

8. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

8.1 Introduction

The study areas for the consideration of the landscape and visual impacts arising from the three EPIWs are generally defined by a distance of 500m from the roadworks, expanded, where appropriate, to include either key sensitive receiver groups that are located beyond this.

The project will have two distinct phases - construction and operation.

8.2 Prediction and Assessment Methodology

The assessment and prediction of the degree of sensitivity of landscape and visual impacts is based on reasoned professional judgement and not on scoring or weighting of impacts.

The degree of significance of an impact depends on the nature and sensitivity of the receptor (whether this is a landscape element or a visual receptor) and the nature and magnitude of the impact itself.

8.2.1.1 Sensitivity

The potential sensitivity of a landscape resource depends on a number of factors including:

- Whether the element is commonplace or rare (e.g. a common tree species, or a rare, protected tree species)
- Whether the element constitutes an area of particular landscape interest (e.g. a prominent ridgeline, an old native forest)
- Whether the element is of statutory importance (e.g. Nature Reserves, SSSI's, landscape buffer zones etc.)
- Whether the element is of particular cultural interest (e.g. a Fung Shui Woodland).

The potential sensitivity of a visual receptor is primarily related to whether the person is at work, at play or at rest. Visual receptors may be broadly categorised into four groups as follows.

- Those who view the impact from their homes are considered to be highly sensitive as the attractiveness or otherwise of the outlook from their home will have a substantial effect on their perception of the quality and acceptability of their home environment and their general quality of life.
- Those who view the impact from their workplace are considered to be moderately sensitive, because the attractiveness or otherwise of the outlook will have a less important, although still material, effect on their perception of

their quality of life. The degree to which this applies depends on whether the workplace is industrial, retail or commercial.

- Those who view the impact whilst taking part in an outdoor leisure activity may display varying sensitivity depending on the type of leisure activity. Football players, for example, would be less concerned with the quality of their surroundings than hill walkers.
- Those who view the impact whilst travelling on a public thoroughfare will also display varying sensitivity depending on the speed of travel and whether the view is continuous or occasionally glimpsed.

8.2.1.2 Magnitude

The magnitude of a landscape or a visual impact will depend on a number of factors including:

- the nature of the development;
- the physical area of the impact, both in absolute terms and relative to its landscape and visual context;
- the duration of the impact;
- the distance of the impact from the viewer;
- the number of viewers;
- the landscape context of the impact; and
- the visual context of the impact

8.2.1.3 Degree of Impact

By synthesising the magnitude of the various impacts and the sensitivity of the various receptors it is possible to identify a series of thresholds to be used as a basis for the categorisation of the degree of significance of the impacts in a logical, well reasoned and consistent fashion.

Table 8.2a indicates a rationale for dividing the degree of significance into five thresholds, namely Very substantial, Substantial, Moderate, Slight and Very Slight depending on the combination of low-medium-high magnitude of impacts (these may be positive or negative impacts) and a low-medium-high degree of sensitivity of receptors.

For example, a negative impact of high magnitude which affects receptors of high sensitivity may be assessed as being a very substantial negative impact. A moderate positive impact could result from a positive impact of low magnitude on receptors of high sensitivity as well as from a positive impact of high magnitude on receptors of low sensitivity. This is not a rigid matrix but serves as a basis for the rational categorisation of impacts.

For the purposes of this assessment, a ‘negligible’ category has been included within the broad classification of the degree of impact. This is necessary because a negligible impact is different from a ‘low’ magnitude of impact. A ‘low’ magnitude impact will cause a varying degree of resultant visual impact depending on whether the receptor’s sensitivity is low, medium or high. However, a negligible magnitude impact will always cause a negligible visual impact, irrespective of the sensitivity of the receptor.

Table 8.2a The relationship between sensitivity and magnitude in defining significance thresholds.

Magnitude of Impact (+ve or -ve)	High	Moderate (+ve or -ve)	Substantial (+ve or -ve)	
	Medium	Slight (+ve or -ve)	Moderate (+ve or -ve)	Substantial (+ve or -ve)
	Low	Very Slight (+ve or -ve)	Slight (+ve or -ve)	Moderate (+ve or -ve)
		Low	Medium	High
		Receptor Sensitivity		

8.3 Construction and Operation Phase Impacts at Yuen Long

8.3.1 Sources of Impact at Yuen Long

Potential sources of landscape and visual impacts during the operation phase are illustrated in *Figure 8.3a* and are identified below:

- increased road area at Castle Peak road junction;
- new roads L1 and L2;
- increased road traffic;
- 3m noise barrier west of Road L1;
- diverted drainage channel and retaining wall south-east of Nam Pin Wai;
- vehicular and street lighting.

8.3.2 Prediction and Evaluation of Impacts at Yuen Long

8.3.2.1 Landscape Impacts at Yuen Long

8.3.2.1.1 Impact on Landscape Resources at Yuen Long

Landscape impacts associated with the roadworks at Yuen Long Station will include:

- loss of 15000 sq.m of open area (agricultural land no longer in active use) caused by Road L1 and L2;
- loss of a 450 sq.m children's playground and mature trees at Tai Wai Tsuen;
- loss of 16 no. mature trees screening open storage along southern edge of Castle Peak Road; and
- loss of 11 no. mature trees south-east of Shung Tak School at Nam Pin Wai.

8.3.2.1.2 Impact on Landscape Character at Yuen Long

The roadworks along Castle Peak road will not represent a significant impact on the existing environment as they are only modifying an existing road system. However, the proposed works to the north of the Sun Yuen Long Plaza will constitute a moderately substantial new impact to the environment. The existing open aspect of agricultural land (no longer in active use) south of the village development will be reduced in size by the new road. This will in turn lessen the degree of visual separation between the traditional villages with the urban area of Yuen Long. The villages can be effectively screened by retaining existing vegetation and providing new planting but the residents will register the presence of the road through traffic noise and vibration and night lighting.

8.3.2.1.3 Visual Impacts

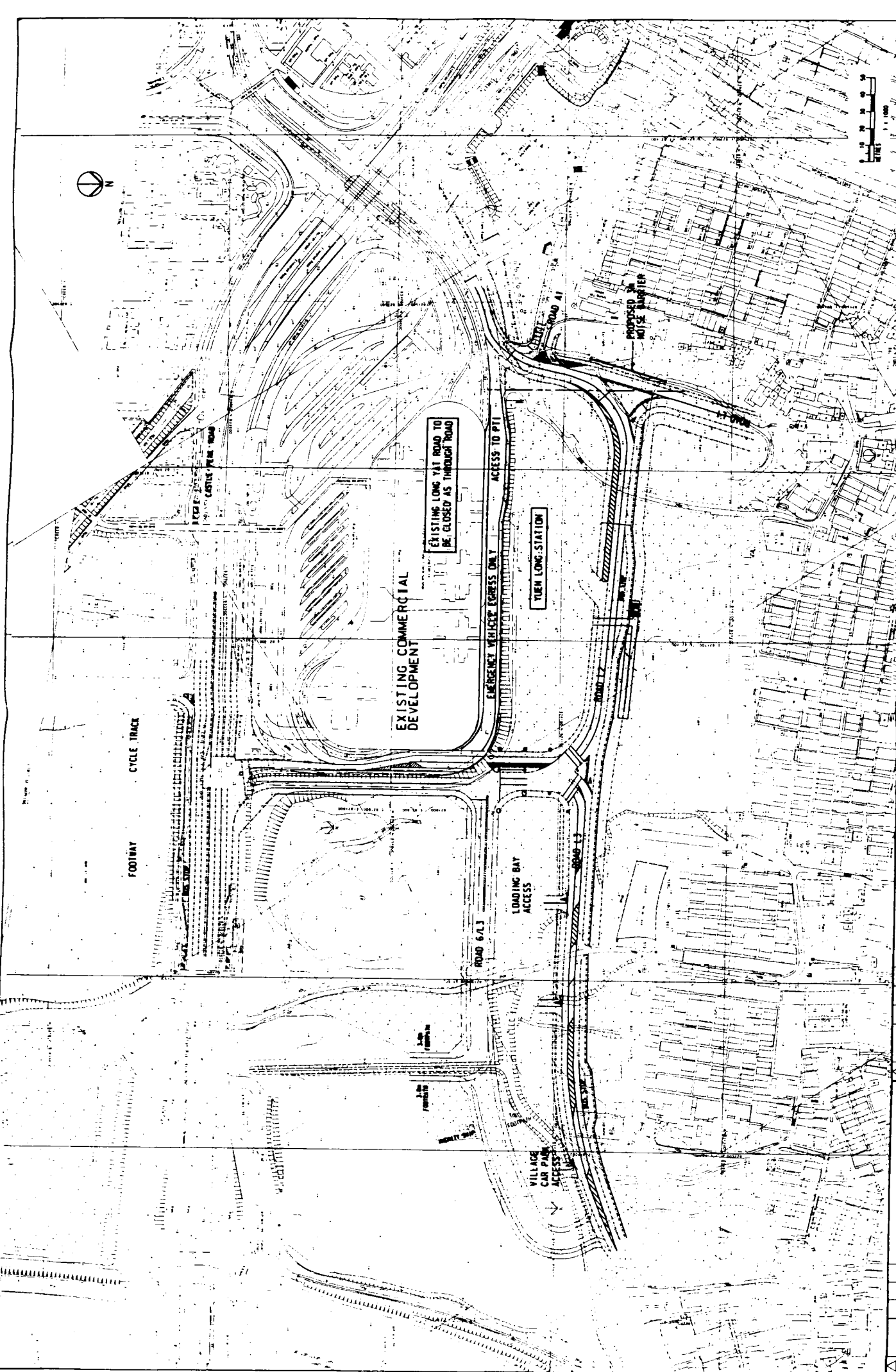
Tables 8.3a and 8.3b list the sources of the visual impacts as described in Section 8.3.1 above; the key VSR's as described in Section 4.2.3; the approximate distance between the VSR's and the sources of impact; the magnitude of the impact; the degree of sensitivity of the VSR's; and the predicted degrees of visual impact on each of the VSR's before and after mitigation.

8.3.3 Mitigation Measures

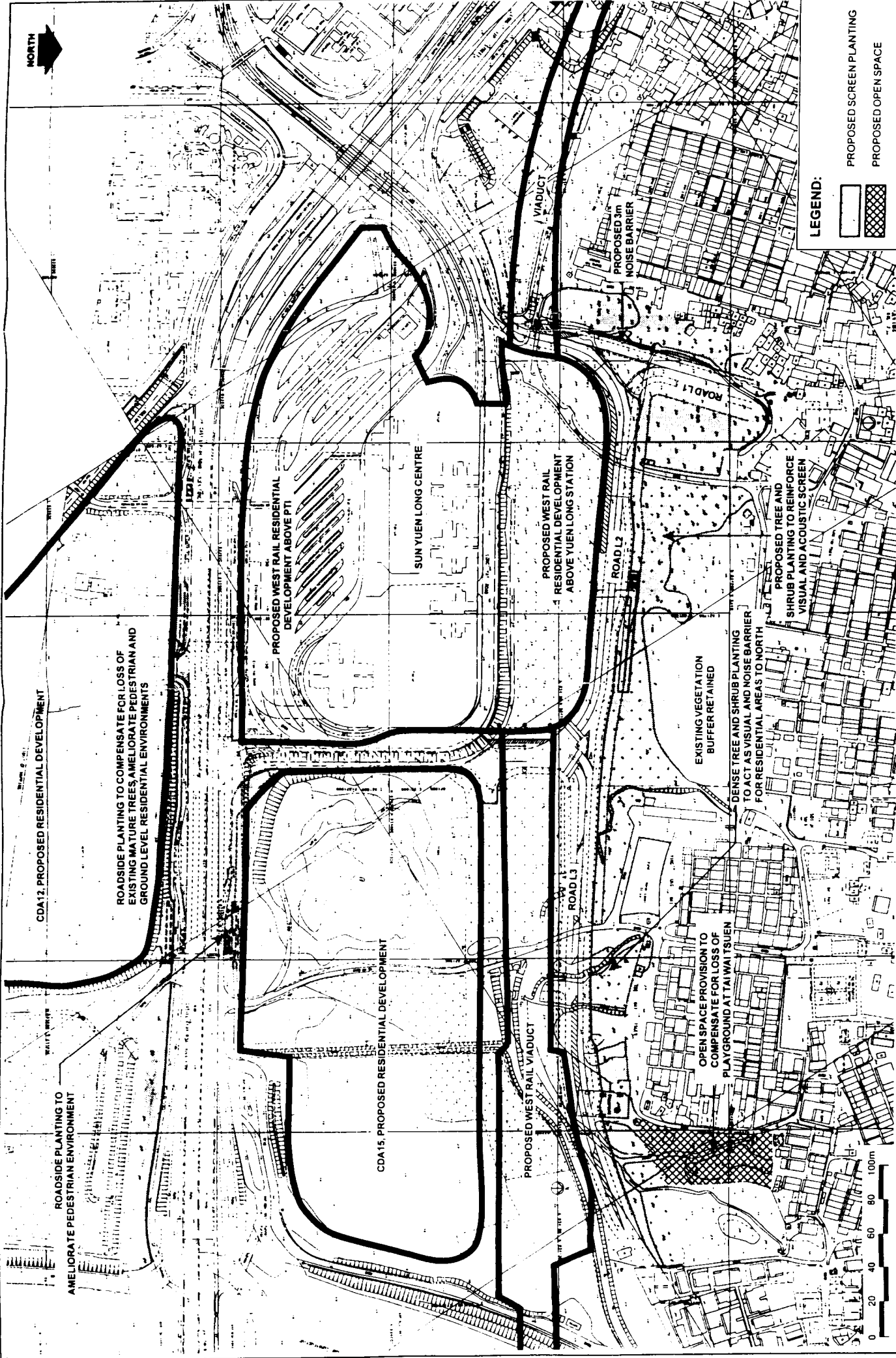
8.3.3.1 Landscape Mitigation Measures

Suggested landscape mitigation measures for the Yuen Long Station road improvements are illustrated on Figures 8.3b and 8.3c are listed below. Generally, the landscape mitigation measures proposed below seek to minimise potential impacts of development, reinstate vegetation that would be lost and to blend the new development into the landscape pattern of the surrounding area, and to provide compensation in the form of environmental improvements such as road side planting to off-set the adverse effects of the scheme. Landscape mitigation measures should include:

- storage and re-use of topsoil in areas impacted by the road improvements;
- dust control measures to prevent the deterioration of adjacent landscape elements;



Kowloon-Canton Railway Corporation WEST RAIL		KCR WEST RAIL (PHASE 1) ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR TUEN LONG SECTION MODIFICATIONS TO LONG YAT ROAD AND ROAD L3 TO SERVE YUL STATION SOURCES OF LANDSCAPE AND VISUAL IMPACTS		CDD YUL NO. 1 RECORD NO. SCALE: 1:2,000 DRAWING NUMBER: B.3B CONTRACT NO. YUL/1/1/1
PROJECT TITLE: WEST RAIL PROJECT NO.: YUL/1/1/1		DRAWING NO.: B.3B CONTRACT NO.: YUL/1/1/1		
DATE: 15/3/97		DRAWN BY: L. OSBORNE CHECKED BY: W. CHURCH APPROVED BY: A. DUGGIE DATE: 15/3/97		
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PROJECT NO. CMB 9712	DATE 2/3/97
SCALE 1:2,000	DATE 2/3/97
DRAWING NUMBER 8.3D	DATE 2/3/97
PROJECT NAME	DATE 2/3/97
<p>KOWLOON-CANTON RAILWAY CORPORATION WEST RAIL</p>	
<p>KCRC WEST RAIL (PHASE 1) ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR YUEN LONG SECTION</p>	
<p>MODIFICATIONS TO LONG TAI ROAD AND ROAD L1 TO SERVE TUL STATION LANDSCAPE MITIGATION MEASURES</p>	
DESIGNED BY	DESCRIPTION
DRAWN BY	
CHECKED BY	
DATE	

LEGEND:

- PROPOSED SCREEN PLANTING
- PROPOSED OPEN SPACE

MODULAR NOISE BARRIER WITH PATTERNED OR COLOURED PANELS FOR VISUAL VARIETY

CLIMBER PLANTING SOFTENS BARRIER FACADE

TRANSITIONAL TAPER TO END OF WALL

SHRUB PLANTING AT BASE REDUCES APPARENT HEIGHT OF WALL

3 METRE NOISE BARRIER

ROAD L1 FOOTPATH

SHRUB AND CLIMBER PLANTING AT BASE OF NOISE BARRIER

INDICATIVE ELEVATION OF NOISE BARRIER AT ROAD L1
SCALE 1: 100

INDICATIVE SECTION OF NOISE BARRIER AT ROAD L1
SCALE 1: 100

<p>INDICATIVE SECTION OF NOISE BARRIER AT ROAD L1 SCALE 1: 100</p>		<p>INDICATIVE ELEVATION OF NOISE BARRIER AT ROAD L1 SCALE 1: 100</p>		<p>INDICATIVE SECTION OF NOISE BARRIER AT ROAD L1 SCALE 1: 100</p>	
<p>DESIGNED BY L. LAM DRAWN BY D. K. HO</p>		<p>CHECKED BY L. LAM L. LAM L. LAM DATE 20-3-99</p>		<p>NOISE CONTROL DIVISION REVISION</p>	
<p>KOWLOON-CANTON RAILWAY CORPORATION WEST RAIL</p>		<p>KCRC WEST RAIL (PHASE 1) ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR YUEN LONG SECTION</p>		<p>MODIFICATIONS TO LONG YAT ROAD AND ROAD L1 TO SERVE TUL STATION LANDSCAPE AND VISUAL MITIGATION MEASURES FOR PROPOSED NOISE BARRIERS</p>	
<p>PROJECT NO. 100</p>		<p>SECTION NO. 8.3c</p>		<p>SCALE 1: 100</p>	
<p>DATE 20-3-99</p>		<p>DATE 20-3-99</p>		<p>DATE 20-3-99</p>	

- transplantation of existing trees impacted by the road improvements to compensatory planting sites or offsite to amenity sites identified by Government Departments;
- stabilisation and planting of all disturbed areas where appropriate;
- compensatory *new* tree and shrub planting; consideration should be given to the feasibility of advance planting works;
- compensatory new tree and shrub planting;
- reprovision of children's playground at Tai Wai Tsuen at a location close to Tai Wai Tsuen.

It is assumed that the proposed mitigation measures would be funded by KCRC and carried out under the EPIW contracts. After an initial 12 month maintenance period of planting works by the implementing Contractor, the Highways Department would normally assume the long term maintenance responsibility of hard landscape elements such as planter walls and tree grilles, and the Regional Services Department would maintain the soft landscape. The children's playground at Tai Wai Tseun would be maintained and managed by the Regional Services Department.

8.3.3.2 Visual Mitigation Measures

Generally, the visual mitigation measures proposed below seek to minimise potential impacts of development and to blend the new development into the landscape pattern of the surrounding area. Visual mitigation measures should include:

- site hoardings to screen works areas during the construction period; consideration should be given to the design and surface treatment, particularly adjacent to pedestrian environments;
- sensitively designed noise barrier at Road L1; careful choice of materials, colours and textures and associated planting;
- control of lighting during night construction activity;
- amenity roadside tree and shrub planting to screen the road alignment and associated structures, particularly new Roads L1 and L2 (consideration should be given to planting in advance of completion of the works where possible to maximise visual mitigation on day one; other planting works should be carried out as soon as practicable after the road works are completed). *Figures 8.3d and 8.3e* show, respectively, the proposed landscape and visual mitigation measures at Yuen Long both immediately and 10 years after their implementation.

8.3.4 Residual Landscape and Visual Impacts

8.3.4.1 Residual Landscape Impacts

Residual landscape impacts associated with roadworks at Yuen Long include:

- loss of open area (agricultural land no longer in active use) caused by Road L1 and L2;
- loss of mature trees screening open storage along southern edge of Castle Peak Road; and
- loss of mature trees south east of Shung Tak School at Nam Pin Wai.

8.3.4.2 Residual Visual Impacts

Tables 8.3a and *8.3b* illustrate the predicted residual visual impacts on each of the VSR's after the mitigation measures have taken effect.

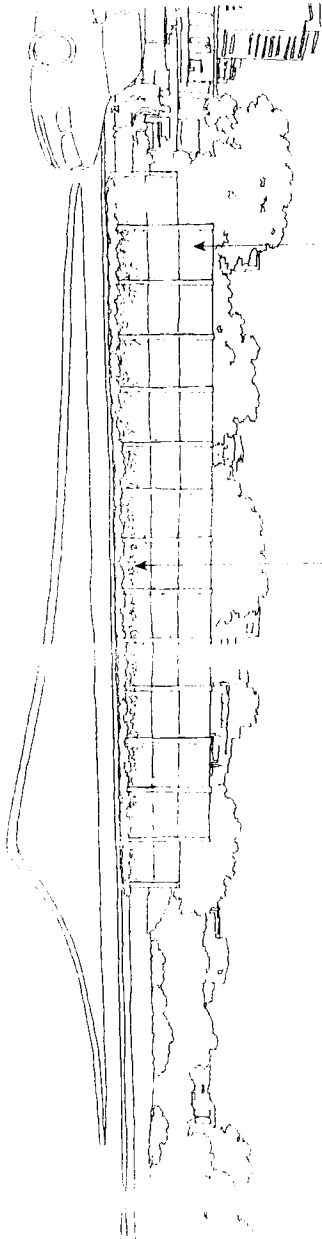
Significant visual impacts will remain during the construction phase even after the implementation of the mitigation measures outlined above. During the Operational Phase the most significant residual impacts will be the substantial negative impacts which will be felt by users of the open area south of Nam Pin Wai village. In addition, moderate negative residual impacts will be felt by village residents located at the southern edge of Ying Lung Wai and Tai Wai Tsuen, and slight negative impacts will be felt by the occupants of Shung Tak School, and residents of the south-east edge of Nam Pin Wai village.



EXISTING CONDITIONS LOOKING WEST TO NAM PIN WAI

REINFORCED CONCRETE PANELS TEXTURED AND PATTERNED ON BOTH SIDES TO ADD VISUAL INTEREST FOR SENSITIVE VISUAL RECEIVERS

CLIMBER AND GROUND COVER PLANTING TO SOFTEN NOISE BARRIER ELEVATION



VIEW OF PROPOSED NOISE BARRIER ON ROAD L1 IMMEDIATELY AFTER CONSTRUCTION

70

Title Area

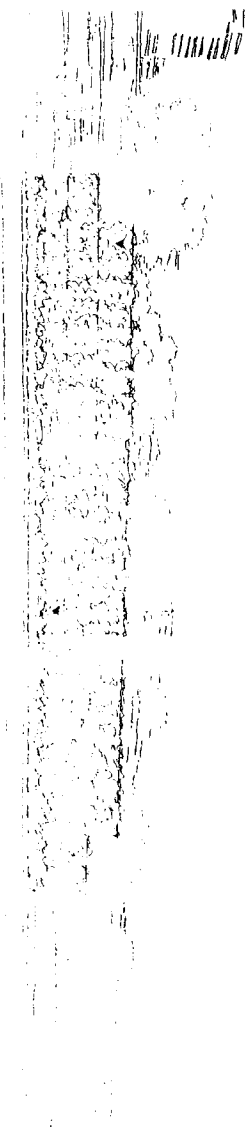
<p style="text-align: center;">KOWLOON-CANTON RAILWAY CORPORATION</p> <p style="text-align: center;">WEST RAIL</p>	<p style="text-align: center;">KCR WEST RAIL PHASE 1 ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR TUEN LONG SECTION MODIFICATIONS TO LONG YAT ROAD AND ROAD L2 TO SERVE YUL STATION LANDSCAPE AND VISUAL MITIGATION MEASURES FOR PROPOSED NOISE BARRIER</p>
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EXISTING CONDITIONS LOOKING WEST TO NAM PIN WAI

REINFORCED CONCRETE SLABS TEXTURED AND
 PATTERNEED ON BOTH SIDES TO ADD VISUAL INTEREST
 FOR SENSITIVE VISUAL RESOURCES

GRASS AND SPERMATOPHYTES PLANTING TO
 SOFTEN AND SCREEN THE SECTION



VIEW OF PROPOSED NOISE BARRIER ON ROAD 100 FEARS AFTER CONSTRUCTION



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Landscape and Visual Impact Assessment

Key to Table 8.3a:

- Magnitude of Impact** = Negligible, Low, Medium or High (Positive or Negative)
- Receptor Sensitivity** = Low, Medium or High
- Impact Significance Thresholds** = Negligible, Very Slight, Slight, Moderate, Substantial or Very Substantial (Positive or Negative)
- Types of Visually Sensitive Receivers (VSR's)**
- I = Industrial (including Agricultural), R = Residential, C = Commercial, C/I = Mixed Commercial/Industrial,
- R/I = Mixed Residential/Industrial, C/R = Mixed Commercial/Residential, OS = Open Space,
- M = Community, T = Transport Related

(*For ease of cross-referencing between Tables and Plans, each key VSR is numbered given an Identity Number according to the foregoing categories - see column 3 of Table.)

Table 8.3a VISUAL IMPACT DURING THE CONSTRUCTION PHASE

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Construction Phase before Mitigation Measures	Residual Impact During Construction Phase after Mitigation Measures take effect.
Construction of 3m Noise Barrier, diverted drainage channel and retaining wall south east of Nam Pin Wai	Students and teachers at Shung Tak School facing south east	M1	30m	Medium	Medium	Moderate Negative	Moderate Negative
Construction of Access roads L1 & L2 between Tung Tau Tsuen and Sun Yuen Long Centre	Residents located at southern edge of Nam Pin Wai facing south east	R2	50m	Medium	High	Substantial Negative	Substantial Negative
	Students and teachers at Shung Tak School facing east	M1	40m	Medium	Medium	Moderate Negative	Moderate Negative

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Construction Phase before Mitigation Measures	Residual Impact During Construction Phase after Mitigation Measures take effect.
	Residents located at southern edge of Ying Lung Wai and Tai Wai Tsuen facing south	R1	30m	High	High	Very Substantial Negative	Very Substantial Negative
	Residents located at eastern edge of Nam Pin Wai facing east	R2	50m	Medium	High	Substantial Negative	Substantial Negative
	Residents at Far East Construction Yuen Long Building facing north-east	R3	250m	Negligible	High	Negligible	Negligible
	Residents at north-east Yuen Long tower blocks facing north-east	R4	300m	Negligible	High	Negligible	Negligible
	Residents located at southern edge of Yuen Long Kau Hui and Tung Tau Tsuen facing south	R5	70m	Negligible	High	Negligible	Negligible
	Residents at Sun Yuen Long Centre facing north and east	R/C1	30m	Low	High	Moderate Negative	Moderate Negative
	Users of open space south of villages	OS1	0m	High	High	Very Substantial Negative	Very Substantial Negative
	Motorists/ passengers on Yuen Long Highway adjacent to Castle Peak Road roundabout	T1	320m	Negligible	Medium	Very Slight Negative	Negligible
	Motorists/ passengers on Local Service Road	T2	50m	Low	Low	Very Slight Negative	Very Slight Negative
	Motorists/ passengers on Castle Peak Road Flyover	T3	50m	Low	Low	Negligible	Negligible

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Construction Phase before Mitigation Measures	Residual Impact During Construction Phase after Mitigation Measures take effect.
	Motorists/ passengers on Long Yat Road	T4	0m	Low	Low	Very Slight Negative	Very Slight Negative
	Motorists/ passengers on Ting Lung Wai Access Road & Parking	T5	20m	High	Low	Moderate Negative	Moderate Negative
	Motorists/ passengers on Nam Pin Wai Access Road & Parking	T6	20m	High	Low	Moderate Negative	Moderate Negative
	Passengers on LRT north of Castle Peak Road	T8	10m	High	Medium	Substantial Negative	Substantial Negative
Access road junction with Castle Peak Road	Residents at North East Yuen Long tower blocks facing east	R4	200m	Negligible	High	Very Slight Negative	Negligible
	Residents of Sun Yuen Long Centre facing south east	R/C1	60m	Low	High	Moderate Negative	Moderate Negative
	Motorists/ passengers on Castle Peak Road	T1	0m	Medium	Medium	Moderate Negative	Moderate Negative
	Pedestrians and cyclists on Castle Peak Road	P1	0m	High/Medium	High	Very slight Negative	Negligible

Landscape and Visual Impact Assessment

Key to Table 8.3b:

Magnitude of Impact

Receptor Sensitivity

Impact Significance Thresholds

Types of Visually Sensitive Receivers (VSR's)

= Negligible, Low, Medium or High (Positive or Negative)

= Low, Medium or High

= Negligible, Very Slight, Slight, Moderate, Substantial or Very Substantial (Positive or Negative)

I = Industrial (including Agricultural), R = Residential, C = Commercial, C/I = Mixed Commercial/Industrial,

R/I = Mixed Residential/Industrial, C/R = Mixed Commercial/Residential, OS = Open Space,

M = Community, T = Transport Related

(*For ease of cross-referencing between Tables and Plans, each key VSR is numbered given an Identity Number according to the foregoing categories - see column 3 of Table.)

Table 8.3b VISUAL IMPACT DURING THE OPERATIONAL PHASE

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
3m Noise Barrier, diverted drainage channel and retaining wall south east of Nam Pin Wai	Students and teachers at Shung Tak School facing south east	M1	30m	Low	Medium	Moderate Negative	Slight Negative
	Residents located at southern edge of Nam Pin Wai facing south east	R2	50m	Low	High	Moderate Negative	Slight Negative
	Residents of proposed West Rail development above Yuen Long station	R/C2	20m	Low	High	Slight Negative	Very Slight Negative

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
Access roads L1 & L2 between Tung Tau Tsuen and Sun Yuen Long Centre	Students and teachers at Shung Tak School facing east	M1	40m	Medium/Low	Medium	Slight Negative	Very Slight Negative
	Residents located at southern edge of Ying Lung Wai and Tai Wai Tsuen facing south	R1	30m	High/Medium	High	Substantial Negative	Moderate Negative
	Residents located at eastern edge of Nam Pin Wai facing east	R2	50m	Low	High	Slight Negative	Very Slight Negative
	Residents at Far East Construction Yuen Long Building facing north-east	R3	250m	Negligible	High	Negligible	Negligible
	Residents at north-east Yuen Long tower blocks facing north-east	R4	300m	Negligible	High	Negligible	Negligible
	Residents located at southern edge of Yuen Long Kau Hui and Tung Tau Tsuen facing south	R5	70m	Negligible	High	Negligible	Negligible
	Residents at Sun Yuen Long Centre facing north and east	R/C1	30m	Low	High	Negligible	Negligible
	Residents of proposed West Rail development above Yuen Long station	R/C3	20m	Low	Medium	Slight Negative	Very Slight Negative
	Users of open space south of villages	OS1	0m	High	High	Very Substantial Negative	Substantial Negative
	Motorists/ passengers on Yuen Long Highway adjacent to Castle Peak Road roundabout	T1	320m	Negligible	Medium	Very Slight Negative	Negligible

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
	Motorists/ passengers on Local Service Road	T2	50m	Low	Low	Negligible	Negligible
	Motorists/ passengers on Castle Peak Road Flyover	T3	50m	Low	Low	Negligible	Negligible
	Motorists/ passengers on Long Yat Road	T4	0m	Low	Low	Negligible	Negligible
	Motorists/ passengers on Ting Lung Wai Access Road & Parking	T5	20m	Medium	Low	Negligible	Negligible
	Motorists/ passengers on Nam Pin Wai Access Road & Parking	T6	20m	Low	Low	Negligible	Negligible
	Passengers on West Rail	T7	20m	Low	Low	Negligible	Negligible
	Passengers on LRT north of Castle Peak Road	T8	10m	Low	Medium	Very Slight Negative	Negligible
Access road junction with Castle Peak Road	Residents at North East Yuen Long lower blocks facing east	R4	200m	Negligible	High	Very Slight Negative	Negligible
	Residents of Sun Yuen Long Centre facing south east	R/C1	60m	Negligible	High	Very Slight Negative	Negligible
	Residents of proposed West Rail development above PT1	R/C2	20m	Negligible	High	Very Slight Negative	Negligible
	Residents in proposed development in CDA12	R6	20m	Negligible	High	Very Slight Negative	Negligible
	Residents in proposed development in CDA15	R7	0m	Negligible	High	Very Slight Negative	Negligible

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
	Motorists/ passengers on Castle Peak Road	T1	0m	Medium/Low	Medium	Very slight Negative	Negligible
	Pedestrians and cyclists on Castle Peak Road	P1	0m	High/Medium	High	Very slight Negative	Negligible

8.4 Construction and Operation Phase Impacts at Tin Shui Wai

8.4.1 Sources of Impact at Tin Shui Wai

Potential sources of landscape and visual impacts are illustrated in *Figure 8.4a* and identified below:

- four noise barriers (including the proposed 4m high TDD barrier alongside Ping Ha Road), with the three EPIW barriers being 4.5m high and 35m long, and 5m high and 135m long and 7m high and 70m long;
- increased road area;
- increased road traffic;
- highways structures (including safety barriers, signage and gantries); and
- vehicular and street lighting.

8.4.2 Prediction and Evaluation of Impacts at Tin Shui Wai

8.4.2.1 Landscape Impacts at Tin Shui Wai

8.4.2.1.1 Impact on Landscape Resources at Tin Shui Wai

Landscape impacts associated with the modifications to Tin Fuk Road and Ping Ha Road are listed below:

- 1600 sq.m loss of central median planting;
- 3300sq.m loss of mature embankment tree and shrub planting to boundary of future public transport interchange south of Ping Ha Road;
- 4550 sq.m loss of mature embankment tree and shrub planting to south east boundary of proposed HOS development in Tin Shui Wai Area 3;
- 4000 sq.m loss of grass verge at Tin Fuk Road; and
- 13375 sq.m loss of planter adjacent to Ping Ha Road.

8.4.2.1.2 Impact on Landscape Character at Tin Shui Wai

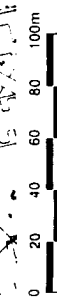
The impact on the landscape character of the road works at Tin Shui Wai will be relatively minor due to the scale of the existing road layout and junction and when seen in the context of the proposed West Rail and LRT developments which will introduce new and far more dominant elements into the existing landscape. However, the character of the pedestrian environments adjacent to the roads will be substantially modified by the noise barriers. West of Ping Ha road the extensive earth mounding and mature planting will be lost and replaced with footpaths and reduced planting at grade. Proposed noise barriers will constitute new visual elements to the pedestrian environment. The road works do however offer the opportunity for the enhancement of some roadside environments such as the disused LRT reserve adjacent to Tin Fuk Road.

LEGEND:

- NOISE BARRIERS**
- NB1 4.5m HIGH BARRIER, 35m LENGTH
 - NB2 5m HIGH BARRIER, 135m LENGTH
 - NB3 4m HIGH BARRIER
 - NB4 7m HIGH BARRIER INTEGRATED WITH FOOTBRIDGE



	KOWLOON-CANTON RAILWAY CORPORATION	WEST RAIL	<p style="font-size: small;">KCR WEST RAIL (PHASE 1) ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR YUEN LONG SECTION</p> <p style="font-size: x-small;">MODIFICATIONS TO TIN FUK ROAD, PING HA ROAD AND TIN YU ROAD TO SERVE TIS STATION SOURCES OF LANDSCAPE AND VISUAL IMPACTS</p>
DRAWN BY	CHECKED BY	DESIGNED BY	SCALE: 1:2,000
IN CHARGE	DATE	DATE	DRAWING NUMBER
NOISE BARRIERS AMENDED	NOISE BARRIERS AMENDED	NOISE BARRIERS AMENDED	B 43
REV. DATE BY SUB APP	REV. DATE BY SUB APP	REV. DATE BY SUB APP	BY: 1/11/99
DESCRIPTION	DESCRIPTION	DESCRIPTION	B



8.4.2.2 Visual Impacts

Tables 8.3a and 8.3b list the sources of the visual impacts as described in Section 8.4.1 above; the key VSR's are described in Section 4.4.4 and illustrated by Figure 4.4h; the approximate distance between the VSR's and the sources of impact; the magnitude of the impact; the degree of sensitivity of the VSR's; and the predicted degree of visual impact on each of the VSR's before and after mitigation.

8.4.3 Mitigation Measures

8.4.3.1 Landscape Mitigation Measures

Generally, the landscape mitigation measures proposed below and illustrated by Figures 8.4b and 8.4c seek to minimise potential landscape and visual impacts of the roadworks, reinstate vegetation that would be lost, blend the new development into the landscape pattern of the surrounding area, and to provide compensation in the form of environmental improvements such as road side planting to off-set the adverse effects of the scheme. Landscape mitigation measures should include:

- storage and re-use of topsoil in areas impacted by the road improvements;
- dust control measures to prevent the deterioration of adjacent landscape elements;
- transplantation of existing trees impacted by the road improvements to compensatory planting sites or offsite to amenity sites identified by and agreed with Government Departments;
- stabilisation and planting of all disturbed areas where appropriate; and
- compensatory new tree and shrub planting for lost vegetation; consideration should be given to advance planting works.

It is assumed that the proposed mitigation measures would be funded by KCRC and carried out under the EPIW contracts. After an initial 12 month maintenance period of planting works by the implementing Contractor, the Highways Department would normally assume the long term maintenance responsibility of hard landscape elements such as planter walls and tree grilles, and the Regional Services Department would maintain the soft landscape.

8.4.3.2 Visual Mitigation Measures

Generally, the visual mitigation measures proposed below seek to minimise potential impacts of development and to blend the new development into the landscape pattern of the surrounding area. Visual mitigation measures should include:

- site hoardings to screen works areas during the construction period; consideration should be given to the design and surface treatment, particularly adjacent to pedestrian environments;
- sensitively designed noise barriers with careful choice of materials, colours and textures and associated planting;
- control of lighting during night construction activity; and
- amenity roadside tree and shrub planting to screen the road alignment and associated structures (advance planting works should be considered).

Figures 8.4d and 8.4e show the landscape and visual mitigation measures at Tin Fuk Road both immediately, and 10 years after their implementation, whilst *Figures 8.4f and 8.4g* show the landscape and visual mitigation measures at Ping Ha Road both immediately, and 10 years after their implementation.

8.4.4 Residual Landscape and Visual Impacts at Tin Shui Wai

8.4.4.1 Residual Landscape Impacts at Tin Shui Wai

Residual landscape impacts associated with the modifications to Tin Fuk Road and Ping Ha Road will include:


- 550 linear metres loss of central median palm trees (note: there is insufficient space to reinstate central median planting along Tin Fuk Road and Ping Ha Road).;
- 600 linear metres loss of mature embankment tree and shrub planting to boundary of future public transport interchange south of Ping Ha Road;
- 200 linear metres loss of mature embankment tree and shrub planting to south east boundary of HOS development in Tin Shui Wai Area 3;
- 400 linear metres loss of grass verge at Tin Fuk Road; and
- 450 linear metres loss of grass verge at Ping Ha Road.

8.4.4.2 Residual Visual Impacts at Tin Shui Wai


Tables 8.4a and 8.4b below illustrates the predicted residual visual impacts on each of the VSR's after the mitigation measures have taken effect.

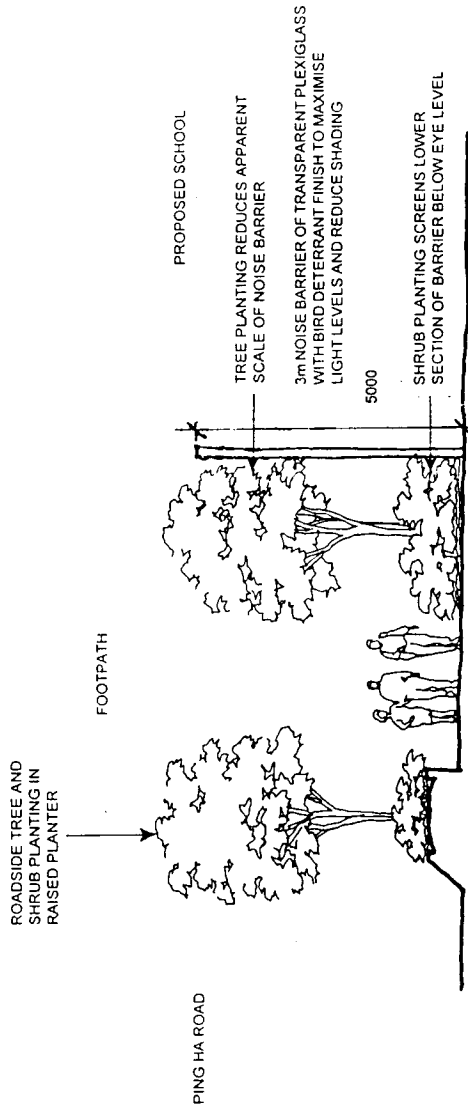
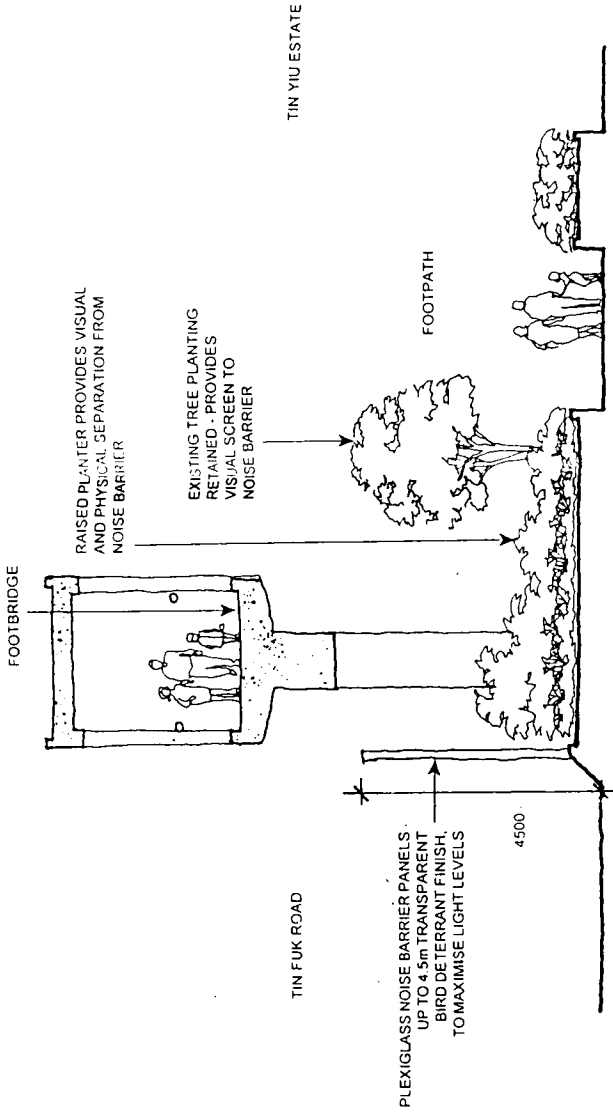
Significant visual impacts will remain during the construction phase even after the implementation of the mitigation measures outlined above. During the Operational Phase the most significant residual impacts will be the very substantial negative impacts felt by pedestrians and cyclists adjacent to the noise barriers on Tin Fuk Road, and the substantial impacts felt by the proposed school at Ping Ha Road. In addition the noise barriers will cause moderate negative impacts on the adjacent land uses at Tin Yiu Estate and Queen Elizabeth Primary School.

LEGEND:

-  PROPOSED SCREEN PLANTING
- NOISE BARRIERS**
- NB1 4.5m HIGH BARRIER, 35m LENGTH
- NB2 5m HIGH BARRIER, 135m LENGTH
- NB3 4m HIGH BARRIER
- NB4 7m HIGH BARRIER INTEGRATED WITH FOOTBRIDGE



<p>SCALE FILE NO: (708) 0417 SECRETARY: T. 2,000 DATE: 3/1/97 DRAWING NUMBER: 8.4B SHEET NO: 8</p>	
<p>KCRC WEST RAIL (PHASE 1) ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR YUEN LONG SECTION</p>	
<p>MODIFICATIONS TO TIN YUK ROAD, PING HA ROAD AND TIN YU ROAD TO SERVE ITS STATION LANDSCAPE MITIGATION MEASURES</p>	
 <p>KOWLOON-CANTON RAILWAY CORPORATION</p> <p>WEST RAIL</p>	
<p>DESIGNED BY: [Signature] DRAWN BY: [Signature] CHECKED BY: [Signature] IN CHARGE: [Signature] DATE: 3/1/97</p>	<p>DATE: [] BY: [] APP: [] REVISIONS: [] DESCRIPTION: []</p>
<p>NOISE BARRIERS</p> <p>TO WEST RAIL NB1, NB2, NB3, NB4</p> <p>NOISE BARRIERS ALIGNED TO WEST RAIL NB1, NB2, NB3, NB4</p>	

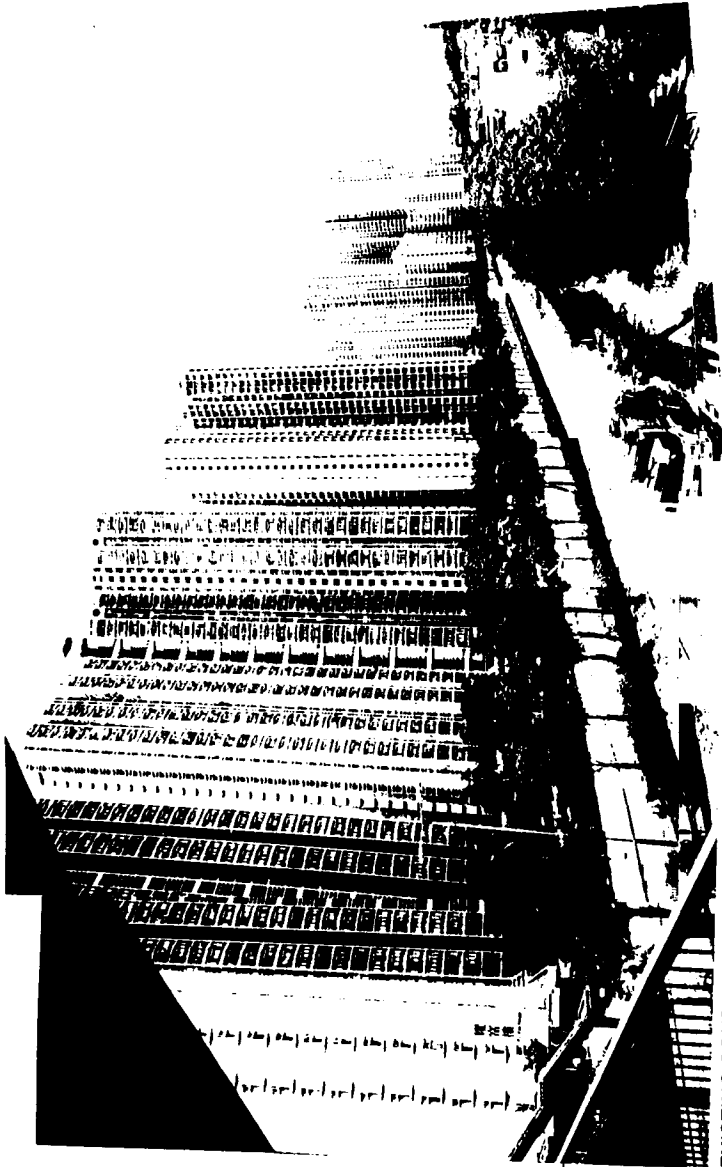


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KOWLOON-CANTON RAILWAY CORPORATION
WEST RAIL

KCRC WEST RAIL (PHASE 1)
ESSENTIAL PUBLIC INFRASTRUCTURE WORKS
FOR YUEN LONG SECTION
MODIFICATIONS TO TIN FUK ROAD,
PING HA ROAD AND TIN YIU ROAD TO SERVE TIS STATION
LANDSCAPE AND VISUAL MITIGATION MEASURES
FOR PROPOSED NOISE BARRIERS

PROJECT NO. 1411
DRAWING NO. 8.4C
DATE 14/11/08



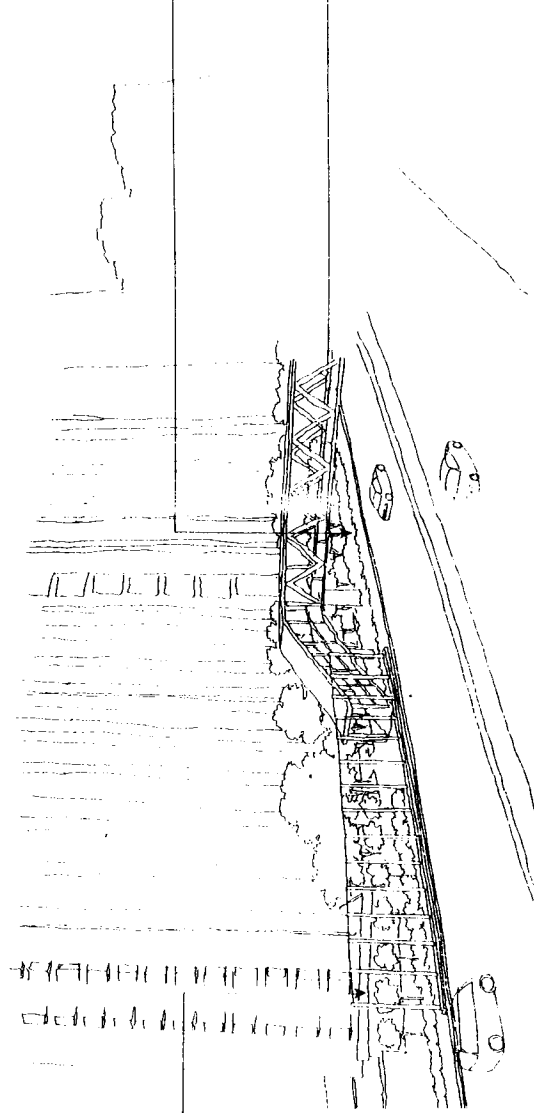
EXISTING CONDITIONS LOOKING NORTH EAST ALONG TIN FUK ROAD

EXISTING FOOTBRIDGE
TO BE DEMOLISHED

4.5m PLEXIGLASS NOISE BARRIER
WITH PLANTING

LANDSCAPE PLANTING TO
SCREEN TIN FUK ROAD
FROM TIN YIU ESTATE
AND FOOTPATHS

PROPOSED FOOTBRIDGE



PROPOSED MITIGATION MEASURES AT TIN FUK ROAD IMMEDIATELY AFTER CONSTRUCTION

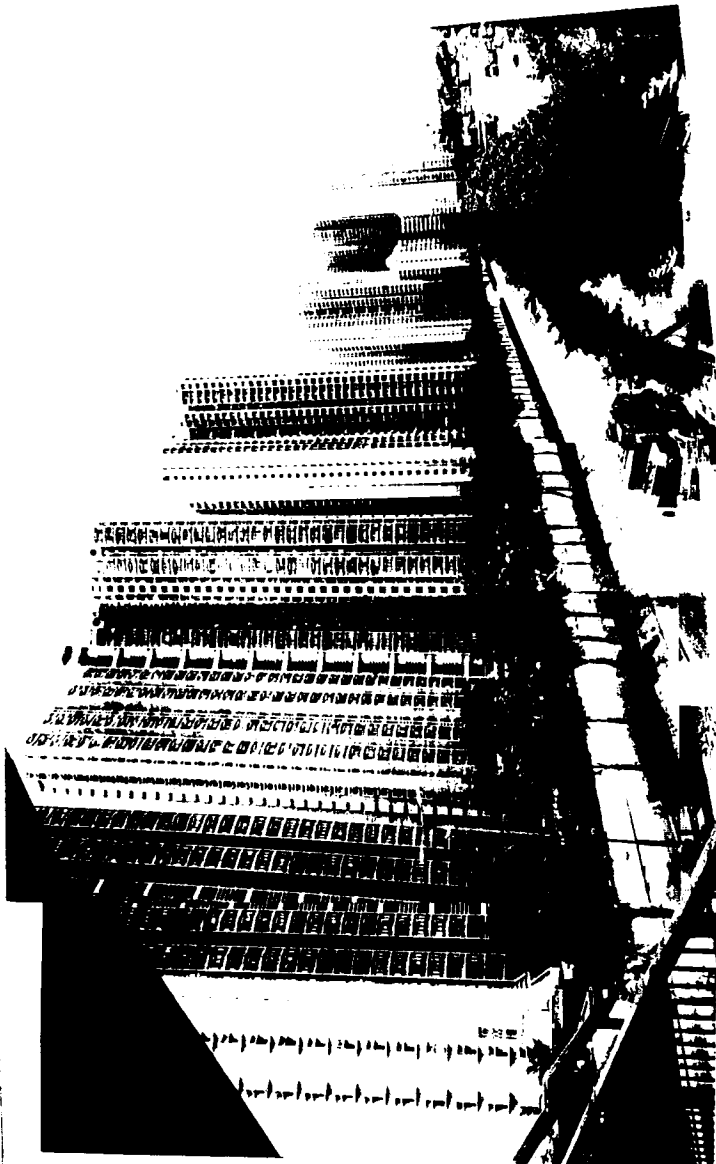


KOWLOON-CANTON RAILWAY CORPORATION
WEST RAIL

DATE: 15/5/09
DRAWN BY: [Signature]
CHECKED BY: [Signature]

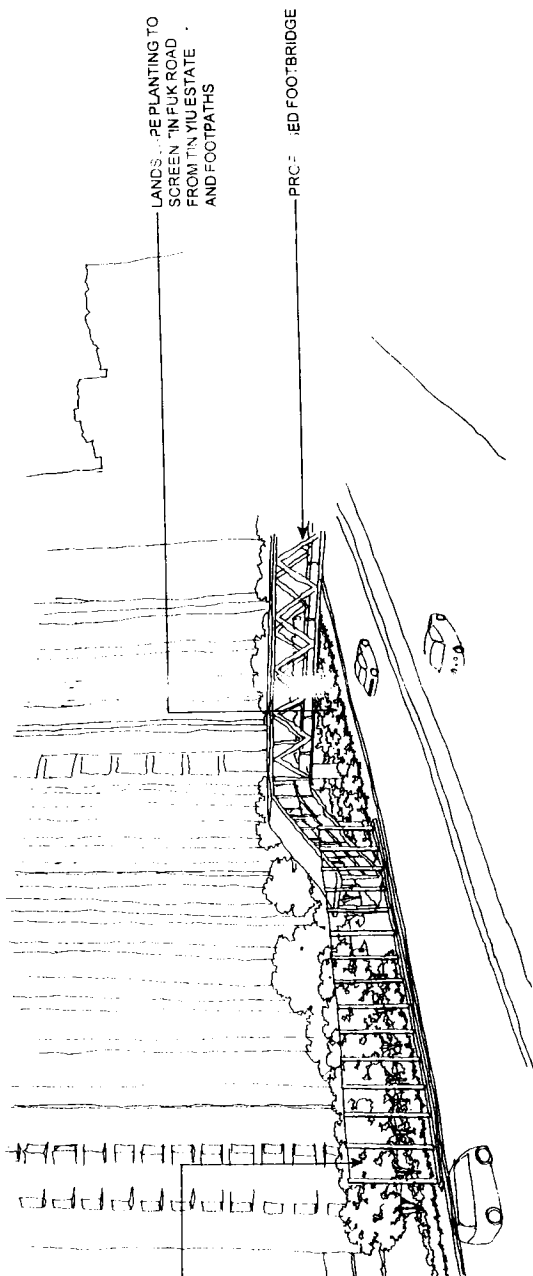
KCRC WEST RAIL (PHASE 1)
ESSENTIAL PUBLIC INFRASTRUCTURE WORKS
FOR YUEN LONG SECTION
MODIFICATIONS TO TIN FUK ROAD
AND TIN YIU ROAD TO SERVE THE STATION
LANDSCAPE AND VISUAL MITIGATION MEASURES
FOR PROPOSED NOISE BARRIERS

SCALE: 1:500
DATE: 15/5/09



EXISTING CONDITIONS LOOKING NORTH EAST ALONG TIN FUK ROAD

EXISTING FOOTBRIDGE
TO BE DEMOLISHED



4.5m PLEXIGLASS NOISE BARRIER
WITH PLANTING

LANDSCAPE PLANTING TO
SCREEN TIN FUK ROAD
FROM TIN YIU ESTATE
AND FOOTPATHS

PROPOSED FOOTBRIDGE

PROPOSED MITIGATION MEASURES AT TIN FUK ROAD 10 YEARS AFTER CONSTRUCTION

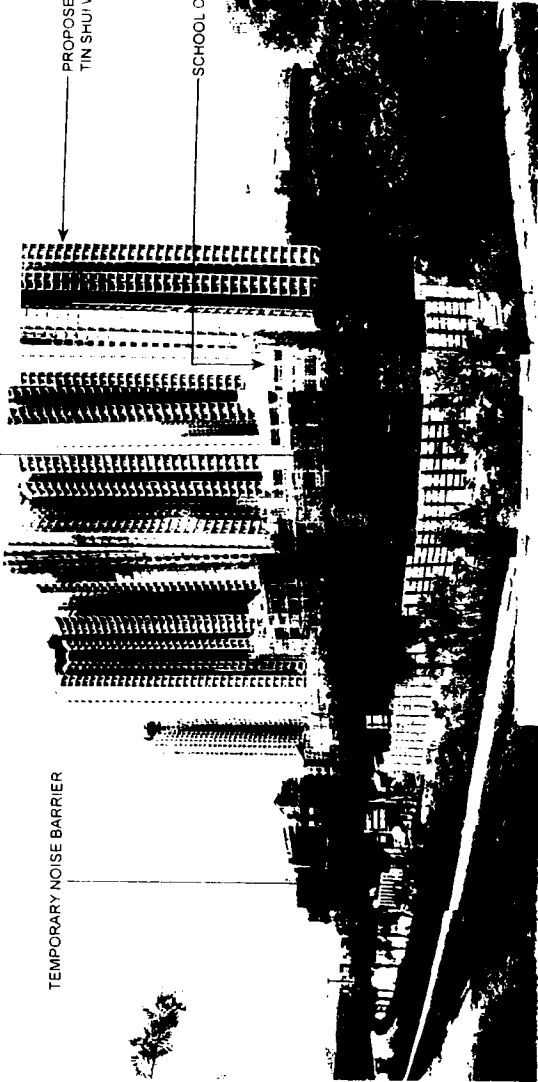
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KOWLOON-CANTON RAILWAY CORPORATION WEST RAIL		MODIFICATIONS TO TIN FUK ROAD, PING HA ROAD AND TIN YIU ROAD TO SERVE THIS STATION LANDSCAPE AND VISUAL MITIGATION MEASURES FOR PROPOSED NOISE BARRIERS		CADD FILE NO. CADD 0517		
DESIGNED BY I. CHORNING	CHECKED BY I. CHORNING	DRAWN BY T. CHORNING	DATE 18/5/99	DESCRIPTION		
NO.	DATE	BY	SUB	APP	DATE	DESCRIPTION

EXISTING SOUNDING AND PLANTING

TEMPORARY NOISE BARRIER

PROPOSED HOUSING DEVELOPMENT IN TIN SHUI WAI AREA 3

SCHOOL CONSTRUCTION SITE



EXISTING VIEW WEST ACROSS PING HA ROAD

PLANTING BENEATH FOOTBRIDGE RAMP

PROPOSED FOOTBRIDGE

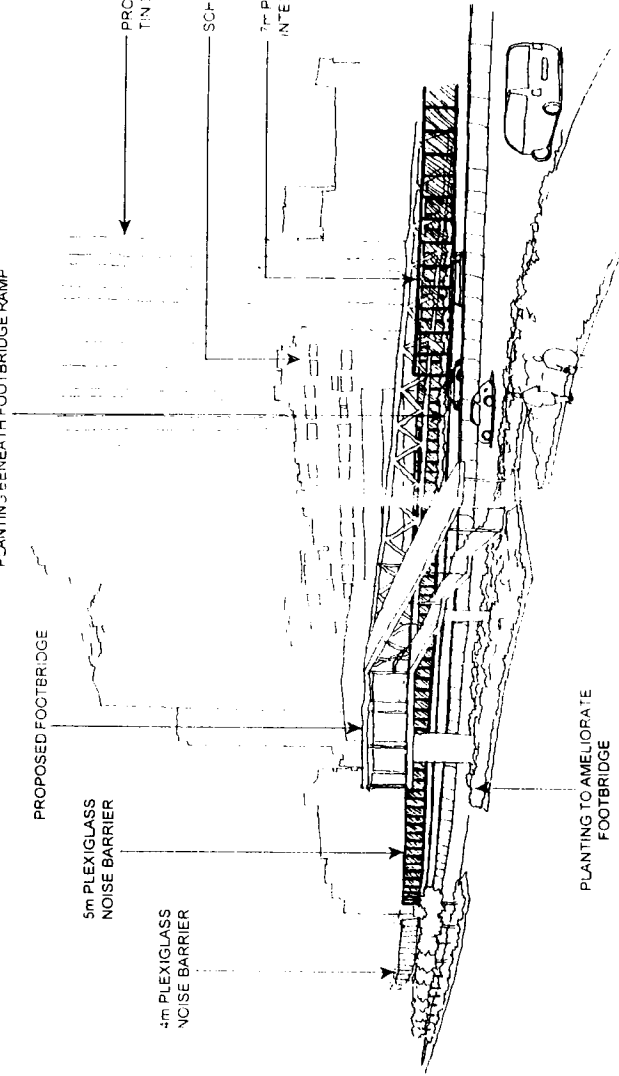
5m PLEXIGLASS NOISE BARRIER

4m PLEXIGLASS NOISE BARRIER

PROPOSED HOUSING DEVELOPMENT IN TIN SHUI WAI AREA 3

SCHOOL CONSTRUCTION SITE

TEMPORARY NOISE BARRIER (WITH FOOTBRIDGE)



PLANTING TO AMELIORATE FOOTBRIDGE

VIEW WEST ACROSS PING HA ROAD IMMEDIATELY AFTER CONSTRUCTION

NOTICE PROCESSED UNDER WEST RAIL STATION AND VIADUCT LIMITED FROM PREPARING TO AVOID OBSCURING MITIGATION MEASURES



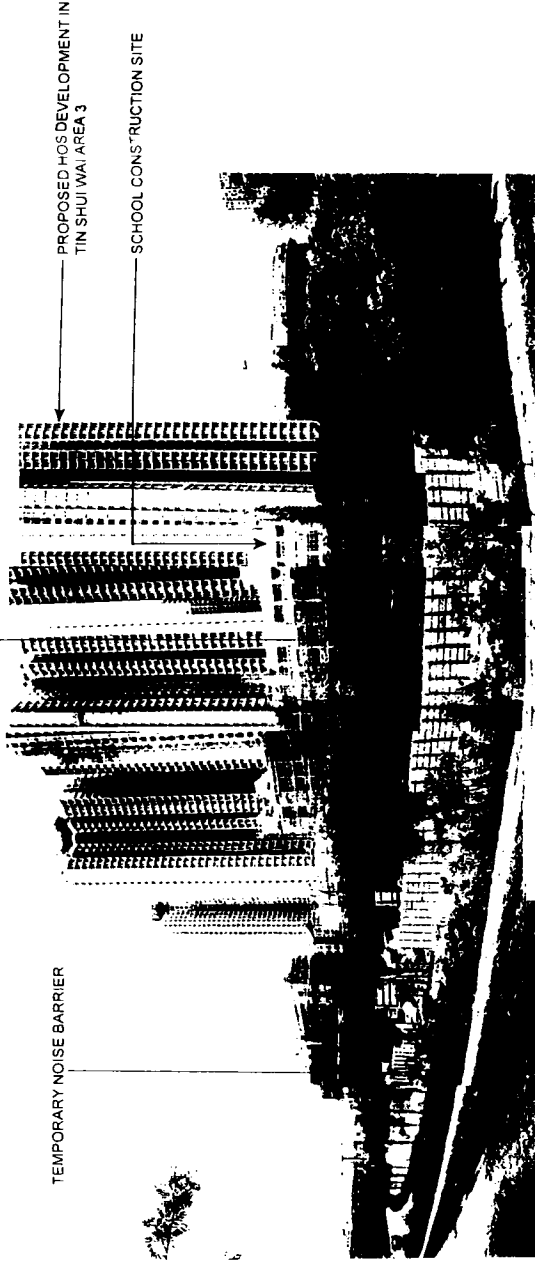
KOWLOON-CANTON RAILWAY CORPORATION
WEST RAIL

SCALE: 1:500 (PLAN)
1:100 (SECTION)

MTRC WEST RAIL PHASE 1
ESSENTIAL PUBLIC INFRASTRUCTURE WORKS
FOR TUN LUN LONG SECTION
MODIFICATIONS TO TIN SHUI WAI
ROAD AND TIN SHUI ROAD TO SERVE THE STATION
NEIGHBOURHOOD VIA MITIGATION MEASURES
DATE OF ISSUE: 2018-08-20

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EXISTING TREES AND PLANTING



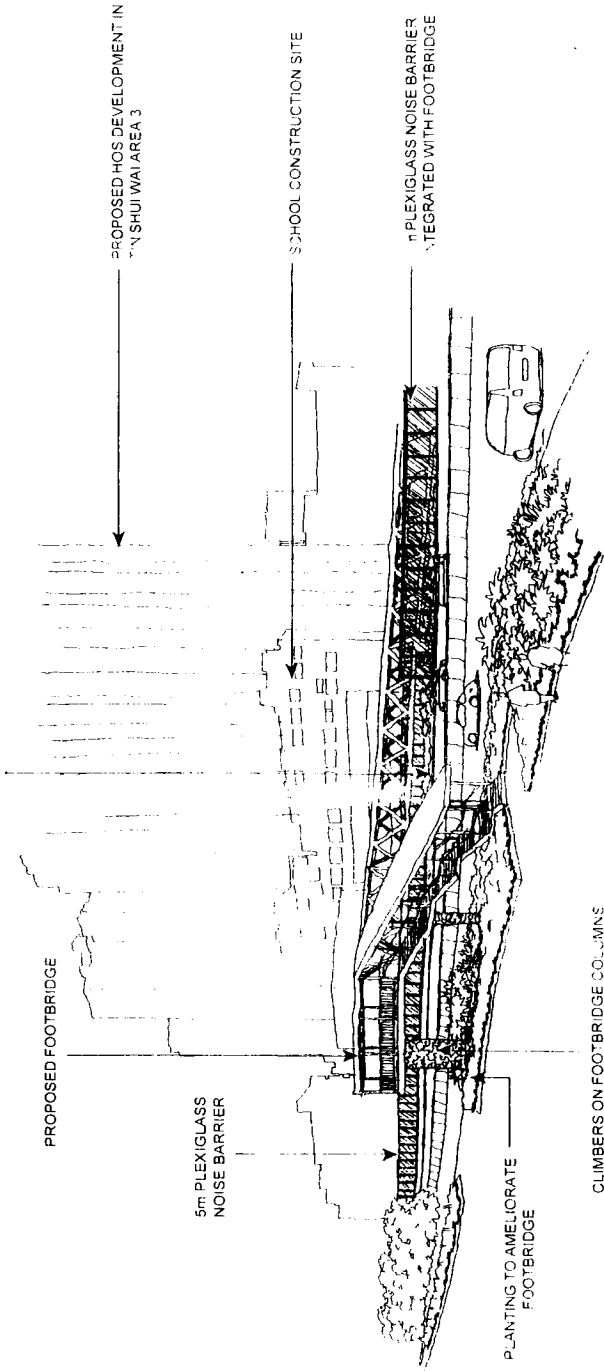
TEMPORARY NOISE BARRIER

PROPOSED HOS DEVELOPMENT IN TIN SHUI WAI AREA 3

SCHOOL CONSTRUCTION SITE

EXISTING VIEW WEST ACROSS PING HA ROAD

PLANTING BENEATH FOOTBRIDGE RAMP



PROPOSED FOOTBRIDGE

5m PLEXIGLASS NOISE BARRIER

PLANTING TO AMELIORATE FOOTBRIDGE

CLIMBERS ON FOOTBRIDGE COLUMNS

SCHOOL CONSTRUCTION SITE

PLEXIGLASS NOISE BARRIER INTEGRATED WITH FOOTBRIDGE

PROPOSED HOS DEVELOPMENT IN TIN SHUI WAI AREA 3

VIEW WEST ACROSS PING HA ROAD 10 YEARS AFTER CONSTRUCTION

NOTE: PROPOSED KCR WEST RAIL STATION AND VIADUCT OMITTED FROM FOREGROUND TO AVOID OBSCURING MITIGATION MEASURES

KOWLOON-CANTON RAILWAY CORPORATION
WEST RAIL



KCR WEST RAIL (PHASE 1) ESSENTIAL PUBLIC INFRASTRUCTURE WORKS FOR YUEN LONG SECTION

MODIFICATIONS TO TIN LUK ROAD AND TIN YU ROAD TO SERVE THIS STATION

LANDSCAPE AND VISUAL MITIGATION MEASURES FOR PROPOSED NOISE BARRIERS

SCALE	AS SHOWN
DATE	10/11/2011
DESIGNER	ALAN LEE
CHECKER	ALAN LEE
APPROVER	ALAN LEE

APPROVED TO DATE BY ALAN LEE

Table 8.4a VISUAL IMPACT DURING THE CONSTRUCTION PHASE

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Construction Phase before Mitigation Measures	Residual Impact During Construction Phase after Mitigation Measures take effect.
Modifications to Tin Fuk Road and associated Noise barriers NB1	Students and teachers at Queen Elizabeth Primary School	M1	30m	Medium	Medium	Moderate Negative	Moderate Negative
	Students and teachers at TWGH Kwok Yat Wai College	M2	20m	Medium	Medium	Moderate Negative	Moderate Negative
	Residents at south-east facing towers at Tin Yiu Estate	R1	40m	High	High	Very Substantial Negative	Very Substantial Negative
	Pedestrians and cyclists on footpaths adjacent to Tin Fuk Road	P1/P2	1.5m	High	High	Very Substantial Negative	Very Substantial Negative
	Pedestrians on proposed footbridge across Tin Fuk Road	P3	0m	High	High	Very Substantial Negative	Very Substantial Negative
	Pedestrians on proposed footbridge at Tin Fuk Road/Ping Ha Road junction	P4	0m	High	High	Very Substantial Negative	Very Substantial Negative
Modifications to Ping Ha Road and associated Noise Barriers NB2, NB3, and NB4	Students and teachers at Kwok Yat Wai College	M2	20m	Medium	Medium	Moderate Negative	Moderate Negative
	Students and teachers at proposed schools north of Ping Ha Road	M3	40m	High	High	Very Substantial Negative	Very Substantial Negative

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Construction Phase before Mitigation Measures	Residual Impact During Construction Phase after Mitigation Measures take effect.
	Residents at south and east facing blocks at proposed HOS development in Tin Shui Wai Area 3	R2	60m	Medium	High	Moderate Negative	Moderate Negative
	Pedestrians on proposed footbridges at Ping Ha Road, and at grade along Ping Ha Road south	P5/P7/P8/P9/ P10	0m	High	High	Very Substantial Negative	Very Substantial Negative
	Pedestrians and cyclists adjacent to Ping Ha Road north	P6	0m	High	High	Very Substantial Negative	Very Substantial Negative
	Passengers on LRT	T7/T8	0m	Medium	Low	Moderate Negative	Moderate Negative
	Motorists and passengers at car park south of TWGH Kwok Yat Wai College	T9	20m	Low	Low	Very Slight Negative	Very Slight Negative
	Motorists and passengers at car park adjacent to Ping Ha Road West	T10	10m	Low	Low	Very Slight Negative	Very Slight Negative

Table 8.4b Visual Impact During the Operational Phase

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
Modifications to Tin Fuk Road and associated Noise barriers NB1	Students and teachers at Queen Elizabeth Primary School	M1	30m	Low	Medium	Substantial Negative	Moderate Negative
	Students and teachers at TWGH Kwok Yat Wai College	M2	20m	Medium/Low	Medium	Slight Negative	Very Slight Negative
	Residents at south-east facing towers at Tin Yiu Estate	R1	40m	Medium/High	High	Substantial Negative	Moderate Negative
	Pedestrians and cyclists on footpaths adjacent to Tin Fuk Road	P1/P2	1.5m	High/Low	High	Very Substantial Negative	Very Substantial Negative
	Pedestrians on proposed footbridge across Tin Fuk Road	P3	0m	High/Low	High	Substantial Negative	Slight Negative
	Pedestrians on proposed footbridge at Tin Fuk Road/Ping Ha Road junction	P4	0m	High/Low	High	Substantial Negative	Slight Negative
	Passengers on proposed LRT crossing Tin Fuk Road	T1	10m	Low	Low	Very Slight Negative	Negligible
	Passengers on proposed LRT/West Rail along southern side of Tin Fuk Road	T2	20m	Low	Low	Very Slight Negative	Negligible
	Passengers at proposed LRT/West Rail Station at Tin Fuk Road	T3	20m	Low	Low	Very Slight Negative	Negligible

Landscape and Visual Impact Assessment

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
Modifications to Ping Ha Road and associated Noise Barriers NB2, NB3 and NB4	Students and teachers at TWGH Kwok Yat Wai College	M2	20m	Medium/Low	Medium	Slight Negative	Very Slight Negative
	Students and teachers at proposed schools north of Ping Ha Road	M3	40m	High	High	Very Substantial Negative	Substantial Negative
	Residents of proposed West Rail development above PTI	R/C1	20m	Low	Medium	Slight Negative	Very Slight Negative
	Residents at south and east facing blocks at proposed HOS development in Tin Shui Wai Area 3	R2	60m	Low	High	Moderate Negative	Slight Negative
	Pedestrians on proposed footbridges at Ping Ha Road, and at grade along Ping Ha Road south	P5/P7/P8/P9/ P10	0m	Medium/Low	High	Moderate Negative	Very Slight Negative
	Pedestrians and cyclists adjacent to Ping Ha Road north	P6	0m	High	High	Very Substantial Negative	Very Substantial Negative
	Passengers at proposed West Rail along southern edge of Ping Ha Road	T6	20m	Medium/Low	Medium	Moderate Negative	Slight Negative
	Passengers on LRT	T7/T8	0m	Low	Low	Very Slight Negative	Negligible
	Motorists and passengers at car park south of TWGH Kwok Yat Wai College	T9	20m	Low	Low	Very Slight Negative	Negligible
	Motorists and passengers at car park adjacent to Ping Ha Road West	T10	10m	Low	Low	Very Slight Negative	Negligible

8.5 Construction and Operation Phase Impacts at Tuen Mun

8.5.1 Sources of Impacts at Tuen Mun

Potential sources of landscape and visual impacts during the operation phase are illustrated in *Figure 8.5a* and identified below:

- slightly increased road area;
- increased road traffic;
- highways structures (including safety barriers, signage); and
- vehicular and street lighting.

8.5.2 Prediction and Evaluation of Impacts at Tuen Mun

8.5.2.1 Landscape Impacts at Tuen Mun

8.5.2.1.1 Impact on Landscape Resources at Tuen Mun

Landscape impacts associated with roadworks at Tuen Mun will include:

- loss of 500 sq.m mature vegetation and seating areas on north side of Pui To road adjacent to public housing; and
- loss of 100 sq.m mature vegetation on north side of Pui To at Deacon Chiu Park.

8.5.2.1.2 Impact on Landscape Character at Tuen Mun

The impact of the proposed roadworks at Tuen Mun on the landscape character of the local environment will be relatively minor as they represent adjustments to an established road system. The greatest impact will be on the northern edge of Pui To road where existing mature vegetation is lost to road widening.

West of Tuen Mun Heung Sze Wui Road the loss of vegetation is less significant as the site context will change with the construction of the new West Rail Station integrated transport, commercial and residential development. It's current function as a screen for residents and a shady environment for seating and play areas will therefore be lost and it is likely that all tree planting will be removed in the re-development of the site. East of Tuen Mun Heung Sze Wui Road there is a minimal loss of vegetation from the edge of Deacon Chui Park.

8.5.2.2 Visual Impacts

Table 8.5a lists the sources of the visual impacts as described in *Section 8.5.1* above; the key VSR's are described in *Section 4.4.4* and illustrated by *Figure 4.41*; the approximate distance between the VSR's and the sources of impact; the magnitude of the impact; the degree of sensitivity of the VSR's; and the predicted degree of visual impact on each of the VSR's before and after mitigation.

8.5.3 Mitigation Measures

8.5.3.1 Landscape Mitigation Measures at Tuen Mun

Generally, the landscape mitigation measures proposed below and illustrated by *Figure 8.5a* seek to minimise potential landscape and visual impacts of the roadworks, reinstate vegetation that would be lost, blend the new development into the landscape pattern of the surrounding area, and to provide compensation in the form of environmental improvements such as road side planting to off-set the adverse effects of the scheme.

Landscape mitigation measures should include:

- dust control measures during the construction period to prevent the deterioration of adjacent landscape elements;
- storage and re-use of topsoil in areas impacted by the road improvements;
- transplantation of existing trees impacted by the road improvements to compensatory planting sites or offsite to amenity sites identified by and agreed with Government Departments;
- stabilisation and planting of all disturbed areas where appropriate;
- compensatory new tree and shrub planting; consideration should be given to the feasibility of advance planting works.

It is assumed that the proposed mitigation measures would be funded by KCRC and carried out under the EPIW contracts. After an initial 12 month maintenance period of planting works by the implementing Contractor, the Highways Department would normally assume the long term maintenance responsibility of hard landscape elements such as planter walls and tree grilles, and the Regional Services Department would maintain the soft landscape.

8.5.3.2 Visual Mitigation Measures

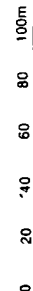
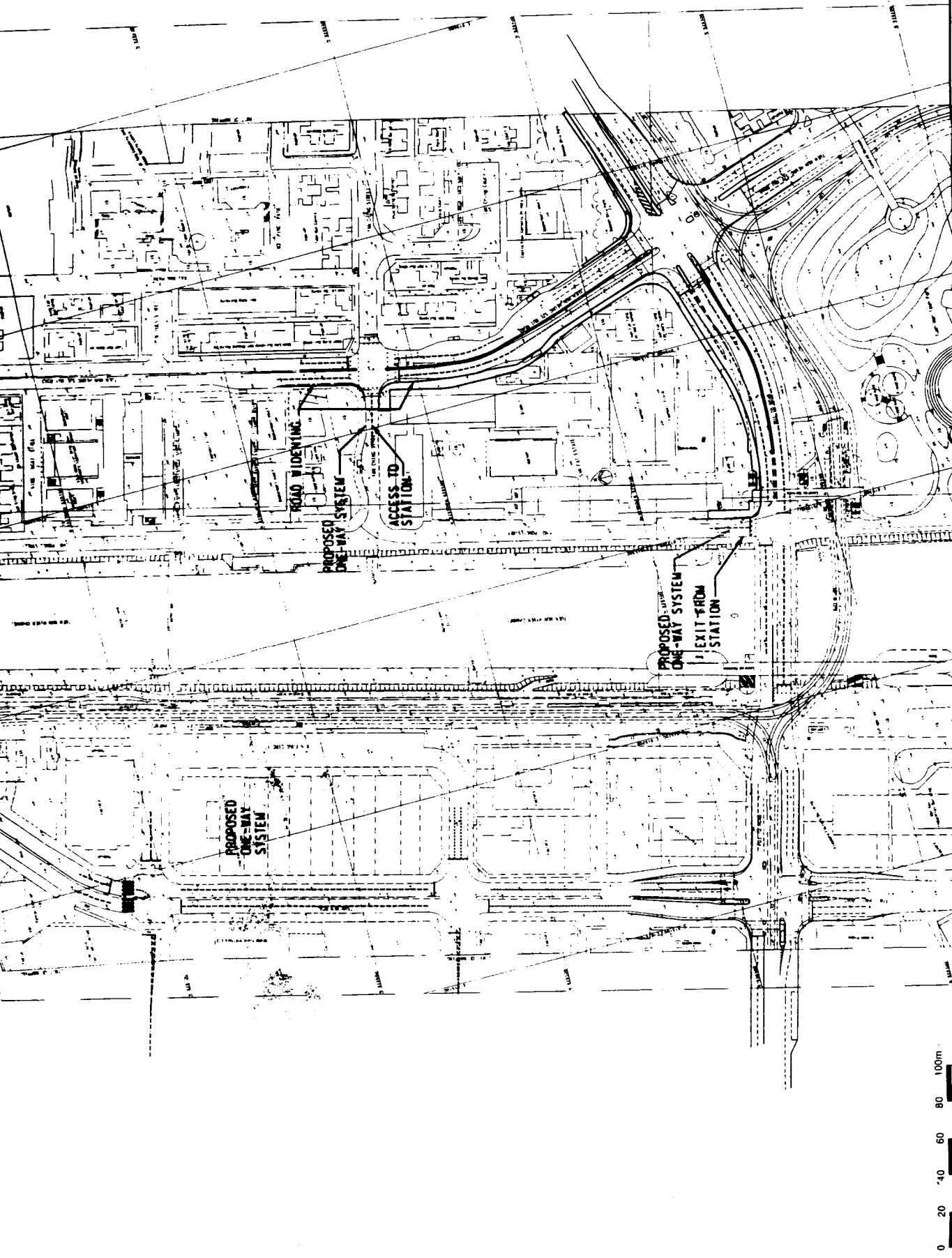
Generally, the visual mitigation measures proposed below seek to minimise potential impacts of development and to blend the new development into the landscape pattern of the surrounding area. Visual mitigation measures should include:

- amenity roadside tree and shrub planting to screen the road works.
- site hoardings to screen works areas during the construction period; consideration should be given to the design and surface treatment, particularly adjacent to pedestrian environments;
- control of lighting during night construction activity;

Suggested landscape and visual mitigation measures for the Tuen Mun Centre road improvements are illustrated in *Figure 8.5b*.

8.5.3.3 Residual Landscape Impacts at Tuen Mun

Residual landscape impacts associated with the modifications to roads at Tuen Mun are listed below:



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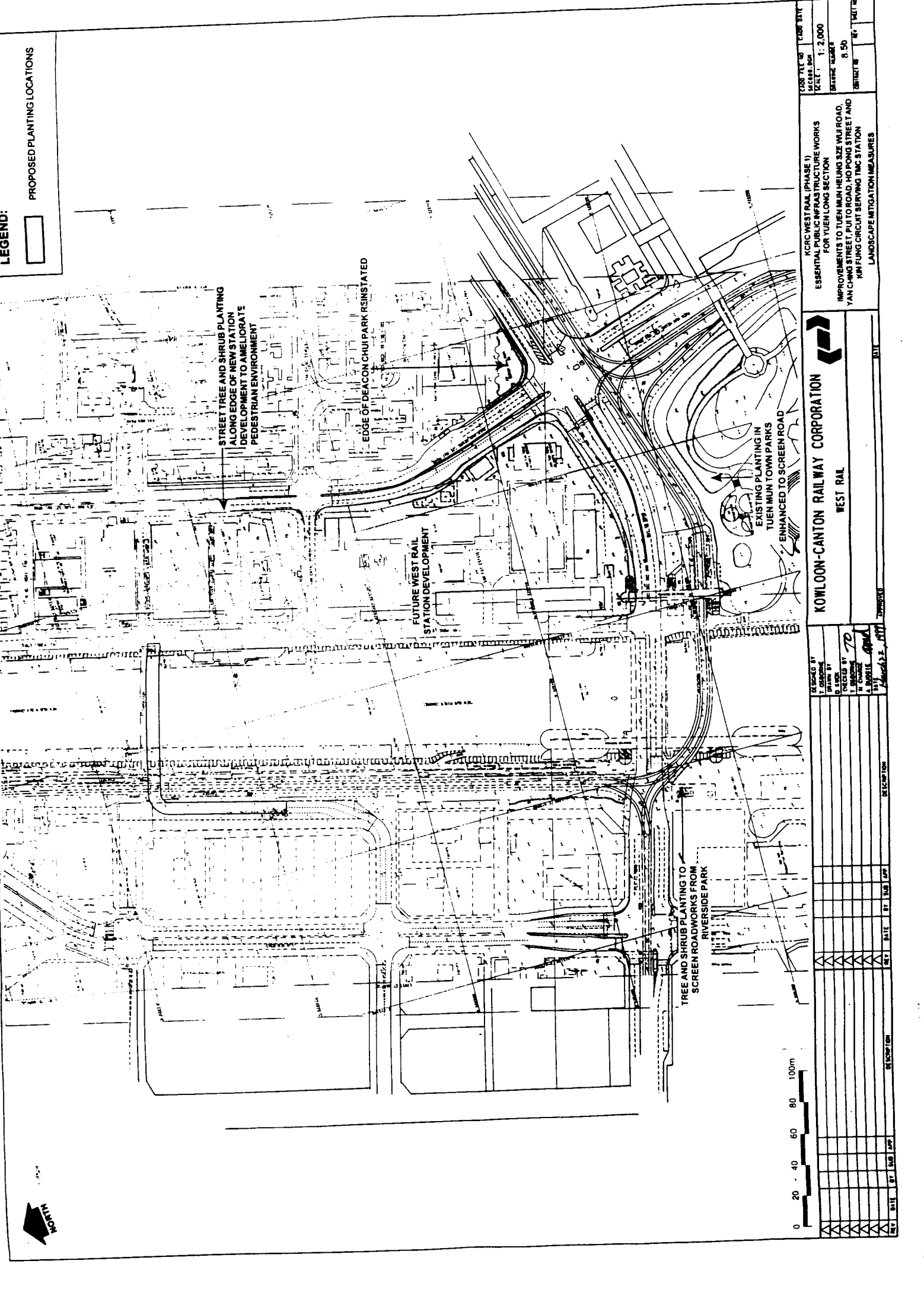


KOWLOON-CANTON RAILWAY CORPORATION
WEST RAIL

DESIGNED BY: J.L.L.
 DRAWN BY: T.B.
 CHECKED BY: T.B.
 IN CHARGE: T.B.
 DATE: 12/3/99

KCRC WEST RAIL (PHASE 1)
 ESSENTIAL PUBLIC INFRASTRUCTURE WORKS
 FOR YUEN LONG SECTION
 IMPROVEMENTS TO TIEN AN HUNG SIZE HUI ROAD
 YAN CHING STREET, PLU TO ROAD HO PONG STREET AND
 YUEN LONG STREET SERVING TMC STATION
 SOURCES OF LANDSCAPE AND VISUAL IMPACTS

CAD FILE NO: 12031.DWG
 METRIC UNIT
 SCALE: 1:2,000
 DRAWING NUMBER: 8.5a
 SHEET NO: 8 OF 8



LEGEND:

PROPOSED PLANTING LOCATIONS

CONSULTANT'S LOGO
 SCALE: 1:2,000
 SHEET NUMBER: 8.50
 SHEET IN TOTAL: 8

KCRC WEST RAIL (PHASE 1)
 ESSENTIAL PUBLIC INFRASTRUCTURE WORKS
 FOR YUEN LONG SECTION
 IMPROVEMENTS TO TUEN MUN HEUNG SIZE WAI ROAD,
 YAN CHING STREET, PUT TO ROAD, HO PONG STREET AND
 KIN FUNG CIRCUIT SERVING TMC STATION
 LANDSCAPE MITIGATION MEASURES

KOWLOON-CANTON RAILWAY CORPORATION
 WEST RAIL

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: []
 CHECKED BY: []
 DRAWN BY: []
 SCALE: 1:2,000
 SHEET NO. 8.50
 SHEETS IN TOTAL: 8

- loss of mature vegetation and seating areas on north side of Pui To Road.

8.5.3.4 Residual Visual Impacts at Tuen Mun

Table 8.5a and *8.5b* illustrates the predicted residual visual impacts on each of the VSR's after the mitigation measures have taken effect.

Substantial visual impacts will remain after mitigation measures during the Construction Phase. However, the residual impacts after the implementation of mitigation measures during the Operational Phase will in all cases be negligible.

Table 8.5a VISUAL IMPACT DURING CONSTRUCTION PHASE

Sources of Impacts	Key Visually Sensitive Receivers (VSR's):	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Construction Phase before Mitigation Measures	Residual Impact During Construction Phase after Mitigation Measures take effect.
Road improvements at junction of Pui To Road and Tsun Wen Road	Workers at Tuen Mun District Police H.Q.	M2	5m	Low	Low	Slight Negative	Slight Negative
	Workers at Tuen Mun Ambulance and Fire Departments	M3	5m	Medium	Low	Slight Negative	Slight Negative
	Pedestrians along Pui To Road, Tin Hau Road and Tsun Wen Road	P1	1m	High	High	Very Substantial Negative	Very Substantial Negative
	LRT Passengers along Pui To Road	T1	1m	High	High	Very Substantial Negative	Very Substantial Negative
Road Improvements Along Tsun Wen Road	Pedestrians along Tsun Wen Road	P2	1m	High	High	Very Substantial Negative	Very Substantial Negative
	Workers and Drivers at Petrol Station	C1	5m	Medium	Medium	Slight Negative	Slight Negative
Road Improvements along Pui To Road	Students and Teachers in Castle Peak Catholic Primary School	M1	5m	High	Medium	Substantial Negative	Substantial Negative
	Residents and shoppers at commercial and residential blocks along east side of Tuen Mun Heung Sze Wui Road	R/C2	20m	Medium	Medium	Moderate Negative	Moderate Negative
	Users of riverside open space south of road bridge, West river bank	OS1	10m	Medium	High	Substantial Negative	Substantial Negative

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	Users of Tuen Mun Town Park	OS2	10m	Low	High	Moderate	Moderate
	Users of Deacon Chiu Park	OS3	5m	Medium	High	Substantial Negative	Substantial Negative
	Pedestrians on footbridges	P3	5m	Medium	High	Substantial Negative	Substantial Negative
	Pedestrians along Tuen Mun River Promenade-east bank	P4	5m	Low	High	Moderate Negative	Moderate Negative
	Pedestrians South East of Pui To Road and Tuen Mun Heung Sze Wui Road	P5	1m	Medium	High	Substantial Negative	Substantial Negative
Roadworks at Tuen Mun Heung Sze Wui Road north of Pui To Road	Residents and shoppers at commercial and residential blocks along east side of Tuen Mun Heung Sze Wui Road	R/C2	5m	Medium	Medium	Moderate Negative	Moderate Negative
	Pedestrians along Tuen Mun Heung Sze Wui Road	P6	1m	High	High	Very Substantial Negative	Very Substantial Negative

Table 8.5b Visual Impact During the Operational Phase

Sources of Impacts	Key Visually Sensitive Receivers (VSR's) :	Type and Identity No. of VSR*	Minimum Distance Between VSR and Sources	Magnitude of Impact	Receptor Sensitivity	Impact During Operation Phase before Mitigation Measures	Residual Impact During Operational Phase after Mitigation Measures take effect.
Road improvements at junction of Pui To Road and Tsun Wen Road	Workers at Tuen Mun District Police H.Q.	M2	5m	Low	Low	Very Slight Negative	Negligible
	Workers at Tuen Mun Ambulance and Fire Departments	M3	5m	Low	Low	Very Slight Negative	Negligible
	Pedestrians along Pui To Road, Tin Hau Road and Tsun Wen Road	P1	1m	Low	High	Slight Negative	Negligible
	LRT Passengers along Pui To Road	T1	1m	Low	High	Very Slight Negative	Negligible
Road Improvements Along Tsun Wen Road	Pedestrians along Tsun Wen Road	P2	1m	Low	High	Slight Negative	Negligible
	Workers and Drivers at Petrol Station	C1	5m	Low	Medium	Very Slight Negative	Negligible
	Passengers on West Rail	T2	100m	Low	Low	Very slight negative	Negligible
Road Improvements along Pui To Road	Students and Teachers in Castle Peak Catholic Primary School	M1	5m	Low	Medium	Slight Negative	Negligible
	Residents and users of proposed Tuen Mun West Rail Station Development	R/C1	5m	Low	Medium	Slight Negative	Negligible

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	Residents and shoppers at commercial and residential blocks along east side of Tuen Mun Heung Sze Wui Road	R/C2	20m	Low	Medium	Slight Negative	Very slight
	Users of riverside open area south of road bridge, West river bank	OS1	10m	Low	High	Negligible	Negligible
	Users of Tuen Mun Town Park	OS2	10m	Low	High	Negligible	Negligible
	Users of Deacon Chiu Park	OS3	5m	Low	High	Slight Negative	Negligible
	Pedestrians on footbridges	P3	5m	Low	High	Negligible	Negligible
	Pedestrians along Tuen Mun River Promenade-east bank	P4	5m	Low	High	Negligible	Negligible
	Pedestrians South East of Pui To Road and Tuen Mun Heung Sze Wui Road	P5	1m	Low	High	Slight Negative	Negligible
Roadworks at Tuen Mun Heung Sze Wui Road north of Pui To Road	Residents and users of proposed Tuen Mun West Rail Station Development	R/C1	5m	Low	Medium	Very Slight Negative	Negligible
	Residents and shoppers at commercial and residential blocks along east side of Tuen Mun Heung Sze Wui Road	R/C2	5m	Low	Medium	Very Slight Negative	Negligible
	Pedestrians along Tuen Mun Heung Sze Wui Road	P6	1m	Low	High	Slight Negative	Negligible

8.6 Conclusions

8.6.1 Yuen Long

The primary sources of impact will be Roads L1 and L2 to the north, and the junction of the access road with Castle Peak Road south east of the Sun Yuen Long Centre to the south. Secondary sources of landscape and visual impact will be the 3m high noise barrier, and the diverted drainage channel and new retaining wall located adjacent to the Yuen Long (LRT) floodwater pumping station south east of Shung Tak School at Nam Pin Wai.

The primary landscape impacts will be loss of open area (agricultural land no longer in active use) caused by the proposed alignments of Roads L1 and L2. The roads will physically impact upon a children's playground and mature trees at Tai Wai Tsuen, and upon a village pond and its surrounding landscape at Ying Lung Wai. Impacts caused by the junction with Castle Peak Road will be associated with loss of mature trees located along embankments on the southern edge of the road. The trees provide visual and landscape amenity to pedestrians, cyclists and motorists whilst additionally providing screening to extensive areas of open storage to the immediate south.

Visual impacts will be highest among VSRs located along the edge of the villages to the north of the works and motorists, pedestrians and cyclists east of Sun Yuen Long Centre. There is little or no vegetative screening along the southern boundaries of Ying Lung Wai and Tai Wai Tsuen and VSRs located on the edges of these village would receive substantial negative visual impacts. The presence of mature trees and vegetation along the southern boundaries of Tsoi Uk Tsuen and Tung Tau Tsuen, and along the eastern boundary of Nam Pin Wai will protect these villages from visual impacts to a large extent. However, there will be a visual impact on VSRs located on the eastern edge of Nam Pin Wai due to a 3m high noise barrier adjacent to the proposed junction between Roads L1 and L2.

There will be no practical method of screening to VSRs on upper floors of the proposed new developments above YUL. However, the visual impact on these VSR's is considered to be only slight.

Secondary landscape and visual impacts will be caused by drainage channel diversion works and a new retaining wall south east of Nam Pin Wai. There may be loss of existing trees associated with the works and the new wall may cause slight negative visual impacts upon VSRs located at Shung Tak School and along the southern edge of Nam Pin Wai.

Visual impacts during the construction phase cannot be effectively mitigated due to the scale of the works and proximity to sensitive visual receivers. However, it is considered that operational phase visual impacts can be significantly reduced by appropriate mitigation measures. In addition to the sensitive design of noise barriers, the open nature of the site offers considerable opportunities for visual and landscape mitigation through screen planting. The open area between Roads L1 and L2 and the villages to the north and west is predominantly flat grassland no longer

used for agriculture. Mitigation measures should concentrate on woodland planting within these buffer zones and upon the re-provisioning of the children's playground at Tai Wai Tsuen.

With reference to the criteria in Annex 10 of the EIA O TM, it is considered that the landscape and visual impacts are acceptable with mitigation.

8.6.2 Tin Shui Wai

Modifications to Tin Fuk Road and Ping Ha Road will result in substantial losses of mature embankment vegetation. Impacts will be highest on embankment planting around the boundary of the proposed public transport interchange south of Ping Ha Road and on the south-eastern corner of the proposed residential site to the north. The existing vegetation provides substantial visual and landscape amenity whilst screening both sites from road and footpath users. It is considered that these impacts are residual in nature as there is no practical method of replacing the mounding or replanting trees and shrubs in similar numbers within the immediate vicinity.

An additional source of landscape and visual impact will be the loss of central median palm trees at Tin Fuk Road and Ping Ha Road. The trees currently soften the visual impact of the roads and their loss will adversely affect motorists and pedestrians and residents in south facing blocks at Tin Yiu Estate.

The primary sources of visual impact will be 4.5m, 5m and 7 m high noise barriers recommended under this Study, (located respectively along the southern boundary of the proposed primary and secondary schools west of the road junction, and along the southern boundary of Tin Yin Estate), and the 4m high barrier proposed by TDD (also along the southern boundary of the proposed primary and secondary schools west of the road junction). It is considered that opportunities for screening these structures will be severely limited by lack of available space for planting and that the noise barriers will cause moderate to very substantial negative residual visual impacts.

Mitigation measures should concentrate upon re-provisioning of trees and shrubs to the road alignment boundaries where practicable. Opportunities exist to the southern boundaries of Tin Yiu Estate and the proposed residential development presently under construction to the west for substantial screen planting. Particular attention should be taken to screen noise barriers along the northern boundary of Tin Fuk Road/Ping Ha Road by the planting of fast growing tree and shrub species where space permits.

Visual impacts during the construction phase cannot be effectively mitigated due to the scale of the works and the proximity to sensitive visual receivers. However, with reference to the criteria in Annex 10 of the EIA O TM, it is considered that the landscape and visual impacts during the operational phase are acceptable with mitigation.

8.6.3 Tuen Mun Centre

The proposed roadworks at Tuen Mun will have moderate to very slight negative visual impacts as they represent relatively minor modifications to an existing road and junction layout.

The primary landscape impacts will be the loss of mature planting and seating areas adjacent to Pui To Road and slight loss of peripheral vegetation at Deacon Chui Park.

The primary sensitive visual receivers will be pedestrians and cyclists adjacent to roads and on footbridges and users of the riverside open areas and Tuen Mun Town Park.

Mitigation measures should include additional screen planting at riverside open areas and at Tuen Mun Town Park, reinstatement of the edge of Deacon Chui Park and street tree and shrub planting adjacent to the proposed West Rail Station along Pui To and Tsun Wen Heung Sze Wui Road.

Visual impacts during the construction phase cannot be effectively mitigated due to the scale of the works and the proximity to sensitive visual receivers. However, with reference to the criteria in Annex 10 of the EIA O TM, it is considered that the landscape and visual impacts are acceptable with mitigation.