

Kowloon-Canton Railway Corporation

Tai Wai to Ma On Shan EIA: *Volume 3 - Landscape Design Strategy Report*

October 1999

Environmental Resources Management
6/F Hecny Tower
9 Chatham Road, Tsimshatsui
Kowloon, Hong Kong
Telephone (852) 2271 3000
Facsimile (852) 2723 5660

FINAL EIA REPORT

Kowloon-Canton Railway Corporation

Tai Wai to Ma On Shan EIA: Volume 3 -Landscape Design Strategy Report

October 1999

Reference C1890

For and on behalf of Environmental Resources Management
Approved by:
Signed: _____
Position: _____
Date: _____ 13 October 1999

CONTENTS			
List Of Contents	i	LANDSCAPE DESIGN STRATEGY	4.01
List Of Figures	ii	4.1 System-wide Proposals	4.01
List Of Abbreviations and Acronyms	ii	4.1.1 The Railway of 21st Century	4.01
		(i) The Railway Envelope"	4.01
		(ii) The "Design Template"	4.01
1.0 INTRODUCTION	1.01	(iii) Rolling Stock	4.01
1.1 MOS Rail EIA Study	1.01	4.1.2 Station Proposals:-	4.02
1.2 Objectives of the Landscape Design Strategy	1.01	(i) Building Form	4.02
1.3 Definition of Landscape	1.01	(ii) Station Entrances and Forecourts	4.02
1.4 Report Methodology	1.02	(iii) Relationship with surroundings	4.02
1.5 Report Structure	1.02	4.1.3 Corridor Proposals:-	4.03
1.6 How to use this Report	1.02	(i) Overhead Catenary System (OHCS)	4.03
		(ii) Noise Barriers and Noise Enclosures	4.03
2.0 MOS RAIL CONTEXT	2.01	(iii) Embankments	4.04
2.1 Description of the Proposed MOS Rail	2.01	(iv) Cuttings	4.05
2.2 The Passenger Experience	2.02	(v) Viaducts	4.06
2.3 The External View of MOS Rail	2.02	(vi) Bridges	4.07
		(vii) Viaducts and Bridge Abutments	4.08
3.0 DESIGN PARAMETERS	3.01	(viii) Trackside Features	4.08
3.1 Primary Design Parameters	3.01	4.2 Landscape Analysis and Strategy Proposals	4.09
3.2 Secondary Design Parameters	3.01	4.2.1 Tai Wai Overrun	4.12
		4.2.2 Tai Wai Depot	4.13
		4.2.3 Tai Wai Station	4.14
		4.2.4 Track Alignment between Tai Wai Station & Shatin Tau Station	4.15
		4.2.5 Sha Tin Tau Station	4.16
		4.2.6 Track Alignment between Sha Tin Tau Station & Sha Kok Street Station Section I	4.17
		4.2.7 Track Alignment between Sha Tin Tau Station & Sha Kok Street Station Section II	4.18
		4.2.8 Sha Kok Street Station	4.19
		4.2.9 Track Alignment between Sha Kok Street Station & City One Station I	4.20
		4.2.10 Track Alignment between Sha Kok Street Station & City One Station II	4.21
		4.2.11 City One Station	4.22
		4.2.12 Track Alignment between City One Station & Shek Mun Station	4.23
		4.2.13 Shek Mun Station	4.24
		4.2.14 Track Alignment between Shek Mun Station & Chevalier Garden Station I	4.25
		4.2.15 Track Alignment between Shek Mun Station & Chevalier Garden Station II	4.26
		4.2.16 Track Alignment between Shek Mun Station & Chevalier Garden Station III	4.27
		4.2.17 Chevalier Gardens Station	4.28
		4.2.18 Track Alignment between Chevalier Garden Station & Heng On Station	4.29
		4.2.19 Heng On Station	4.30
		4.2.20 Track Alignment between Heng On Station & Ma On Shan Station	4.31
		4.2.21 Ma On Shan Station	4.32
		4.2.22 Track Alignment between Ma On Shan Station & Lee On Station I	4.33
		4.2.23 Track Alignment between Ma On Shan Station & Lee On Station II	4.34
		4.2.24 Lee On Station	4.35



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



CONTENTS



List of Figures and Abbreviations

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

5.0 DETAILED LANDSCAPE HARDWORKS STRATEGY 5.01

5.1 Concept Methodology	5.01
5.1.1 Site Survey	5.01
5.1.2 Detailed Design	5.01
5.1.3 Maintenance	5.01
5.2 Typical Details	5.01
5.2.1 Raised Planters	5.02
5.2.2 Lighting	5.03
5.2.3 Paving Materials	5.04
5.2.4 Signage	5.06
5.2.5 Litterbins	5.08
5.2.6 Seating	5.09
5.2.7 Tree Grilles and Guards	5.10
5.2.8 Waterpoints	5.11

6.0 DETAILED LANDSCAPE SOFTWARE STRATEGY 6.01

6.1 Design Methodology	6.01
6.1.1 Site Survey	6.01
6.1.2 Detailed Design	6.01
6.1.3 Establishment Maintenance	6.01
6.1.4 Long Term Maintenance	6.02
6.2 Establishment of a Holding Nursery	6.02
6.3 Definition of Plant Types	6.02
6.3.1 Trees	6.02
6.3.2 Palms	6.03
6.3.3 Shrubs	6.03
6.3.4 Ground Cover Shrubs	6.03
6.3.5 Climbers	6.03
6.3.6 Conifers	6.03
6.4 Plant Species/ Location Matrix	6.04

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

Figure	Page	Abbreviation
Fig 2A	2 04	AMO
Fig 2B	2 05	CLP
Fig 4A	4 09	EIA
Fig 4B	4 10	Dept
Fig 4C	4 11	HyD
		KCRC
		MTRC
		USD

1.1 MOS Rail EIA Study

In April 1999 the Kowloon-Canton Railway Corporation (KCRC) commissioned Environmental Resources Management Hong Kong Ltd to undertake an Environmental Impact Assessment of the proposed new railway from Tai Wai to Ma On Shan, known as MOS Rail.

The Environmental Impact Assessment is being carried out by a multi-disciplinary team. Urbis Limited are the specialist consultants for the production of the Landscape Design Strategy Report and the Landscape and Visual Assessment.

1.2 Objectives of the Landscape Design Strategy

The objective of the Landscape Design Strategy Report is not defined in the Brief, but is considered to be similar to the Brief for the West Rail Landscape Design Strategy which was to:

"establish the design principles and guidelines for all landscape and visual aspects of the West Rail to be used by the Other Consultants in formulating the planning and landscape maintenance strategies under the Technical Studies. The Strategy Report will outline the role of landscaping in enhancing the visual connection between stations and adjacent developments/land uses and in promoting a clear public image of the railway and its various facilities. It will consider views to be seen from the trains and recommend how such views can be enhanced and/or protected."

This is complementary to the broader objectives of the EIA study which include the requirement to:

"minimise potential pollution and environmental disturbance arising from the construction and operation of the railway,"

and

"identify, assess and specify methods, measures and standards to be included in the design, construction and operation of the railway which are necessary to mitigate the impacts and reduce them to acceptable levels".

The Landscape Design Strategy is necessary to develop and promote a high standard of environmental design around the MOS Rail operation facilities, one that will encourage improvements within existing adjacent developments and that will inspire co-ordinated ideas for subsequent projects arising from MOS Rail.

1.3 Definition of Landscape

Landscape is defined in The New Shorter Oxford English Dictionary (1993 Edition) as:

"a tract or region of land with its characteristic topographical features, especially as shaped or modified by (usually natural) processes and agents"

The Dictionary does not provide a definition of Landscape Design but does define Landscape Architecture as:

"the art of planning and designing the open air environment, especially with reference to the harmonious fitting of buildings, roads, etc., into the landscape"

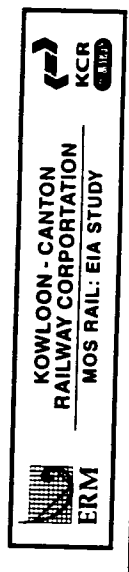
These definitions are appropriate for this study which seeks to promote the sensitive shaping and modification of the existing landscape and the harmonious fitting of the MOS Rail and its associated operational buildings and structures into that landscape.

In this context, landscape design should be concerned not only with the "soft" landscape of trees, shrubs and grasses, but also with the physical and visual relationship of all engineering and architectural components of MOS Rail with the surrounding environment.

The Landscape Design Strategy Report therefore addresses the wider landscape implications of these engineering and architectural components and the effect that they will have on the public image of MOS Rail.



INTRODUCTION



1.4 Report Methodology

Based on site inspection and desk top studies, the MOS Rail Corridor has been identified into landscape buffer areas. The proposed engineering form and vertical alignment of the railway within each of these character areas has been identified and described based on the data/information provided by the engineering teams, on the basis of studies.

An analysis of the extent of severance or disruption to the existing landscape and visual character has been undertaken for the affected areas underneath and on either side of the proposed railway. Consideration has been taken of the views from the train as experienced by passengers, and of external views of the railway as experienced by sensitive users, located along the MOS Rail Corridor.

Based on the above stated objectives for the Landscape Design Strategy Report, a number of Landscape Design Parameters have been formulated which provide a basic philosophy for approaching the specific design issues, constraints and opportunities presented by MOS Rail.

By synthesising the Design Parameters and the specific contextual constraints and opportunities occurring along MOS Rail, a series of landscape design strategy philosophies embodied in the Design Parameters. The proposals recommend landscape solutions for each situation along the Corridor which reflect and enhance the existing and known proposed character of the surroundings, and, where possible, highlight the passenger experience and public perception of MOS Rail.

The proposals are subdivided into those which are system-wide and those which are context-specific. They are further divided into:

- generate design proposals which should be adopted to aid preliminary design and the fine tuning of the rail alignment, and
- more detailed proposals which should be used in the detailed design in order to create a coordinated range of hard and soft landscape details and materials which will create a consistent theme and image throughout MOS Rail.

1.5 Report Structure

Chapter 2 of the Report examines the landscape context of the MOS Rail Corridor, and identifies the passenger experience and the external views of the railway.

Chapter 3 outlines the Design Parameters that form the underlying basis for the Landscape Design Strategy.

Chapter 4 describes the Landscape Design Strategy. The Strategy is described first for the common system-wide elements and subsequently for the site-specific contextual elements associated with each geographical section of the railway. The landscape setting of each geographical section is analysed and then the strategy is proposed for these sections, describing in detail the landscape context, the key issues and the responding strategies.

Chapter 5 identifies the Detail Landscape Hardworks Strategy. Typical details for common hard landscape elements are proposed.

Chapter 6 identifies the Detail Landscape Softworks Strategy. Recommended species lists are provided and maintenance regimes proposed.

1.6 How to Use This Report

The Landscape Design Strategy Report is structured to be of maximum use to consultants employed on the Detailed Design packages.

The consultants should:

- Understand the Design Parameters outlined in Chapter 3 and use these as the touchstone for all design decisions which impact upon the landscape and the visual experience of West Rail.
- Adopt the system-wide landscape strategy proposals outlined in Chapter 4.1.
- Adopt the contextual landscape strategy proposals relevant to their Detailed Designs as outlined in Chapter 4.2.

Chapters 5 and 6 expand upon Chapter 4 and provide more detailed proposals specific to Hard and Soft Landscape Design.

2.1 Description of the Proposed MOS Rail Route

The proposed alignment of MOS Rail is shown in Figure 2A.

The MOS Rail overrun track will start at the existing Shatin Government Kennels and Plant Quarantine Area at the end of Che Kung Miu Road at Hin Keng Estate. The track will run in a north-easterly direction on a vacant strip of land in-between the existing Kowloon-Canton Railway (KCR), and the Hin Tin Playground and the Outdoor Swimming Pool. Heading to the Tai Wai Depot, the overrun track will be alternately at grade and on embankment as it passes Hin Tin Playground and Hin Tin outdoor swimming pool at Che Kung Miu Road. A noise barrier will be required at the northern side of the overrun track.

Tai Wai Depot will be located immediately to the south-west of the existing Tai Wai KCR East Rail Station and within the urban area of Tai Wai. The embankment adjacent to the KCR railway marks the northern boundary of the depot site. It is also bounded on its southern side by Che Kung Miu Road, on its eastern side by Mei Tin Road, and on its western side by the Hin Tin Outdoor Swimming Pool.

Tai Wai Station will be located immediately adjacent to the Tai Wai Depot. The station will be located on the vacant strip of land in-between the existing Tai Wai Station and the public transport interchange. Tai Wai station will serve as a major interchange station providing access and transfer onto other mode of transportation and other KCR route options.

From Tai Wai Station, the railway will run on a viaduct in a north-easterly direction across the Happy Dragon Recreation Park towards the Shing Mun River Channel. The railway in this area initially passes over the river channel on its southern side and then on viaduct over the footpath/cycle track along Che Kung Miu Road before running along the southern side of a temporary car park which was formerly the site occupied by Sha Tin Temporary Housing Area.

The railway will run on viaduct and proceeds in a westerly direction onto the proposed Sha Tin Tau Station.

The elevated Sha Tin Tau station will be located within the site formerly occupied by the Sha Tin Wai Temporary Housing Area which now used as a temporary car park. This area is bound on its southern and western sides by Che Kung Miu Road, on its eastern side by Lion Rock Tunnel Road and on its northern side by the Shing Mun River Channel with its associated footpath/cycle track.

The railway will run on viaduct from Sha Tin Tau station to the Sha Kok Station in an easterly direction passing in-between the junction of Che Kung Miu Road/ Lion Rock Tunnel Road. From the junction the viaduct proceeds over the Tsang Tai Uk Recreation Ground, where the viaduct will be over the playground, basketball and tennis courts. From Tsang Tai Uk Recreation Ground, the railway will run parallel to and immediately to the east of Sha Kok Street on its way to Sha Kok Street Station. The railway will run on viaduct over a series of open spaces to the south of Sha Kok Street. These include two basketball courts, a large carpark and two separate sitting areas.

The elevated Sha Kok Street Station will be located at the grassed reserve of the MOS Extension development, immediately to the south of Shui Chuen Au Street. An elevated walkway passes across Sha Kok Street at a point immediately to the north of the station site. A bus terminus is located adjacent to the south of the station site.

From Sha Kok Street Station, the MOS Rail will pass over Shui Chuen Au Street and runs along a large linear and well-vegetated mound located immediately to the north-west of Sha Tin Wai Road. The route will pass over the Kong Pui Street Rest Garden and the vegetated mound on viaduct. Then the railway will proceed north-east and will pass over the China Light and Power Substation located to the east of Wong Uk Village and over Shatin Road and its well vegetated embankment. Thereafter, the railway will pass over a bus terminus and a small open space located between the bus-terminus and Ngan Shing Street, then it will pass over Ngan Shing Street before it reaches City One Station.

The elevated City One Station will be located at the junction of Ngan Shing Street and Chap Wai Kon Street. The site will be located at a long linear reserve of MOS Extension immediately to the west and parallel to Chap Wai Kon Street, which is currently used as a temporary government plant nursery.

From City One Station to Shek Mun Station, MOS Rail will run on viaduct in an easterly direction parallel to Chap Wai Kon Street. Noise enclosure would be required at the track crossover at the junction of Wai Kok Street and Su Lek Yuen Road, immediately adjacent to City One Station. Heading north-east to Shek Mun Station, MOS Rail will pass over a section of Su Lek Yuen playground and Su Lek Yuen River Channel both of which run perpendicular to the alignment.

The elevated Shek Mun Station will be located within Shek Mun Industrial Area on a piece of vacant land previously used for storage of trucks, immediately to the north of On Ming Street.

From Shek Mun Station, the MOS Rail will pass over vacant land on viaduct then steer due north to join the Tate's Cairn Highway. The railway will pass on viaduct over the 12m wide grassed reserve that is located along the centre of the highway. The railway will descend gradually down to meet the highway level at a point close to the roundabout adjacent to the Pictorial Gardens. It then remains at the highway level as it passes by the Shatin Hospital.

A noise barrier will be required mainly along the north side of the track, from the roundabout adjacent to the Pictorial Garden to the end of the building development.

From Shatin Hospital to the Shatin Fishermen New Village, MOS Rail will continue in a north-easterly direction at grade on the Tate's Cairn Highway reserve, until it passes underneath the road flyover system located to the north-east of Shatin Fisherman's Village. From the Shatin Fisherman's Village, the rail will run in a cutting and on an embankment. The rail will then pass over the nullah which runs perpendicular to the Tate's Cairn Highway, and there it will ascend an embankment as it reaches the Chevalier Gardens Station.

The elevated Chevalier Gardens Station will be located at the grassed central reserve. A mixed residential/commercial development is under construction to the south of the station. A pedestrian subway connecting the station to Hang Tak Street and Ma On Shan Road will be provided.

From Chevalier Gardens Station, MOS Rail will run in a north-easterly direction on viaduct. It will pass over the Ma On Shan Road and the flyover and will join Sai Sha Road above the central reserve. Then from there onwards to the site of Hong On Station.

The Hong On Station will be located within the central reserve that was set aside for the MOS Extension within the Sai Sha Road corridor, adjacent to Hong On Estate. A station plant room will be located along Sai Sha Road to the west of the station.

From Hong On Station, MOS Rail will run north-east to Ma On Shan Station on viaduct above the central reserve of Sai Sha Road. The MOS Rail will pass over the footbridge adjacent to the institution on Sai Sha Road before it passes over Hung Hong Street and the junction of On Luk Street and On Yuen Street.

The elevated Ma On Shan Station will be located at the central reserve of Ma On Shan Road. The station will pass over two footbridges between Sunshine City and Iolo Place, and between Sunshine City and Bayshore Towers. A proposed footbridge will connect the station concourse to Sunshine City, and Bayshore Towers/ Ma On Shan Centre.

From Ma On Shan Station, MOS Rail will run on viaduct above the well-vegetated central reserve of Ma On Shan Road and pass over the existing footbridge between Fu Fai Garden and Ma On Shan Central. Thereafter, the viaduct will pass over On Chui Street and through an area of residential properties and the Ma On Shan Health Centre. Heading east to Lee On Estate, MOS Rail will cross over Kaim Ying Road, and pass by Lee On Estate, and Wu Kwai Sha New Village.

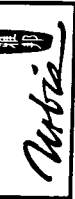
The Lee On Station will be located within a former borrow area which comprises a series of flat platforms separated by rock outcrops. Limited excavation works will be required at this site. A public transport interchange will be provided adjacent to the station at Sai On Street. The station will serve as a major inter-change station providing passenger access and transfer onto other mode of transport.

KOWLOON - CANTON
RAILWAY CORPORATION

MOS RAIL: EIA STUDY



KCR
CORPORATION



Arbia

2.2 The Passenger Experience

Passenger experience is a fundamental element to be considered in the development of the Landscape Design Strategy.

For the whole length of MOS Rail the railway will be above ground. It will run on viaducts for most of the line, providing elevated views of the surrounding landscape and townscape, punctuated by stops at the nine proposed stations. The timing and sequence of railway journey and stops is illustrated in Figure 2B.

Tai Wai Station to Shek Mun Station

Passengers travelling on the section of railway between Tai Wai Station to Shek Mun Station will have clear views of Shatin.

From Tai Wai Station to Shatin, Tai Station there will be open views of Shing Mun River to the north and distant views of Chun Shek Shan Fung Shui Hill to the south. North of Shatin, Tai Station the railway passes over Tsang Tai Uk Recreation Ground and passengers will have clear views of the open space and also of Tsang Tai Uk itself, located to the south. From Tsang Tai Uk Recreation Ground to Shek Mun Station, views will be largely contained by the buildings bordering the railway. These comprise a mix of residential, commercial and institutional uses in the southern section, with industrial uses at Shek Mun. Some visual contrast to this dense urban environment will be provided as the railway curves around the Sha Tin Wai Fung Shui Hill, located between Sha Kok Street and City One Station.

Shek Mun Station to Chevalier Gardens Station

North of Shek Mun Station, the railway descends from viaduct to run at grade along Tate's Cairn Highway and Ma On Shan Road. Passengers will have more expansive views of the hills of Ma On Shan Country Park to the south-east and Shing Mun River, Sha Tin Ho and Toke Harbour to the north-west and north. Urban landform will be visible on the other side of Shing Mun River and in scattered locations alongside the railway, i.e. Shatin Hospital and Shatin Fisherman's New Village.

Chevalier Gardens Station to Lee On Station

From Chevalier Gardens Station, along Sai Sha Road, the railway will run on viaduct there will be clear views of Sha Tin Ho and development sites to the north and the hills of Ma On Shan Country Park to the south and east. From Heng On Station to Lee On Station, views will be dominated by urban development comprising residential, commercial and institutional uses. As Lee On is approached, the density of buildings gradually decreases and views to the surrounding landscape open up.

2.3 The External View of MOS Rail

The visibility of MOS Rail has significant implications on the Landscape Design Strategy as visually sensitive receivers will perceive the MOS Rail landscape components as part of the KCR's public image.

The exact extent of the visibility of the alignment of the railway has been assessed in detail as part of the Landscape and Visual Assessment of the EIA. The visibility of the line is summarised below in broad terms.

Tai Wai Overrun track and Tai Wai Depot

The overrun track and Tai Wai Depot is located in the urban area of Tai Wai, adjacent to the existing KCR railway track/station. The overrun track will be seen in the context of hillside of Shatin Heights. The overrun track will be viewed in close proximity from the staff at the Shatin Plant Quarantine Area and the Government Kennels, and the users of Hin Tin Playground, Hin Tin Outdoor Swimming Pool.

Due to the size of the Depot there will be clear views of the development from the surrounding hillsides and from the view points along Che Kung Miu Road and the adjacent open spaces and residential developments. Visually Sensitive Receivers will include the residents of the Hin Keng Estate, Carado Garden, Shatin Heights, Holford Garden, Woodcrest Hill, Shatin Garden, Blossom Court and the low-rise housing of Tin Sam, and the users of Che Kung Miu Road Playground.

Tai Wai Station to Sha Tin Tau Station

The railway will be visible running on viaduct between Tai Wai Station and Shek Mun Station. The elevated structures will be seen in the context of the river channel and associated road corridors and against a backdrop of the Tai Wai Residential areas. Through the urban area of Tai Wai the route will be visible from many of the ground level areas along the Shing Mun River Channel corridor and the Che Kung Miu Road, as well as the low and high rise residential developments alongside. These visually sensitive receivers include: the residents at the high-rise properties of Sun Chui Estate, Man Lai Court, and Chun Shek Estate, and the low-rise properties of Lek Uk Tsuen, and Sha Tin Tau, and the users at Che Kung Miu Temple.

Sha Tin Station to Sha Kok Street Station

Between Sha Tin Tau Station and Sha Kok Street Station the viaduct heads west over the junction of Che Kung Miu Road and Lion Rock Tunnel Road. The viaduct is located in an area that has a relatively open aspect and would be particularly visible to surrounding sensitive receivers. These receivers include users of the adjacent road system, and the residents of the low-rise housing of Sha Tin Tau on the nearby wooded mound. Thereafter, the viaduct will pass over the Tsang Tai Uk Recreation Ground before running parallel to and immediately to the east of Sha Kok Street, overflying spaces containing two basketball courts, a large car-parking area and two separate sitting-out areas. The whole railway structure will be viewed in close proximity from the users of the recreation ground, the open spaces and the adjacent residential areas along this stretch of the corridor. These include the residents at the high-rise housing of Jat Mun Chuen, Pok Hong Estate, and Sha Kok Estate.

Sha Kok Street Station to City One Station

From Sha Kok Street Station the railway will be on viaduct as the route passes over Sha Tin Wai Road before it reaches the embankment of Sha Tin Road. The elevated structures will be viewed in close proximity from the users of the Kong Pui Street Rest Garden, Shatin Fung Shui Hill, Caritas Care & Attention Home and the residents of Greenwood Garden, Shatin Park, Green Leaves Garden, and the low-rise Wong Uk Village. The railway will be visible running on viaduct between Sha Tin Road and City One Station. The elevated structure will be viewed by the users of Ngan Shing Street bus terminus, the adjacent local open space, and two medical facilities: Prince of Wales Hospital and Yuen Chau Kok Clinic.

City One Station to Shek Mun Station

From City One Station to Shek Mun Station, the railway will be on viaduct and will pass through an urban area of mixed industrial and residential use which includes the Siu Lek Yuen Playground and River Channel. The elevated structures will be visible by the south-east facing residents of City One Shatin, and the users of the Shatin Industrial area.

Shek Mun Station to Chevalier Gardens Station

As the railway departs from Shek Mun Station towards Chevalier Gardens Station, the viaduct will drop gradually to the existing road level and run parallel to Tate's Cairn Highway and Ma On Shan Road. The rail track running at grade will be seen in context with the associated road corridor and against a backdrop of the hills of Ma On Shan Country Park on one side and Shing Mun River Channel on the other. The railway track will be visible by the residents of Pictorial Garden, Garden Vista, Ravenna Garden, Chevalier Garden and the low-rise housing of Shatin Fishermen New Village and Tai Shui Hang. The railway track will be also visible from the Shatin Hospital and the Cheshire Home.

Chevalier Gardens Station to Heng On Station

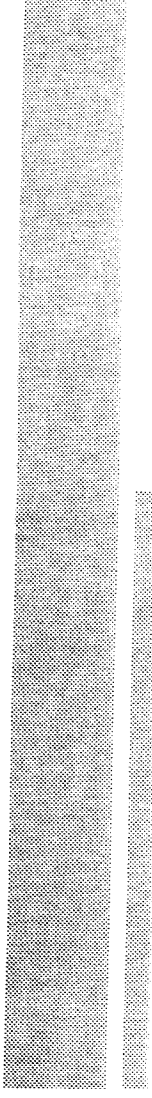
The railway will resume running on viaduct as it leaves Chevalier Gardens Station and runs along Sai Sha Road towards Heng On Station. The railway will run past and will be visible by existing and proposed residential developments. These include: the future residents at the proposed residential development of former Shing On Temporary Housing Area and the residents of Heng On Estate and Vista Paradise. Although there is an existing noise barrier in front of the Tai Shan Association Wong Tai To Memorial School at Ma On Shan Road, the elevated structure of Heng On Station and associated viaduct will be visible to the students and staff.

Heng On Station to Ma On Shan Station

The railway between Heng On Station to Ma On Shan Station will be on viaduct as the route runs on top of the MOS railway reserve. The railway will run past and will be visible by the residential/commercial developments, education institutions and the recreation/public open spaces along Sai Sha Road. Visually Sensitive Receivers will include the residents of Heng On Estate, Vista Paradise, Chung On Estate, Kam Fung Court, Yiu On Estate, Fok On Garden, the users at Chun On Shopping Centre, and the students and staff at Tsang Pk Shan Secondary School and Fung Yiu King Memorial School; the users of the proposed recreation sport stadium, and the existing Luk Street Garden. The railway will have a large visual impact on the adjacent areas



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



as it runs through the stretch along Bayshore Towers and Sun Shine City. The station and the viaduct will be highly visible to the residents.

Ma On Shan Station to Lee On Station

Between Ma On Shan Station to Lee On Station, the railway will run on viaduct within an area of mainly residential development. Visually Sensitive Receivers will include the residents of Ma On Shan Centre, Villa Athena, Fu Fai Garden, Saddle Ridge Garden, Kam Lung Court, Lee On Estate, and the low-rise housing of Wu Kai Sha New Village. Lee On Station will be seen in the context with the hills of Ma On Shan Country Park and the proposed adjacent residential development, which is currently under construction. There will be short, middle and long range views of the station development from surrounding greenbelt area.

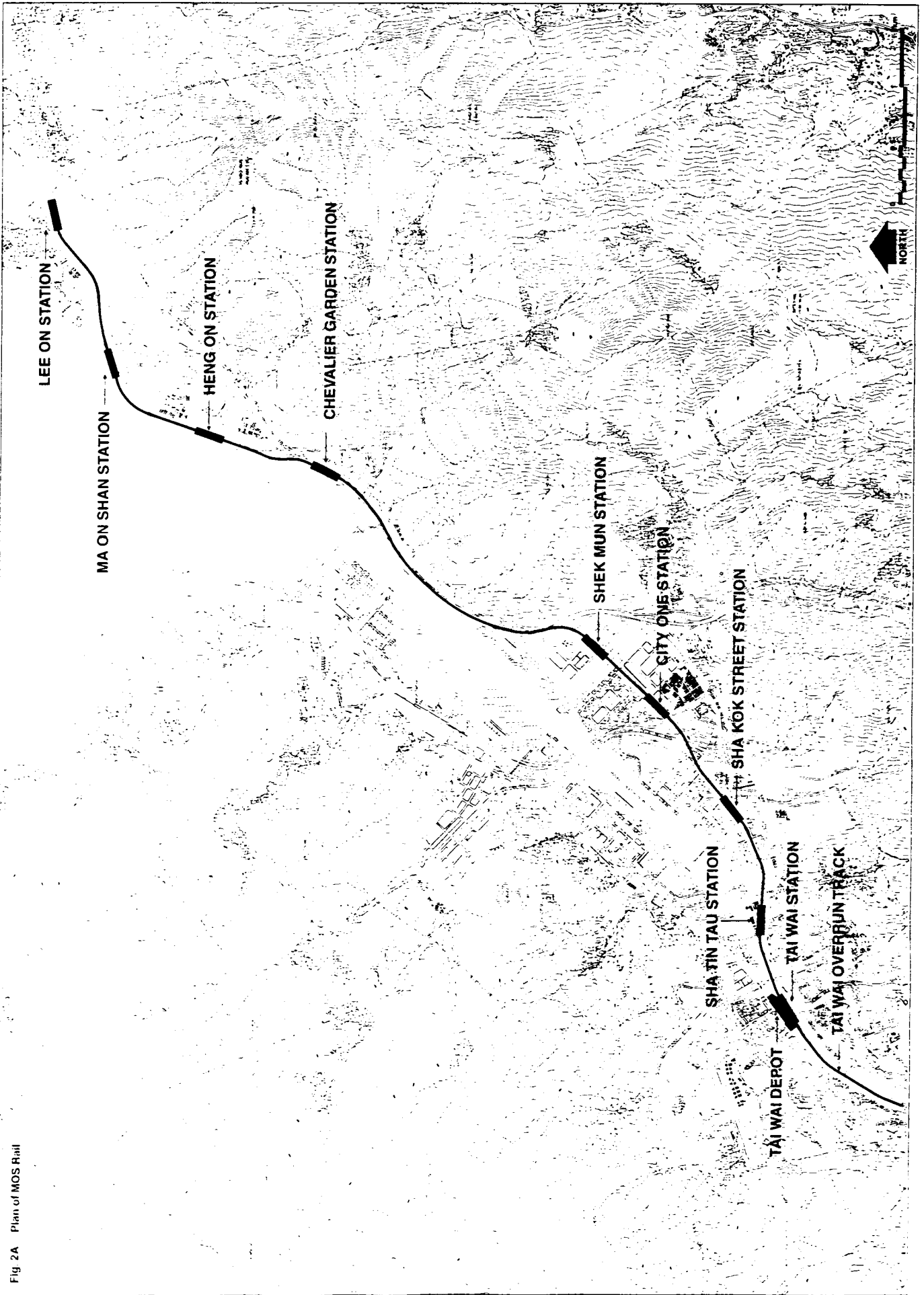
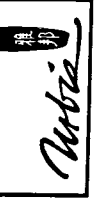


Fig 2A Plan of MOS Rail



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



TIME LINE

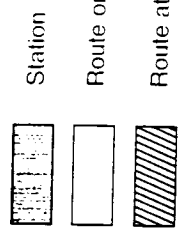
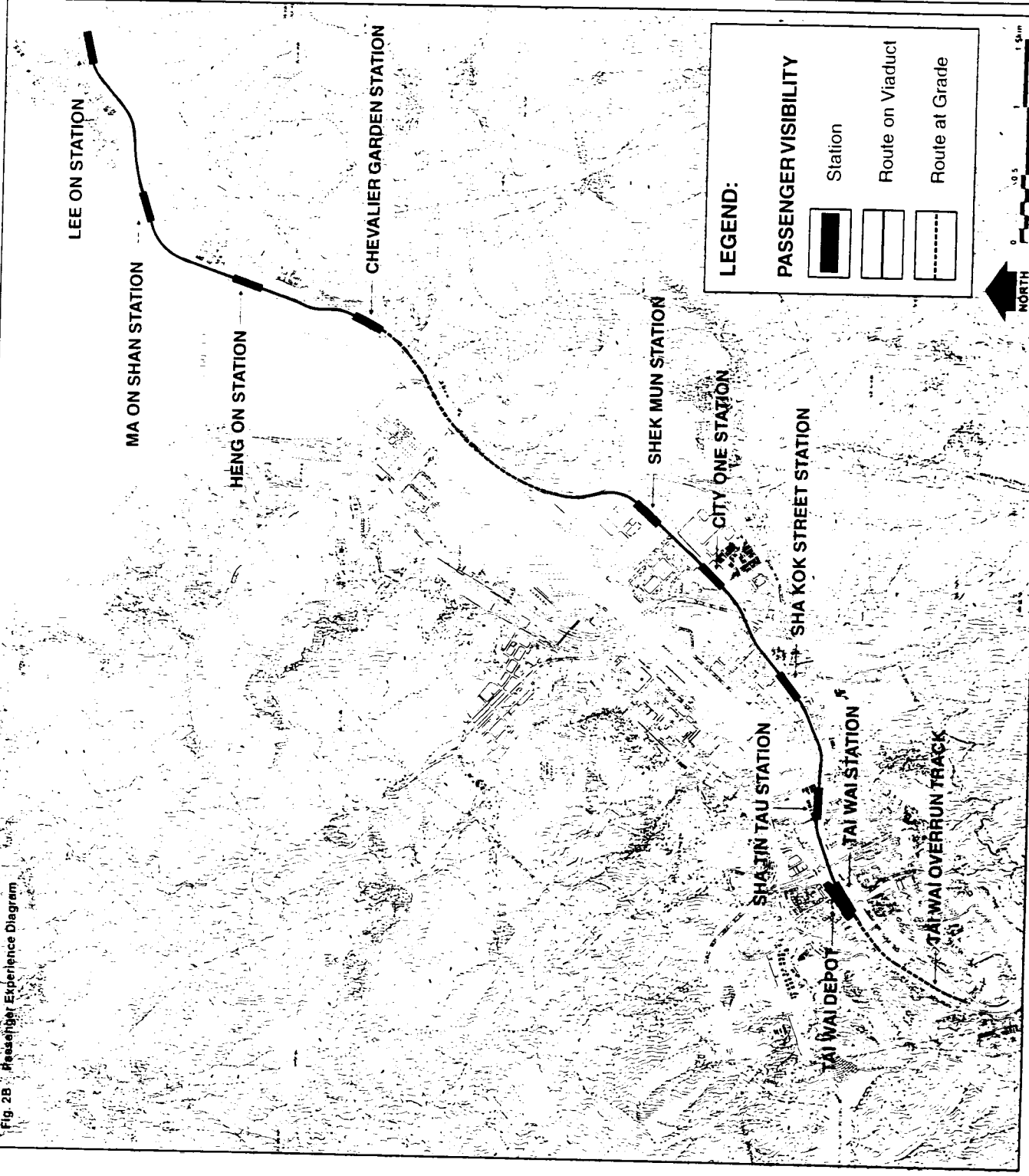


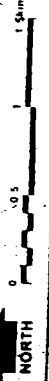
Fig. 2B Passenger Experience Diagram



LEGEND:

PASSENGER VISIBILITY

- Station
- Route on Viaduct
- Route at Grade



3.1 Primary Design Parameters

In order that the Landscape Design Strategy achieves the EIA Study objectives as outlined in Chapter 1, the Landscape Design Strategy is underpinned by a series of Primary Design Parameters as follows.

The Landscape Design Strategy should:

- enhance public attitudes towards MOS Rail;
- enhance external views of MOS Rail;
- enhance the passenger experience of MOS Rail;
- minimise potential negative impacts that MOS Rail may have on the existing landscape and visual character of the Rail Corridor;
- create a consistent design theme for MOS Rail which finds expression throughout the Rail Corridor;

In addition to the above, three further Primary Design Parameters that have been identified, namely:

The Landscape Design Strategy should:

- be environmentally friendly;
- promote safety and security; and
- be cost effective.

3.2 Secondary Design Parameters

Leading on from each of the Primary Design Parameters it is possible to identify Secondary Design Parameters that amplify and expand upon the Primary Parameters.

As can be seen below, several of these Secondary Parameters are common to more than one Primary Parameter, indicating that these should be particularly emphasised in the Landscape Design Strategy.

The Secondary Parameters are listed below together with the Primary Parameters from which they are derived.

Primary Design Parameter:

The Landscape Design Strategy should enhance public attitudes towards MOS Rail

Secondary Design Parameters:

The Landscape Design Strategy should:

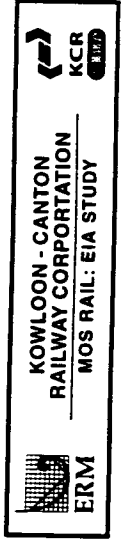
- create a modern, technologically efficient 21st century image for MOS Rail, employing state of the art design;
- convey that the KCRC is concerned about, and has a responsible attitude towards, disabled access to its facilities;
- convey that the KCRC is concerned about, and has a responsible attitude towards, the environment;
- convey that the KCRC is a forward looking corporation;
- provide an enjoyable and comfortable passenger experience, from the moment that the passenger enters the station, at the beginning of the journey until the moment the journey is completed; and
- convey that MOS Rail is a good neighbour



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



DESIGN PARAMETERS



Primary Design Parameter:

The Landscape Design Strategy should enhance external views of MOS Rail

Secondary Design Parameters:

- The Landscape Design Strategy should create a modern, technologically efficient 21st century image for MOS Rail, employing state of the art design.
- promote designs for major engineering structures such as bridges and viaducts which present an attractive co-ordinated image.
- promote designs which avoid track side clutter and create a clean and tidy image, and
- screen unattractive elements of MOS Rail through careful siting of those elements and by provision of screen planting

Primary Design Parameter:

The Landscape Design Strategy should enhance the passenger experience of MOS Rail

Secondary Design Parameters:

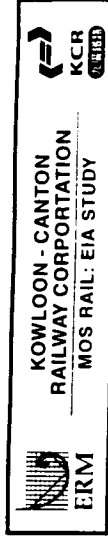
- The Landscape Design Strategy should create a modern, technologically efficient 21st century image for MOS Rail, employing state of the art design.
- provide an enjoyable and comfortable passenger experience, from the moment that the passenger enters the station at the beginning of the journey until the moment the journey is completed;
- promote station forecourt designs which reinforce circulation patterns and provide visual clues to location and place;
- promote panoramic views from the train at all times - generally speaking, no view is too ugly not to be of interest to the passing traveller and therefore no views should be considered to require screening, and
- promote framing of attractive views to heighten their attractiveness.

Primary Design Parameter:

The Landscape Design Strategy should minimise potential negative impacts that MOS Rail may have on the existing landscape and visual character of the Rail Corridor.

Secondary Design Parameters:

- The Landscape Design Strategy should promote engineering solutions which minimise cut into existing hillsides;
- promote designs for major engineering structures such as bridges and viaducts which present an attractive co-ordinated image; and
- promote fine tuning of the railway and viaduct columns alignment which preserves important cultural and historical components of the landscape, such as lung shui groves and historical temples.



Primary Design Parameter:

The Landscape Design Strategy should create a consistent design theme for MOS Rail that finds expression throughout the East Rail Corridor.

Secondary Design Parameters:

- The Landscape Design Strategy should:
 - create a modern, technologically efficient 21st century image for MOS Rail, employing state of the art design;
 - promote designs for major engineering structures such as bridges and viaducts which present an attractive co-ordinated image;
 - create standard designs for repetitive hard landscape elements such as fences, noise barriers, signage etc.;
 - provide recommended species lists of plants which create a consistent palette of plants for use throughout MOS Rail; and
 - promote a consistent approach to the design of soft landscape areas

Primary Design Parameter:

The Landscape Design Strategy should be environmentally friendly

Secondary Design Parameters:

- The Landscape Design Strategy should:
 - promote the use of indigenous plants which provide shelter and food for local bird-life;
 - promote the use of drought tolerant plants which require minimal irrigation;
 - promote the use of hard landscape materials which are manufactured in an environmentally sustainable manner;
 - promote maintenance regimes for hard and soft landscape materials which are energy efficient.

Primary Design Parameter:

The Landscape Design Strategy should promote safety and security

Secondary Design Parameters:

- The Landscape Design Strategy should:
 - promote hard landscape detailing which allows for safety in construction, operation and maintenance;
 - promote soft landscape design which avoids potential interference with the operation of MOS Rail, specifically in relation to the safety of the track and the Overhead Catenary System; and
 - promote a boundary demarcation system which provides security where this is required

Primary Design Parameter:

The Landscape Design Strategy should be cost effective.

Secondary Design Parameters:

The Landscape Design Strategy should

- promote designs which take into account recurrent maintenance costs as well as capital costs;
- promote design, which require minimal maintenance in terms of manpower and replacement of equipment and materials;
- promote designs which are modular for ease and economy of construction and maintenance; and
- promote the use of standard details which produce economies of scale in construction, maintenance and storage of replacement stock.

4.0 Landscape Design Strategy

4.1 System-wide Proposals

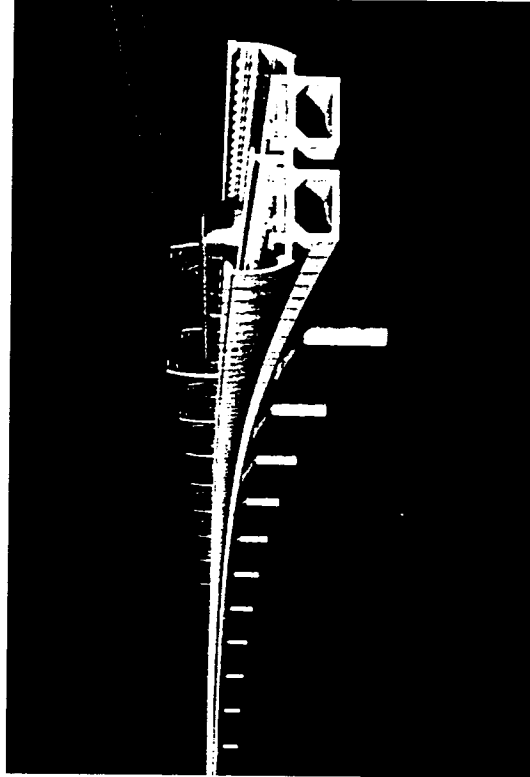
4.1.1 The Railway of the 21st Century

(i) The "Railway Envelope"

- One of the key design parameters identified in Chapter 3 is the need to create a modern, efficient, high technology, 21st century image for MOS Rail, employing state of the art, cutting edge design.
- Although the adoption of standard details for hard landscape elements which are repeated throughout the MOS Rail (such as fences, railings and paving etc.) will help to convey a co-ordinated theme or approach to the railway design, the image of MOS Rail will be created primarily through the public's perception of the major engineering and architectural structures associated with the railway, i.e. the stations, bridges, viaducts and portals etc.
- It is proposed that the major engineering structures required throughout MOS Rail should adopt physical forms which convey the desired image of a modern, efficient, 21st century, state of the art, facility. Furthermore, it is proposed that a design concept for the "railway envelope" is established which is then used as a template for the detailed design of all trackside structural engineering components.
- The "railway envelope" is defined as the space occupied by the trains, the trackside hardware such as Overhead Catenary System (OHC/S) and Noise barriers, and the bridge or viaduct decks that support the tracks.

(ii) The "Design Template"

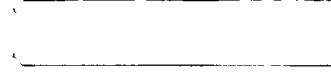
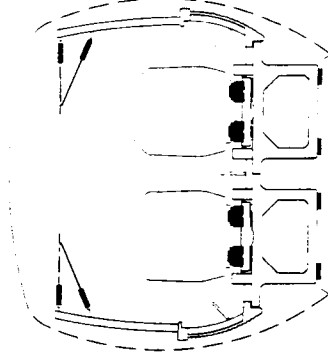
- The viaduct design adopted for the West Rail project serves as a starting point for the creation of a "Design Template" for MOS Rail railway envelope. The West Rail viaduct design has been developed to satisfy engineering design parameters whilst also satisfying aesthetic criteria in order to mitigate possible negative visual impacts.
- This Design Template, if used consistently, will promote a clear co-ordinated image of modernity, high speed and streamlined efficiency which will provide an attractive and distinctive identity for MOS Rail.
- This conceptual form will find physical expression in the shape of viaduct and bridge decks, the curve of OHC/S masts and noise barriers, the shape of portal openings and the completely enclosed form of noise enclosures.
- All these structures will be seen to form part of a unified vision that promotes MOS Rail as the "Railway of the 21st Century".
- The curvilinear, rounded form and the absence of sharp corners and angles will ensure that potential negative impacts associated with the intrusion of viaducts and bridges into both urban and rural settings will be minimised.



West Rail Viaduct Design

(iii) Rolling Stock

- Although it is outside the scope of this report discuss the rolling stock, it is obvious that the external appearance of the rolling stock, in particular the passenger carriages and engines, will play a significant role in the public's perception of MOS Rail.
- The rolling stock should be designed with a stylised, streamlined appearance that further promotes the MOS Rail as a product of the next century.



MOS Rail Design Template

4.1.2 Station Proposal

(i) Building Form

- The stations will be one of the principal elements influencing the public perception of MOS Rail.
- Each station design will be required to respond to a different urban context and consequently a different set of design parameters. Furthermore, some stations will have property development above them. The building forms of the stations will be a delineation of all these factors, and also of architects' aesthetic concepts.
- In order that a strong "line identity" is created for MOS Rail, it is recommended that, as far as possible, the structural form of the stations themselves is kept visually distinct from any associated commercial or residential development and further that this form is consistent for all stations.
- architectural identity for the stations should be derived from the modern, streamlined image previously described. Elevated station platforms should maximise the sensation of being open to the sky, and lateral visual connections with the surrounding landscape context should be maximised. Similarly, visual connections with the railway corridor at either end of the station should be encouraged and the curvilinear architectural language adopted in the "Design template" should be extended to the platform canopies so that the visual connection between the station and the railway corridor is emphasised. Platform furniture should also adopt a similar design aesthetic.
- It is proposed that stations should be built of materials such as steel and glass which convey a modern, technologically efficient image and which are consistent with the need to generate large spans and a sense of transparency.
- The stations should be bold and innovative structures which use advanced technological knowledge to create light and airy spaces with integral lighting systems, enabling them to become important landmarks in the urban landscape both by day and by night.

(ii) Station Entrance & Forecourts

Hard Landscape Treatment

- Station entrances and forecourts should be clear and uncluttered, allowing uninterrupted freedom of movement and circulation.
- Disabled access should be provided in a non-discriminatory manner.
- Paving materials should be carefully selected to be hard wearing, non-slip and provision should be made for tactile surfaces for the blind. Details are provided in Chapter 5.
- Signage should be clear, concise and eye catching. Opportunity exists to create very distinctive signage systems which become a recognisable part of the street scene and lend an identifiable image and character to the MOS Rail, much in the same way as the Metro signage in Paris has for decades been a distinctive graphic icon.
- Architectural feature lighting should be used where particular architectural elements or design themes are to be emphasised.

Soft Landscape Treatments

- It is likely that space around station entrances and forecourts will be limited and there will be few opportunities for extensive planting.
- The requirement that circulation space around entrances should be maximised dictates that planting in these areas should in most cases be limited to trees in tree grilles. These will not restrict pedestrian circulation but will provide an attractive greening effect and will moderate the microclimate, most significantly with regard to the provision of cooling shade.
- Station entrances and associated signage should be clearly visible and should not be obscured by tree canopies. Nevertheless, street trees enrich the quality of the urban environment and architects' preferences for unobscured views of station elevations should not be at the expense of the provision of street trees.
- It is recommended that station interiors should not be planted as the areas that would be available for planting are likely to be very small and would therefore incur disproportionately large maintenance responsibilities for relatively small aesthetic benefits.



(iii) Relationship with Surroundings

Hard Landscape Treatments

- All station developments must establish strong connectivity with the surrounding urban context. Directional signage should be frequent, clearly visible and concise.
- Footbridge connections should be provided with adjacent residential developments to increase rider-ship and ease pedestrian flows.
- Paving patterns should be developed which complement the station architecture and relate to surrounding open spaces.
- Adequate paved circulation space should be allowed at pedestrian road crossings.
- At "Kiss and Ride" and other drop off areas, canopies should be provided to provide shelter from rain whilst people are disembarking from cars. Canopy design should be consistent with the curvilinear theme adopted for other structures throughout the railway.

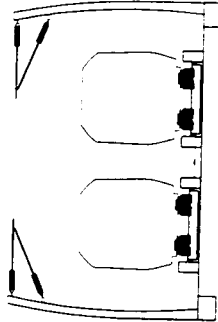
Soft Landscape Treatments

- Soft landscape design should be bold and robust, using colour, texture and form to provide interest. Planting themes should be responsive to the context and should provide continuity with local urban landscape themes (e.g. types of street trees).

(i) Overhead Catenary System (OHCS)

Hard Landscape Treatment

- The Overhead Catenary System (OHCS) will be a major visual component of the railway, and its design will contribute to the public image of MOS Rail.
- The design of the OHCS should be consistent throughout the railway, whether situated on embankments, in cuttings, or on bridge or viaduct decks. It should reflect the "Design Template" described previously, and should be designed to appear as an integral component of larger structures such as bridges and viaducts.
- Masts supporting the OHCS should be fabricated to a standard curvature which is constant throughout the railway for a specific track configuration. Different track configurations will call for different degrees of curvature, but there will be a limited number of typical configurations.
- The mast curvature should be designed to continue the curvilinear cross-sectional profile of viaduct and bridge decks and parapet walls.
- The spacing of the masts should be as regular as possible and the positioning of masts on viaduct and bridge decks should be consistent with the "ribbing" of the concrete finishes to the deck elevations.
- Masts should either be hot dip galvanised or finished with powder-coated paint so as to minimise maintenance requirements. If painted, colour schemes should be neutral and should be selected to minimise visual intrusion.
- The armatures may also be curved to continue the curvilinear design theme.
- The exact positioning of the masts relative to the track, and the exact degree of curvature that permits adequate safety margins for the kinematic envelopes of the trains can be refined according to the detailed engineering parameters.
- The illustrations below represent a conceptual framework for the OHCS design which can be refined according to these detailed engineering parameters, whilst retaining the spirit of the design concept.



(ii) Noise Barriers and Noise Enclosures

Hard Landscape Treatment

- Noise barriers and noise enclosures should be designed to appear to be an integral part of larger engineering structures such as viaducts and bridges. They should continue the "Design Template" theme of other engineering structures, following the curved profile generated by the OHCS masts.
- Noise barriers should be of modular design for flexibility and economy. They should be supported by curved steel posts which echo the design of the OHCS masts. The posts should be finished with powder-coated paint in neutral colours to match the colour scheme of the OHCS masts.

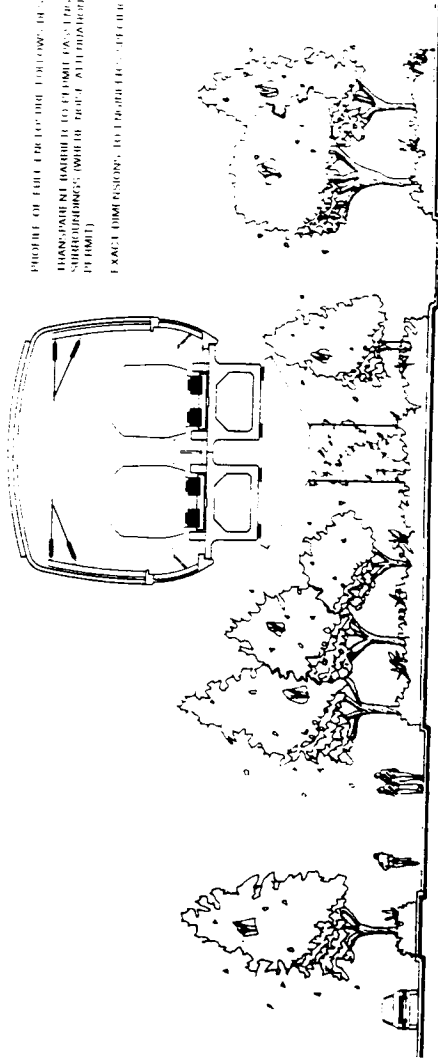


FIGURE OF THE PROPOSED NOISE BARRIER TO BE USED THROUGHOUT THE CORRIDOR. THE EXACT DIMENSIONS TO BE DETERMINED BY THE ENGINEERING TEAM.

(III) Embankments

Hard Landscape Treatment

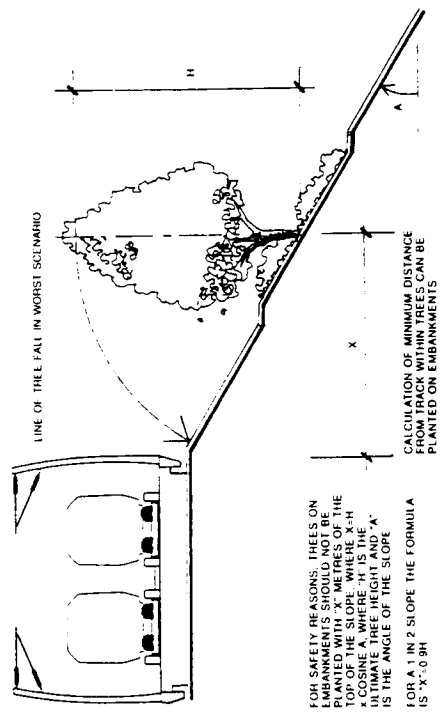
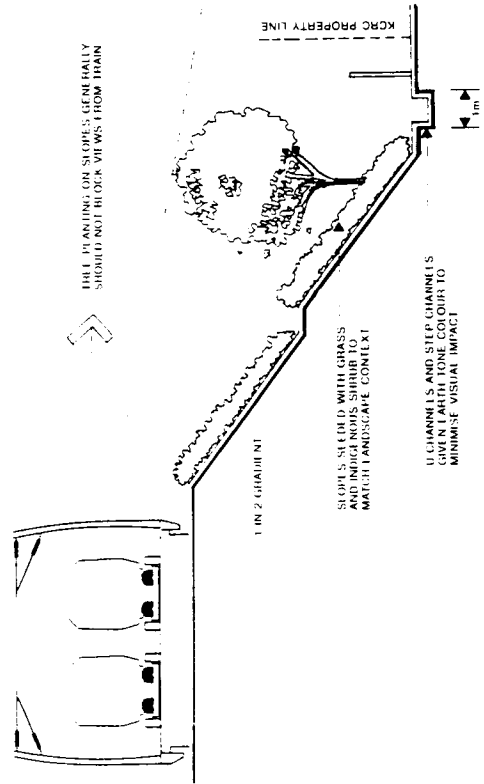
- Embankments should be formed to 1:2 gradients, so as to minimise the width of the railway corridor whilst permitting soft landscape treatments on the embankment slopes.
- U channels, step channels, and adjacent splash guards/paths should be in coloured concrete (e.g. Shadecrete) to blend the concrete with the local earth colour and thereby reduce glare and associated negative visual impacts. The width of splash guards should be minimised.
- Where access paths are required at the base of the embankments, these should be in concrete and also coloured in earth tones, as per the U-channels.

Soft Landscape Treatment

- Adequate soil cover should be provided on the embankment for the establishment and maintenance of trees, shrubs and grass - at least 1.2m graded earth fill over rock.
- The planting regime on embankments should be as follows:
 - on the verge between track and top of embankment - no grass or planting
 - on embankment - hydroseeding of indigenous grass shrub mix with pit planting of trees/shrubs where appropriate.

Trees, shrubs and grasses should be selected from the recommended species lists and chosen to match with the vegetation pattern in the surrounding landscape.

Trees and tall shrubs should not be planted in close proximity to the track so as to prevent potential damage to the track and OHCS by fallen trees. The distance from the track within which trees and tall shrubs may be planted varies according to the ultimate height of the tree/shrub (i.e. smaller trees may be planted closer to the track than larger ones). The diagram below indicates a simple formula for calculating this distance from the track within which planting is not permitted, described as a function of the tree's ultimate height. Trees and shrubs in the recommended species lists are categorised according to their ultimate height.





KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



(iv) Cuttings

Hard Landscape Treatment

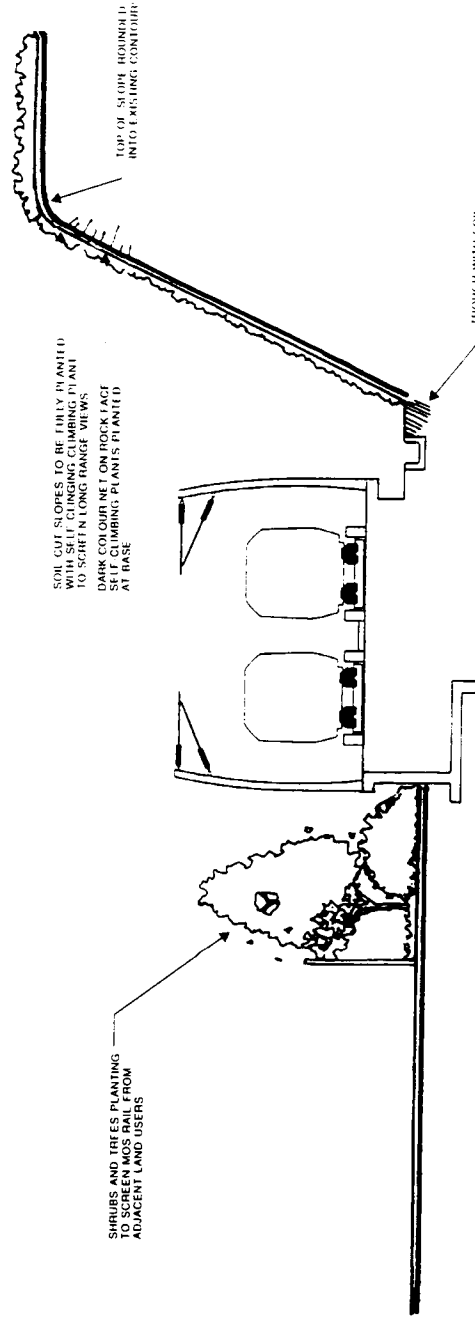
- The railway should be aligned horizontally and vertically to minimise cutting.
- Cutting in rock should be as near vertical as geotechnically acceptable so as to minimise the volume of cut.
- Sprayed concrete should not be used on rock faces.
- To prevent rockfall, netting fixed to the rock face should be used in preference to fence guards. Netting should be dark coloured.
- Cutting in soft ground should be at an angle of 1 in 1.5 in order to minimise the upslope extent of the cut.
- U-channels, step-channels and adjacent splash guards/patris should be in coloured concrete (e.g. Shadcrete) to blend the concrete with the local earth colour and thereby reduce glare and associated negative visual impacts. The width of splash guards should be minimised.

Soft Landscape Treatment

- The planting regime for rock cuttings should be as follows:
 - Self-clinging climbing plants should be planted at the base of the rock cut and on rock berms. Trenches to receive these climbing plants should be excavated along the base of the cut face. Drainage channels should be positioned to allow climbing plants between the channels and the cut face.
 - self-clinging climbing plants should be planted at the junction between rock cut and soft cut and at the edges of the rock cut.
- The planting regime for soft cuttings should be as follows:
 - on the verge between track and bottom of cut - no grass or planting
 - on the cutting - hydroseeding of indigenous grass/shrub mix with pit planting of shrubs where appropriate.

Shrubs and grasses should be selected from the recommended species list and chosen to match with the indigenous vegetation pattern in the surrounding landscape.

Trees should not be planted on cuttings so as to avoid potential damage to the track and OHCS by fallen trees



(V) Viaducts

Hard Landscape Treatment

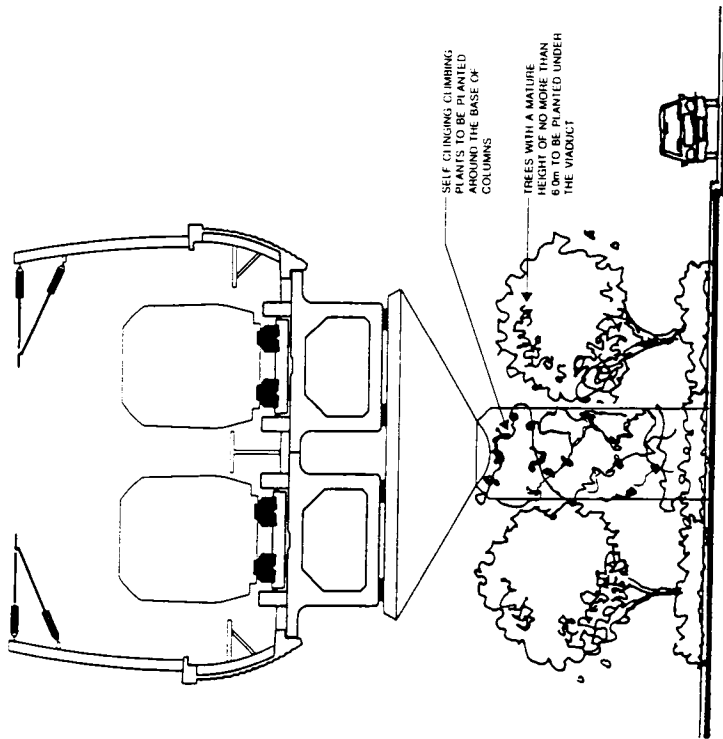
- The viaduct design should be based on the West Rail "Design Template" outlined in section 3.1.1
- The viaduct and supporting columns should be as thin as possible so as to convey a lightweight appearance
- The viaduct and supporting columns should adopt rounded and curvilinear forms, avoiding sharp edges.
- The viaduct deck soffit should be devoid of any clutter associated with drainage requirements. Drainpipes and gullies should be hidden within the deck and column structures.
- Horizontal lines may be incorporated in the surface detailing of the parapet walls in order to give the deck a visually slender appearance.
- Columns should be oval in plan section, narrow at the base and gently flared towards the top, in both front and side elevations. The curvature of the flare should be designed to be tangential with the curvature of the parapet wall.
- Vertical lines should be incorporated in the surface detailing of the column (e.g. by tonework detailing) in order to give the columns a visually slender appearance.
- Fin lines should be applied to the underside of the deck parapet so as to prevent unsightly streaking of the deck soffit by rainwater.
- Noise barriers, when required, should be designed so as to appear as a wholly integrated part of the structure and not an "add-on".

Soft Landscape Treatment

- Self-clinging climbing plants should be planted around the base of columns in order that such climbing plants do not interfere with the visual inspection of bearing pads, and in order that climbing plants do not spread onto the soffit of the viaduct deck, a chemical treatment should be applied to the top 500mm of the column surface to prevent climbers clinging to the column surface above that point
- Trees with a mature height of more than 6.0m will not be planted under the viaduct as they may eventually interfere with the railway operation. Such large trees will be proposed where opportunities exist on either side of the viaduct.
- Trees will be located near the viaduct should possess a generally narrow crown. Trees with a generally wide crown would not be suitable for use near the viaduct but should be used where opportunities exist for tree planting in locations away from the viaduct.

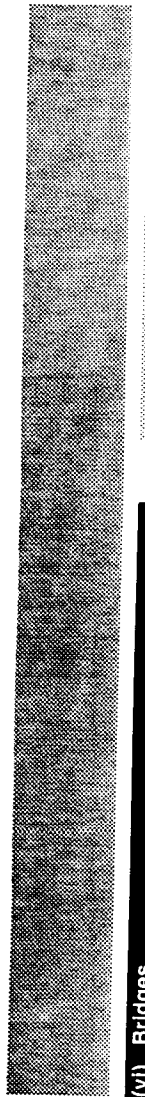
Land Use under the Viaduct

- Wherever the viaduct passes over an active land use, the area under the viaduct should be reinstated to the previous land use, unless this is an undesirable land use from KCHC or Government standpoints
- If no active land use has been identified, the area under the viaduct should be planted with shrubs and height permitting, trees so as to match the surrounding vegetation pattern in rural areas, or to fulfil any landscape and visual mitigation requirements.





KOWLOON - CANTON RAILWAY CORPORATION MOS RAIL: EIA STUDY



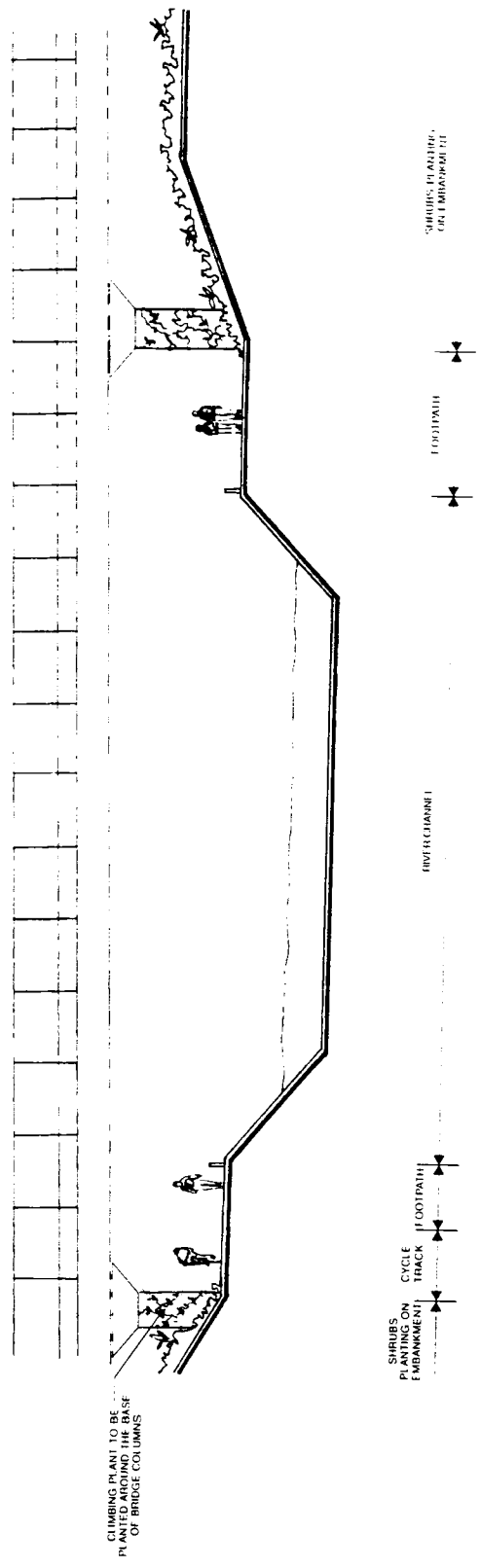
(W) Bridges

Hard Landscape Treatment

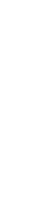
- The bridge deck and columns should adopt the same hard landscape design parameters as previously specified for viaducts. The deck and columns should have the same curvilinear cross section and plan section respectively as provided for viaducts, so that there is consistency and uniformity in design throughout the railway.
- Noise barriers, if required, should be identical in design to those incorporated in the viaduct design, and should appear to be an integral component of the bridge and not an "add-on".

Soft Landscape Treatment

- Self-clinging climbing plants should be planted around the base of bridge columns. In order that such climbing plants to not interfere with the visual inspection of bearing pads, and in order that climbing plants do not spread onto the underside of the bridge deck, a chemical treatment should be applied to the top 500mm of the column surface to prevent climbers clinging to the column surface above that point.



KOWLOON - CANTON RAILWAY CORPORATION MOS RAIL: EIA STUDY



(vii) Viaduct and Bridge Abutments

Hard Landscape Treatment

- Where bridge and viaduct abutments are situated on embankments, the embankment should wrap around under the bridge/viaduct at the same angle of slope as on either side of the track. This will create a larger bridge span than would occur if the abutment was vertical, but will create a more open visual effect and greater feeling of space under the deck.
- The abutment slope located immediately beneath the deck should be clad with coloured, patterned concrete or with granite blocks. The width of this area of hard treatment should narrow towards the base of the abutment slope so as to permit the adjacent soft landscape treatments to wrap around underneath the deck.
- Parapet walls on the bridge/viaduct should not stop abruptly at the abutment. Mock parapet walls should extend along the top of the adjacent embankments for a specified distance, the top of the wall tapering smoothly down to ground level.
- Noise barriers, if required, should appear continuous between the bridge/viaduct and the adjacent embankment.
- Where the bridge has a long span which requires intermediate support, this should be provided in the form of angled piers springing from the abutment slope, rather than in the form of vertical columns.
- The angle of such piers should be determined by considering the visual balance between the piers and the angle of slope of the abutment embankment. It is generally preferable that the piers should adopt the same angle as the embankment, but this will depend to a degree on the length of span.
- The cross-section of an angled pier should be curvilinear, and vertical lines should be incorporated in its surface detailing, in the same manner as previously specified for columns.

Soft Landscape Treatment

- The abutment slopes should be planted with trees and shrubs to match the planting on adjacent embankments, following the guidelines specified above for embankments.

(viii) Trackside Feature

Hard Landscape Treatment

- In addition to the OHTCS and noise barriers, it is anticipated that visible track-side features will include transformer stations, signal cabins (near stations), chest boxes for emergency tools, communication stations and fences and gates.
- Trackside clutter should be minimised.
- Trackside features should be sited based on function and where possible they should be located to maintain passenger views.
- Large structures such as transformer stations or signal cabins should be sited so as to be hidden from adjacent sensitive receivers as far as possible.
- The architectural treatment of transformer stations and signal cabins should be consistent with nearby station architecture. Bright corporate colours should not be used.
- Smaller features which fulfil emergency functions, such as communication stations and chests for emergency tools, should be given bright corporate colour finishes that make them visible from a considerable distance along the track.
- Fences should be located at the bottom of embankments, 1m inside the property line.
- Fences should be located at the top of cuttings, 1m inside the property line.
- Fences and gates should be finished in dark earth tones so as to minimise potential visual intrusion.

Soft Landscape Treatment

- Larger structures such as transformer stations or signal cabins should be screened from adjacent sensitive visual receivers by tall shrub and tree planting which matches with the local vegetation pattern. Such planting should not screen views up and down the track from these structures.
- Planting should be used to screen fences at the top of cuttings.



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY

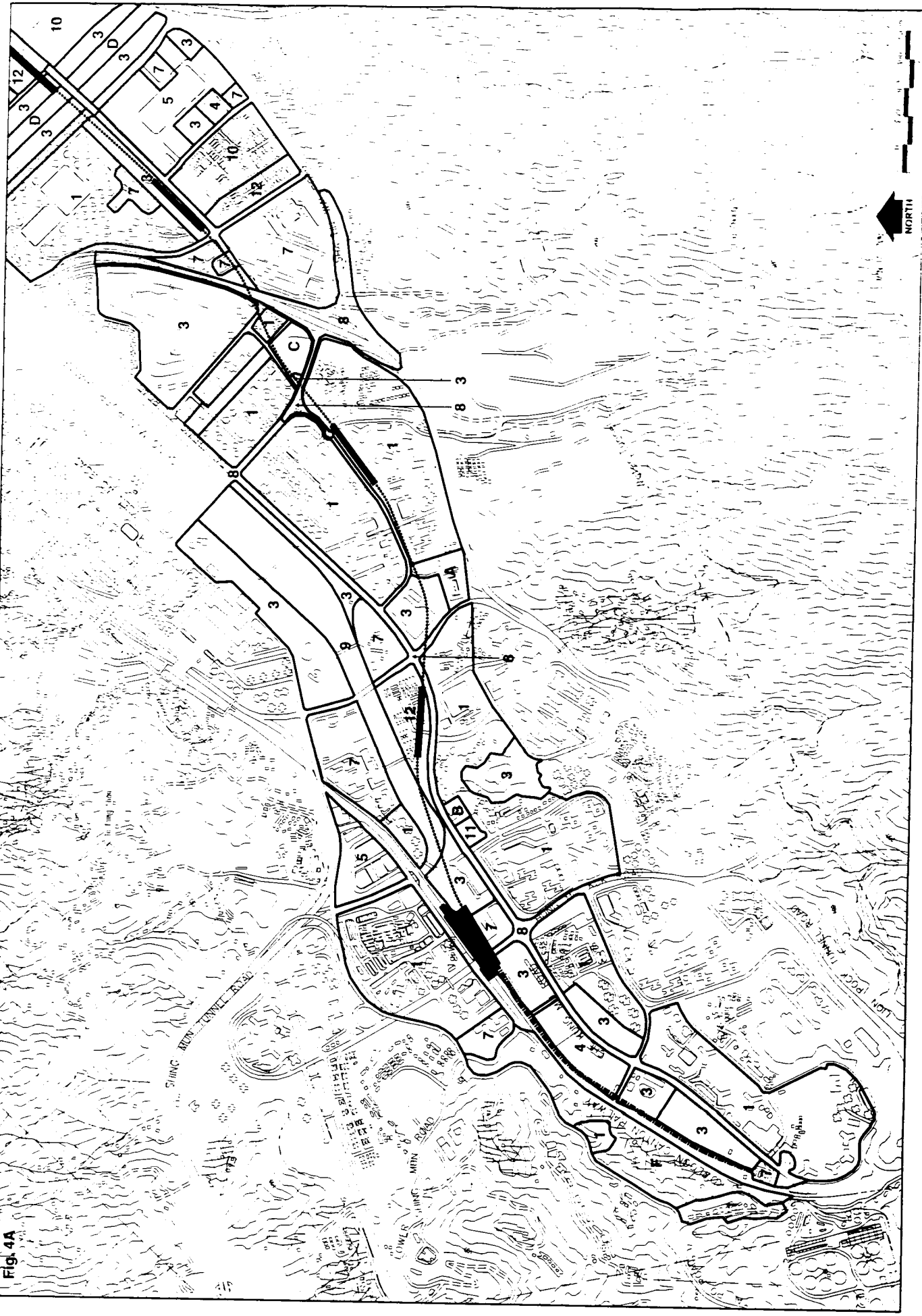
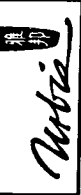


Fig. 4A

4.2 Landscape Analysis

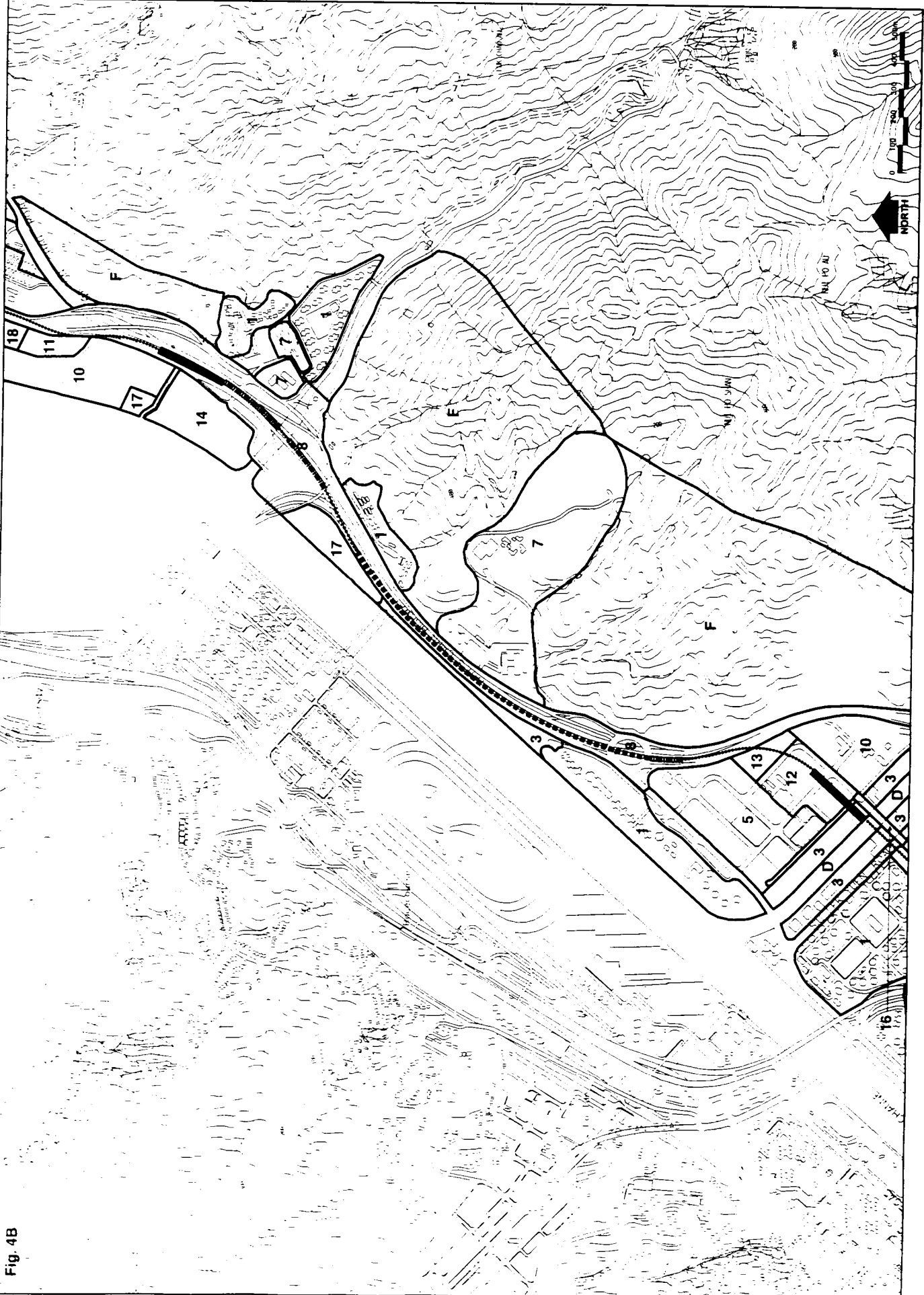


Fig. 4B



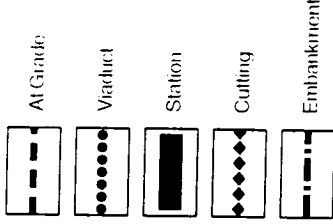
KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



EXISTING ADJACENT LANDUSE

1. Urban Residential Area
2. Rural Residential Area / Farming Area
3. Recreational Area / Public Open Space
4. Commercial Area
5. Industrial Area
6. Mixed Commercial / Residential Area
7. Community Facility (School, Hospital, Bus Station)
8. Transportation Corridor

ROUTE NATURE



PROPOSED ADJACENT LANDUSE

10. Residential Area
11. Recreational Area / Public Open Space
12. Development Area
13. Mixed Commercial / Residential Area
14. Committed Residential Development
15. Industrial Area
16. Transportation Corridor
17. Community Facility
18. Commercial Area

CULTURAL AND ENVIRONMENTAL SITES

- A. Historical / Ancestral Building
- B. Temple / Pagoda / Monastery
- C. Fung Shui Hill
- D. Nullah
- E. River / Marsh / Fish Pond
- F. Green Belt

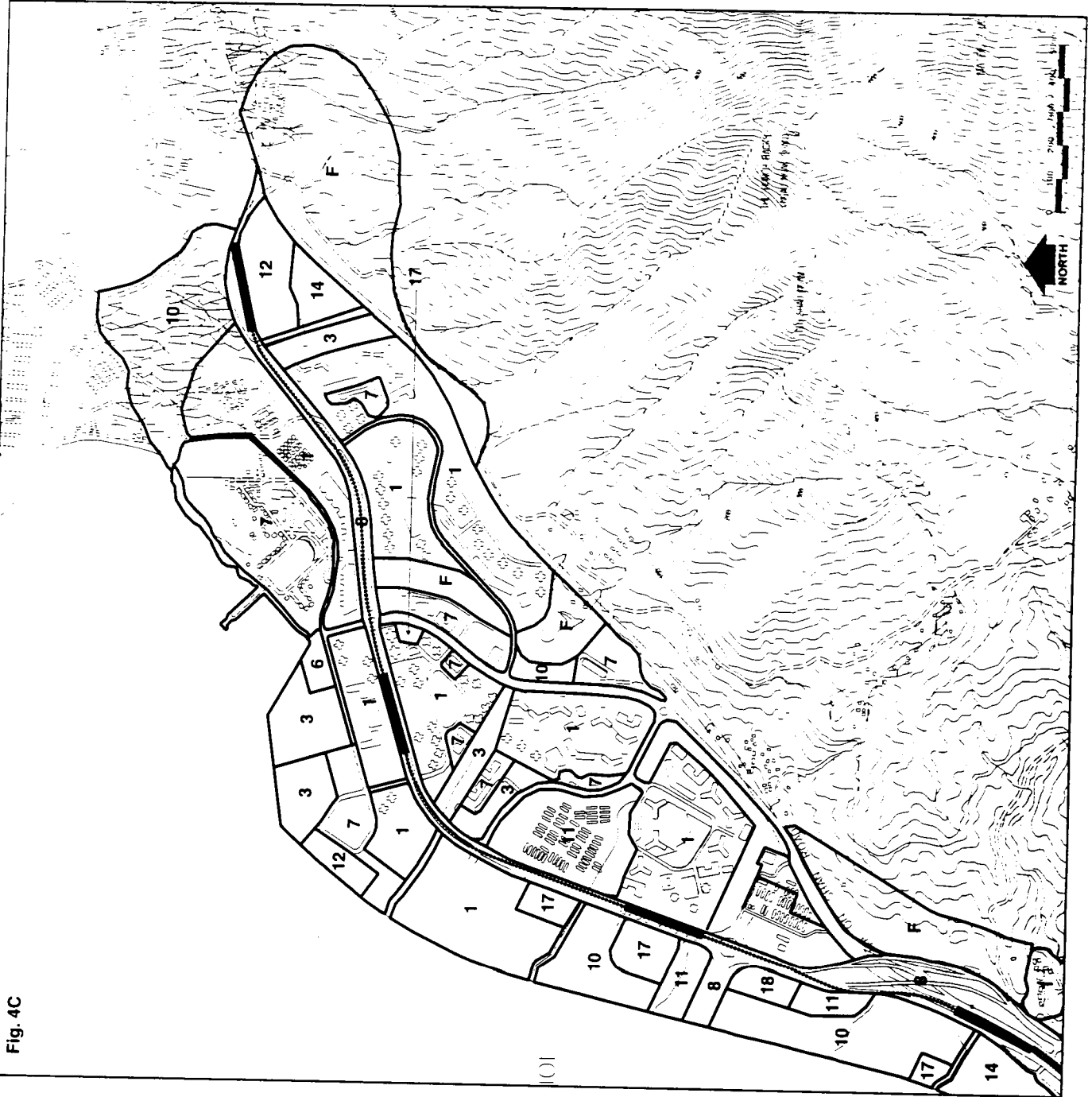


Fig. 4C

4.2.1 Tai Wai Overrun Track

Context

The Tai Wai overrun track will start at the existing Sha Tin Government Kennels and Plant Quarantine Area at the end of Che Kung Mui Road at Hin Keng Estate. The track will run on a north-easterly direction on the south-east side of the road, along existing Kowloon Canton Railway. Heading to the Tai Wai Depot, the overrun track will be alternately at grade and on retaining walls as it passes the Hin Tin Playground and Hin Tin Outdoor Swimming Pool at Che Kung Mui Road. A noise barrier will be required at the north bound of the track alignment.

The proposal of the overrun track will require the area immediately adjacent to the Government Kennels and Plant Quarantine to be storage area. An access road will be provided.

Issues

Visual Impacts:

The appearance of overrun track, retaining wall and the cut slope to the staff of Sha Tin Government Kennels and Plant Quarantine Area and users of Hin Tin Playground and Hin Tin Outdoor Swimming Pool.

Landscape Impact:

Loss of trees as affected by the construction of the MOS Rail. Treatment to the cut slope. Treatment to the cut slope.

Strategy

Mitigation of Visual Impacts:

Buffer planting to be planted at along the overrun track to screen the retaining wall at eye level from the playground and swimming pool. The noise barrier will be transparent to reduce the visual impact of the mass of the retaining wall and railway structure to the adjacent playground users.

Mitigation of Landscape Impacts:

Loss of trees and vegetation along the boundary fence of Hin Tin Playground and Swimming Pool to be compensated. Compensation planting will be proposed surrounding the Plant Quarantine Area and at the bottom of the adjacent slope where possible.

Management Agency:

- RSD - Hin Tin Playground and Hin Tin Outdoor Swimming Pool.
- KCRC - Planting along the overrun track.
- MOS Rail - Planting along MOS Rail Overrun track, MOS Rail overrun track and the existing East Rail.

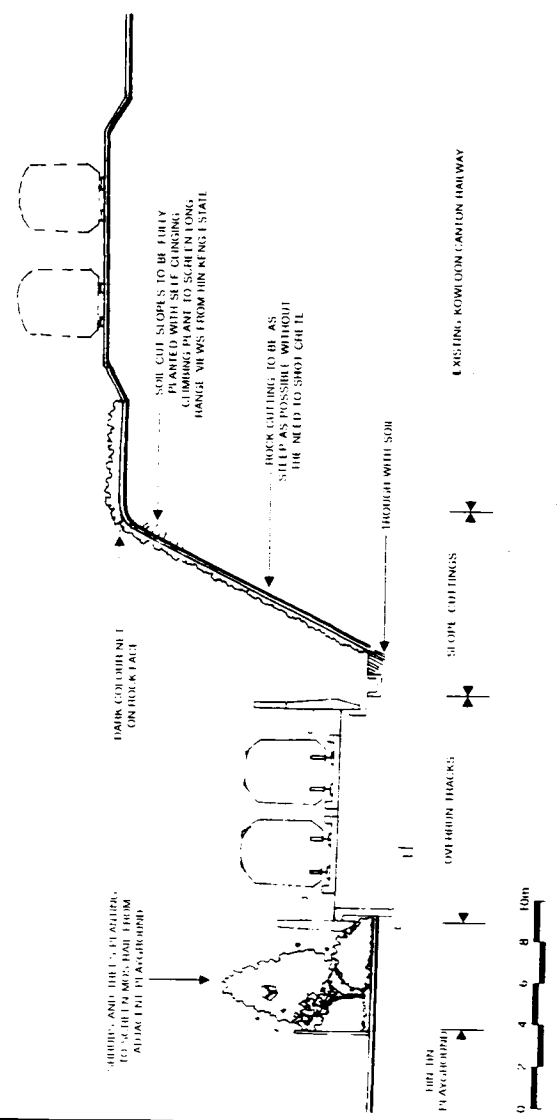
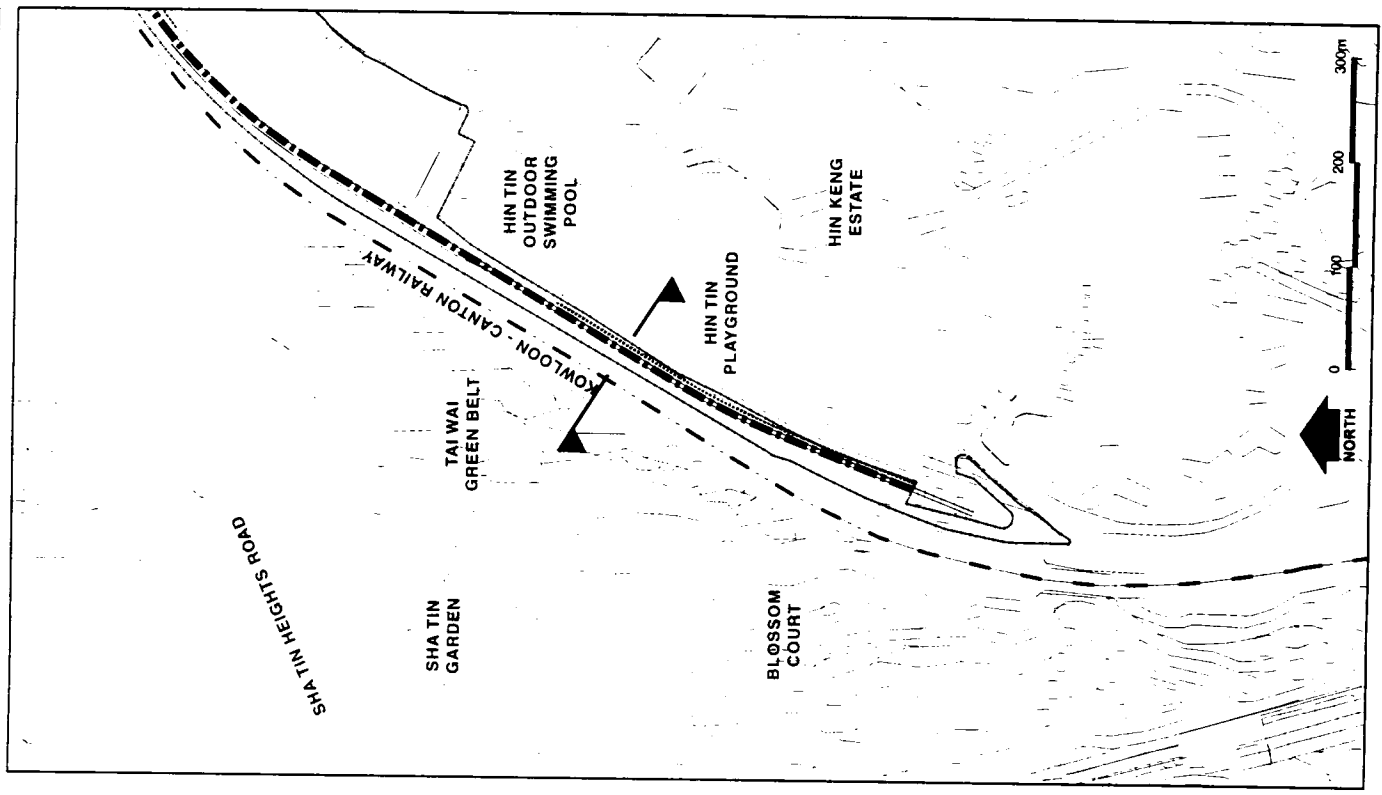
Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to climbers, screening shrub and trees.

KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY

ERM

Artec



4.2.2 Tai Wai Depot

Context

The Tai Wai Depot will be located immediately to the south-west of the existing Tai Wai KCR East Rail Station and within the urban area of Tai Wai. It is bounded on its southern side by Che Kung Miu Road, on its eastern side by Mei Tin Road, on its northern side by the KCR railway and on its western side by a public park that is located opposite Hin Keng Estate.

Issues

Visual Impacts:
Appearance of the depot and the cutting slope to the residents of Holford Garden, Tin Sam and Carado Garden, the students and staff of educational institutions, and the users of Che Kung Miu Road Playground

Landscape Impacts:
Loss of some groups of mature and immature trees located close to the embankments, around the sports area and to the south and east of the cycling area.

Strategy

Mitigation of Visual Impacts:

Tree planting will be planted along the perimeter of the depot at Chik Wan Street to reduce visual impact to the adjacent resident. Self-climbing plants will be planted on depot walls

Mitigation of Landscape Impacts:

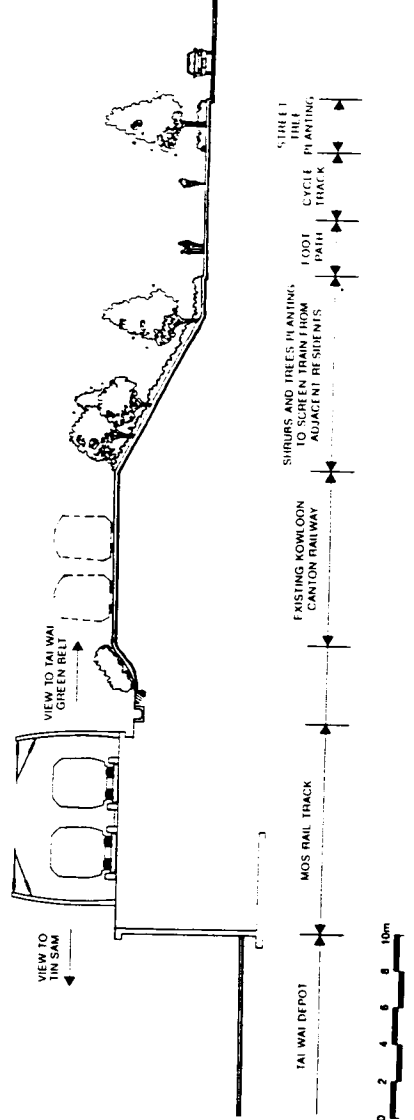
Loss of trees to be compensated. Compensation planting should be proposed at Chik Wan Street, and wherever space is available

Management Agency:

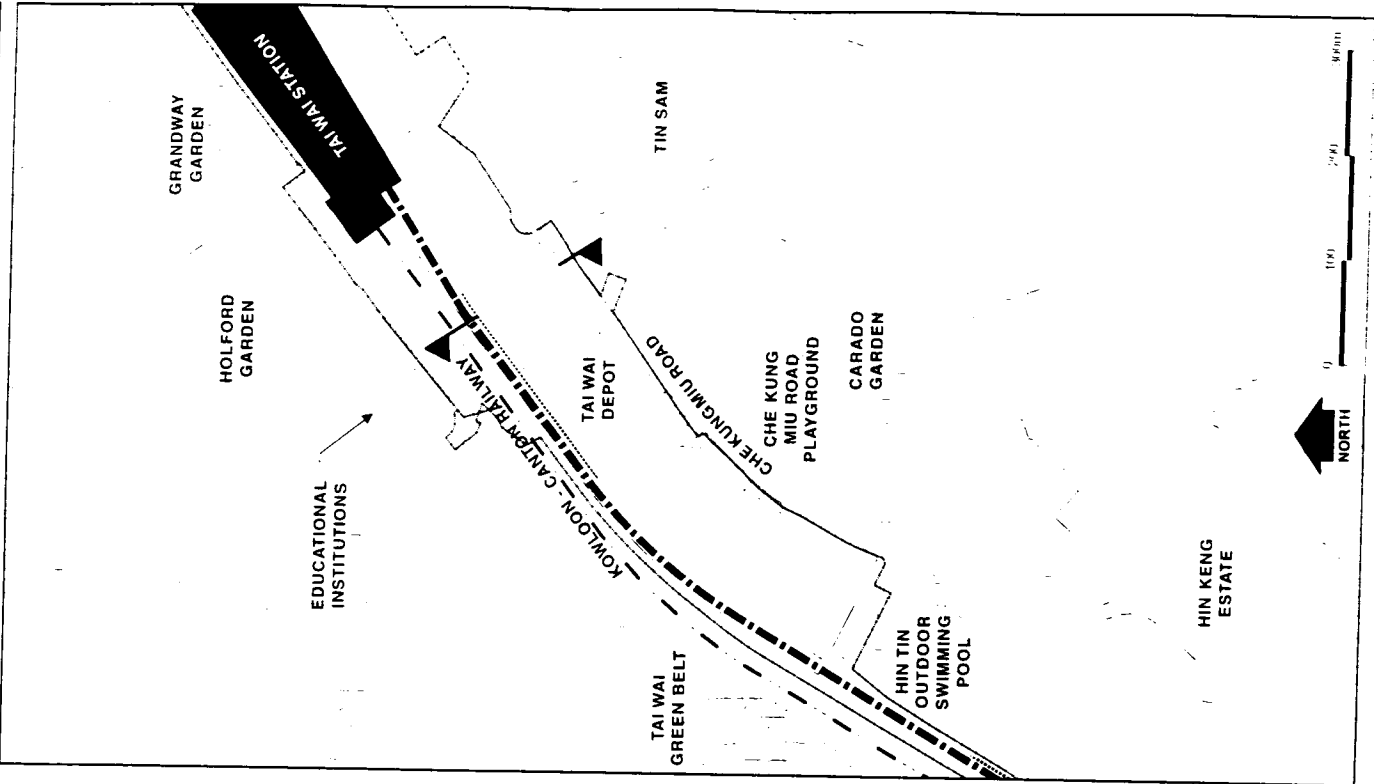
HyD - Street tree and planting at Chik Wan Street
KCRC - Planting within KCRC property.

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to trees and climbers.



KOWLOON - CANTON RAILWAY CORPORATION MOS RAIL - EIA STUDY



4.2.3 Tai Wai Station

Context

The Tai Wai Station will be located on the vacant strip of land in between the existing Tai Wai Station and the public transport interchange at approximately 13.5m².

The Public Transport Interchange (PTI) will be elevated permanently, and will be provided at the site immediately adjacent to the station, which would require the Happy Dragon Recreation Park to be demolished.

The station will affect the existing footpath/cycle track along the existing Tai Wai Station. It will also affect the pedestrian footbridge ramp of the proposed extension of the PTI. A pedestrian subway connecting Isuen Nam Road will be constructed.

There will be passenger views over into the Shing Mun River Channel to the east, and a long distance view out over the hills of Lion Rock Country Park to the far south.

ISSUES

Land Use:
The construction of station may interfere with the adjacent footpath/cycle track and the PTI.

Visual Impacts:
The appearance of the station to the residents at Sun Chui Estate, Grandway Garden and the users at the PTI.

Landscape Impacts:
Loss of trees and vegetation between the existing Tai Wai Station and the existing PTI.

Strategy

Land Use:

The existing PTI will be extended to the adjacent site where the Happy Dragon Recreation Ground will be demolished. The footpath/cycle track will be disrupted by the construction. Reprovision of affected footpath/cycle track between the proposed station and the proposed PTI allows opportunities to improve the landscape quality, these include: tree planting and paving surfaces.

Mitigation of Visual Impacts:

The station should be built of materials such as steel and glass which convey a modern, technologically efficient image and which are consistent with the need to generate large spans and a sense of transparency. Buffer planting to be planted along the station to reduce visual impact, and also maintain view out to the Che Kung Miu Playground and the hills of Lion Rock Country Park to the far south.

Mitigation of Landscape Impacts:

Loss of trees along the track alignment to be compensated. Compensation planting will be proposed along the station, and in other areas within the project boundary.

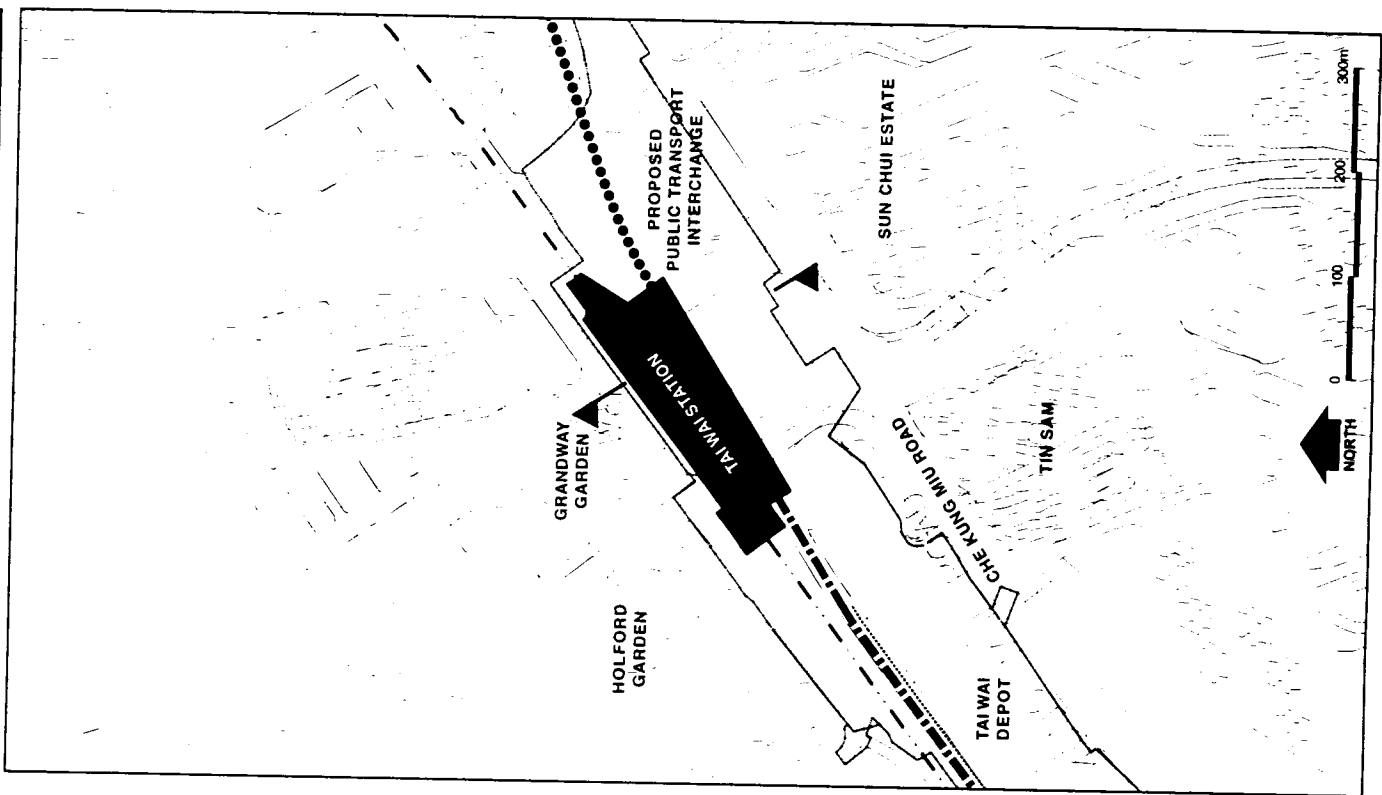
Management Agency:

Hyd: PTI Planting adjacent to the station and PTI.
KGRC: Tai Wai Station

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to trees.

KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY
ERIM
KCR
MTR



4.2.4 Track Alignment between Tai Wai & Sha Tin Tau Station

Context

From Tai Wai to Sha Tin Tau, MOS Rail will run in a north-easterly direction on viaduct at approx. 7.5-11.5 metres above existing ground level along the northern bank of the Shing Mun River Channel.

From Tai Wai Station to the northern bank of Shing Mun River, MOS Rail will run east over the existing Happy Dragon Recreation Park. The proposed alignment will require the recreation park to be demolished, and replaced by the extension of the Public Transport Interchange.

The alignment will affect the existing footpath/cycle track along the south-bound carriageway of Che Kung Miu Road. The footpath/cycle track will be realigned.

The Che Kung Miu Temple on the south side of the railway is classified as a site of historic and cultural interest (Grade 2).

There will be views over into the recreational facilities on the River bank, and the Sha Tin Central Park to the east, and a long distance view out over the Lion Rock Country Park to the far south.

Issues

Land Use:
Land use underneath viaduct

Visual Impact:
The appearance of the viaduct to the residents at Lei Uk Tsuen and Man Lai Court, the users at the Che Kung Miu Temple, and the users of the Shing Mun River Promenade. Disruption to the river bank.

Landscape Impact:
Street trees affected by the construction of the MOS Rail.

Site of Historic and Cultural Interest:
Proximity to Che Kung Miu Temple (AMO Grade 2) and Chun Shek Shan Fung Shui Hill.

Strategy

Land Use:
River channel under the viaduct will not be disrupted by the construction of the MOS Rail, but the associated footpaths/cycle track will need to be realigned. Reprovision of affected footpath/cycle track/open space along Shing Mun River Promenade allows opportunities to improve the river bank environment along Che Kung Miu Road. These include tree planting and paving surfaces.

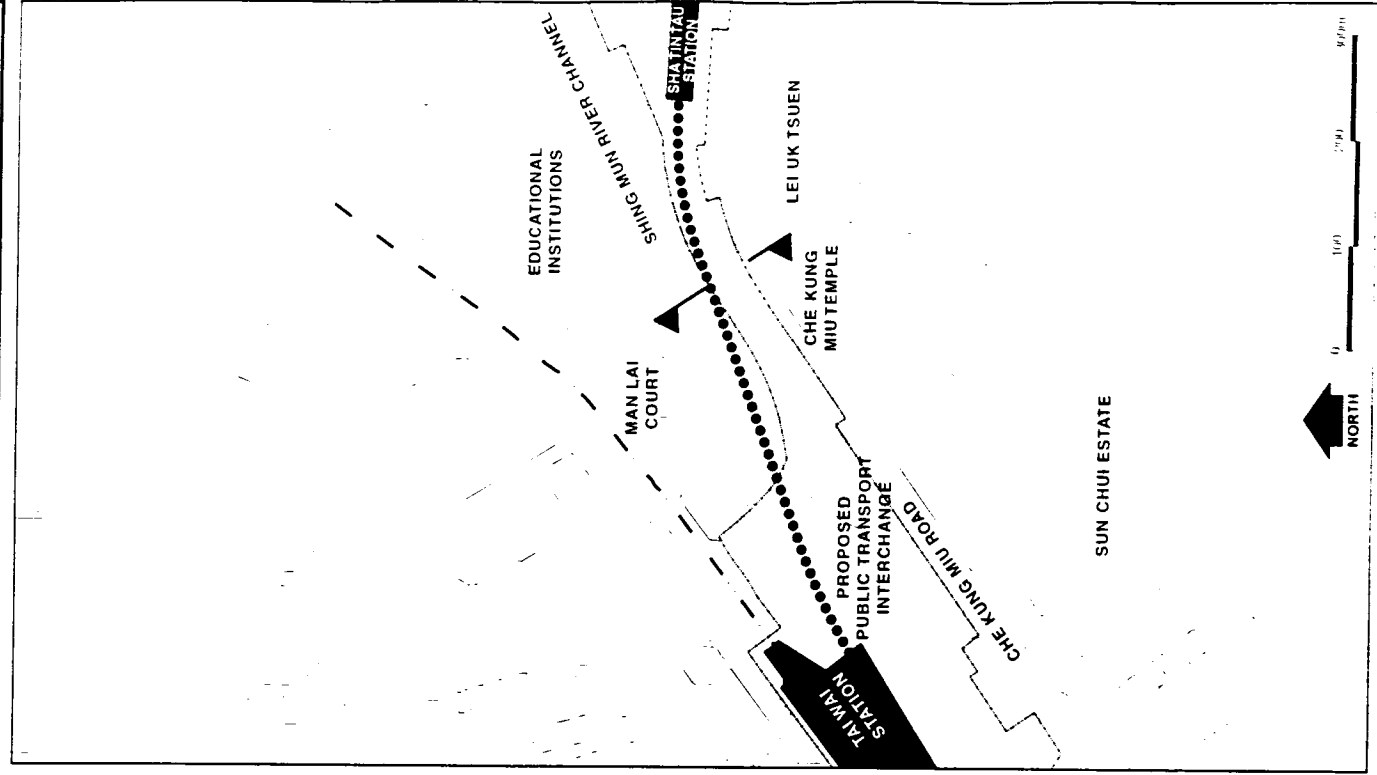
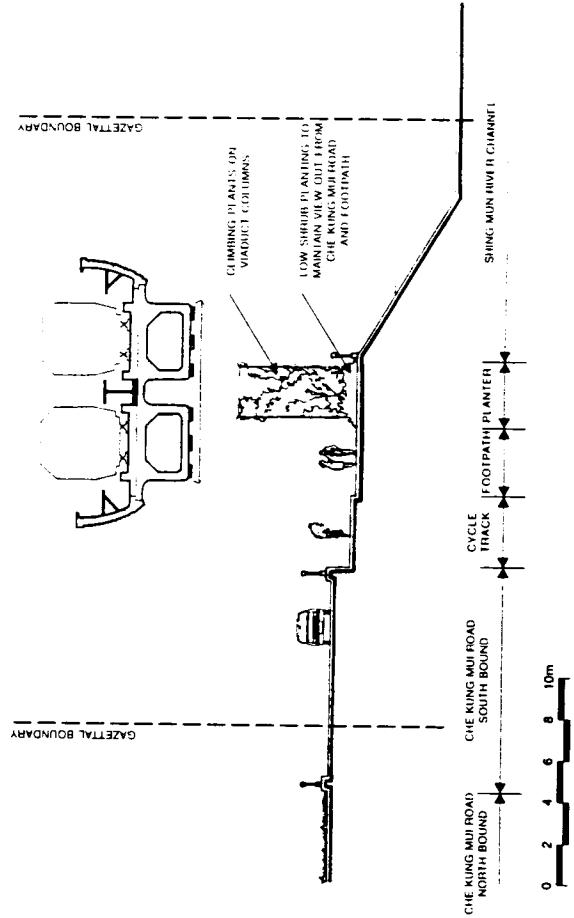
Mitigation of Visual Impact:
Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under viaduct. Low shrub planting at the viaduct along the river promenade to reduce visual impact, and also maintain view out to the Shing Mun River Channel.

Mitigation of Landscape Impact:
Loss of street trees along the track alignment to be compensated. Compensation planting will be proposed along Che Kung Miu Road, to screen the viaduct column at street level, and maintain view out to the river channel.

Site of Historic and Cultural Interest:
Access across Che Kung Miu Road to the sites of historic and cultural interest should be maintained.

Management Agency:
Street tree and planting under viaduct
KCR - Railway route at the existing Happy Dragon Recreation Park and along Che Kung Miu Road.
RSD - Shing Mun River Channel and the Promenade.

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to climbers.



4.2.5 Sha Tin Tau Station

Context

The Sha Tin Tau Station will be located within the site formerly occupied by the Shek Tin Wo Temporary Housing Area and now used as a temporary car park. The elevated Sha Tin Tau Station platform will be at approximately 19m (63') above the ground level. The station will be at approximately 100m (330') from the Che Kung Miu Road, on the eastern side by Lion Rock Tunnel Road and Lion Rock Tunnel Road, on the western side by Lion Rock Tunnel Road and Lion Rock Tunnel Road, on the northern side by Lion Rock Tunnel Road and Lion Rock Tunnel Road, on the southern side by Lion Rock Tunnel Road and Lion Rock Tunnel Road.

The proposed location of the station will affect the existing Che Kung Miu Road. A segment of the road at the eastern end of the station will be re-located. A pedestrian subway across Che Kung Miu Road to Chun Shek Estate is located adjacent to the Sha Tin Tau station. The current proposed location of the station will require an extension of ramp to the existing pedestrian subway.

There will be views for the passengers along the Shing Mun River Channel and of the further Cultural Museum across the river channel to the north, and views of Chun Shek Estate to the south. A long distance views into Gow Hill.

ISSUES

Land Use: Land use of the station development, and the j/o Che Kung Miu Road and Lion Rock Tunnel Road.

Visual Impacts:

The appearance of the station to the residents at Lei Uk Tsuen, Chun Shek Estate, and Sha Tin Tau, and the users of the Shing Mun River Promenade.

Landscapes Impacts:

Loss of trees along Che Kung Miu Road. Vegetation affected by the construction of the station development.

Site of historic and Cultural Interest:

Proximity to Stewards High Rock Christian Camp.

Strategy

Land Use

The existing temporary car park will be demolished for the station development. The associated footpaths/cycle track will be re-provided. The re-provision of the footpaths/cycle track allows opportunities to improve the landscape quality, these include tree planting and paving surfaces. An extension of ramp will be connected from the station to the existing subway at Che Kung Miu Road, however, the subway will not be disrupted by the construction of the station development. Station development at the j/o Che Kung Miu Road and Lion Rock Tunnel Road will be disrupted. The existing road will be reconstructed.

Mitigation of Visual Impacts:

Buffer planting adjacent to the station along Che Kung Miu Road to screen station from the residents at the adjacent residential development and the road users.

Mitigation of Landscape Impacts:

Loss of trees to be compensated. Compensation planting will be proposed at the loop path along Che Kung Miu Road, and the planting area at the j/o Che Kung Miu Road and Lion Rock Tunnel Road. Ground cover will be planted at the understorey to improve the roadside environment.

Site of Historic and Cultural Interest:

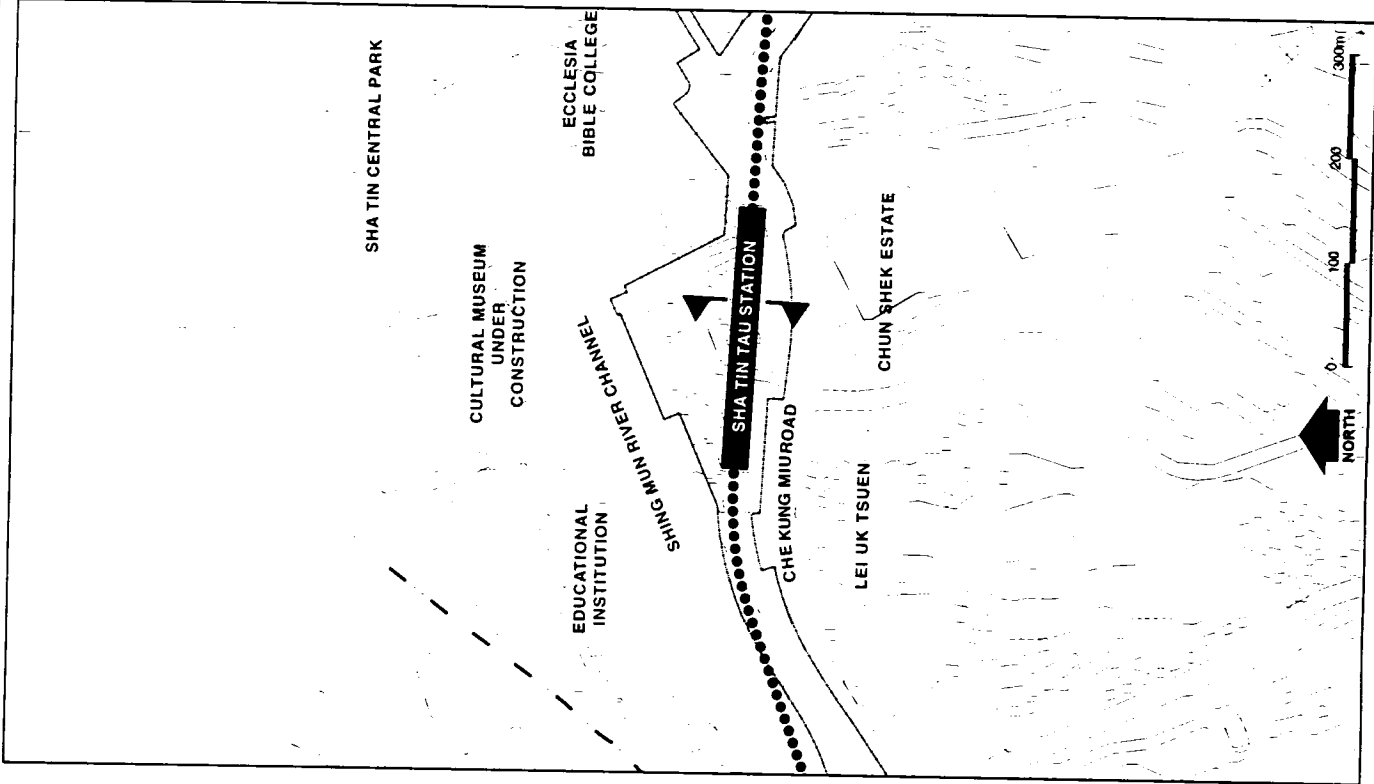
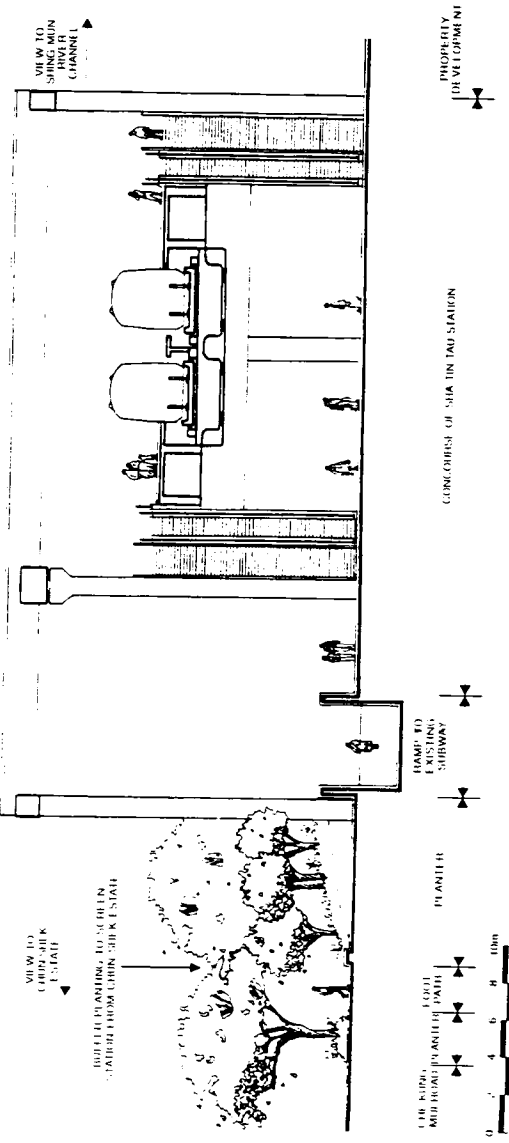
Access to Stewards High Rock Christian Camp to be maintained.





Management Agency:

Street tree at Che Kung Miu Road, and the j/o Che Kung Miu Road and Lion Rock Tunnel Road. The pedestrian subway at Che Kung Miu Road. Planting adjacent to the station development. Sha Tin Tau Station Development. KCR.

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to street trees and climbers.



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY

4.2.6 Track Alignment Between Sha Tin Tau Station & Sha Kok Street Station - Section I

Context

From Sha Tin Tau Station to Sha Kok Street, MOS Rail will run on viaduct in an easterly direction passing in-between the junction of Che Kung Miu Road and Lion Rock Tunnel Road at approx. 17.5mPD and a wooded mound. Then it will proceed over the Tsang Tai Uk Recreation Ground.

Current proposed alignment will affect the existing facility of Tsang Tai Uk Recreation Ground. The viaduct columns will be located at the existing tennis courts, the playground area, and within the safety margin in the south-west corner of the football pitch.

High Rock Christian Camp and Tsang Tai Uk (Shan Ha Wai Village) sites of Historic and Cultural Importance are located in this area.

There will be passenger views from this section of viaduct, into the well vegetated Ecclesia Bible College, and Shing Mun River Channel to the north, and the low rise village of Sha Tin Tau, and Shan Ha Wai to the south.

ISSUES

Land Use:

Land use underneath viaduct. Viaduct columns may interfere with layout of existing playground/tennis courts.

Visual Impacts:

The appearance of viaduct to the residents of Chun Shek Estate, Tsang Tai Uk and the users of Tsang Tai Uk Recreation Ground. Disruption to the layout of Tsang Tai Uk Recreation Ground.

Landscape Impacts:

Loss of trees at the wooded mound, and trees at the boundary of the recreation ground as affected by the construction of the MOS Rail.

Site of Historic and Cultural Interest:

Proximity to High Rock Christian Camp (AMO grade 3), and Tsang Tai Uk

Strategy

Land Use:

Columns layout to be adjusted to minimise disruption to layout of playground/tennis courts under viaduct. Reprovision of affected tennis courts/playground/football path allows opportunities to improve both soft and hard landscape. Soft Landscape treatment to be incorporated under viaduct where no active land use has been identified. Refer to system-wide proposals for soft landscape treatment of these areas.

Mitigation of Visual Impacts:

Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under the viaduct where no active land use is identified. Shrub planting at viaduct to reduce visual impact.

Mitigation of Landscape Impacts:

Loss of trees along the track alignment to be compensated. Compensation planting to be proposed near the boundary of the existing basketball court and playground.

Site of Historic and Cultural Interest:

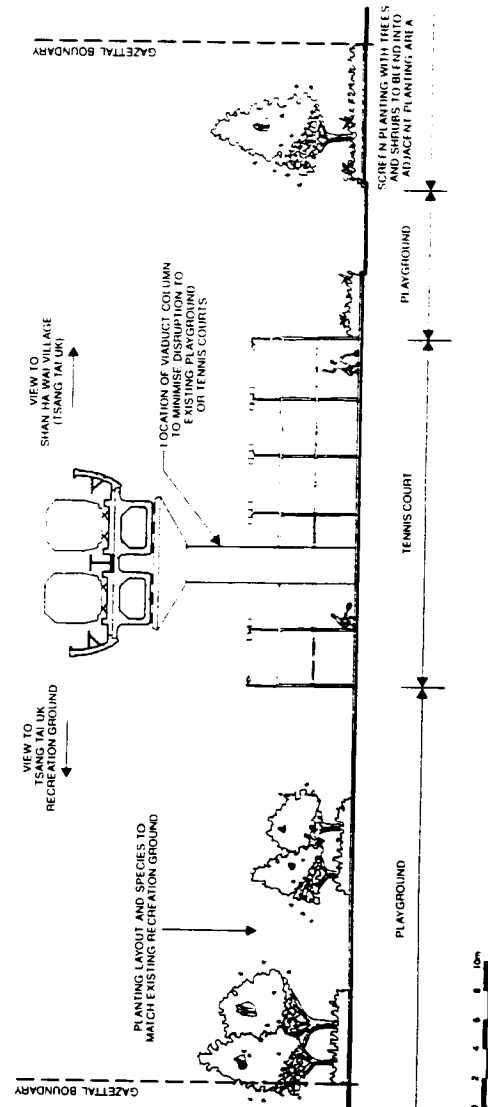
Proposed plans show sites of historical and cultural importance remain undisturbed though severed accesses would require to be reinstated.

Management Agency:

- HyD - Trees and planting under viaduct at the wood mound, and trees along the Lion Rock Tunnel Road
- KCRC - Railway route at the existing Tsang Tai Uk Recreation Ground and along Sha Kok Street
- RSD - Tsang Tai Uk Recreation Ground

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to trees and climbers.



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



SHING MUN RIVER CHANNEL

ECCLESIA BIBLE COLLEGE

TSANG TAI UK RECREATION GROUND

SHAN HA WAI VILLAGE (ALSO KNOWN AS TSANG TAI UK)

SHA TIN TAU

CHUN SHEK ESTATE

SHA TIN TAU STATION



0 100 200 300

4.2.7 Track Alignment Between Sha Tin Tau Station & Sha Kok Street Station - Section II

Context

From Tsang Tin Uk Recreation Ground, MOS Rail will run adjacent to a series of open spaces that are located immediately to the south of Sha Kok Street at height varying between +18 (m)PD and +16 (m)PD. These open spaces contain two basketball courts, one large car parking area and two separate parks/sitting area.

Current proposal of the MOS Rail will affect the open spaces at Sha Kok Street, these also include the pedestrian access. The affected open spaces and the adjacent paving will be reinstated.

There will be passenger views of the educational institutions and high rise residential developments, to both sides of the viaduct.

Issues

Land Use:
Land use underneath viaduct. Viaduct columns may interfere with the layout of the series of open spaces on the south side of Sha Kok Street.

Visual Impacts:
The appearance of the viaduct to the residents of Pok Hong Estate and Jat Min Chuen. Viaduct located directly above the series of open space and in close proximity to the educational institutions on Sha Kok Street.

Landscape Impacts:
Loss of street trees affected by the construction of the MOS Rail.

Strategy

Land Use:
Columns layout to be adjusted to minimise disruption of existing playground/basketball courts. Planters and areas where disrupted to be reinstated. Reprovision of open spaces allows the opportunities to improve the street side landscape along Sha Kok Street, these include both soft and hard landscape.

Mitigation of Visual Impacts:
Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under the viaduct. Additional tree and shrub planting to buffer viaduct from adjacent school and residential area.

Mitigation of Landscape Impacts:
Loss of street trees along the track alignment to be compensated. Compensation planting will be proposed at the boundary of Pok Hong Estate.

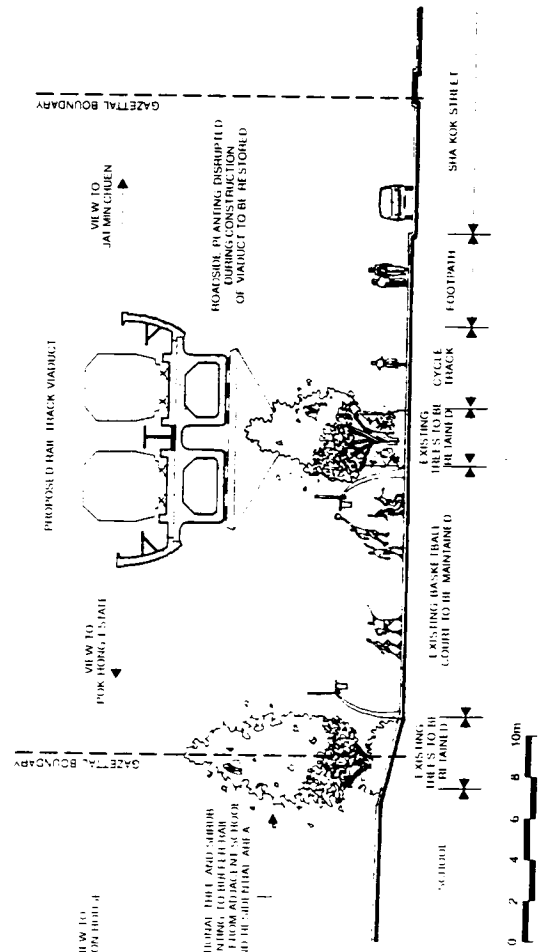
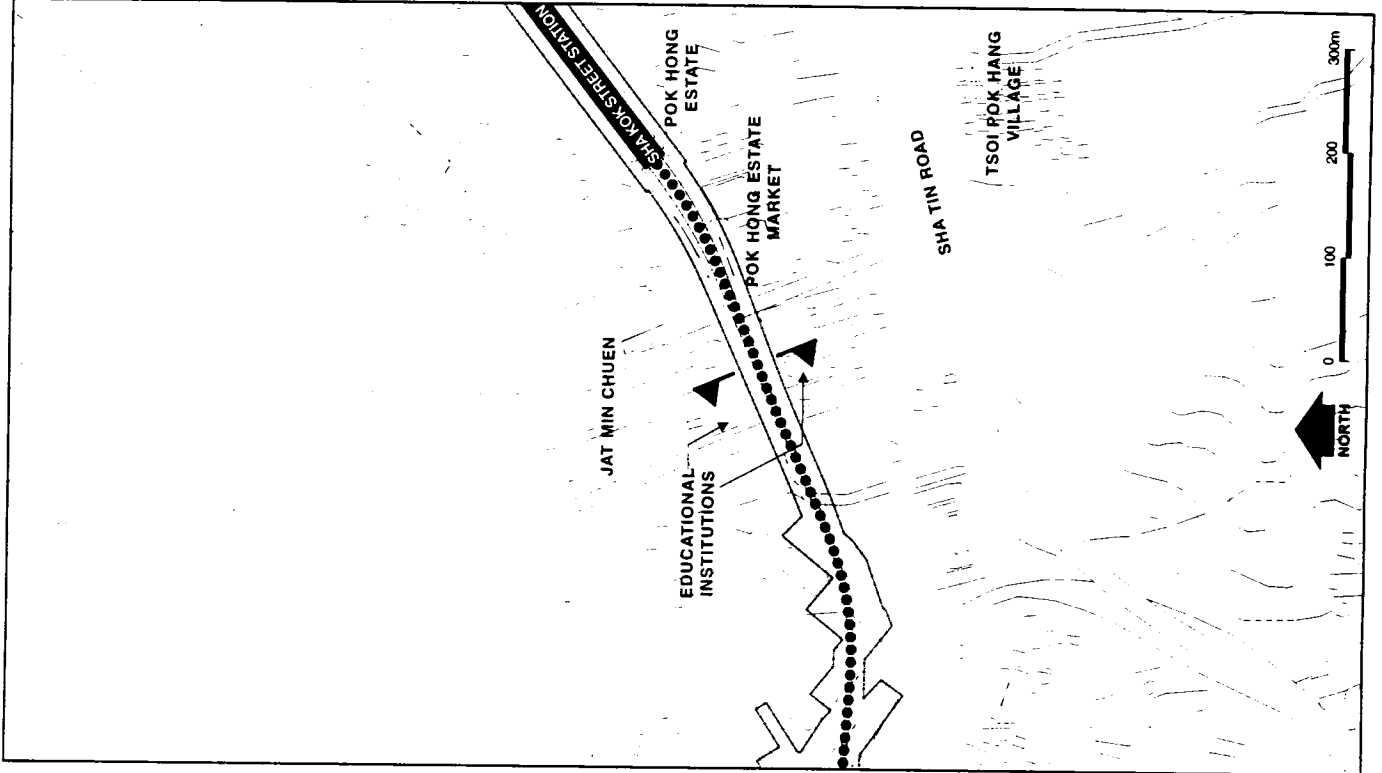
Management Agency:
KCRG - Railway route along Sha Kok Street
RSD - Basketball court and playground on Sha Kok Street

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to trees and climbers.

KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY

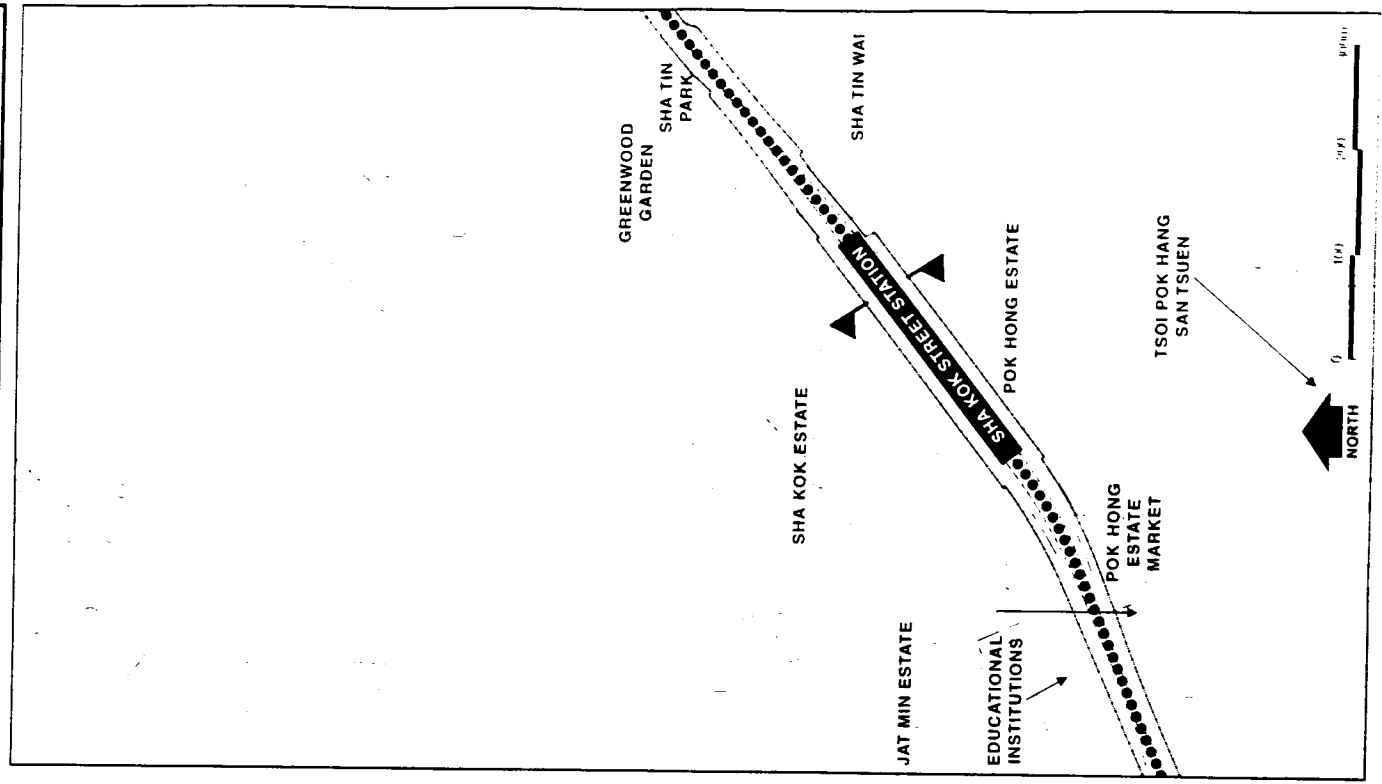
ERM

WSP





KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



Strategy

Land Use:
Footpaths along Sha Kok Street will be disrupted by the construction of the station. Footpath restoration will be co-ordinated with upgrading of street side environment, i.e., improvement on footpath surfaces, and planting. Tree planting in tree grilles to allow for pedestrian flow while providing shade and buffer to the adjacent road.

Mitigation of Visual Impacts:
Street tree planting on both sides of the station to reduce visual impact. All tree will be planted in tree grilles to allow for pedestrian flow while providing shade and buffer to the adjacent road.

Mitigation of Landscape Impacts:
Loss of tree at the rail reserve to be compensated. Compensation planting will be proposed at the footpath adjacent to the station, along the existing bus terminus.

Management Agency:
HyD - Street tree at the footpath, and the bus terminus adjacent to the station.
KCRC - Sha Kok Street Station Development

Maintenance Strategy:
Occasional maintenance to street trees

Context

The Sha Kok Street Station will be located in the grass reserve, which was set aside for the MOS Extension development, immediately to the south of Shui Chuen Au Street at approximately +16.5mPD. An elevated walkway passes across Sha Kok Street at a point immediately to the north of the station site. A bus terminus locates adjacent to the south of the station site.

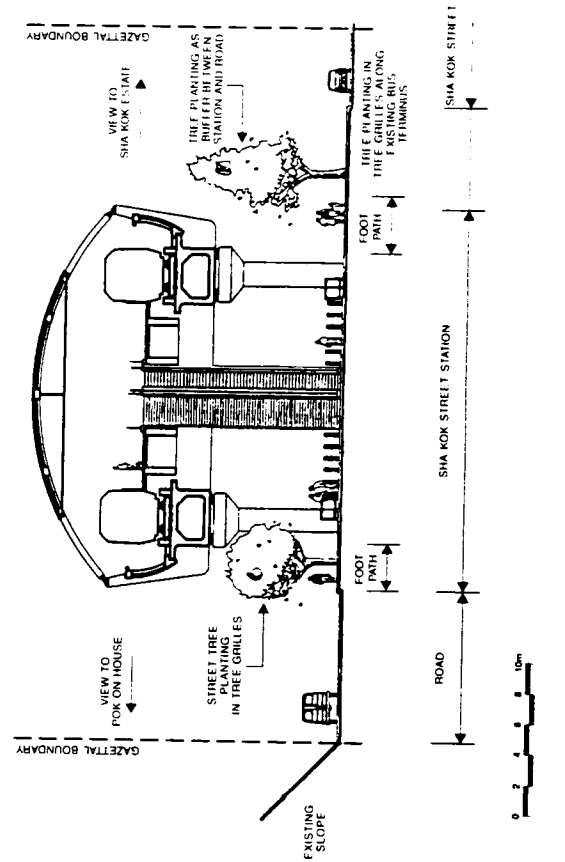
Land use at both sides of the station is predominantly residential and institutional.
There will be passenger views to the Pok Hong Estate to the south, and the Sha Kok Estate to the north.

Issue

Land Use:
Land use at the station. Station will be located at the MOS Rail reserve, and immediately adjacent to the existing bus terminus.

Visual Impacts:
The appearance of the station to the residents at Sha Kok Estate, Pok Hong Estate, the users of the bus terminus, and pedestrian of Sha Kok Street.

Landscape Impacts:
Loss of trees at the rail reserve affected by the construction of the MOS Rail.



4.2.9 Track Alignment Between Sha Kok Street Station & City One Station - Section I

Context

From Sha Kok Street Station, MOS Rail will pass over Shui Chuen Au Street and along a large linear and well vegetated open space on its way to Sha Tin Wai Road. The MOS Rail then will run in a north-east direction to Wong Uk Village before heading to the City One Station.

The proposed viaduct will affect the Kong Pui Street Rest Garden. The viaduct columns will be located within the rest garden and the adjacent vegetation around the Sha Tin Wai Fung Shui Hill, where groves are located on the western edge of the mound. Current proposal of the viaduct will also affect the Wang Uk Estate and the CIP Sub-station.

There will be passenger views to the Sha Tin Wai Fung Shui Hill, and Yuen Chai Kok Playground to the distance north.

Sha Tin Wai Fung Shui Hill and Wong Clan Ancestral Hall at Wong Uk Estate, sites of historical and cultural importance are located in this area.

Issues

Land Use: Land use underneath viaduct. Viaduct columns may interfere with the layout of the linear open space at the /o Sha Kok Street and Sha Tin Wai Road, and the existing Kong Pui Street Rest Garden.

Visual Impacts:

The appearance of the viaduct to the residents at Wong Uk Tsuen and the adjacent high rise residential developments. Visual impact to the users at Kong Pui Street Rest Garden and the Sha Tin Wai Fung Shui Hill, where viaduct will be directly above.

Landscape Impacts:

Loss of trees and vegetation at Kong Pui Street Rest Garden and the Fung Shui Hill affected by the construction of the MOS Rail.

Site of Historic and Cultural Interest:

Proximity to Sha Tin Wai Fung Shui Hill and Wong Clan Ancestral Hall at Wong Uk Estate. Distant view of Yuen Chai Kok Fung Shui Hill.

Strategy

Land Use:

The linear open space at the /o Sha Kok Street and Sha Tin Wai Road and the Kong Pui Street Rest Garden and part of the Sha Tin Wai Fung Shui Hill will be disrupted by the construction of the MOS Rail. The associated footpaths/cycle track will be re-provided. The re-provision of the footpath/cycle track/open space allows opportunities to improve the landscape quality, these include tree planting and paving surfaces.

Mitigation of Visual Impacts:

Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under viaduct. Low shrub planting at the viaduct at Wong Uk Tsuen and adjacent to the Sha Tin Wai football field to reduce visual impact, and dense shrub planting at Kong Pui Street Rest Garden to screen the viaduct at street level.

Mitigation of Landscape Impacts:

Loss of street tree along the track alignment to be compensated. Compensation planting will be proposed at the linear open space at the /o Sha Kok Street and Sha Tin Wai Road. Planting will be also proposed at the at Kong Pui Street Rest Garden, and at Wong Uk Tsuen.

Site of Historic and Cultural Interest:

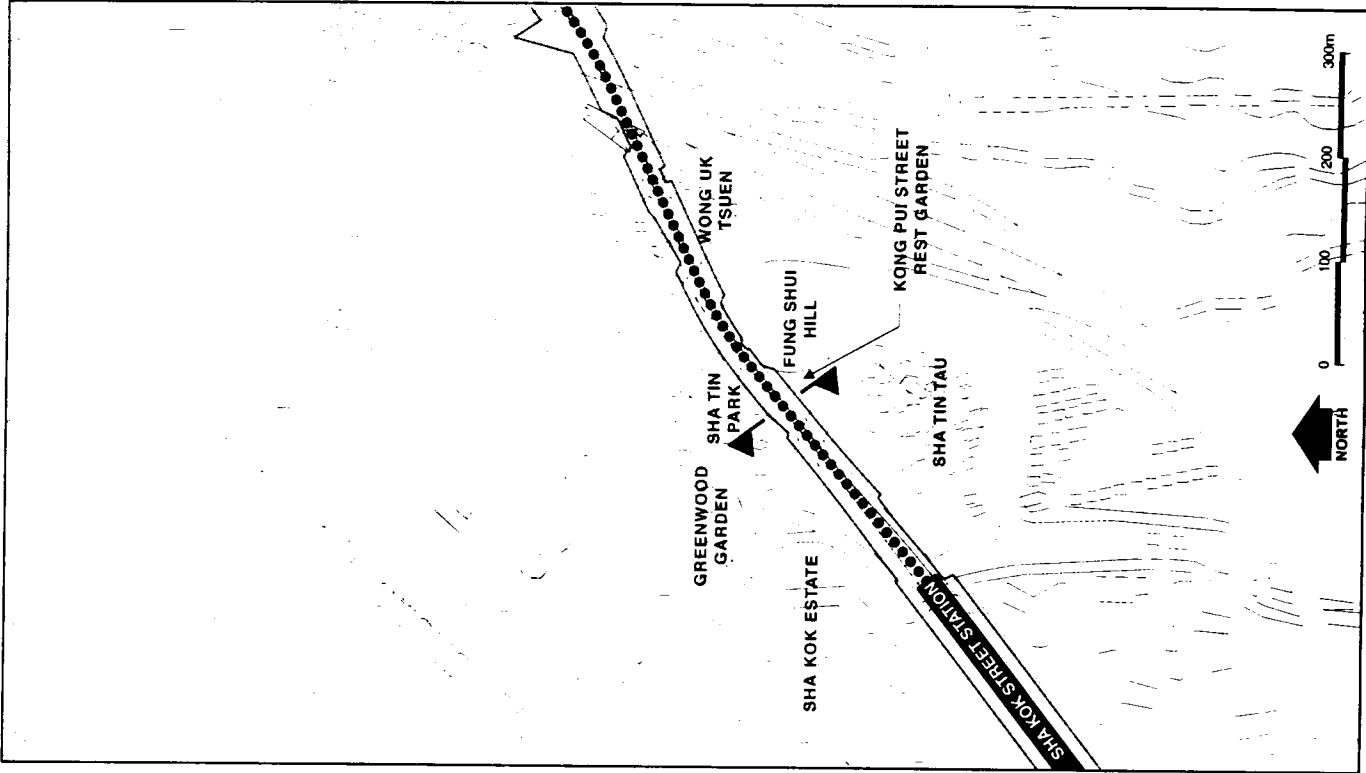
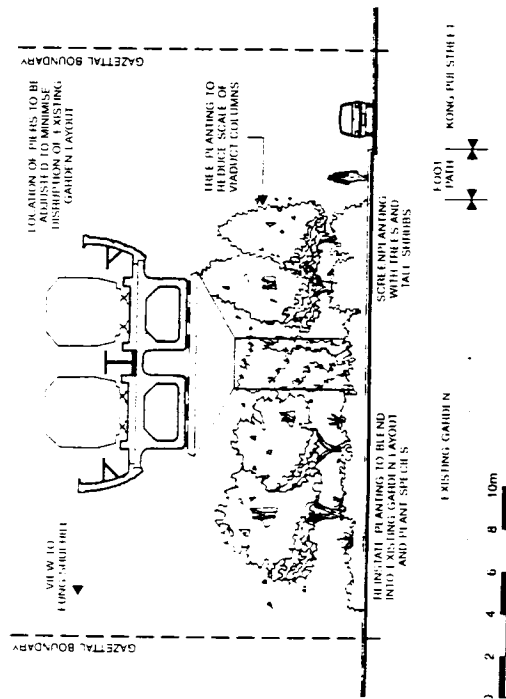
Access to Sha Tin Wai Fung Shui Hill not affected. Disruption to the Fung Shui Hill area should be minimised. Protection of Wong Clan Ancestral Hall at Wong Uk Tsuen should be maintained during and after construction.

Management Agency:

- HyD Street trees at Sha Kok Street and Sha Tin Wai Road
- KCRC Planting under viaduct along Sha Kok Street
- RSD Railway route at the Wong Uk Tsuen
- F Hill Kong Pui Street Rest Garden and Sha Tin Wai Fung Shui Hill

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to street trees and climbers.





KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



ERM

4.2.10 Track Alignment Between Sha Kok Street Station & City One Station - Section II

Context

From Wong Uk Tsuen, MOS Rail will pass over Sha Tin Road and its well-vegetated embankments on viaduct at approximately +21.2mPD. Thereafter, MOS Rail will pass over a bus terminus and a small open space at Ngan Shing Street, then it will be immediately adjacent to the Pamela Youde Child Assessment Centre and School Dental Clinic and passes over Ngan Shing Street before it reaches City One Station.

The proposed alignment will affect the bus terminus and the small open space at Ngan Shing Street, these also include the existing footpath/cycle track.

There will be passenger views over into the Prince of Wales Hospital to the south, and Yuen Chau Kok Playground to the distance north. The viaduct located directly above Sha Tin Road and in close proximity to the bus terminus and the local open space.

Issues

Land Use:
Land use underneath viaduct.

Visual Impacts:
Appearance of the viaduct to the staff and patients at the Pamela Youde Child Assessment Centre and School Dental Clinic, Prince of Wales Hospital, and the Yuen Chau Clinic, and the users at Sha Tin Road, Ngan Shing Street Bus Terminus and the local open space.

Landscape Impacts:
Loss of trees and vegetation at the embankment of Sha Tin Road, the local open space and the planter adjacent to the Pamela Youde Child Assessment Centre and School Dental Clinic affected by the construction of the MOS Rail.

Strategy

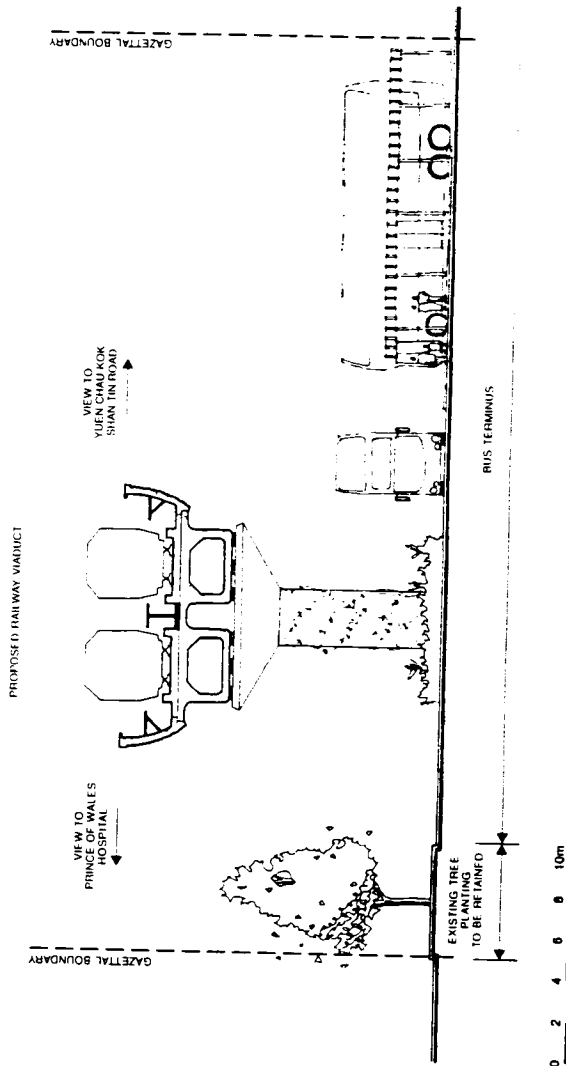
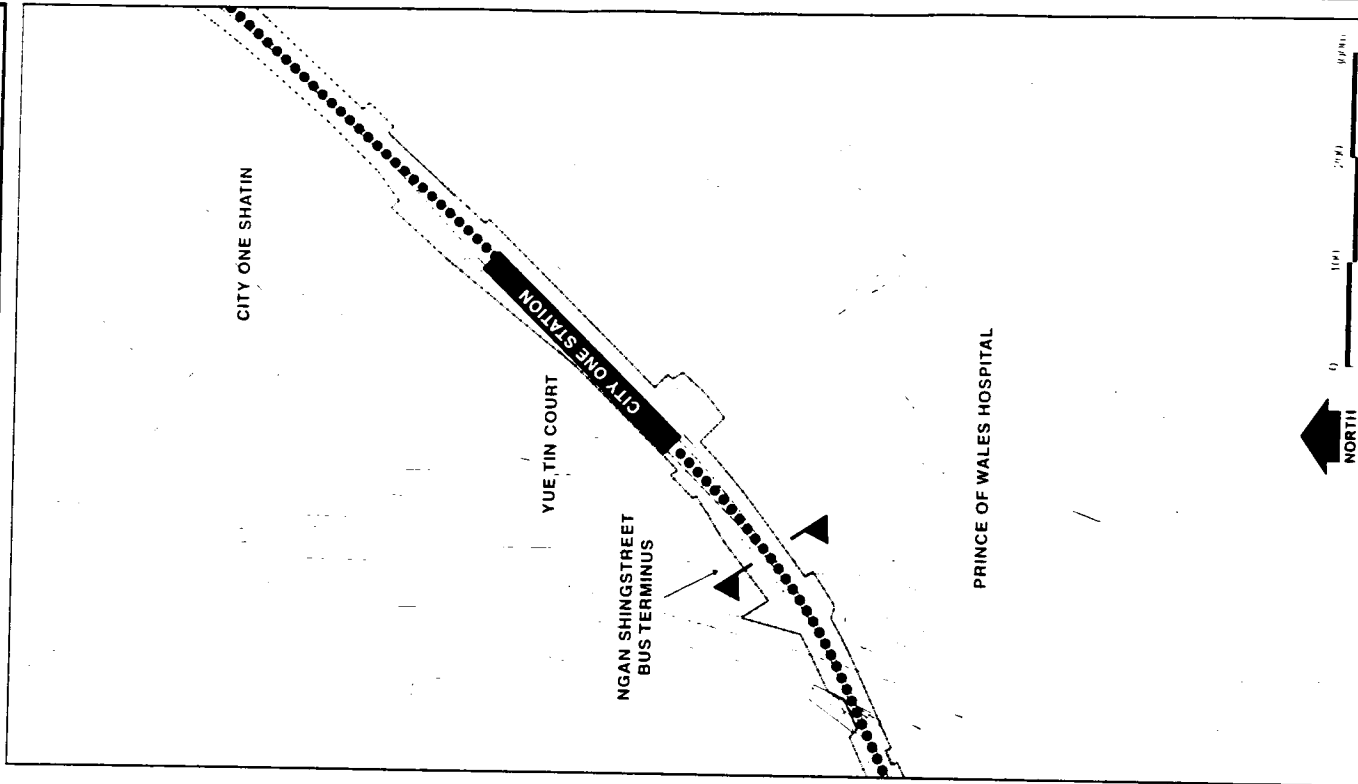
Land Use:
Location of columns will be adjusted to minimise disturbance to existing road and bus terminus. Reprovision of footpath/ cycle track and open space at Ngan Shing Street allows opportunities to improve the landscape quality, these include tree and shrub planting and paving surfaces.

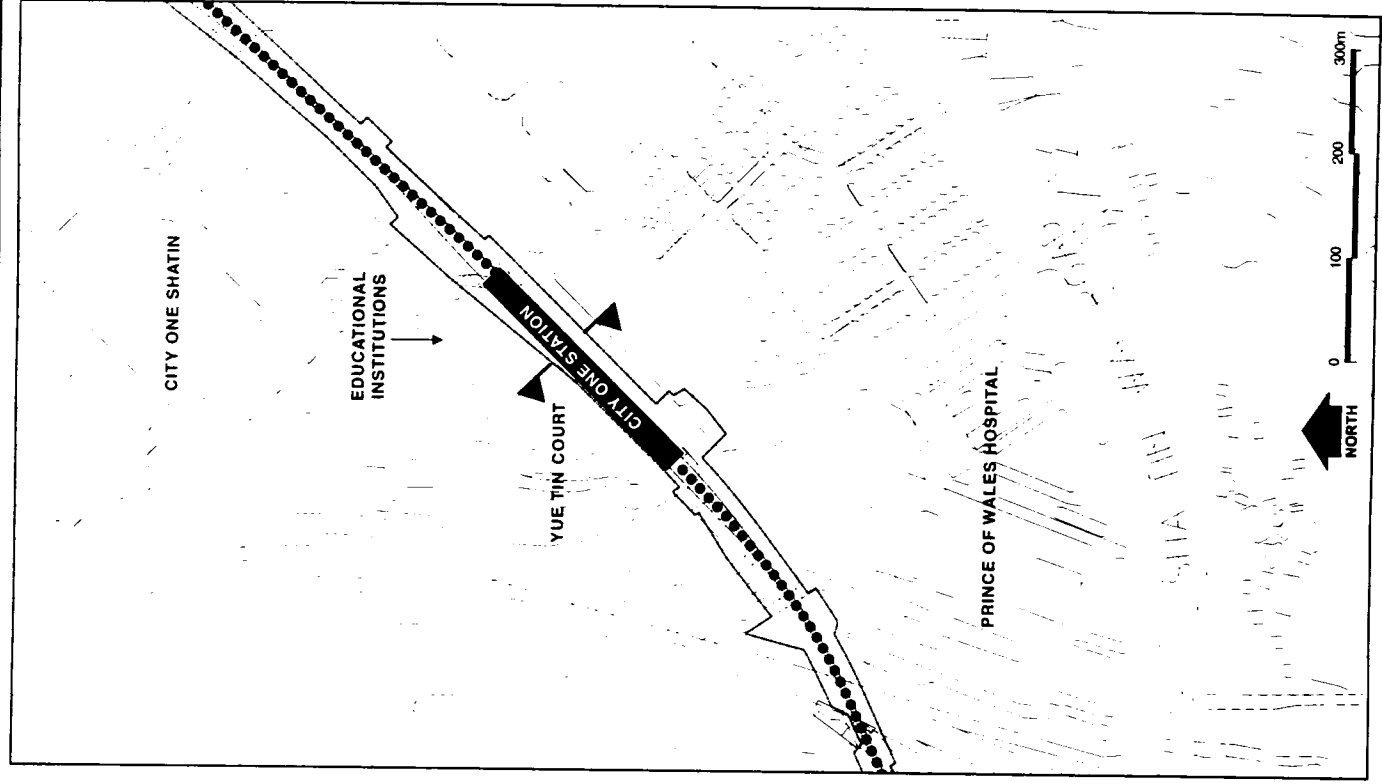
Mitigation of Visual Impacts:
Climbing plants and shade tolerant shrub to be planted at the viaduct columns and under viaduct. Screen planting at the bus terminus to screen the viaduct column at street level.

Mitigation of Landscape Impacts:
Loss of tree and vegetation along the track alignment to be compensated. Compensation planting will be proposed at the planter adjacent to the Pamela Youde Child Assessment Centre and School Dental Clinic and at the embankment of Sha Tin Road.

Management Agency:
HyD - Embankment on both side of Sha Tin Road, trees at the bus terminus, street trees and planting under viaduct.
RSD - Ngan Shing Street local open space
KCRC - Railway route at the embankment of Sha Tin Road, the local open space and the bus terminus.

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to climbers and screening shrub.





4.2.11 City One Station

Context

The City One Station will be located at the junction of Ngan Shing Street and Chap Wai Kon Street at approximately 14.2m PD. The site will be located in a long linear reserve set aside for MOS E extension immediately to the west, and parallel to Chap Wai Kon Street, which is currently used as a temporary government plant nursery.

The proposed station will affect the plant nursery and the adjacent footpath/cycle track.

Land use along the site is predominantly residential and institutional to the north, and proposed residential development to the south. A pedestrian footbridge across Chap Wai Kon Street will be built adjacent to the station.

There will be passenger views to Yue Tin Court and the educational institutions to the north and over into Shun Chune O to the far south.

Issues

Land Use:
Land use at the station development and along Chap Wai Kon Street. The station will interfere the layout of the temporary plant nursery and the associated footpath/cycle track.

Visual Impacts:
The appearance of viaduct and station to the residents of Yue Tin Court, City One Station, staff and students of the educational institutions and users of Prince of Wales Hospital.

Landscape Impact:
Loss of street trees along Chap Wai Kon Street, and the trees at the plant nursery as affected by the construction of the MOS Rail and station.

Strategy

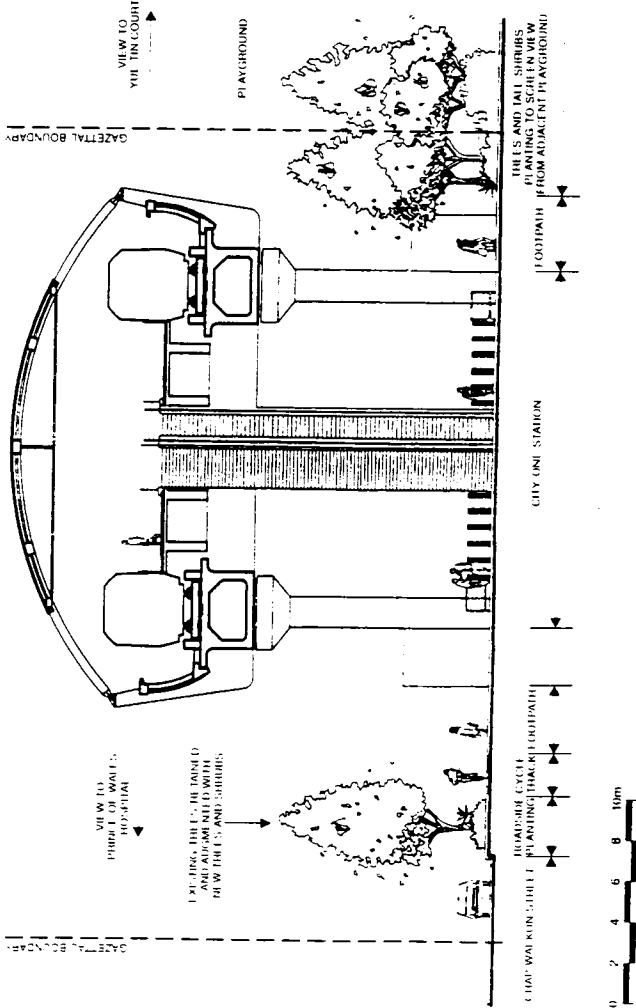
Land Use:
Cycle track and footpath to be maintained and provided where disturbed. Part of the temporary plant nursery to be demolished for the station development. Provision of footpath/cycle track allows opportunities to improve the landscaped quality, and introduce new landscape design.

Mitigation of Visual Impacts:
Tree planting along Chap Wai Kon Street to be augmented with new trees and understory shrub planting. Trees and tall shrubs planting as buffer between the station and the adjacent playground at Yue Tin Court, and the educational institutions.

Mitigation of Landscape Impact:
Loss of street trees along the station to be compensated. Compensation planting will be proposed along the boundary of the playground at Yue Tin Court and the educational institutions.

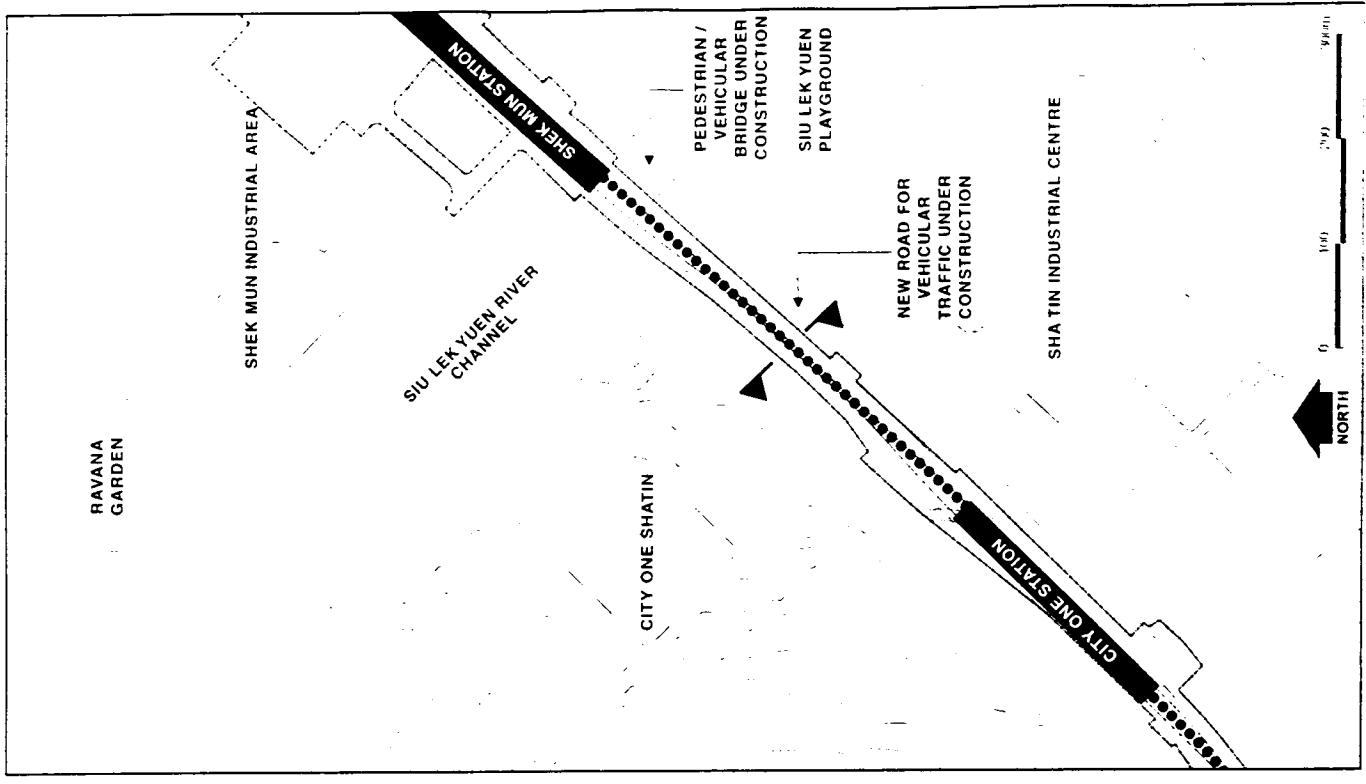
Management Agency:
HYD - Street tree planting along Chap Wai Kon Street.
KCHC - Railway route and station along Chap Wai Kon Street.
RSD - Temporary government plant nursery.

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to street trees.





KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



4.2.12 Track Alignment Between City One Station & Shek Mun Station

Context

From City One Station to Shek Mun Station, MOS Rail will run on viaduct in an easterly direction parallel to Chap Wai Kok Street at approximately +16.0mPD. Noise enclosure would be required at the track crossover at the junction of Wai Kok Street and Siu Lek Yuen Road, immediately adjacent to City One Station. Heading north-east to Shek Mun Station, MOS Rail will pass over a section of Siu Lek Yuen playground and Siu Lek Yuen River Channel both of which run perpendicular to the alignment. A pedestrian/vehicular bridge over the Siu Lek Yuen River Channel is currently under construction, which would run adjacent to the MOS Rail. The proposal of MOS Rail will affect the government temporary plant nursery, and the associated footpath/cycle track, Siu Lek Yuen Playground and the river channel will be also affected.

The land use on both sides of the track alignment is predominantly industrial to the south, and residential to the north.

There will be passenger view from this section of viaduct, into the Siu Lek Yuen River Channel, and the Shing Mun River Channel to the north, and a far distance view over into Ma On Shan Country Park to the south-east.

Issues

Land Use:
Land use underneath viaduct. The viaduct will interfere the layout of the temporary plant nursery and the associated footpath/cycle track.

Visual Impacts:
The appearance of viaduct, noise enclosure and bridge across nullah to the residents of City One Shatin, and the users of Sha Tin Industrial Centre and Siu Lek Yuen Playground.

Landscape Impacts:
Loss of street trees along Chap Wai Kon Street as affected by the construction of the viaduct.

Strategy

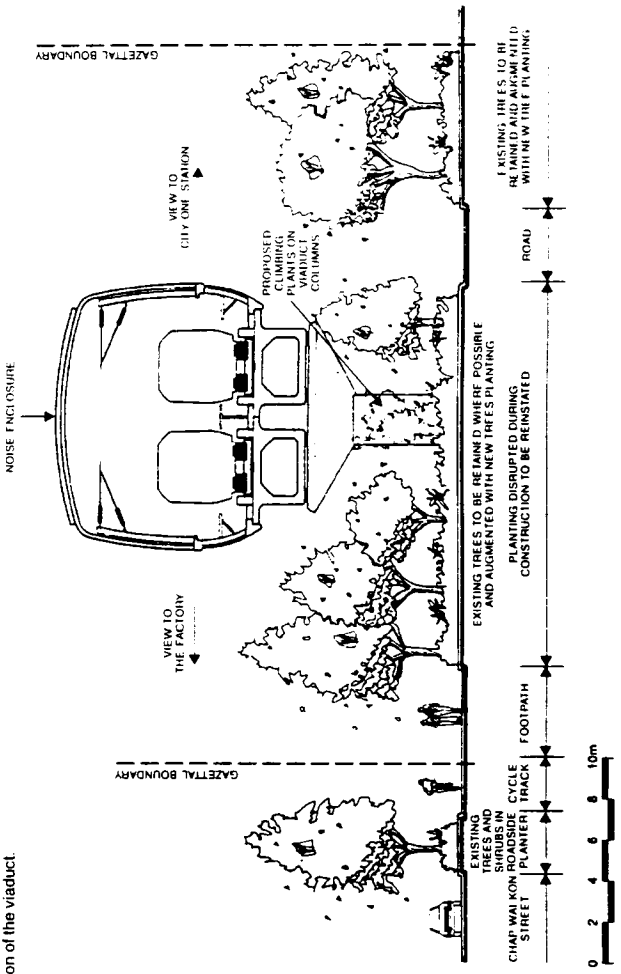
Land Use:
Disruption to footpath/cycle track and existing Siu Lek Yuen Playground to be reinstated. Reinstated footpath/cycle track to be co-ordinated with upgrading of street side environment. Most of existing trees should be retained and augmented with new tree planting.

Mitigation of Visual Impacts:
Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under the viaduct. Tree planting along Chap Wai Kon Street to provide screening at pedestrian level. The noise enclosure should be transparent to maintain view out for the passengers and to reduce the visual impact of the mass of the railway structure to the adjacent residents and playground users.

Mitigation of Landscape Impacts:
Loss of street trees along the track and alignment to be compensated. Compensation planting will be proposed along Chap Wai Kon Street. Tree and shrub planting is also proposed on embankment to screen the bridge across the nullah at eye level.

Management Agency:
HyD - Pedestrian/vehicular bridge over the nullah, street tree and planting under the viaduct.
KCR - Railway route at the existing Siu Lek Yuen Playground, along the Chap Wai Kon Street and the viaduct bridge across the nullah.
RSD - Temporary government plant nursery, Siu Lek Yuen Playground and the river promenade.

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to street tree and climbers.



4.2.13 Shek Mun Station

Context

The Shek Mun Station will be located within Shek Mun Industrial Area on a piece of vacant land previously used for storage of trucks, immediately to the north of On Ming Street at approximately 15.0m². A pedestrian walkway bridge over the Siu Lek Yuen River Channel, currently under construction, which would run adjacent to the MOS rail.

The land along this stretch is predominantly industrial. Beside the single row of trees along On Kwan Street, no other trees can be found. Current proposal of the station will affect traffic at On Muk Road. An extension of On Kwan Road will be required at the north side of the station.

There will be passenger views over to the Tate's Cairn Highway to the east, and Ma On Shan Country Park to the distance east. There will be also passenger views over into the Shek Mun River Channel to the west.

ISSUES

Land Use:

Land use of the station development. Location of station will affect pedestrian and vehicular traffic at On Muk Road.

Visual Impacts:

The appearance of station to the nearby road users and the users of Siu Lek Yuen Playground and the Shek Mun Industrial Area.

Property Interface:

Interface with proposed future development and public transport interchange.

Strategy

Land Use:

Rehabilitated road and footpath should be co-ordinated with upgrading of street side environment, i.e., improvement on footpath surfaces, tree planting in tree gullies to allow for pedestrian flow while providing shade and buffer to the adjacent road.

Mitigation of Visual Impacts:

Street trees along On Ming Street and On Muk Street to provide screening of station at pedestrian level. Trees to be planted adjacent to the station at the nullah to screen station from Sha Tin Industrial Centre across the nullah.

Property Interface:

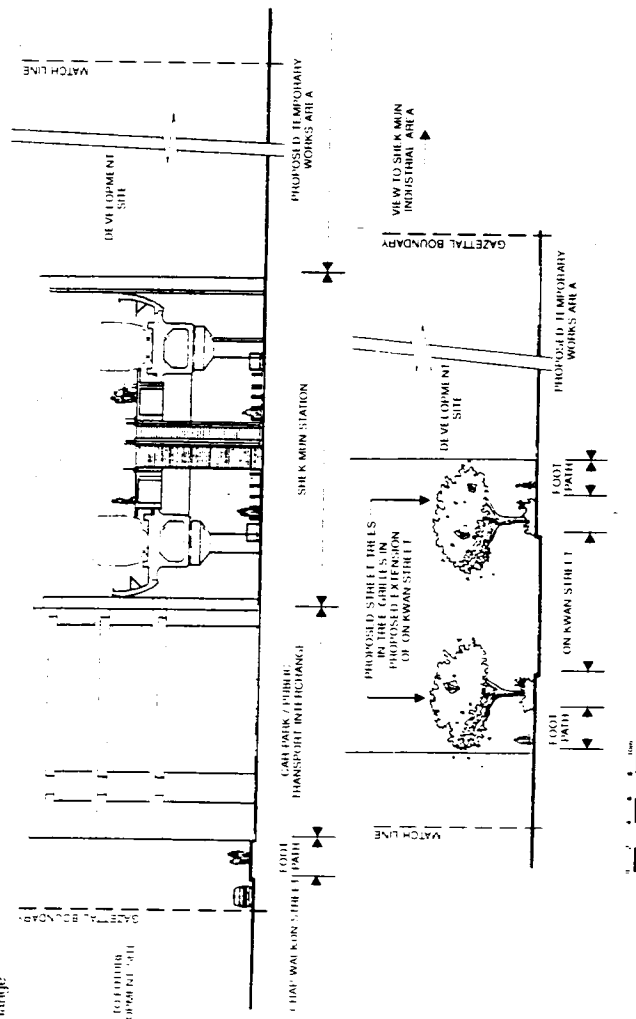
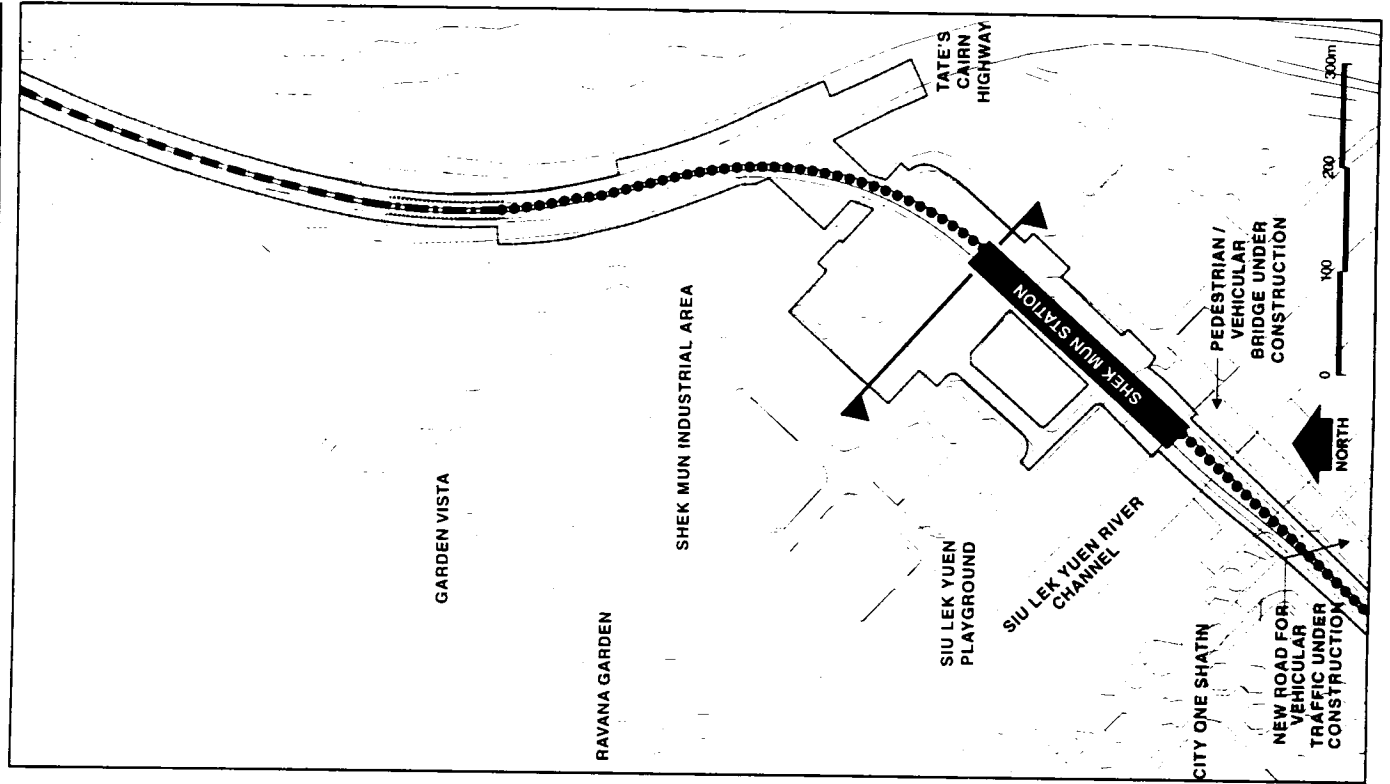
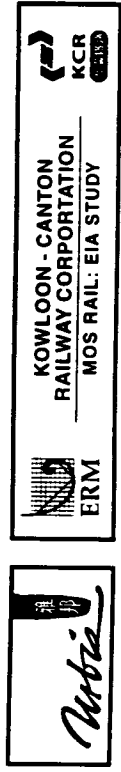
Station design to incorporate connection to public transport interchange and future development. Extension of On Kwan Road to be provided. On Muk Road to be reinstated.

Management Agency:

- HyD - Extension of On Kwai Street, and street tree planting.
- KCRC - Station development along On Ming Street.
- RSD - Siu Lek Yuen River Promenade.

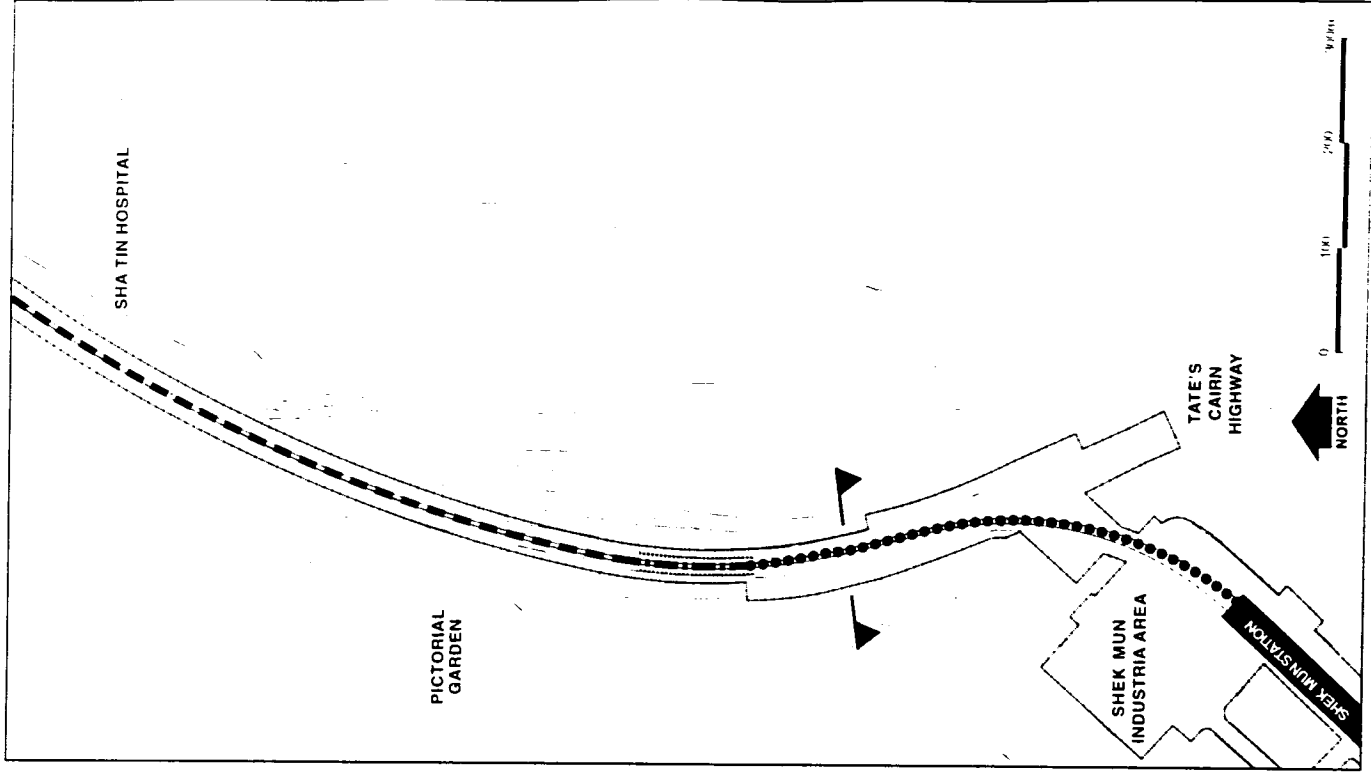
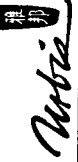
Maintenance Strategy:

Occasional maintenance to street tree.





KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



4.2.14 Track Alignment Between Shek Mun Station & Chevalier Garden Station - Section I

Context

From Shek Mun Station to the Sha Tin Hospital, MOS Rail will veer due north on viaduct at height varying between +7.2mPD and +18.2mPD, and drop to grade to join the Tate's Cairn Highway and passes around the steep wooded slopes of Buffalo Hill within the Ma On Shan Country Park. Thereafter, MOS Rail will run at grade level, on a reserve that has been set aside for the MOS Extension along the centre of the highway at approximately +6.8mPD to +7.2mPD.

The land use along this stretch is predominantly high-rise residential to the east, and the hills of Ma On Shan Country Park to the south. There will be passenger view over into the Ma On Shan Country Park to the south, and Shing Mun River Channel to the east.

Issues

Land Use:

Land use underneath viaduct and rail track along Tate's Cairn Highway.

Visual Impacts:

The appearance of viaducts and rail track to the occupants of Shek Mun Industrial Area.

Landscape Impacts:

Loss of street trees as affected by the construction of the MOS Rail

Strategy

Land Use:

On Lai Street and On Yiu Street under the viaduct will not be disrupted by the construction of the MOS Rail, as well as the vacant land under the viaduct in-between On Lai Street and On Yiu Street. The construction of viaduct at the vacant land allows opportunities to introduce landscape design to improve the environment within the industrial area.

Mitigation of Visual Impacts:

Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under the viaduct to reduce visual impact at street level. Mass trees planting in the area between On Yiu Street and Tate's Cairn Highway to reduce visual impact to the occupants of Shek Mun Industrial Area.

Mitigation of Landscape Impacts:

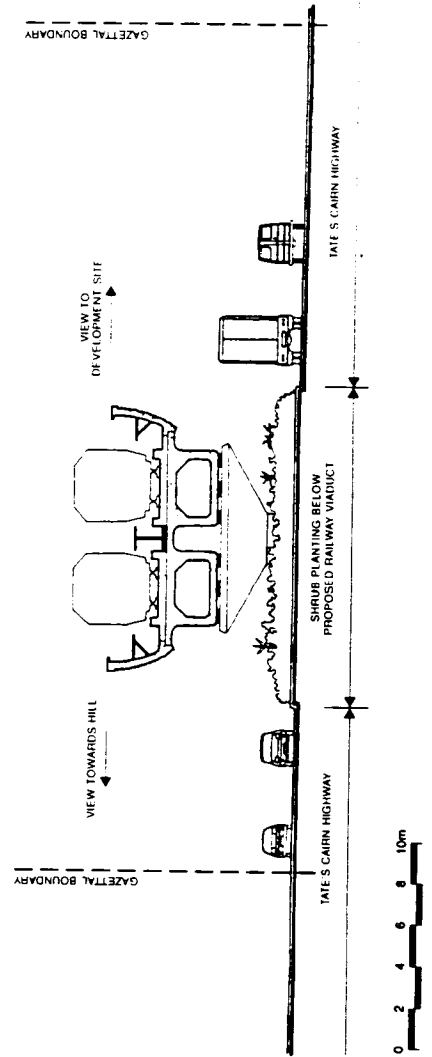
Loss of street trees along track alignment to be compensated. Compensatory tree planting along Tate's Cairn Highway and in area between On Yiu Street and Tate's Cairn Highway.

Management Agency:

- HyD - Extension of On Kwai Street, and street tree planting
- KCRC - Station development along On Ming Street.
- RSD - Siu Lek Yuen River Promenade

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to street trees and climbers.



4.2.15 Track Alignment Between Shek Mun Station & Chevalier Gardens Station - Section II

Context

From Shek Tin Hospital to the Sha Tin Fishermen's New Village, MOS Rail will continue in a north-easterly direction at grade on the reserve at Tate's Cairn Highway reserve at grade level. There is one section of cutting adjacent to the Sha Tin Fishermen's New Village.

The surrounding landscape is rural and residential in character. Sha Tin Fishermen's New Village at the edge of green belt area.

There will be panoramic views from this section of the surrounding rural area into the Shing Mun River and towards the Racecourse and Kau To Sha in the distance west. There will be also views over into the hills of Ma On Shan Country Park to the distance east.

Issues

Land Use:
At grade rail track along Tate's Cairn Highway

Visual Impacts:
The appearance of rail track to the users of Tate's Cairn Highway and Sha Tin Hospital

Landscape Impacts:
Loss of a limited amount of trees at MOS Rail reserve as affected by the construction of the MOS Rail

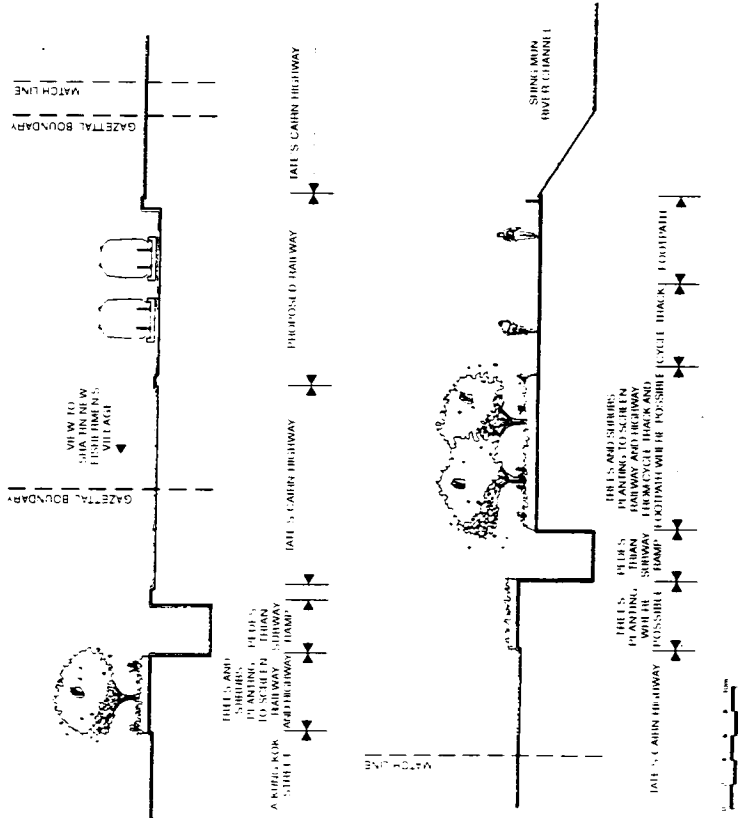
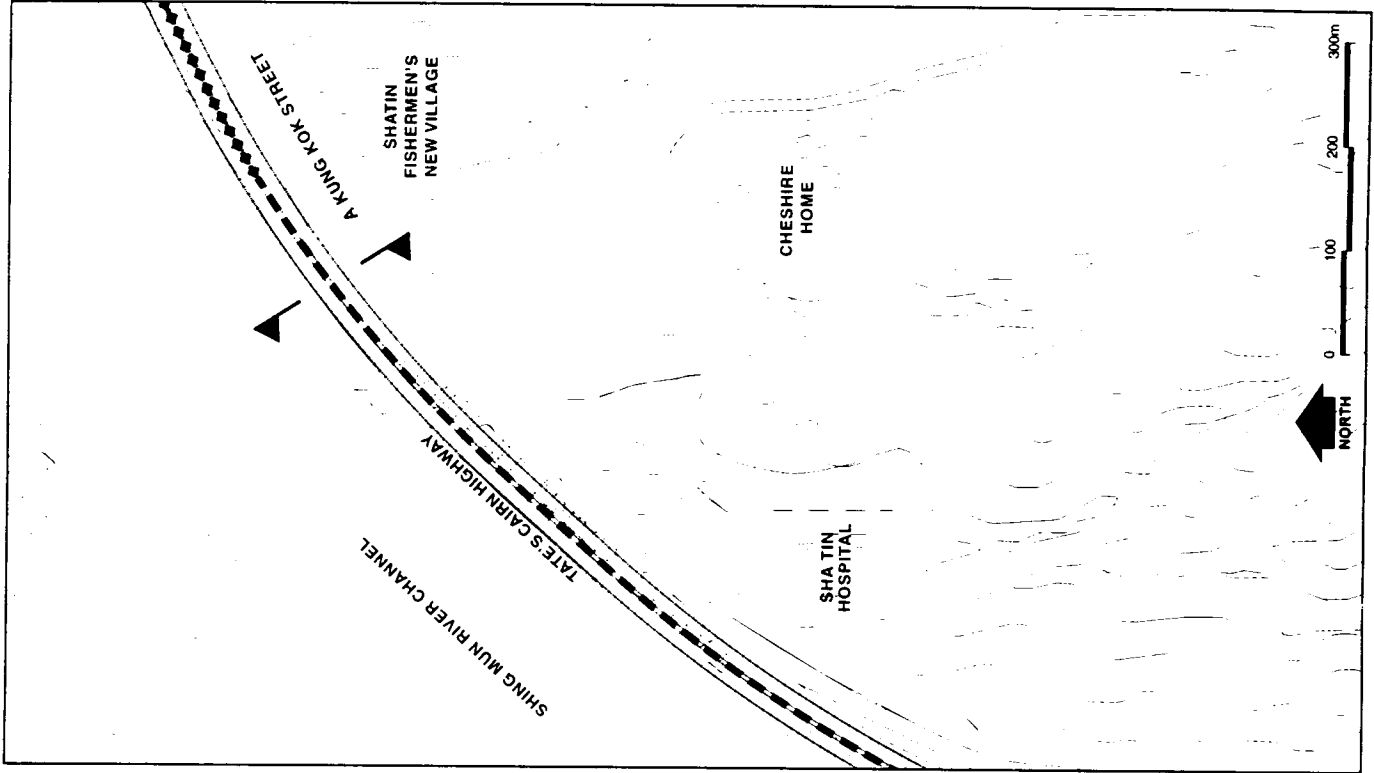
Strategy

Land Use:
Reserve is located within a central reserve that was set aside for the MOS Rail within the Tate's Cairn Highway corridor

Mitigation to Visual Impacts:
Parapet adjacent to the MOS Rail train to screen the rail and wheels of train from the adjacent road users. By virtue of the train's transient nature and screened by the existing carriageway, the MOS Rail should be hardly noticed by the users at Sha Tin Hospital

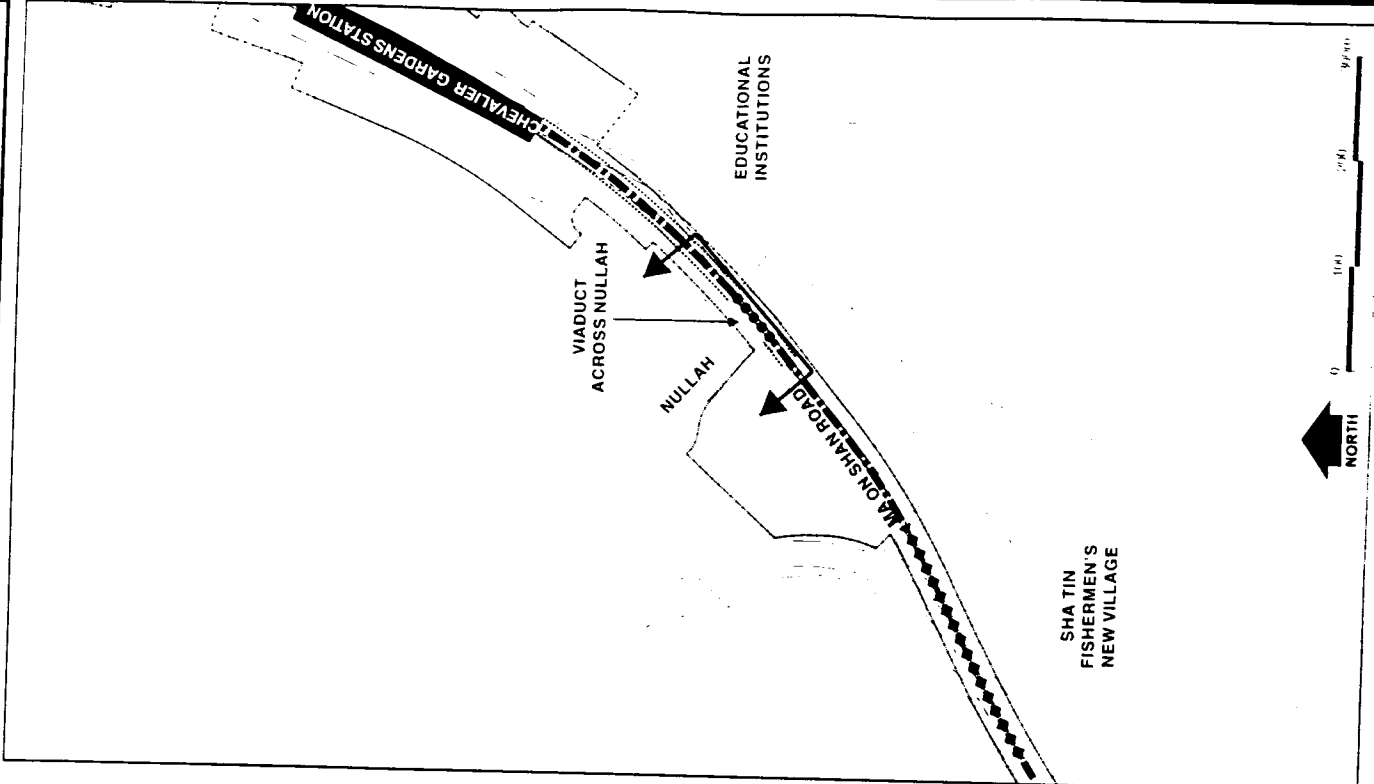
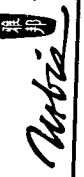
Tree Compensation to Landscape Impacts:
Loss of tree along the track alignment to be compensated in other areas within the project boundary

Management Agency:
Hyd Tate's Cairn Highway
KCRC Railway route along Tate's Cairn Highway





KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



4.2.16 Track Alignment Between Shek Mun Station & Chevalier Gardens Station - Section III

Strategy

Land Use:
Viaduct is located within a central reserve that was set aside for the MOS Rail within the Tate's Cairn Highway corridor. The nullah will not be disrupted by the construction of the MOS Rail. Construction of the MOS Rail allows opportunities to improve the landscape quality, these include planting and paving finishes

Mitigation of Visual Impacts:
Retaining wall design to incorporate surface finish to match existing environment along Ma On Shan Road. Climbing plants and shade tolerant shrubs to be planted on embankment at the viaduct bridge. The area under the viaduct should be planted with shrubs and, height permitting, trees so as to match the surrounding vegetation pattern.

Mitigation of Landscape Impacts
Loss of tree along the track alignment to be compensated in other areas within the project boundary.

Management Agency:
HYD - Trees and planting at Ma On Shan Road
KCR - Railway route along Ma On Shan Road and viaduct bridge at nullah.
RSD - The river promenade

Maintenance Strategy:
Intensive maintenance to ornamental plants and occasional maintenance to street trees.

Context

From The Sha Tin Fishermen's New Village, MOS Rail will run north-east to Chevalier Gardens Station. It will run at grade level and there will be a section of cutting at the Fishermen's New Village, then it will be on embankment except for a section of bridge which passes over the nullah. The land use along this stretch is a mix of rural residential/ institutional, and the transport corridor.

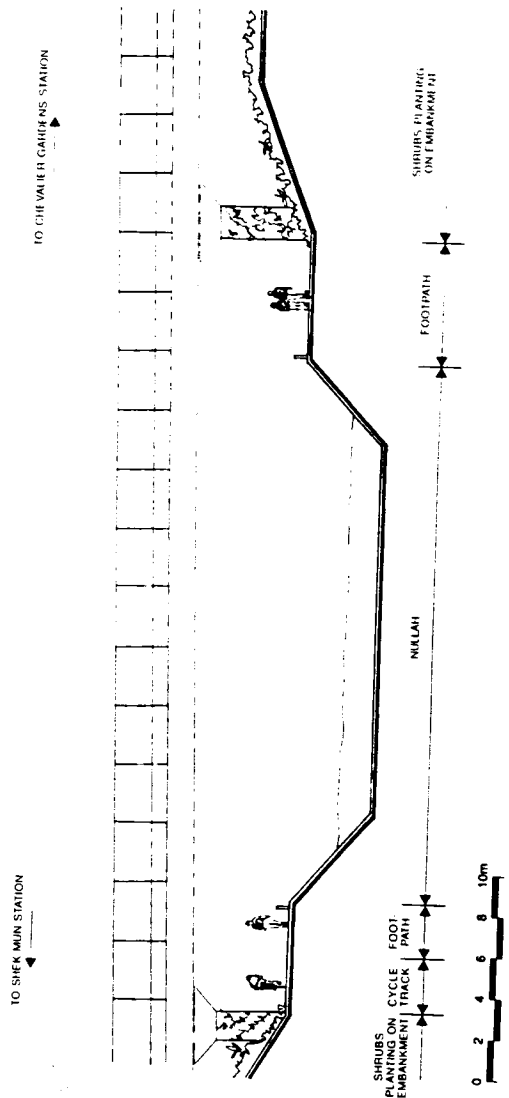
There will be passenger views from this section of the surrounding rural area, into the Sha Tin Hoi and towards the Racecourse and Kau To Shan in the distance west. There will be also views over into Ma On Shan Country Park to the distance east.

Issues

Land Use:
At grade rail track along Ma On Shan Road. Cutting along Ma On Shan Road at Sha Tin Fishermen's New Village. Embankment with retaining wall on both sides at nullah with viaduct across nullah.

Visual Impacts:
Appearance of rail track along Ma On Shan Road and the embankment at nullah to the adjacent road users and the users of the footpath/ cycle track along the nullah. The rail located in closed proximity to the Sha Tin Fishermen's New Village.

Landscape Impacts:
Loss of trees at the central reserve as affected by the construction of the MOS Rail.



4.2.17 Chevalier Garden Station

Context

The Chevalier Garden Station will be located in a well grassed central area of approximately 3.18 ha (7.86 ac). A mixed Residential/Commercial development under consideration to the south of the station. A pedestrian subway at level, both Hang Tak Street and Ma On Shan Road will be provided.

Current proposal of the station will affect the existing pedestrian/vehicular traffic.

The land use along the site is predominantly residential.

There will be panoramic views over into Tai Shui Hang to the northeast, and into the Sha Tin Ho and towards the Chinese University in the distance northwest.

ISSUES

Land Use:
Land use at the station. Station located at central reserve and connected by a proposed subway on both sides of Sai Sha Road.

Visual Impacts:
The appearance of station to the residents of the adjacent residential developments and institution.

Landscape Impacts:
Loss of street trees as affected by the construction of the MOS Rail.

Strategy

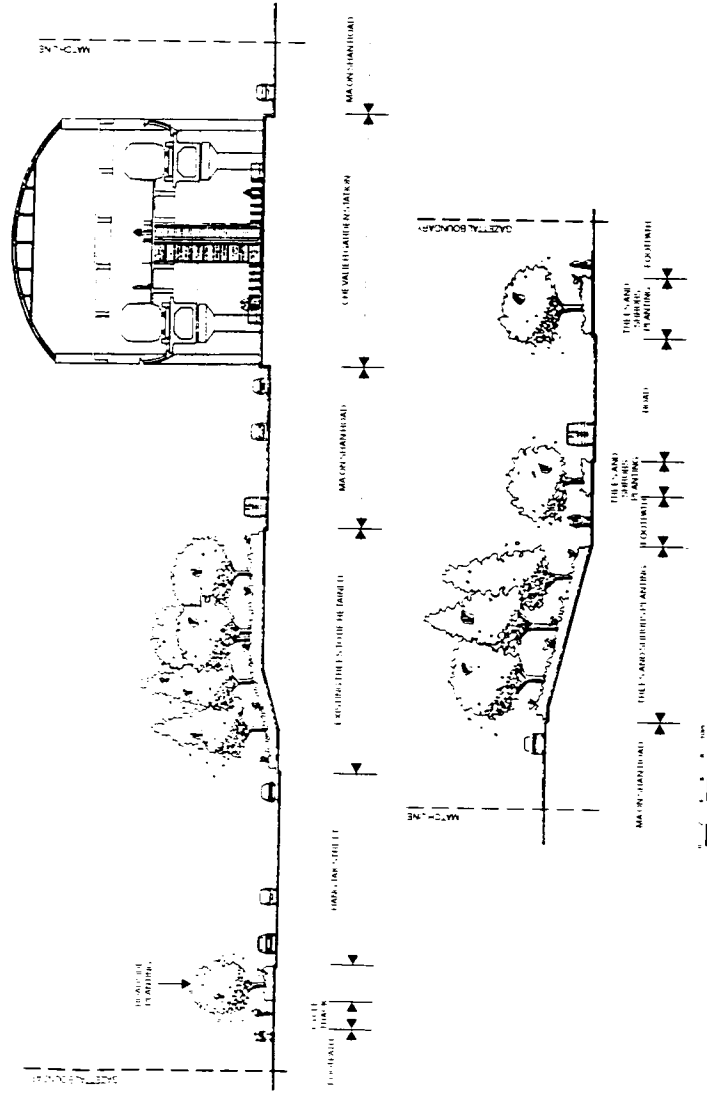
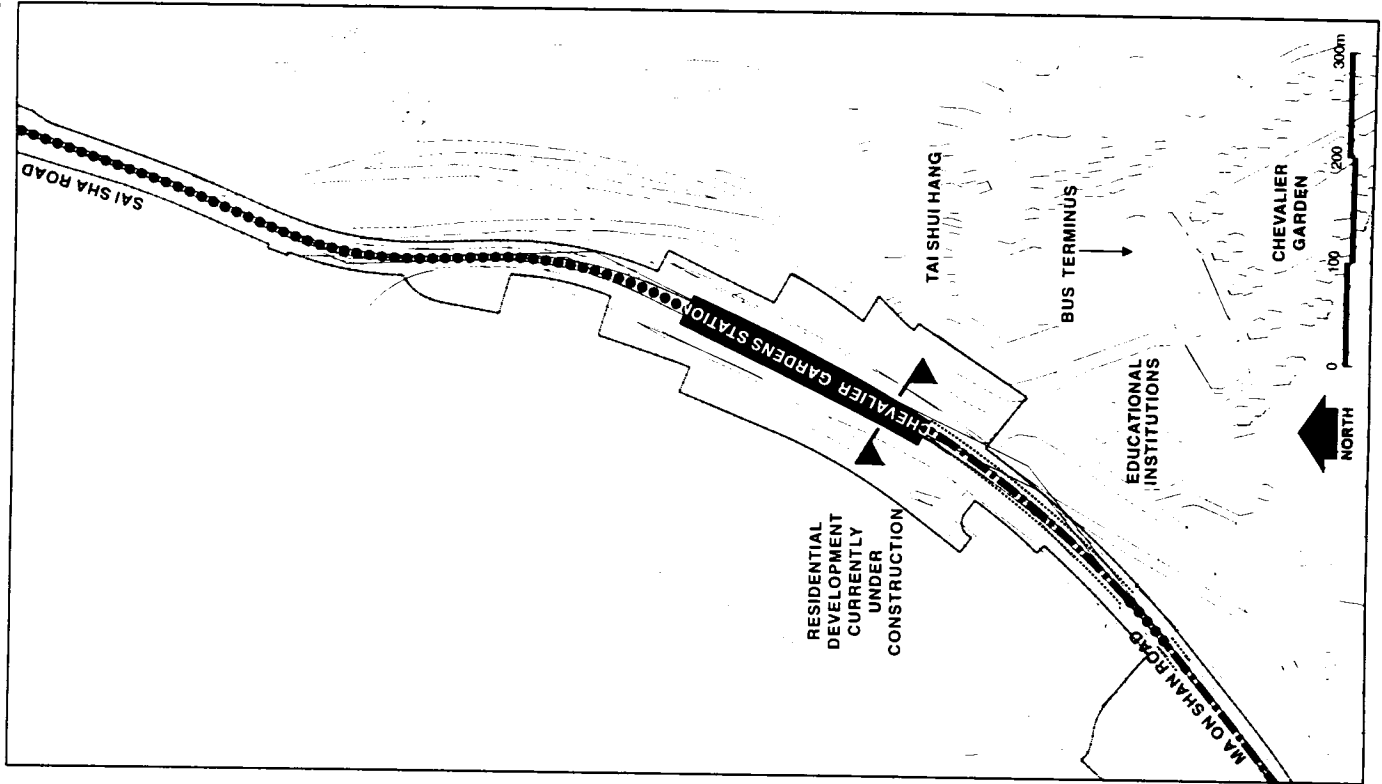
Land Use
Road and footpath to be restored along Ma On Shan Road where disrupted during station construction. Road and footpath restoration should be coordinated with upgrading of street side environment, i.e., improvement of footpath surfaces. Pedestrian subway connection from Chevalier Garden Station to Hang Tak Street and new road to be provided.

Mitigation of Visual Impacts:
Tree planting along Ma On Shan Road as buffer against Hang Tak Street and new road and to provide screening of the station at pedestrian level.

Mitigation of Landscape Impacts:
Loss of trees along track alignment to be compensated. Compensation planting will be proposed on both sides of station at Ma On Shan Road.

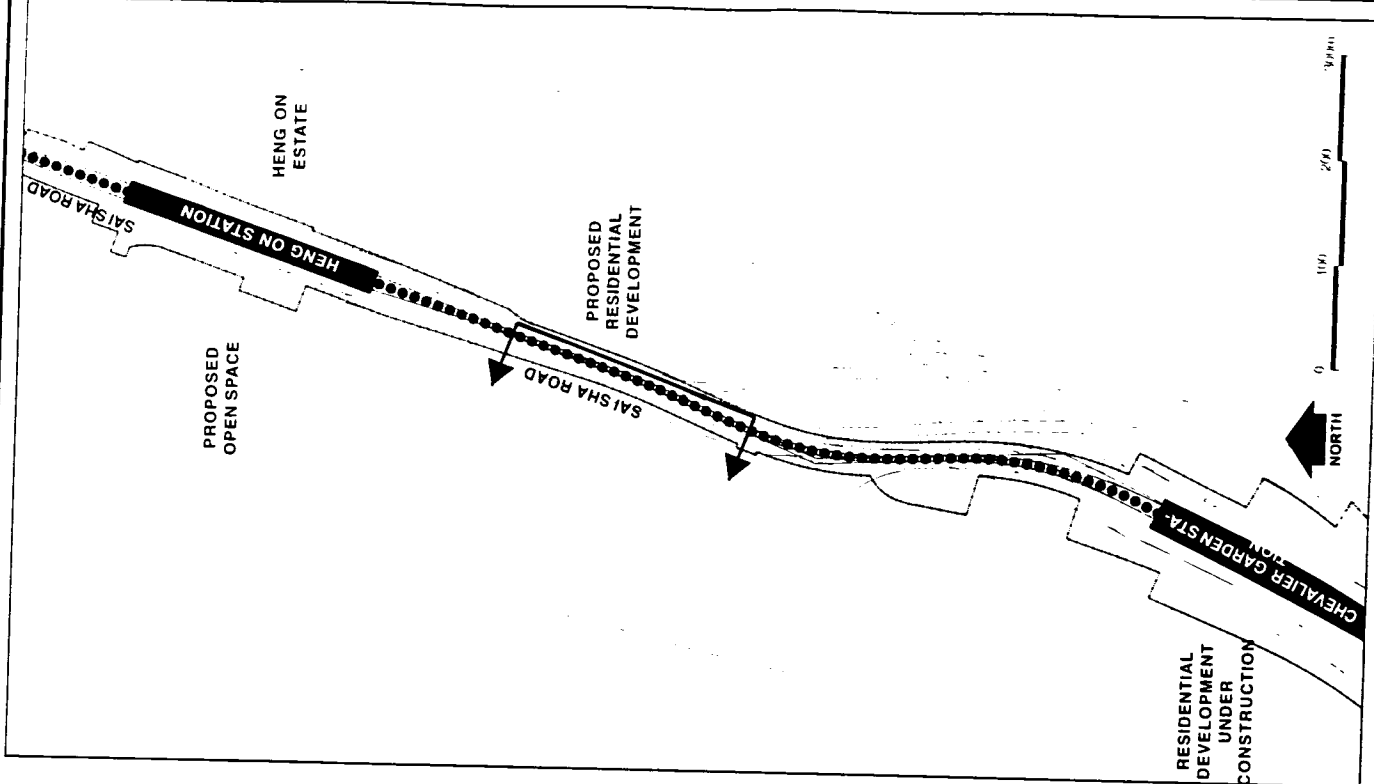
Management Agency:
Proposed pedestrian subway. Street trees and planting along Ma On Shan Road. Railway route and station. KCR.

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to street trees.



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



4.2.18 Track Alignment Between Chevalier Gardens & Heng On Station

Context

From Chevalier Gardens Station, MOS Rail will run in a north-easterly direction on viaduct at approximately +17.6mPD to +23.4mPD. Then the rail will pass over the Ma On Shan Road and the flyover system and joins the Sai Sha Road above the central reserve. Noise enclosure will be required at the track crossover at the roundabout. Then from there onwards to the site of Heng On Station.

The alignment passes through a proposed development area that was formerly occupied by the Shing On Temporary Housing Area to the east. The land use along this stretch is a mix of proposed residential, community open space, and the transportation corridor.

There will be passenger views of the hills of Ma On Shan Country Park to the east of the alignment and views of Sha Tin Hoi to the west.

Issues

Land Use:
Land use underneath viaduct.

Visual impacts:
The appearance of viaduct and the noise enclosure to the residents of Heng On Estate and the proposed residential development on Ma On Shan Road.

Landscape impacts:
Loss of street trees as affected by the construction of the MOS Rail.

Strategy

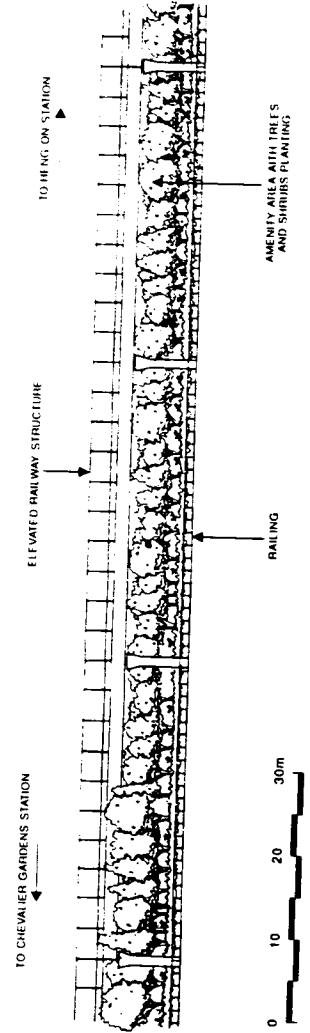
Land Use:
Viaduct is located within a central reserve that was set aside for the MOS Rail within the Ma On Shan Road corridor. The adjacent Ma On Shan Road will not be disrupted by the construction of MOS Rail.

Mitigation of Visual Impacts:
Self-clinging climbing plants will be planted around the base of columns. Trees with a mature height of no more than 6.0m will be planted underneath the viaduct to reduce the visual impact of the viaduct to the adjacent residents. The noise enclosure will be transparent to maintain view out for the passengers and to reduce the impact of the mass of the railway structure to the adjacent residents and road users.

Mitigation of Landscape Impacts:
Loss of street trees along track alignment to be compensated. Compensation planting will be proposed under the viaduct along Sai Sha Road. Larger trees with a generally narrow crown will be proposed where opportunities exist on either side of the viaduct.

Management Agency:
HyD - Street trees and planting under viaduct.
KCRC - Railway route along Sai Sha Road

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance for trees and climbers.



4.2.18 Heng On Station

Context

The Heng On Station will be located within the central reserve within the Sai Sha Road corridor adjacent to Heng On Estate, at approximately 0.5 km (1/4) A station plant room will be located along Sai Sha Road to the west of the station.

Proposed subway access to the station and Heng On Estate will be provided, and access to the existing subway. The proposed station and station plant room will affect the adjacent footpath/cycle track.

The surrounding land use is residential and for community.

There will be panoramic views of the hills of Mu On Shan Country Park to the east, and Sha Tin to the west.

Issues

Land Use:
Land use at the station

Visual Impacts:
The appearance of station to the residents of Heng On Estate and the neighbourhood.

Landscape Impacts:
Loss of grass area at reserve as affected by the construction of the MOS rail.

Strategy

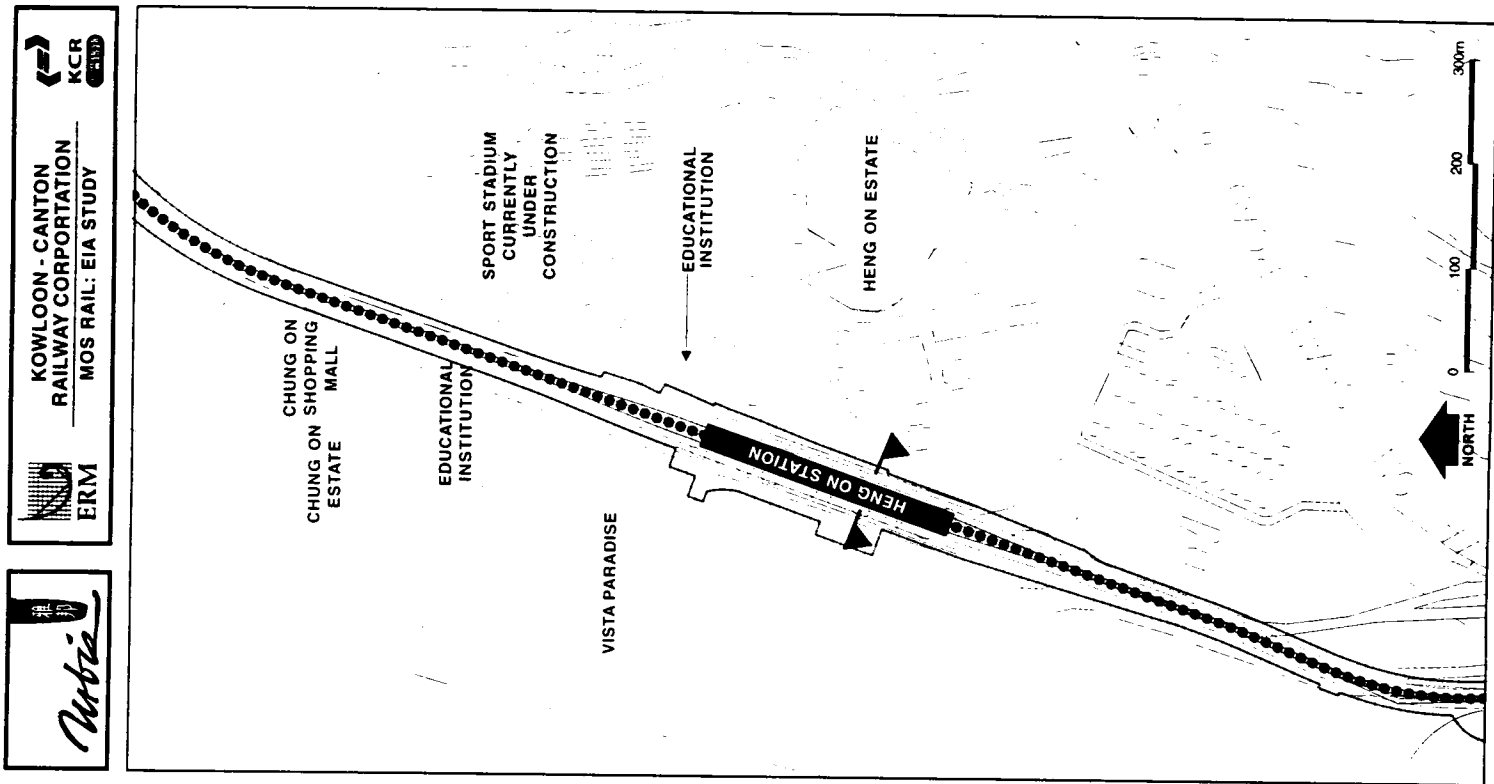
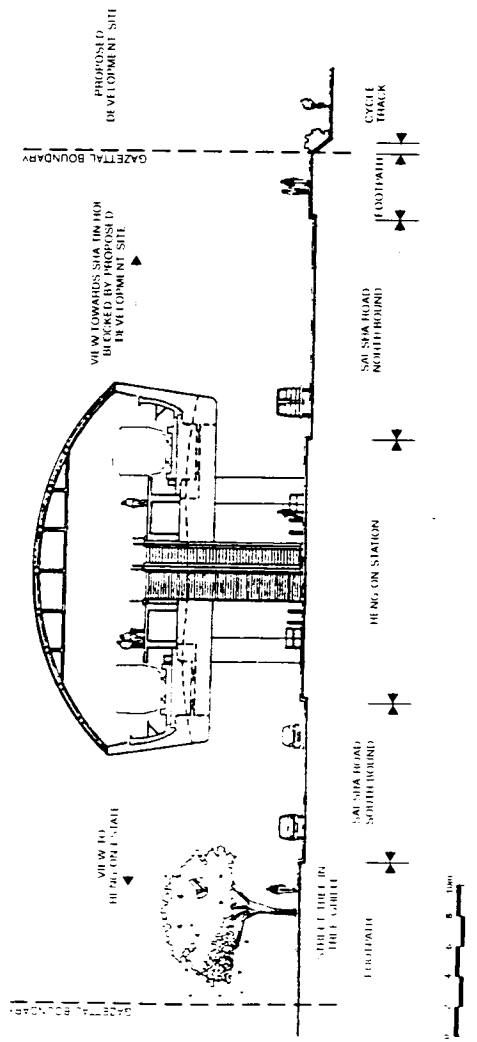
Land Use:
The Heng On Station will be located within the central reserve within the Sai Sha Road corridor. Provision of footpath/ cycle track, and construction of proposed subway allow opportunity for on-street environment improvements e.g. up-grading footpath surfaces, planting of street trees, and provision of co-ordinated street furniture.

Mitigation of Visual Impacts:
Planting of street trees in tree grille along Sai Sha Road to provide screening of the station at pedestrian level. Climbing plants and shade tolerant shrubs to be planted adjacent to the station to reduce the visual impact to the adjacent residents and users at the institutions.

Mitigation of Landscape Impacts:
Loss of grass area at the reserve to be compensated by tree and shrub planting adjacent to the station along Sai Sha Road. Planting should be incorporated wherever possible.

Management Agency:
KCR
Railway route along Sai Sha Road

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to street trees and climbers.

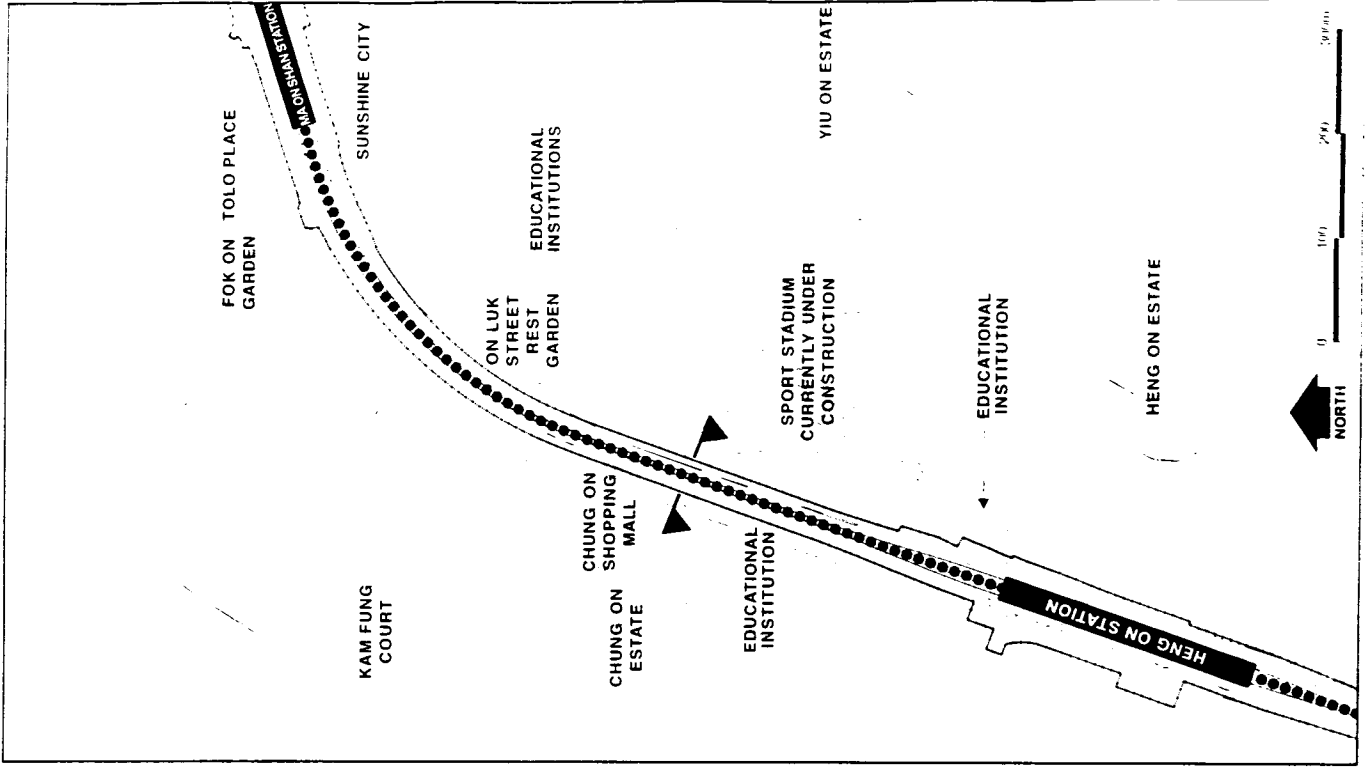


ERM

Autris

Kowloon - Canton Railway Corporation
MOS RAIL: EIA STUDY

KCR
KCR
RAIL



4.2.20 Track Alignment Between Heng On Station & Ma On Shan Station

Context

From Heng On Station, MOS Rail will run north-east to Ma On Shan Station on a viaduct above the central reserve of Sai Sha Road at approximately +15.7mPD to +21.5mPD. The MOS Rail will pass over the footbridge adjacent to the institution on Sai Sha Road before it passes over Hang Hong Street and the junction of On Luk Street and On Yuen Street.

Current proposal of the track alignment will affect the pedestrian/vehicular traffic at Sai Sha Road.

The surrounding land use of this stretch is a mix of residential and communal uses. A sport stadium is currently under construction at the site which was formerly occupied by Hing On Temporary Housing.

There will be passenger views into Tolo Harbour in a distance north, the hills of Ma On Shan Country Park to the east of the alignment.

ISSUES

Land use:

Land use underneath viaduct.

Visual Impacts:

The appearance of viaduct to the residents of Chung On Estate and new commercial/residential development on Sai Sha Road and the users of On Luk Street Rest Garden.

Landscape Impacts:

Loss of trees as affected by the construction of the MOS Rail.

Strategy

Land Use:

Viaduct is located within a central reserve that set aside for MOS Rail within the Sai Sha Road corridor.

Mitigation of Visual Impacts:

Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under the viaduct to reduce the scale of the viaduct. Trees with a mature height of no more than 6.0m will be planted underneath the viaduct to reduce the visual impact of the viaduct to the adjacent residents and rest garden users.

Mitigation of Landscape Impacts:

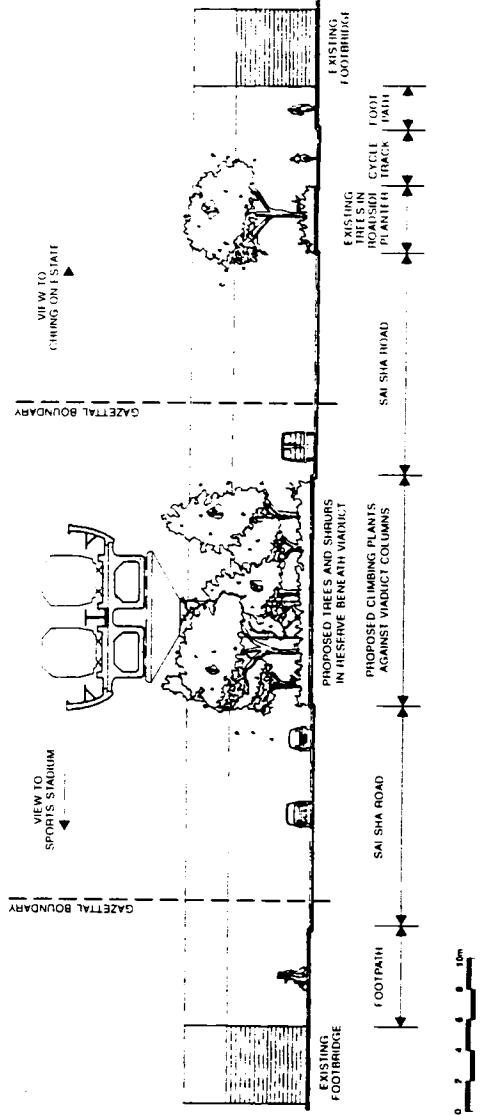
Loss of trees along the track alignment to be compensated by tree planting under the viaduct along Sai Sha Road.

Management Agency:

- HYD - Street tree and planting under viaduct.
- KCRC - Railway route along Sai Sha Road
- RSD - On Luk Street Rest Garden

Maintenance Strategy:

Intensive maintenance to ornamental plants, and occasional maintenance to trees and climbers.



4.2.21 Ma On Shan Station

Context

The Ma On Shan Station on the elevated Ma On Shan Station will be located within the central reserve of Ma On Shan Road at approximately 22.5 km/h. The station will pass over two footbridges, these include the footbridge between Sunshine City and Tolo Place, and between Sunshine City and Bayshore Towers.

The surrounding land use of the station is mainly residential/commercial there will be passenger view to the adjacent residential developments

ISSUES

Land use:
Land use underneath station and along Sai Sha Road Pedestrian footbridge across Sai Sha Road between Sunshine city and Bayshore tower

Visual Impacts:
The appearance of Ma On Shan Station to the residents of Sunshine city and Bayshore towers, and the adjacent road users.

Landscape Impacts:
Loss of trees, and vegetation in reserve as affected by the construction of the MOS Rail. Disrupted area underneath station to be reinstated

Strategy

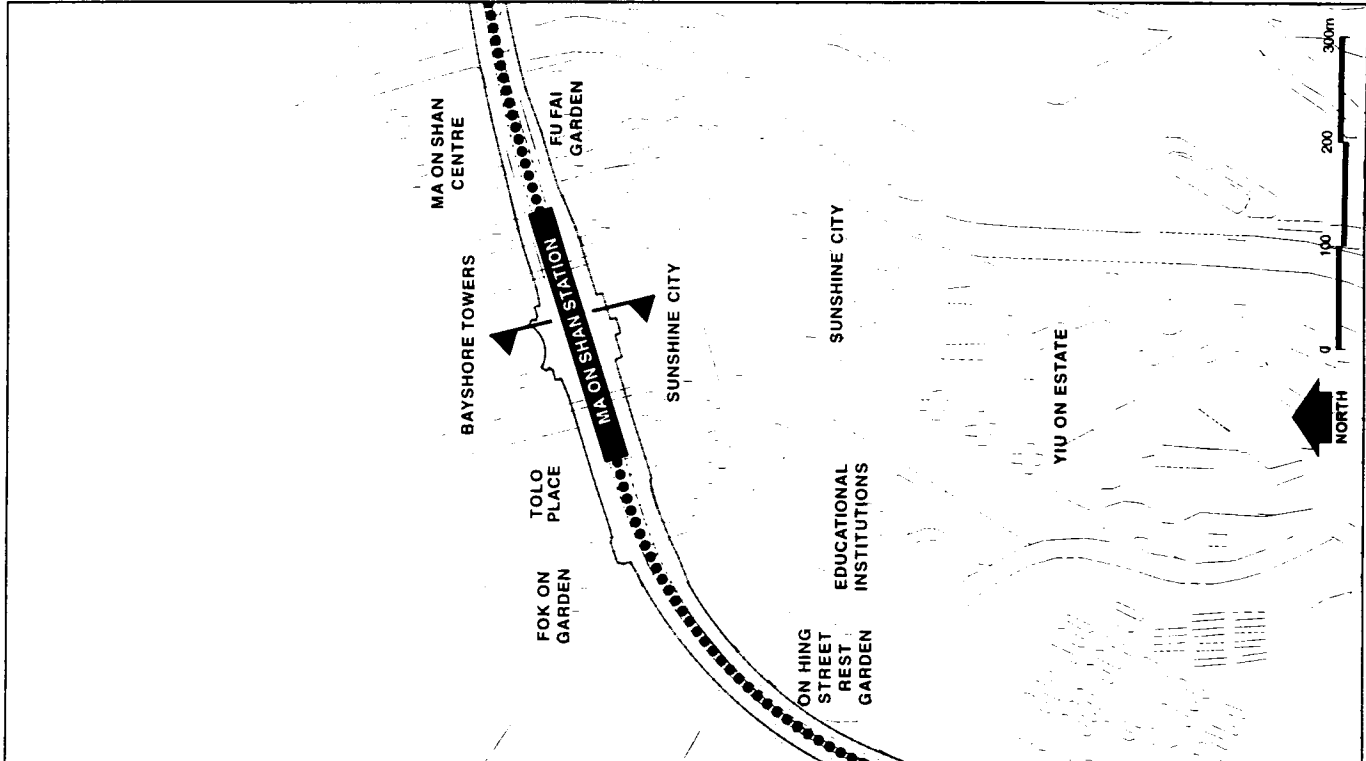
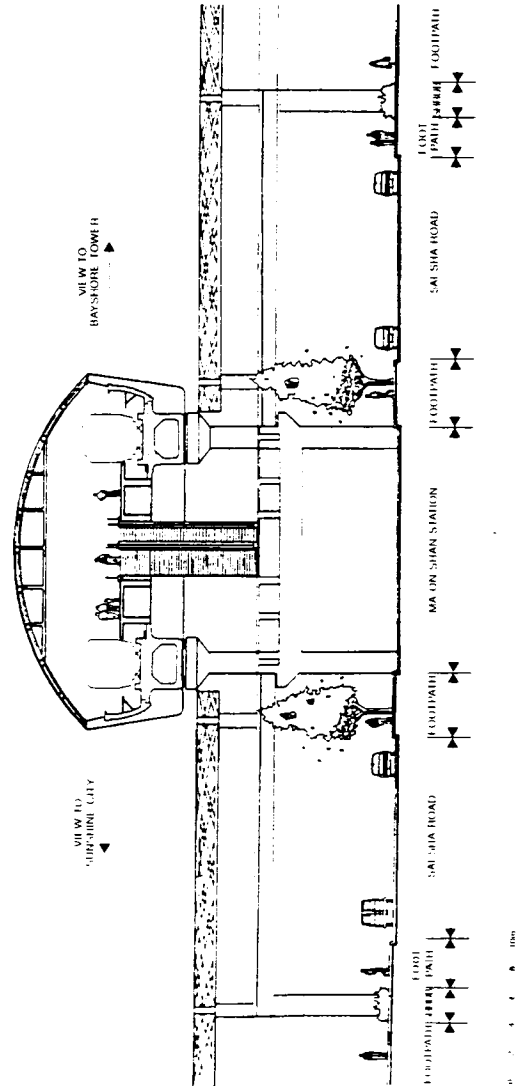
Land use:
Disrupted area underneath station to be reinstated and augmented with tree planting. The existing footbridges across the development on both side of Sai Sha Road will not be disrupted by the construction of the MOS Rail. A proposed footbridge will connect the station concourse to the Sunshine City and the Bayshore Towers/ Ma On Shan Centre

Mitigation of Visual Impacts:
Tree planting on both side of the station along Sai Sha Road to reduce visual impact to the adjacent residents and road users

Mitigation of Landscape Impacts:
Loss of street trees along track alignment to be compensated. Compensation planting will be proposed along Sai Sha Road on both side of the station.

Management Agency:
HYD Street tree and planting under viaduct
KCHC Railway route along Sai Sha Road and station.

Maintenance Strategy:
Intensive maintenance to ornamental plants, and occasional maintenance to trees and climbers.



4.2.22 Track Alignment Between Ma On Shan Station & Lee On Shan Station - Section I

Context

From Ma On Shan Station, MOS Rail will run on viaduct within the well-vegetated central reserve of Ma On Shan Road passes over the existing footbridge between Fu Fai Garden and Ma On Shan Centre at approximately +22.5mPD. Thereafter, the viaduct will pass over On Chui Street and through an area of residential properties and the Ma On Shan Health Centre. Before heading east to the Lee On Shan Station, the viaduct will pass between Villa Athena and Saddle Ridge Garden.

An emergency footbridge will be located at Ma On Shan Road, across Villa Athena and Saddle Ridge Garden.

The surrounding land use along this stretch is predominantly residential. There will be passengers view to the Wu Kai Sha Youth Village to the north, and a distance view over into the Ma On Shan Country Park to the south.

Issues

Land Use:

Land use underneath viaduct and along Sai Sha Road

Visual Impacts:

The appearance of viaduct to the residents of Villa Athena and Saddle Ridge Garden.

Landscape Impacts:

Loss of trees and vegetation in reserve as affected by the construction of the MOS Rail.

Strategy

Land Use:

Tree planting along Sai Sha Road to be augmented with new trees and understory shrub planting. Existing trees to be retained.

Mitigation of Visual Impacts:

Planting under viaduct to be shade tolerant species and to include climbing plants at columns to reduce the scale of the viaduct, and visual impact to the adjacent residential developments.

Mitigation of Landscape Impacts:

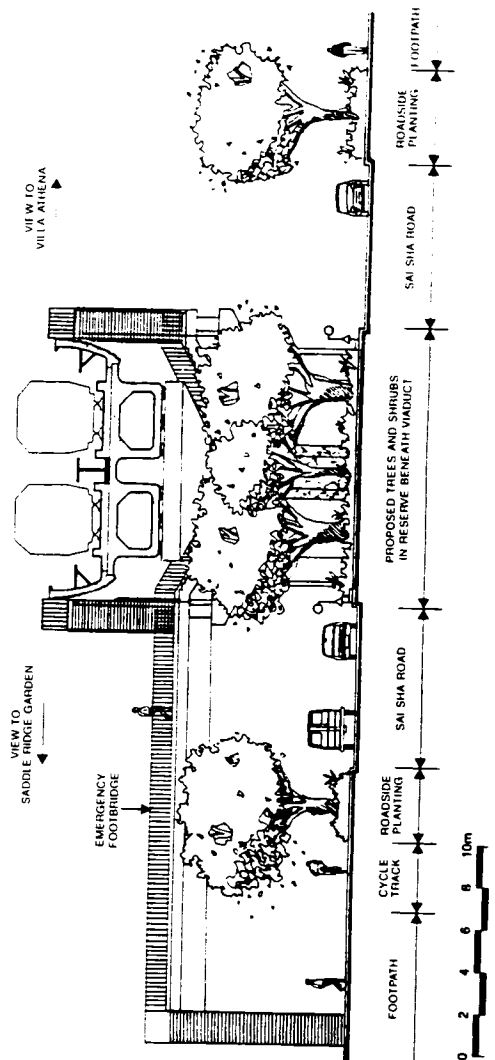
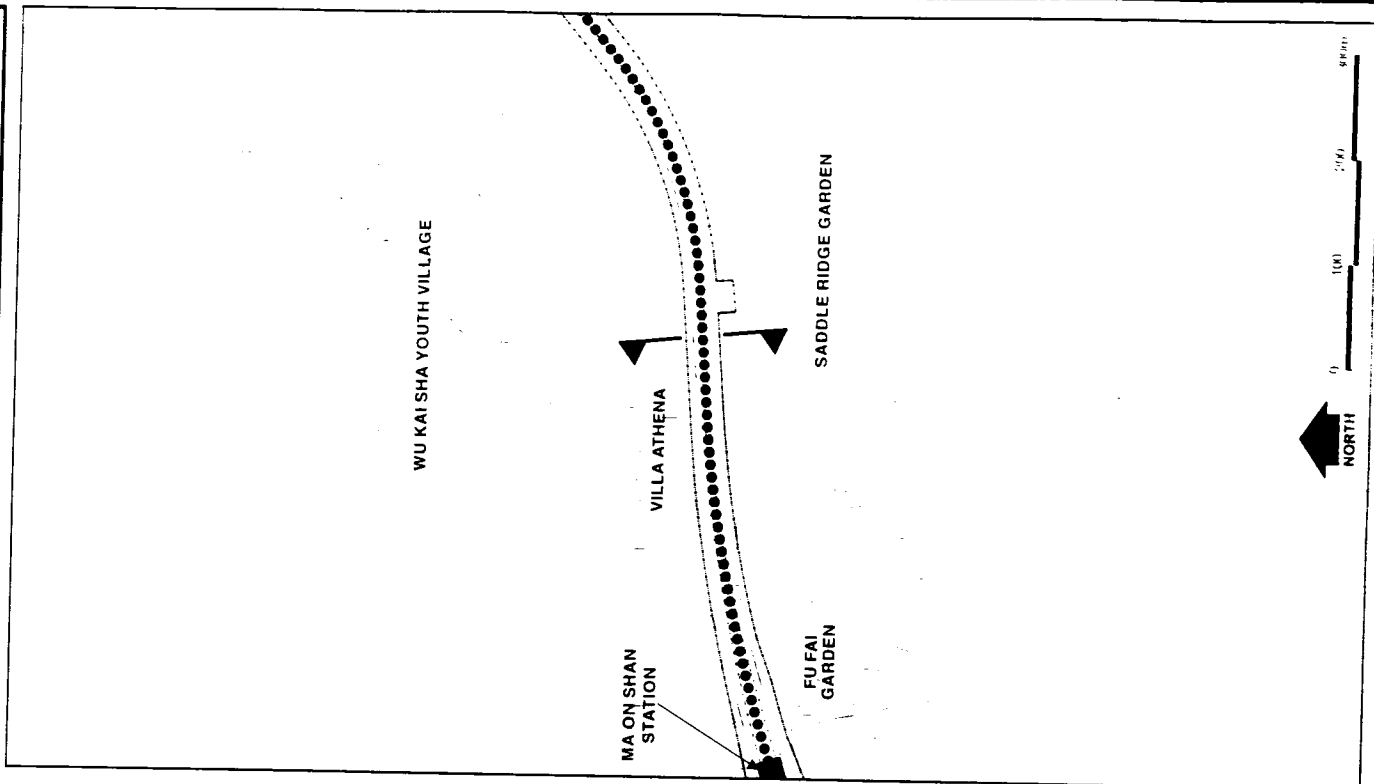
Loss of street trees along the track alignment to be compensated. Compensation planting will be proposed in reserve under viaduct along Sai Sha Road

Management Agency:

HyD - Street trees and planting under viaduct.
KCRC - Railway route along Sai Sha Road

Maintenance Strategy:

Intensive maintenance to shrubs under viaduct, and occasional maintenance to trees and climbers.



4.2.23 Track Alignment Between Ma On Shan Station & Lee On Estate - Section II

Context

Heading east to the Lee On Station from Villa Athena, MOS Rail will cross over Kam Yung Road and through Lee On Estate and Wu Kai Sha New Village. These crossings will be required at the crossover at the section of viaduct. The proposed track alignment will affect the existing alignment of Sai Sha Road and the existing pedestrian vehicular traffic at Kam Yung Road.

The surrounding landscape along this stretch is predominantly residential. There will be panoramic views to the Wu Kai Sha Youth Village to the north, and a distance view over into the Ma On Shan Country Park to the far south.

ISSUES

Land Use: Land use underneath viaduct. Viaduct columns may interfere with the existing Sai Sha Road.

Visual Impacts: The appearance of viaduct to the residents of Wu Kai Sha New Village, Kam Lung Court and Lee On Estate, and the adjacent road users. The crossovers on viaduct at this section of track alignment will be fully enclosed by a noise enclosure.

Landscape Impacts: Loss of street trees as affected by the construction of the MOS Rail.

Strategy

Land Use:

Sai Sha Road and the associated footpath/cycle track at this section will be disrupted by the proposed layout of viaduct columns. Reprovision of footpath/cycle track allows opportunities to improve the landscape quality. These include planting and paving structures.

Mitigation of Visual Impacts:

Climbing plants and shade tolerant shrubs to be planted at the viaduct columns and under the viaduct. Tree planting under viaduct as buffer between railway route and Lee On Estate. The noise enclosure will be transparent to maintain view out for the passengers and to reduce the visual impact of the mass of the railway structure to the adjacent residents.

Mitigation of Landscape Impacts:

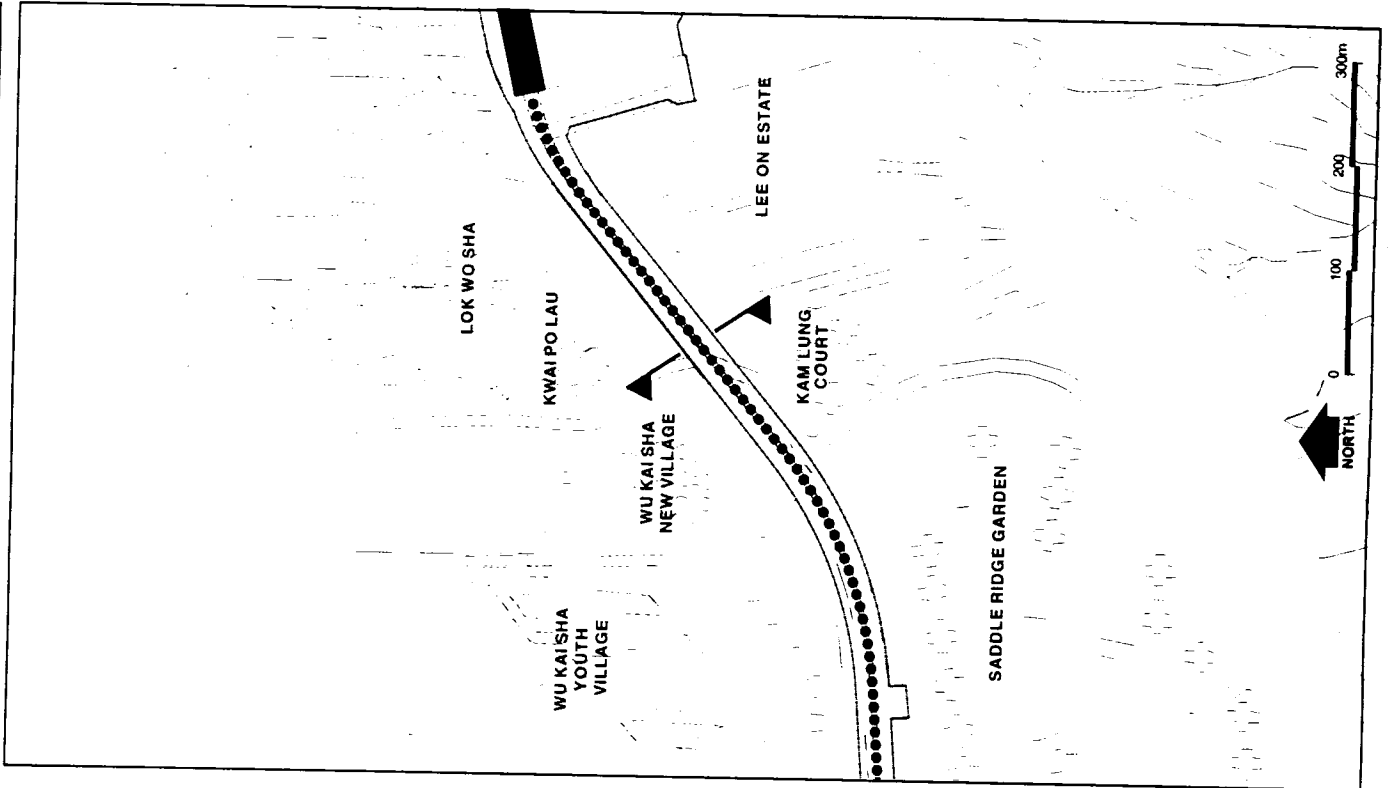
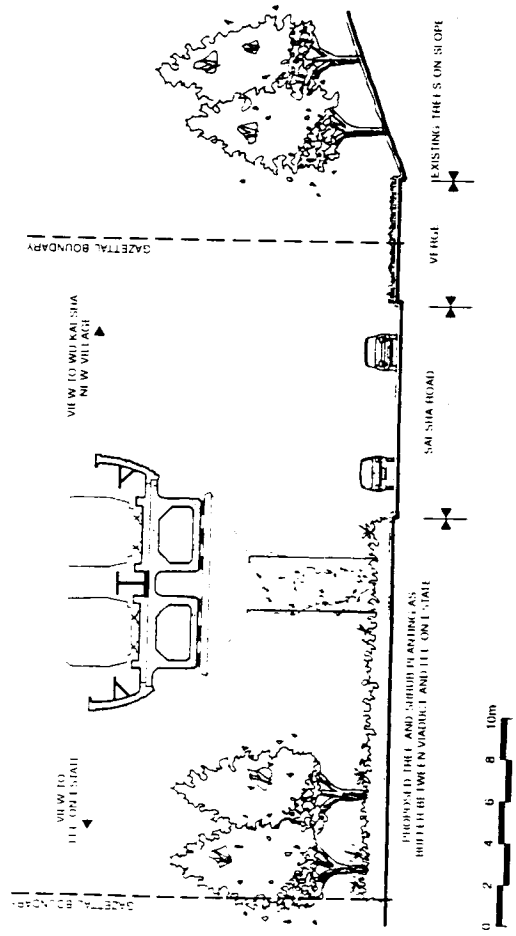
Loss of street trees along the track alignment to be compensated by tree planting under the viaduct along Sai Sha Road.

Management Agency:

HyD - Street tree and planting under viaduct.
KCRC - Railway route along Sai Sha Road.

Maintenance Strategy:

Intensive maintenance to ornamental shrubs, and occasional maintenance to trees and climbers.



Context

The Lee On Station will be located within a former borrow area that comprises series of flat platforms which are separated by rock outcrops. Limited excavation works will be required at this largely unvegetated site. The station platform will be at approximately +24.35mPD. A public transport interchange will be provided adjacent to the station at Sai On Street. An access road will also be provided.

The station will be bordered on its northern and eastern sides by Sai Sha Road and associated footpath/ cycle track, on its southern side by the residential development currently under construction, and on its western side by the proposed open space. Sai Sha Road will be realigned at this section.

Current proposal of the station will affect the existing footpath/ cycle track, and the access road in-between the station and the proposed open space adjacent to Lee On Station, and existing footpath/ cycle track.

There will be passenger views from the station over into the rural setting of Whitehead to the north, and a distance view to the Ma On Shan Country Park to the far south.

Issues

Land Use:
Land use at station.

Visual impacts:
The appearance of station to the adjacent road users, and the residents of Lee On Estate and the new residential development adjacent to Lee On Station.

Landscape impacts:
Loss of trees as affected by station construction.

Strategy

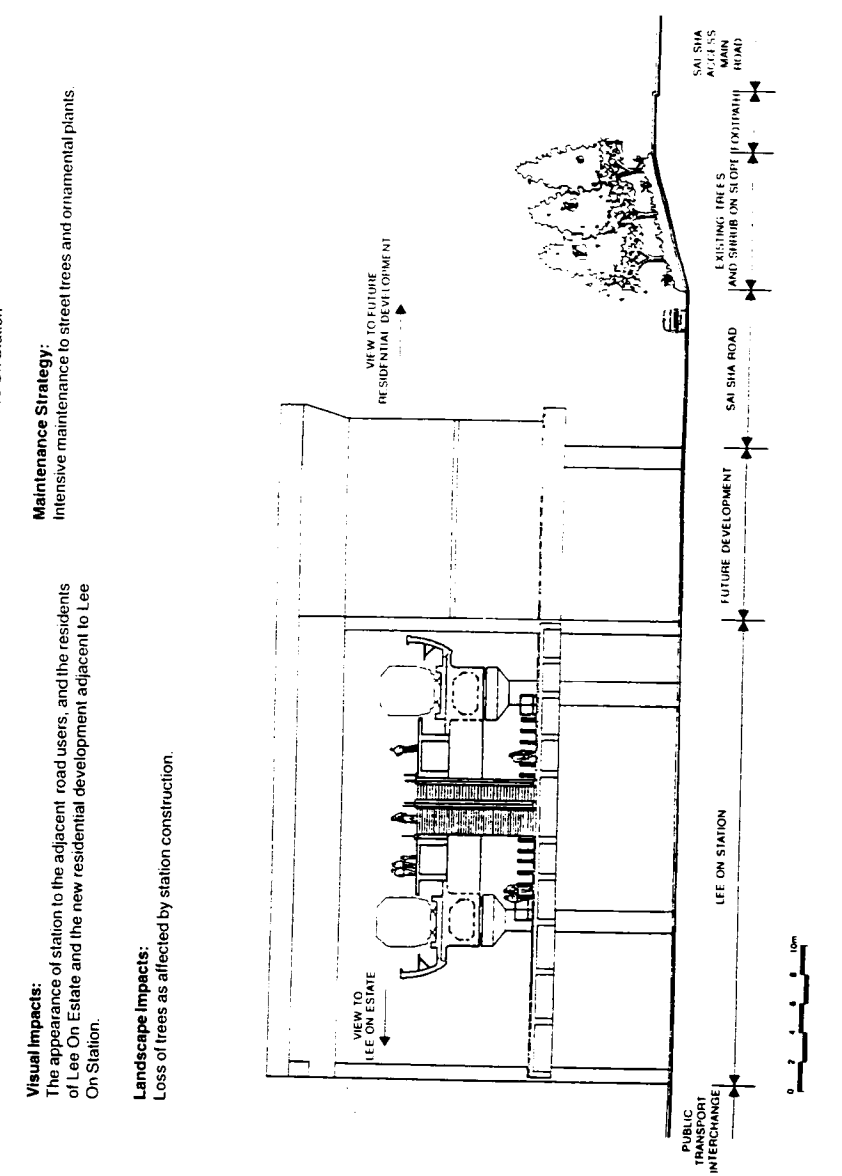
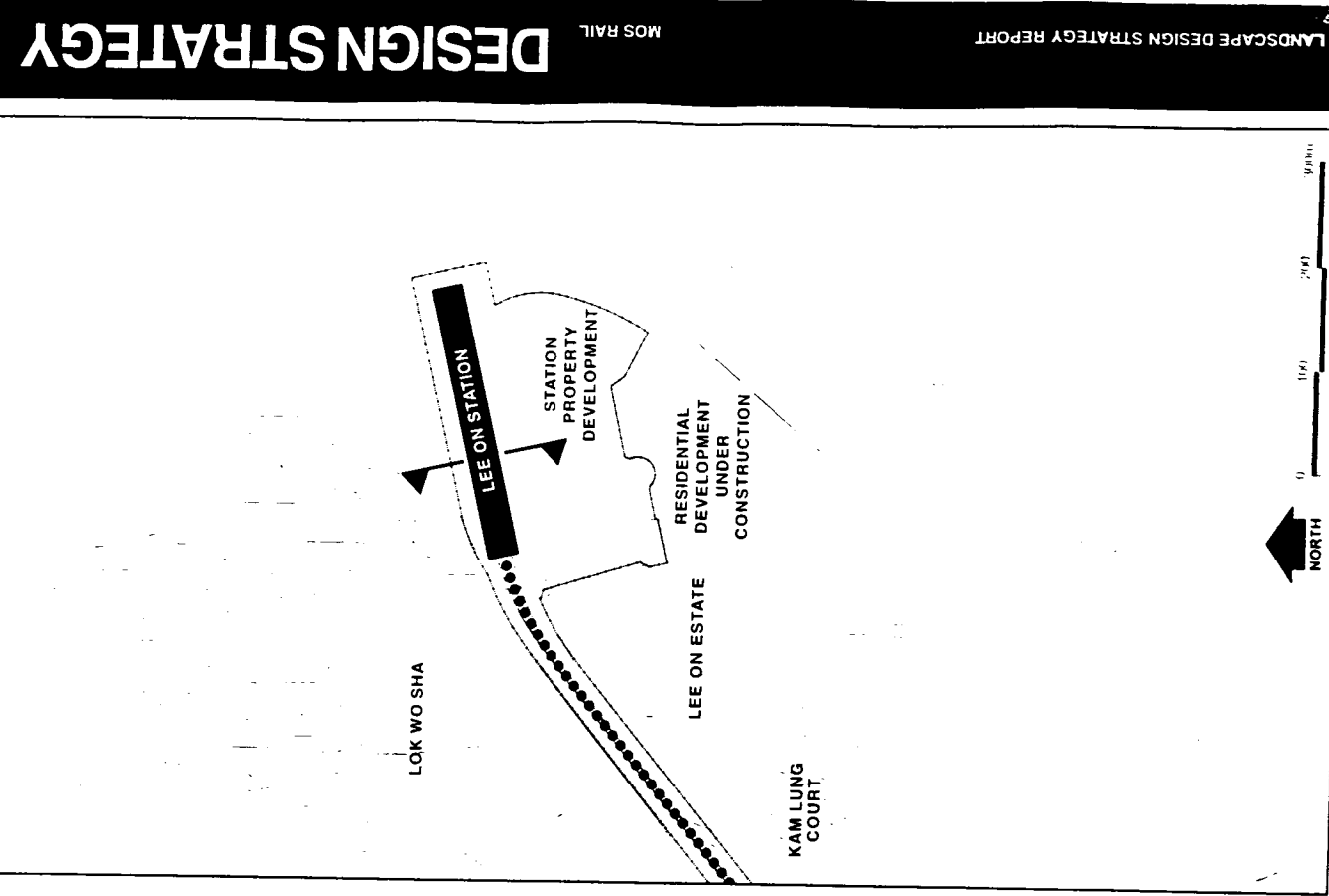
Land use:
Footpath/cycle track to be repositioned around the station development. Opportunity for on-street environmental improvements e.g. up-grading footpath/ cycle track surfaces, planting of street trees and provision of coordinated street furniture. The section of Sai Sha Road at the station will be realigned.

Mitigation of Visual Impacts:
Tree and shrub planting around the station site to provide screening at the pedestrian level. Planting at station to be shade tolerant species and to include climbing plants at the supporting columns.

Mitigation of Landscape Impact:
Loss of trees at station site to be compensated. Compensation planting will be proposed around the proposed station site, and in other areas within the project boundary.

Management Agency:
HyD - Proposed PTI, Street tree and shrub planting along Sai Sha Road
KCR - Lee On Station

Maintenance Strategy:
Intensive maintenance to street trees and ornamental plants.



5.1 Design Methodology

The stages in the design process which specifically relate to the Chapter 4 - System-wide Proposal are shown below:

5.1.1 Site survey

Purpose - to record information on the following:

- Pedestrian and vehicular surfaces - note which routes are likely to be served as a result of the construction and the type and condition of existing surface treatment.
- Boundary treatment - note the type, condition and location of private boundary treatment likely to be disrupted or removed during the construction process and record all vehicular and pedestrian entrance and exit points.
- Site utilities - note the presence of existing site utilities and the extent of likely disruption from excavation.
- Surrounding streetscape - note the scale of the space surrounding the area to be redesigned and record the style, colour, texture and materials of the adjacent buildings.
- Street furniture - note the presence, location, style and condition of any existing street furniture.

5.1.2 Detailed design

Purpose - to decide the following

- Function - the function of each element to hard landscape should be seen within the context of other MOS Rail facilities and their immediate surrounds. Facilities should be provided for the use of MOS Rail passenger and staff, except where the presence and function of the railway corridor has been incorporated into the adjacent laneway. There may be a range of function for each element e.g. signage can be informative or purely directional, and it will be necessary to state exactly which type of hard landscape feature is required.
- Location - hard landscape features should be located to consider trackside safety and to avoid obstruction to safety exits, through routes or maintenance facilities. Individual elements of street furniture should be located to assist passenger circulation throughout KCRC property. The range of paving materials should highlight exit and entrance points and feature of streetscape interest.
- Position - items of street furniture should be positioned to relate to the general direction of pedestrian, train and vehicular traffic flow e.g. seats on platforms should be positioned parallel to the direction of train travel. There should be sufficient clearance around individual elements for emptying and cleaning.
- Design theme - all street furniture should be designed to conform as far as possible to the general curvilinear theme of MOS Rail. The Detailed design of the immediate surrounds should have consideration to this theme. Many elements of street furniture will be made of corrosion resistant material/finishes to allow for use of the same design internally and externally.
- MOS Rail Logo - the design of all items of street furniture can include the MOS Rail logo if required. It is also possible to include the logo within areas of decorative paving.

5.1.3 Maintenance

Purpose - to ensure hardscape elements are kept in good condition, are replaced when necessary and do not become a safety hazard.

- Materials to the construction and finish elements of street furniture will be corrosion resistant to minimise maintenance. Sufficient room should be allowed for access around each element for regular maintenance and for cleaning and repairs to the ground surface material.

5.2 Typical Details

Figure 5.2.1-5.2.8 illustrate typical details for hard landscape features; for more in the preparation of Directive Drawings; and detailed design of external spaces for MOS Rail. Text describes issues specific to the design, construction and maintenance of each item.



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL - EIA STUDY



5.2.1 Raised Planter

Function and Location

Raised planters should be used within urban situations to highlight a station entrance or land-use feature or to restrict access around a building or structure.

Position

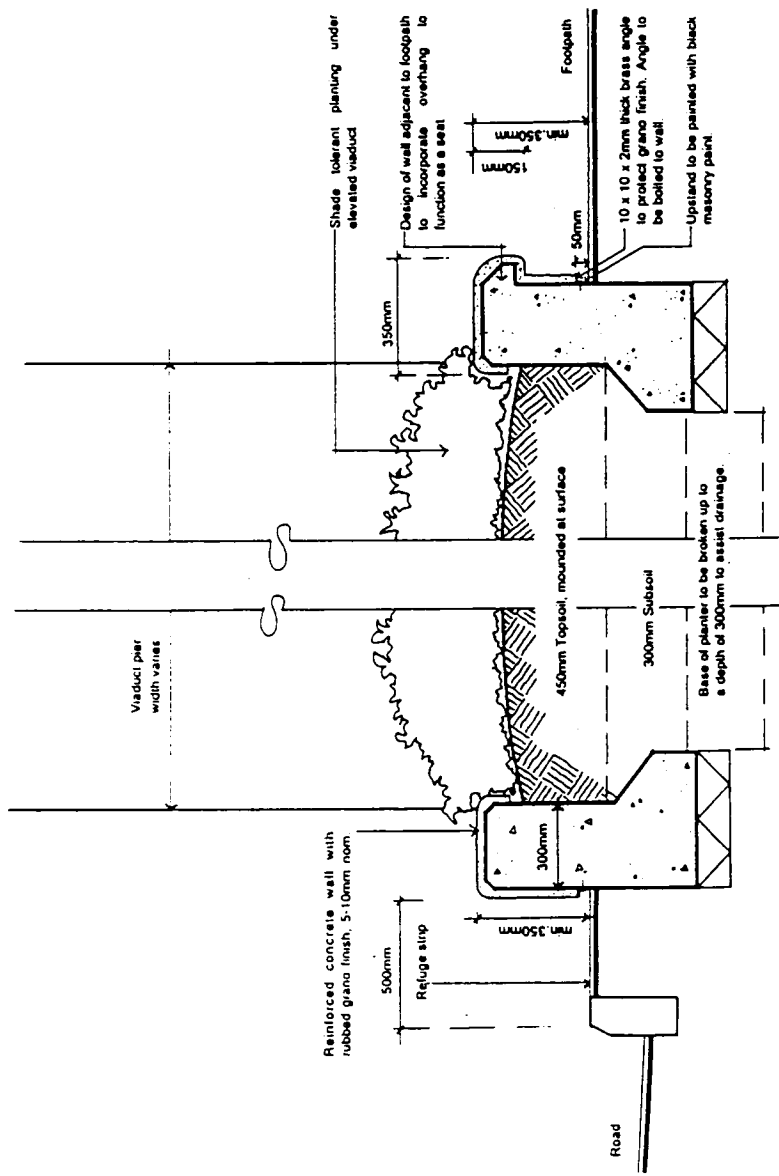
- The raised planter should not obscure views of station entrances, should not obstruct access to emergency exits around buildings or where access is required underneath elevated structures.
- Where the raised planter wall is adjacent to a footpath or station entrance and where there is insufficient space for a seat, the wall should be designed to provide short term seating.
- Where the planter is adjacent to a road, the wall should be positioned to create a 450mm refuge strip. Adjacent to a road the design of the planter walls should not permit sitting.

Design

- Planter walls should be minimum 350mm high and 350mm in depth for seating. The walls should be of reinforced concrete, finished to match adjacent building, voided pier of footpath surface. Otherwise finish should be rubbed grano 5-10mm non.
- Planters should be minimum 1.5m wide to allow sufficient space for the establishment of a substantial and effective display of planting.
- Planters should contain 100mm aggregate drainage layer, filler layer over aggregate, 300mm depth subsoil and 300mm topsoil or fabricated soil.

Maintenance

Maintenance of planting within raised planters should be according to schedule in Chapter 6. Planter walls require no specific maintenance after construction other than checks on the condition of the finish.



SECTION
RAISED PLANTER



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



5.2.2 Lighting

Function and location

Externally, lighting should be required to increase pedestrian security around KCRC property, to highlight entrance/exit points, at maintenance areas and to illuminate signage. Lighting will be used at station forecourts, on platforms and under viaducts, and within the Depots.

Position

Lighting should be positioned so as not to obstruct pedestrian routes or safety exits. Wall mounted signs or lights suspended from ceilings should be used where possible.

Design, size, materials, finishes, colours

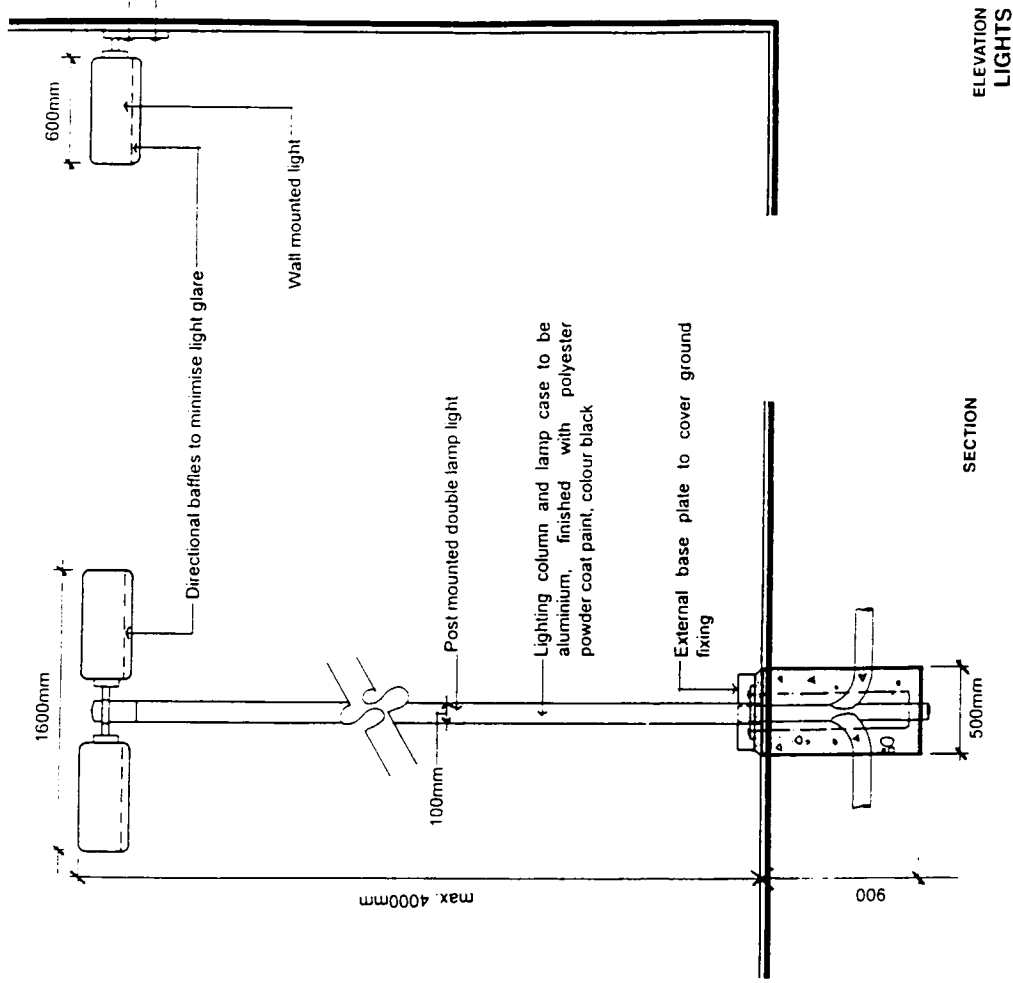
- All lighting should be directional and have baffles incorporated within the design so as to reduce light glare on surrounding areas.
- The height of lights should be in scale with surrounding location and landscape features i.e. Maximum 4m high in open pedestrian areas and on station platforms and according to manufacturers recommendations.
- Light columns should be of seamless round aluminium tube and welded to a cast aluminium base. Poles should be round and non-tapered, have a flush cast aluminium pole cap and can be single or double side arm mounted. Poles should have an external base plate to cover ground fixing and fittings. All lights should be finished in polyester powder coat paint, colour black, over a chromate conversion coating be finished in black.

Incorporation of logo

It is not necessary to incorporate a logo onto lighting fittings, a well designed coordinated range of lighting should create a theme for MOST Rail property

Maintenance

Lights should be maintained regularly to ensure that the bulb is working, protective coating is intact, corrosion or structural damage has not occurred and that anchor fixing bolts are tight.



ELEVATION LIGHTS

SECTION



5.2.3 Paving Material

Location

External paving should be located in the following places: station platforms, station forecourts, service entrances to stations, and ancillary buildings, pedestrian and vehicular surfaces throughout the MCRS Rail Depots.

Position

- Decorative patterns, and directive bands, of paving should be positioned to highlight station entrances and site/scape features and comprise a range of colours, textures, and finishes.
- A hard wearing surface should be selected for areas to infill decorative patterns and for areas where there should be a high use e.g. station platforms.
- Less decorative inexpensive material should be used for pedestrian and vehicle surfaces in maintenance areas and ancillary buildings, carparks and drop off areas.

Design, size, materials, finishes, colours

- Decorative patterns and directive bands of paving should be of ceramic tiles and reconstituted granite in a range of sizes and colours to match the modular interior paving and adjacent surfaces. Both ceramic and reconstituted granite tiles have textured surfaces for grip, and the latter is available in tactile form to assist the disabled.
- Washed grano surface should be used where large expanses of hard wearing surface are required. It can be laid insitu to a high quality, smooth finish in a range of colours and is laid on a concrete screed to avoid problems of settlement often associated with expanses of paving in pedestrian area. Carburandum strips can be inserted into rubbed grano to provide a strip resistant ramp or at the interface of an external and internal surface.
- Precast concrete pavers should be used for pedestrian surfaces in maintenance areas and around ancillary buildings in a range of dark colours.
- Precast concrete pavers or brushed concrete should be used for vehicular surfaces.

Cost comparison

(cost includes supply of surface material as well as make up of sub base and base course and labour)

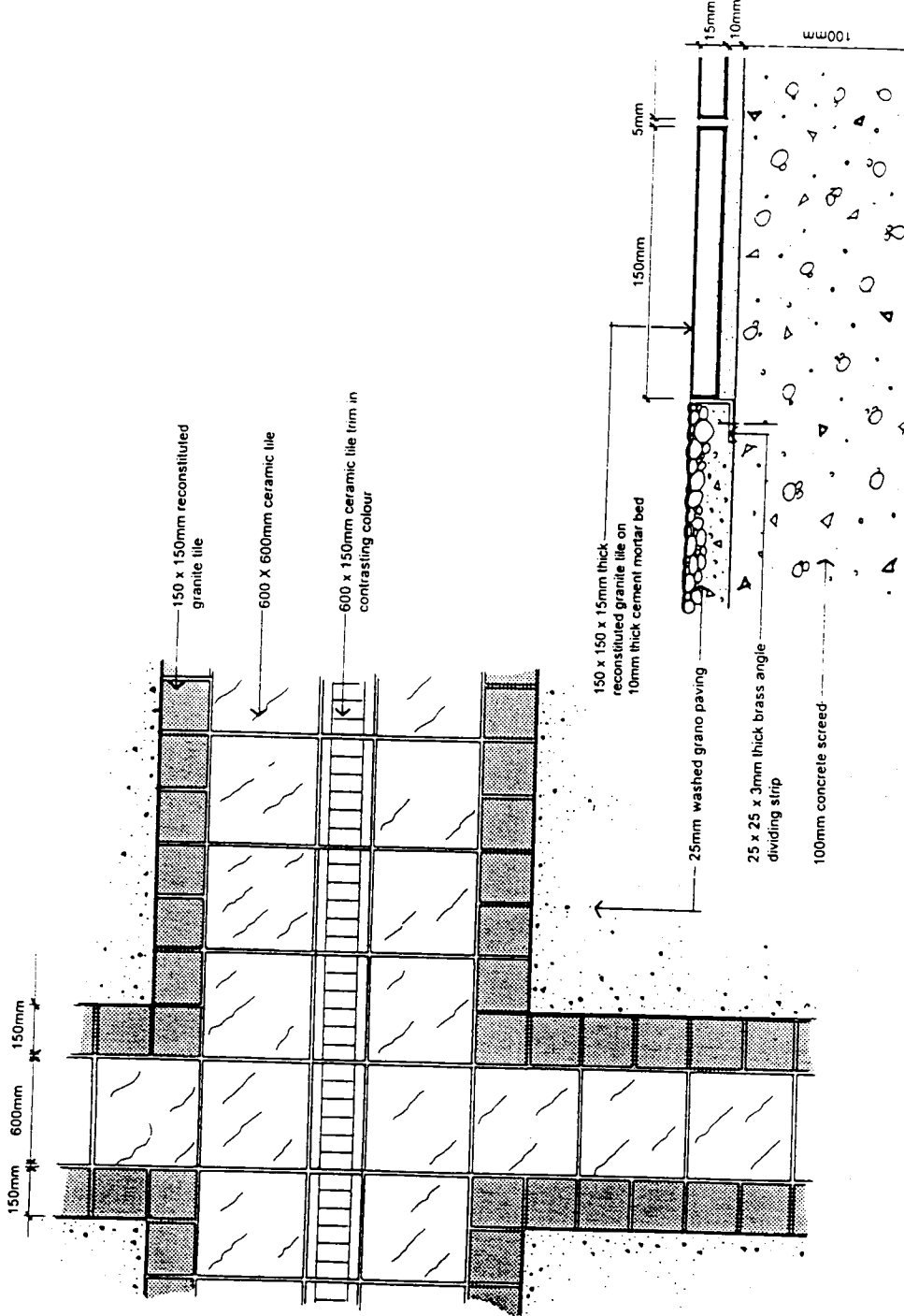
Ceramic tiles	HK\$ 400/m ²
Reconstituted granite	HK\$ 650/m ²
Rubbed grano surface	HK\$ 400/m ²
Precast concrete pavers	HK\$ 270/m ²
In-situ concrete	HK\$ 180/m ²

Maintenance

Maintenance of paved areas should be carried out regularly to ensure surfaces are at the designed fall and that individual paving stones are firm.



KOWLOON - CANTON RAILWAY CORPORATION MOS RAIL: EIA STUDY



PLAN
TYPICAL LAYOUT OF
DECORATIVE PAVING

SECTION
INTERFACE OF WASHED GRANO WITH
RECONSTITUTED GRANITE TILE



5.2.4 Signage

Function

Signage should be used to direct members of the public to and from all new KCR/MOS Rail facilities. A range of signs to be required to display information relating to specific facilities or services, and to highlight relevant place names.

Locations

The location and clarity of signage will determine the ease of passenger circulation to from and within KCR property.

Signs should be located to relate to the direction of traffic / pedestrian flow and to avoid obstruction of safety exits, through routes or maintenance facilities.

All street level signs are required to indicate the following facilities:

- Station entrances
- Carpark areas
- FVA's
- Railway crossing points
- On station platforms signs should be required to highlight the presence of and direction to the following
- Station name
- Platform and emergency exit points
- General passenger facilities

Design

The generic design for signage for MOS Rail should be developed from the station name signs already in place at East Rail stations. Signs should be simple in shape so as not to detract from the information being displayed and with curved edges to conform with the general round theme of MOS Rail structures. Signs should be of stainless steel or aluminium for continuity of material internally and externally. Surfaces should be a mixture of polished and matt metallic finishes. Lettering/ characters should be painted in a bold colour to contrast with the background material.

- 3 types of signs are proposed depending on available fixing method, existing obstructions at ground level, desired viewing distance and location of viewer.
- KCR/MOS Rail logo can be incorporated onto all signs using corporate colours. The logo should be located in the same position on all signs to further enhance the co-ordinated range of signs.

Type 1 Free standing signs

Free standing signs should be used in locations where double aspect visibility of information is desired i.e. along the centreline of station platforms or where fixing to a wall or ceiling is not possible.

Where information is displayed primarily for passengers within passing trains, lettering should be positioned at approx. 1.5m in height above ground. Where information on free standing signs is intended for pedestrian use, information should be displayed as near as possible to eye level. Posts for free standing signs should be circular and fixed at ground level with curved cover plates for minimum pedestrian obstruction.

Type 2 Suspended signs

Suspended signs should be used over main pedestrian through routes and where information will be read from a distance. Suspended signs should have a head clearance of min 2m to ensure the information can be seen over all possible obstructions at ground level.

Type 3 Wall mounted signs

Wall mounted signs should be located where there is sufficient space for viewers to stand and read the information on display without causing an obstruction. In general the main information should be displayed at eye level i.e. approx. 1.5m in height above ground with additional information above or below.

Maintenance

Signs should be cleaned regularly so that the information remains visible, that the fixing method is secure and that associated lighting (if present) is functioning.

Incorporation of logo

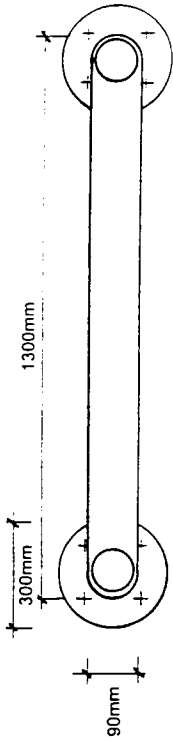
It is not necessary to incorporate a logo onto lighting fittings, a well designed co-ordinated range of lighting should create a theme for West Rail property.

Maintenance

Lights should be maintained regularly to ensure that the bulb is working, protective coating is intact, corrosion or structural damage has not occurred and that anchor fixing bolts are tight.



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



Optional KCR/ West Rail logo

Generic sign design similar to new East Rail station signs

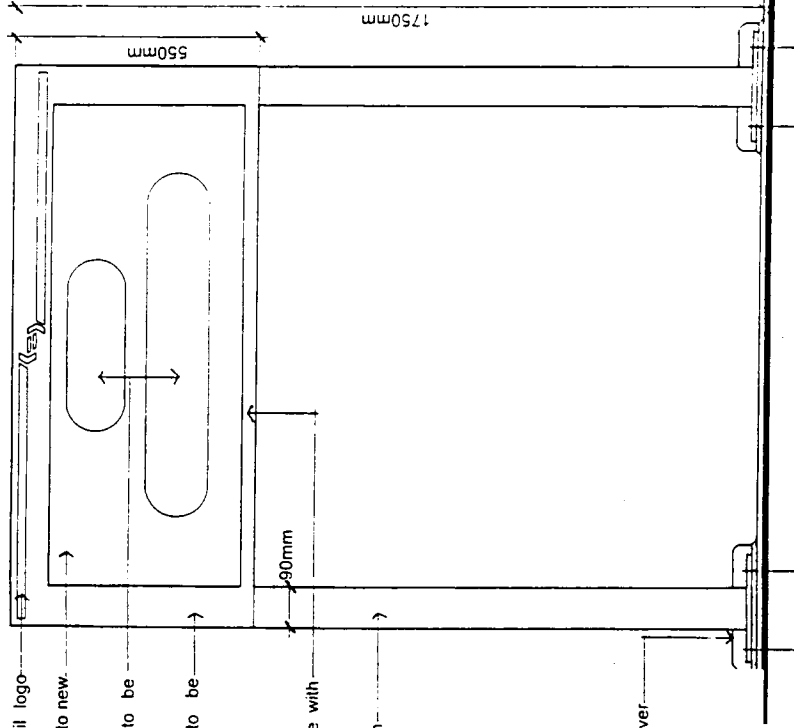
Lettering and characters to be painted in bold colours

All edges and corners to be rounded

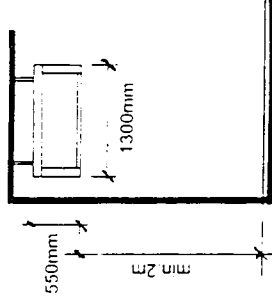
Hollow stainless steel frame with aluminium display boards

Hollow stainless steel section

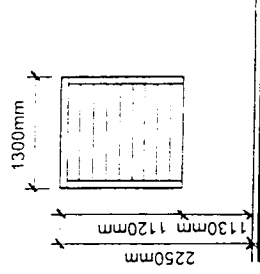
External base plate to cover ground fixing



PLAN & ELEVATION
FREE STANDING SIGN



ELEVATION
SUSPENDED SIGN



ELEVATION
WALL MOUNTED SIGN

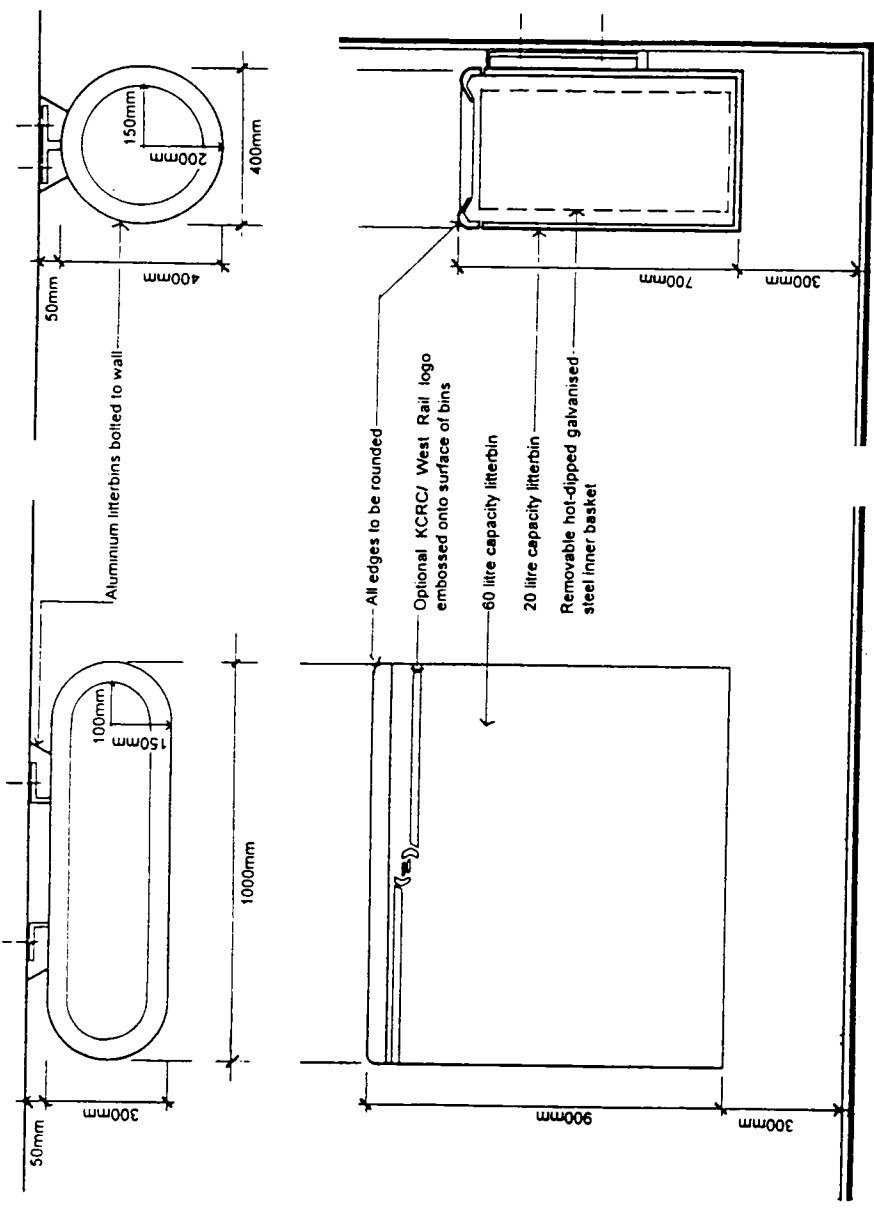
5.2.5 Litterbins

Locations
Litterbins should be located at the entrances to KCRC stations, next to sitting areas, and near to shops, within KCRC property.

Position
Litterbins should be positioned so that they do not obstruct pedestrian routes, emergency exits, or block access to railway maintenance facilities. There should be sufficient clearance around litterbins for emptying and cleaning.

- Design**
- A variety of litterbin sizes and styles is required for all potential locations within KCRC property. Both free-standing (bolted to ground) and wall-mounted litterbins are recommended, however wall-mounted are preferred to minimise obstruction at ground level. Wall-mounted bins should be fixed with a clearance of min. 300mm at ground level to allow for cleaning of floor surface.
 - The size of bin should vary according to the location and probable usage i.e. the largest bins at station entrances and around station shops should be approx. 60 litre capacity and the smaller bins 20 litre capacity. Litterbins should have optional ashtray inserts for location such as station entrances.
 - Litterbins should be stainless steel or aluminium with a removable hot-dip galvanised steel inner basket for maintenance/cleaning.
 - KCRC logo can be embossed onto the surface of litterbins by a recessed pattern incorporated at manufacturing stage, otherwise the logo can be painted onto the surface with polyester powder coating.

Maintenance
Bins should be emptied as soon as they have become filled and the external surfaces should be washed with a non-abrasive cloth to avoid damage to protective coating.
Litterbins should be checked regularly to ensure that protective coating is intact, anchor bolts are tight, and that corrosion or structural damage has not occurred.



PLAN & ELEVATION
WALL MOUNTED LITTERBINS
(60 litre capacity)

PLAN & SECTION
WALL MOUNTED LITTERBINS
(20 litre capacity)



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



5.2.6 Seating

Function and location

Generally seats should be provided for waiting MOS Rail passengers within KCRC property, typically on station platforms and at station forecourts. However, where the route of West Rail has created new areas of public open space, seats could also be included.

Position

Seats should not obstruct pedestrian routes, emergency exits, EVA's or MOS Rail signage, or block access to railway maintenance facilities.

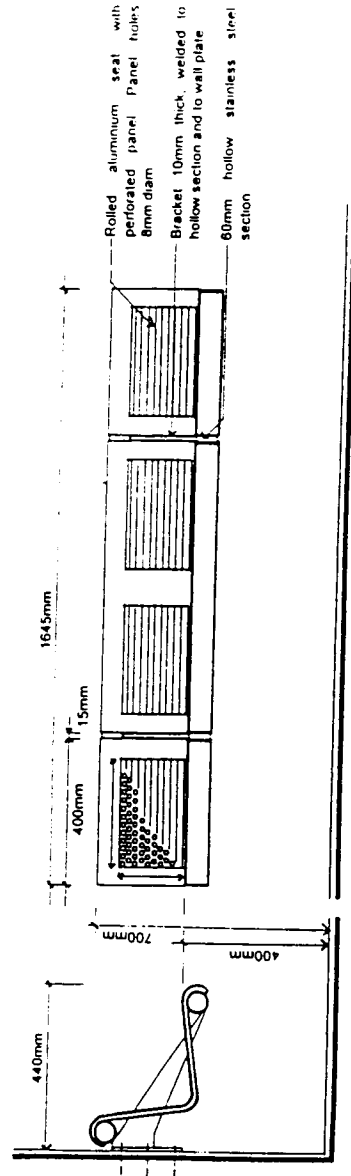
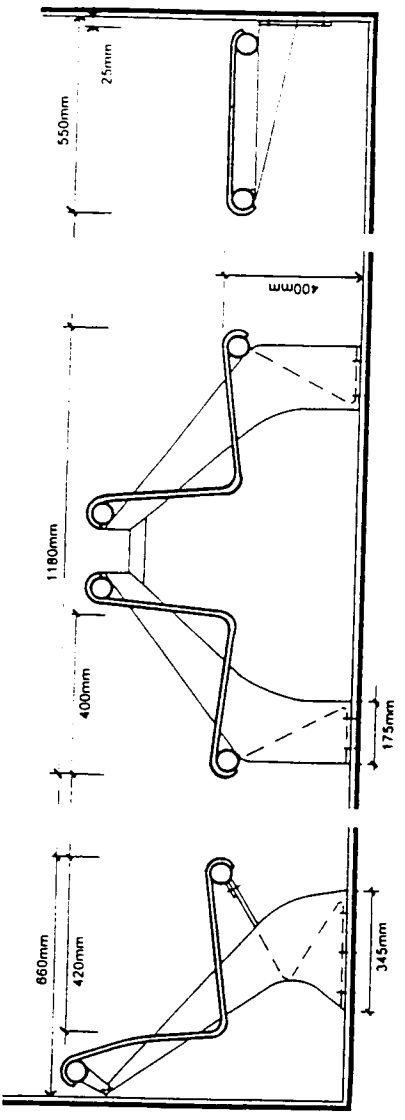
Design

- A co-ordinated range of seats is required to suit all potential locations.
- For external use single aspect wall-mounted seats with backs are recommended where possible to minimise obstructions at floor level.
- Double/twin-aspect, free-standing seats with backrests are recommended for use on platforms, positioned parallel with the direction of train movement.
- All seat types should have uprights to divide seat places and to avoid nighttime occupation
- Seats should be capable of seating a minimum of 3 to 4 people and should be flexible in design to allow for a variety of sizes.
- The overall height of seats varies between 700-760 mm high and the depth 350-550 mm. The width of each seat is approx. 400 mm. The overall length of the seat depends on the number of seat places required.
- Seats should be made of stainless steel and/or aluminium to allow for use internally and externally.
- The structural supports to be of stainless steel and the seat portion of rolled aluminium. All fixings to be of stainless steel and seats should be bolted into a supporting wall or at ground level.

Maintenance

Seats should be maintained regularly to ensure that protective coating is intact, corrosion or structural damage has not occurred and that the fixing method is secure.

SECTION FREE STANDING SEAT WITH BACK
SECTION FREE STANDING SEAT TWIN SEAT WITH BACK
SECTION WALL MOUNTED SEAT WITHOUT BACK



SECTION WALL MOUNTED SEAT WITH BACK (preferred option)
ELEVATION SEATS

5.2.7 Tree Grilles & Guards

Function
Trees in paved areas may be liable to damage by vehicular traffic, and should be protected with grilles and guards.

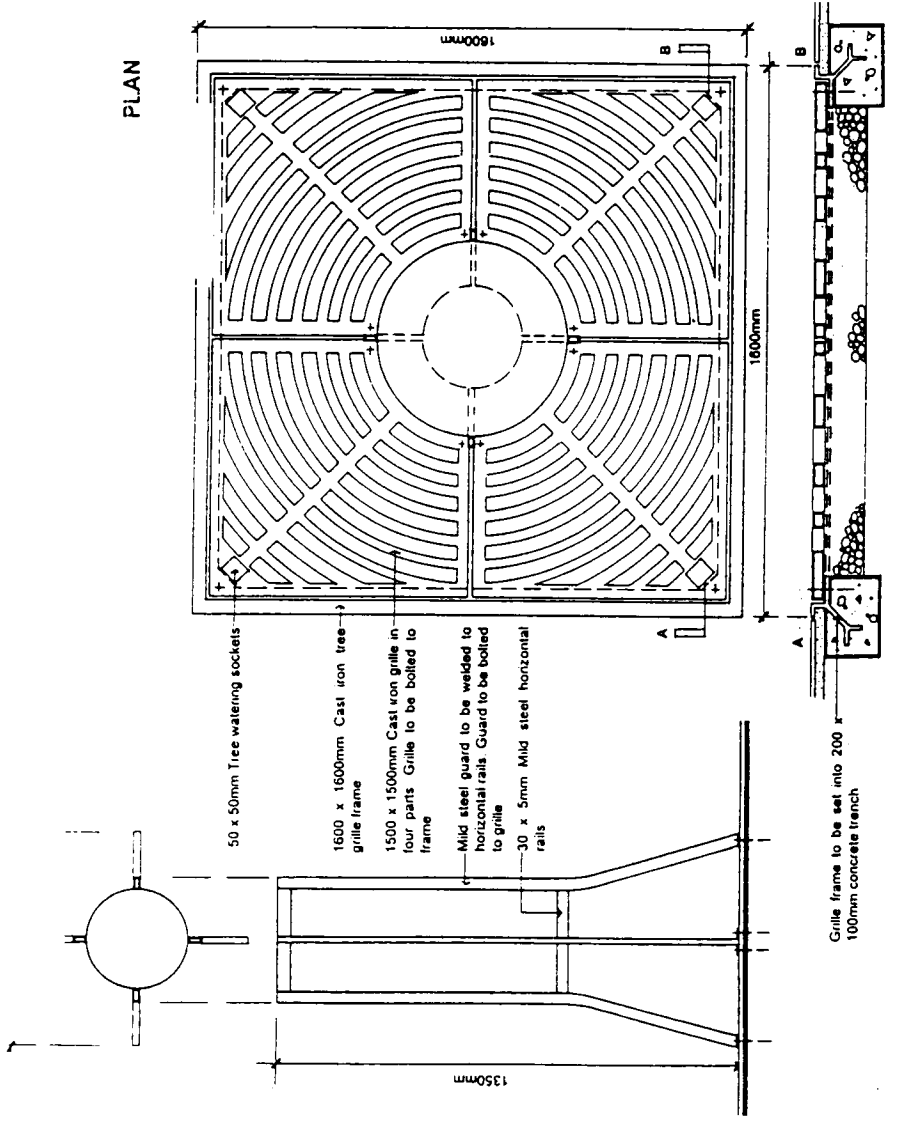
Trees, with grilles, and guards, should be located where recommended in Chapter 6 Detail and Landscape Softworks Strategy

Locations
Typical locations where tree grilles and guards may be necessary within KCR/C property are:

- Station forecourts
- Within footpaths around KCR/C/MOS Rail buildings (It is unlikely that trees should be planted within station buildings.)
- Open air carparks

Design
Tree grilles should be square in plan to facilitate modular patterns within surrounding paving. Upright elements should be slender and joints in metal should be curved to avoid rigid corners. Tree guards should be 1350 mm in height and fixed into a grille with frame 1600 x 1600 mm in size. The guard should be of mild steel, polyester powder coated and the grille and frame should be of cast iron painted black.

Maintenance
Regular maintenance of the grille and guard should ensure that the frame is flush with surrounding paving, that all fixings are tight, that protective coating is intact and that the guard is not obstructing the normal growth of the tree. Regular maintenance should also involve removal of litter and debris within the guard and grille which could obstruct access to drainage layer.



ELEVATION
TREE GUARD

SECTION
TREE GRILLE



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



5.2.8 Waterpoints

Locations

Water points should be located to maintain areas of decorative planting and planting in raised containers. Water points should not be provided for planting in rural areas as planting will be designed to be drought resistant. Refer to Chapter 6 for provision of water to planting in urban and rural areas during establishment maintenance period.

Position

Water points should be positioned within MOS Rail property and in a position that is clearly identified i.e. not obscured by fencing or planting and at intervals of not less than 50m.

Design, size, materials, finishes, colours

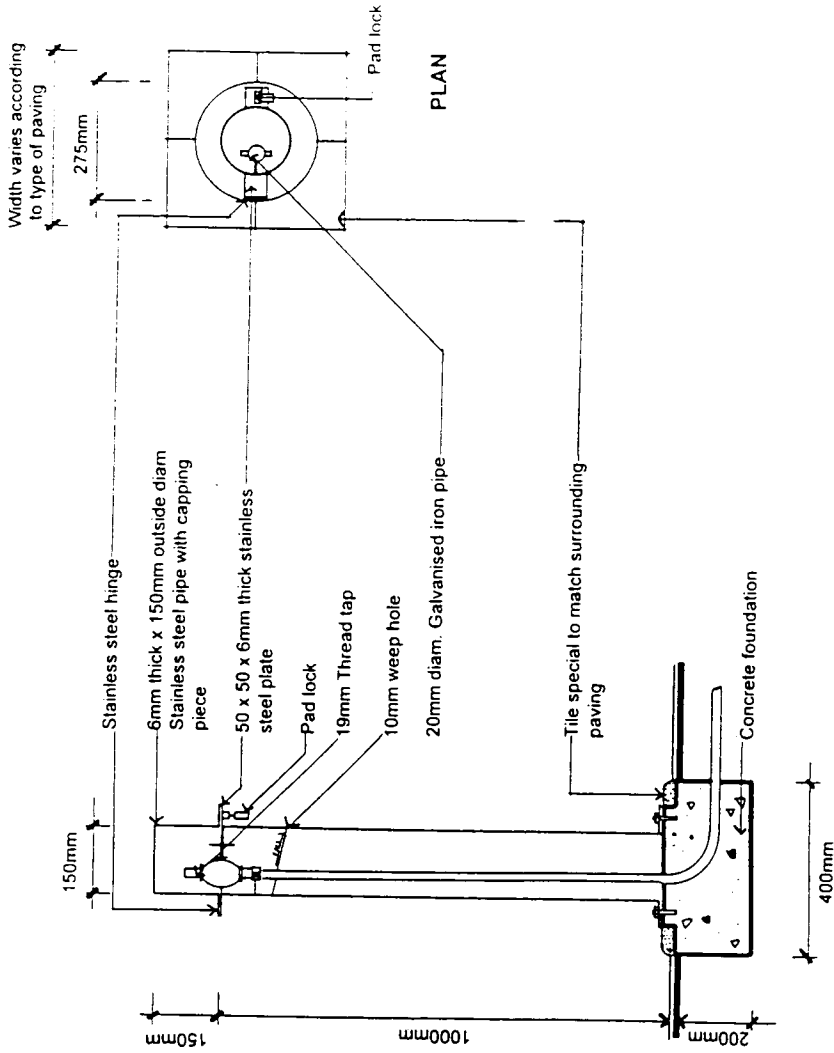
Water point should be 1150 mm in height x 150 mm in diameter, of stainless steel 6 mm thick. Water should be supplied through a 20 mm galvanised iron pipe, the thread tap should be protected by a stainless steel case.

Incorporation of logo

KCRC logo can be on the surface of water point by a recessed pattern incorporated at manufacturing stage. The logo could also be painted onto the surface with polyester powder coating.

Maintenance

Water points should be maintained regularly to ensure that protective coating is intact, corrosion or structural damage has not occurred and that anchor bolts are tight. External surfaces of the water point should be washed with a non abrasive cloth to avoid damage to protective coating.



PLAN & SECTION WATER POINT

6.1 Design Methodology

The stages in the design process which specifically relate to the Chapter 4 System-wide Proposal are shown below:

6.1.1 Site Survey

Purpose – to record information on the following:

- **Boundary treatment** – note the type, condition and location of planted boundary treatment likely to be disrupted or removed during the construction process and record all vehicular and pedestrian entrance and exit points.
- **Site utilities** – note the presence of existing site utilities across existing soft landscape areas and the extent of likely disruption from excavation.
- **Surrounding environment** – note the presence of soft landscape features in the area adjacent to the railway corridor, identify species, record their height and condition and note any site specific conditions which would affect the establishment of areas of planting.

6.1.2 Detailed design

Purpose – to decide the following:

Function – plant themes with specific functions previously identified in Chapter 4 System-wide Proposal are shown below.

- **Screen Planting** – this type of planting will be used to obscure visibility of certain aspects of MOS Rail from Visually Sensitive Receivers as highlighted in the Visual and Landscape Assessment Report. Screen planting will also be used to obscure passenger visibility where necessary.
- **Structure Planting** – this type of planting will be used as advance planting to create a framework within which development and further soft landscape works can take place.
- **Woodland planting** – this type of planting will be used to create woodland edge type planting or expand upon an existing woodland adjacent to the railway corridor.
- **Screen Planting, Structure Planting and Woodland planting** comprise different percentage mixes of fast growing pioneer species which can establish in poor environmental conditions and shade, dominant woodland trees, and shrubs. Ornamental plants are included within the mix for use where suitable i.e. within an urban setting.
- **Street Trees** – street trees will be used in urban locations to replace or supplement existing street trees removed during the construction of MOS Rail. They may also be used to enhance aspects of KCRC property, within road central reservations or within footpaths for general street planting. Street trees can establish and grow in urban conditions.
- **Ornamental plants** - ornamental plants may be used to enhance aspects of MOS Rail and KCRC property particularly within urban settings. They can be used to provide shade and to add colour, scent and texture along the route of the railway. This type of planting will comprise trees conifers, plants, shrubs and climbers.

- **Hydroseeding** - hydroseeding is the application of a specified mixture of seed, mulch, fertiliser and soil binding agent in aqueous suspension by high pressure spraying. Hydroseeding will be used in location where access for hard sowing of seed is difficult i.e. on a steep slope. The mixture of seed will comprise either grass only or a mixture of grass and shrubs.

Location - the soft landscape proposals illustrated in the Chapter 4 were subdivided into those which were system-wide and those which were context specific. The system-wide guidelines describe soft landscape treatment for typical locations. The context specific guidelines describe soft landscape proposals for actual locations along the route.

Typical contextual description e.g. urban context, railway alignment within cut and cover tunnel - the choice of species for soft landscape works over and either side of the cut and cover tunnel should be selected from the Screen planting, structure planting, woodland planting, ornamental plants and hydroseeding lists.

To reduce the risk of fire planting should not be located near to equipment rooms, high voltage feeder stations, cable troughs or cable hangers.

To Simplify the task of specifying recommended species for each location along the route of MOS Rail, the context for soft landscape works is described in terms of route nature and are shown in Table 6.4a to 6.4d - Planting Matrix

6.1.3 Establishment Maintenance

Purpose - to ensure establishment of soft landscape areas by the contractor

General

During the period for Establishment Works, regular inspections and cultural operations are required as defined below to ensure that all grass, trees and other plants thrive and become established. The contractor shall keep the Site neat and tidy at all times. Unless otherwise specified (and/or exceptional weather condition prevail), inspections with the Landscape architect shall be carried out at monthly intervals.

Establishment maintenance comprises the following tasks:

Watering - The Contractor shall water all trees, shrubs and grass areas as often as is required to keep the ground moist all around the roots of the plants. An inspection of watering requirements shall be made in dry weather by the Contractor and the Landscape architect twice weekly. The Contractor shall thoroughly water areas as necessary to ensure the above conditions are achieved. Fresh water only shall be used for the works. When required an analysis of water to be used shall be obtained by the Contractor for approval. Water shall be applied using an approved rose or sprinkler, and so as not to cause compaction or wash-outs of soil, or loosening of plants. The Contractor shall immediately make good any such damage. The Contractor shall complete watering operations within 24 hours of an inspection which deems watering to be necessary.

Weeding and Litter Removal - Planting in bare ground shall be maintained in a weed free condition by the removal of all unwanted vegetative growth over the whole planted area to the satisfaction of the Landscape Architect. Planting not in bare ground shall be maintained by removing all competing and overhanging weeds and by cutting all grass and by keeping all areas within a 300mm radius of the base of each plant in a weed/ grass free and tidy condition. Weeding shall

be carried out by a means approved so as not to cause any damage to the Works. All weeds and rubbish resulting from this operation shall be removed from the Site. The Contractor shall weed areas as necessary and shall complete weeding within seven days of inspection. All litter/ rubbish in the planting areas shall be removed from the site. Litter/ rubbish removal shall be completed within seven days of inspections.

Pruning - The Contractor shall prune all plants other than trees, when agreed with the Landscape architect during the Establishment Period. Pruning and removal of branches shall be carried out using sharp clean implements. Pruning shall be carried out with the cut just above, and sloping away from, an outward facing healthy bud. Removal of branches shall be carried out by cutting flush with the adjoining stem and in such a way that no part of the stem is damaged or torn. Ragged edges of bark shall be trimmed with a sharp knife. Any cuts or wounds over 25mm diameter shall be painted with an approved sealant after trimming.

Grass Cutting - The Contractor shall cut all grassed and not otherwise planted areas by approved mechanical or manual means so as to avoid root pulling.

Grass shall be cut when it reaches a height of 100mm. Cutting shall reduce the height to 40mm.

Post Planting Fertiliser - The Contractor shall apply post-planting fertiliser when agreed with the Landscape architect during the Establishment Period. Application of fertiliser shall be at a rate of 100g/sq m of grass. Application of fertiliser shall be at a rate of 50g per Shrub, Climber, Whip Tree or Seedling Tree. Ground-cover, Bamboo Plant or Herbaceous Plant.

Application of fertilizer shall be at the rate of 225g per Light Standard Tree, Standard Tree, Heavy Standard Tree, Semi-mature Tree, Palm, Heavy Palm, Extra Heavy Palm and Semi-mature Palm. Fertiliser shall be lightly worked into the soil surface around the base of the plant, allowing an even distribution. After application of fertiliser each plant shall be well watered.

Forking Over - The Contractor shall fork over the surface of all bare ground planted

areas to relieve surface panning and compaction of the soil. The Contractor shall take care not to disturb the roots or loosen the plants. Any plants so disturbed shall be firmed up and well watered in immediately.

Securing Stakes and Ties - The Contractor shall be responsible for securing stakes and ties. An inspection shall be made every month by the Contractor and he shall replace all broken, damaged or otherwise unsatisfactory stakes, and ties. Any ties which are causing chafing or abrasion of the tree shall be adjusted. The Contractor shall be responsible for firming up any plants which become loose as a result of wind-rock or other cause. The Contractor shall inspect the Site regularly for this purpose and after each storm or typhoon, to assess panning and the wounds sealed. The Contractor shall lighten or loosen the underpinning guys for the Semi-mature trees as required once towards the end of the Establishment period. The Contractor shall allow for uplining and toppling the brick and granite paving blocks which are open jointed over the tree pit area. The Contractor shall also allow for toppling up the tree pit with topsoil mix as directed and bedding sand where necessary.

Replacement of Plants - The Contractor shall replace all plants which are dead, dying or otherwise unsatisfactory if the cause is in the opinion of the Landscape architect, as a consequence of the use of poor materials or workmanship. Such replacement shall be to the relevant clauses of this Specification.



6.2 Establishment of a Holding Nursery

6.2.1 General Obligations

A Holding Nursery will be used to store plant material and fencing and keep specified plant material for growing on and inspection prior to planting. The Contractor shall carry out any necessary arboricultural work to maintain the stocked plants in a good and healthy condition during the holding period prior to planting.

6.2.1 General Obligations

6.2.2 General Responsibilities

The general responsibilities for maintaining plant stock within holding nursery are as follows:

Dead Plants – The Contractor/s shall be responsible for the replacement at his own expense, of any plant which dies during the holding period.

Damaged Plants – The Contractor/s shall be responsible for replacing dead or damaged stock resulting from vandalism during the holding period. The Contractor/s shall be responsible for replacing dead or damaged planting material resulting from Typhoon Signal No. 8 or above during the holding period.

Watering - Contractor/s shall provide at all times a supply of non-toxic water to the Holding Nursery. The Contractor/s shall make due allowance in his rates for importing non-toxic water during periods of restrictions or pipe work failure if a piped supply has been laid on. The Contractor/s shall water all trees and shrubs as often as is required to keep the soil moist all around the roots and plants. Water shall be applied using an approved rose or sprinkler. Watering shall be carried out either in early morning or late afternoon or both as the case may be. Watering frequency shall be determined by the Contractor/s to ensure the plants are in a healthy condition during the Holding Period.

Weed and Litter Removal - The Holding Nursery shall be kept weed and litter free.

Fertilizer - The Contractor/s shall if instructed by the Engineer carry out one slow release fertilizer application during the Holding Period. Fertiliser shall be applied at the following rates:

6.2.2 General Responsibilities

Extra Heavy Standard Trees	400g/no.
Standard Trees and Palms	300g/no.
Shrubs	100g/no.
Ground Cover	100g/no.
Seedling Trees	100g/no.
Feature Plants	300g/no.

Peats and Fungal Growth – The Contractor/s shall regularly check for any insect attack or fungus infestation particularly during known periods of activity. The Contractor/s shall report to the Landscape architect any such occurrence and shall carry out remedial eradication by use of approved sprayed insecticide/fungicides. Use of such material is to be to the convenience of the general public and is to be carefully controlled to avoid unnecessary dispersion.

Reinstatement of Holding Nursery – The Contractor/s shall reinstate to the satisfaction of the Landscape architect the Holding Nursery to its original condition prior to occupation, within two months after completion of all landscape softworks in the Contract. Reference should be made to the Landscape Design Strategy Report for landscape treatment to reinstate temporary works areas.

6.3 Definition of Plant Types

For clarity, the general characteristics of all plants listed in Table 6.01 to 6.04 are described below. The plant list in Table 6.4a to 6.4d are not exhaustive and additional plants could be added at the detailed design stage.

It should be noted that plants with toxic fruits, seeds, leaves or flowers that are dangerous to humans should not be used adjacent to public areas within MOS Rail property.

The exact sizes of plants to be used within detailed designs will be specified by the individual design consultancies within MOS Rail.

6.3.1 Trees

A Heavy Standard Tree shall have a sturdy, straight stem not less than 2100mm in height from soil level to the lowest branch, a stem diameter between 60-100mm depending on species when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level greater than 3500 mm, and a rootball not less than 400mm in diameter and 350mm in depth.

A Semi-mature Tree shall have a sturdy, straight stem, not less than 2500mm in height from soil level to the lowest branch, a stem diameter, greater than 200mm when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry, still providing a head. A Semi-mature Tree should have a total height above soil level greater than 5000mm grown on in Hong Kong, a root ball not less than 1000mm in diameter and 600mm in depth, and a root system previously under cut a minimum of one year prior to lifting to encourage compact fibrous growth.

A Standard Tree shall have a sturdy straight stem not less than 1800mm in height between the soil level and the lowest branch, a stem diameter between 36 – 60mm when measured at a point one metre above the root collar, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level between 2751 – 3500mm and a rootball not less than 350mm in diameter and 300mm in depth.

A Light Standard Tree shall have a stem diameter between 20 – 35mm when measured at a point one metre above the root collar, a strong, upright and reasonably straight unpruned stem well furnished with side branches, a branching head or a well defined straight and upright leader with branches growing out from the stem with good symmetry, a rootball not less than 350mm in diameter and 300mm in depth and a total height above soil level between 1751mm – 2750mm.

A Feathered Tree shall meet the total height, rootball and stem diameter, dimensions as specified for Standard or Light Standard Trees according to size, a well defined straight and upright leader which has not been pruned, branches growing from the stem with good symmetry, vigorous lateral shoots starting no more than 1000mm above root collar in the case of Standards and 750mm above root collar in the case of Light Standards.

A Whip Tree shall have a single central stem and elementary branch system and

6.3.1 Trees

6.3.1 Trees

A Heavy Standard Tree shall have a sturdy, straight stem not less than 2100mm in height from soil level to the lowest branch, a stem diameter between 60-100mm depending on species when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level greater than 3500 mm, and a rootball not less than 400mm in diameter and 350mm in depth.

A Semi-mature Tree shall have a sturdy, straight stem, not less than 2500mm in height from soil level to the lowest branch, a stem diameter, greater than 200mm when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry, still providing a head. A Semi-mature Tree should have a total height above soil level greater than 5000mm grown on in Hong Kong, a root ball not less than 1000mm in diameter and 600mm in depth, and a root system previously under cut a minimum of one year prior to lifting to encourage compact fibrous growth.

A Standard Tree shall have a sturdy straight stem not less than 1800mm in height between the soil level and the lowest branch, a stem diameter between 36 – 60mm when measured at a point one metre above the root collar, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level between 2751 – 3500mm and a rootball not less than 350mm in diameter and 300mm in depth.

A Light Standard Tree shall have a stem diameter between 20 – 35mm when measured at a point one metre above the root collar, a strong, upright and reasonably straight unpruned stem well furnished with side branches, a branching head or a well defined straight and upright leader with branches growing out from the stem with good symmetry, a rootball not less than 350mm in diameter and 300mm in depth and a total height above soil level between 1751mm – 2750mm.

A Feathered Tree shall meet the total height, rootball and stem diameter, dimensions as specified for Standard or Light Standard Trees according to size, a well defined straight and upright leader which has not been pruned, branches growing from the stem with good symmetry, vigorous lateral shoots starting no more than 1000mm above root collar in the case of Standards and 750mm above root collar in the case of Light Standards.

A Whip Tree shall have a single central stem and elementary branch system and

6.3.1 Trees

6.3.1 Trees

A Heavy Standard Tree shall have a sturdy, straight stem not less than 2100mm in height from soil level to the lowest branch, a stem diameter between 60-100mm depending on species when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level greater than 3500 mm, and a rootball not less than 400mm in diameter and 350mm in depth.

A Semi-mature Tree shall have a sturdy, straight stem, not less than 2500mm in height from soil level to the lowest branch, a stem diameter, greater than 200mm when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry, still providing a head. A Semi-mature Tree should have a total height above soil level greater than 5000mm grown on in Hong Kong, a root ball not less than 1000mm in diameter and 600mm in depth, and a root system previously under cut a minimum of one year prior to lifting to encourage compact fibrous growth.

A Standard Tree shall have a sturdy straight stem not less than 1800mm in height between the soil level and the lowest branch, a stem diameter between 36 – 60mm when measured at a point one metre above the root collar, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level between 2751 – 3500mm and a rootball not less than 350mm in diameter and 300mm in depth.

A Light Standard Tree shall have a stem diameter between 20 – 35mm when measured at a point one metre above the root collar, a strong, upright and reasonably straight unpruned stem well furnished with side branches, a branching head or a well defined straight and upright leader with branches growing out from the stem with good symmetry, a rootball not less than 350mm in diameter and 300mm in depth and a total height above soil level between 1751mm – 2750mm.

A Feathered Tree shall meet the total height, rootball and stem diameter, dimensions as specified for Standard or Light Standard Trees according to size, a well defined straight and upright leader which has not been pruned, branches growing from the stem with good symmetry, vigorous lateral shoots starting no more than 1000mm above root collar in the case of Standards and 750mm above root collar in the case of Light Standards.

A Whip Tree shall have a single central stem and elementary branch system and

6.3.1 Trees

6.3.1 Trees

A Heavy Standard Tree shall have a sturdy, straight stem not less than 2100mm in height from soil level to the lowest branch, a stem diameter between 60-100mm depending on species when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level greater than 3500 mm, and a rootball not less than 400mm in diameter and 350mm in depth.

A Semi-mature Tree shall have a sturdy, straight stem, not less than 2500mm in height from soil level to the lowest branch, a stem diameter, greater than 200mm when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry, still providing a head. A Semi-mature Tree should have a total height above soil level greater than 5000mm grown on in Hong Kong, a root ball not less than 1000mm in diameter and 600mm in depth, and a root system previously under cut a minimum of one year prior to lifting to encourage compact fibrous growth.

A Standard Tree shall have a sturdy straight stem not less than 1800mm in height between the soil level and the lowest branch, a stem diameter between 36 – 60mm when measured at a point one metre above the root collar, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level between 2751 – 3500mm and a rootball not less than 350mm in diameter and 300mm in depth.

A Light Standard Tree shall have a stem diameter between 20 – 35mm when measured at a point one metre above the root collar, a strong, upright and reasonably straight unpruned stem well furnished with side branches, a branching head or a well defined straight and upright leader with branches growing out from the stem with good symmetry, a rootball not less than 350mm in diameter and 300mm in depth and a total height above soil level between 1751mm – 2750mm.

A Feathered Tree shall meet the total height, rootball and stem diameter, dimensions as specified for Standard or Light Standard Trees according to size, a well defined straight and upright leader which has not been pruned, branches growing from the stem with good symmetry, vigorous lateral shoots starting no more than 1000mm above root collar in the case of Standards and 750mm above root collar in the case of Light Standards.

A Whip Tree shall have a single central stem and elementary branch system and

6.3.1 Trees

6.3.1 Trees

A Heavy Standard Tree shall have a sturdy, straight stem not less than 2100mm in height from soil level to the lowest branch, a stem diameter between 60-100mm depending on species when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level greater than 3500 mm, and a rootball not less than 400mm in diameter and 350mm in depth.

A Semi-mature Tree shall have a sturdy, straight stem, not less than 2500mm in height from soil level to the lowest branch, a stem diameter, greater than 200mm when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry, still providing a head. A Semi-mature Tree should have a total height above soil level greater than 5000mm grown on in Hong Kong, a root ball not less than 1000mm in diameter and 600mm in depth, and a root system previously under cut a minimum of one year prior to lifting to encourage compact fibrous growth.

A Standard Tree shall have a sturdy straight stem not less than 1800mm in height between the soil level and the lowest branch, a stem diameter between 36 – 60mm when measured at a point one metre above the root collar, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level between 2751 – 3500mm and a rootball not less than 350mm in diameter and 300mm in depth.

A Light Standard Tree shall have a stem diameter between 20 – 35mm when measured at a point one metre above the root collar, a strong, upright and reasonably straight unpruned stem well furnished with side branches, a branching head or a well defined straight and upright leader with branches growing out from the stem with good symmetry, a rootball not less than 350mm in diameter and 300mm in depth and a total height above soil level between 1751mm – 2750mm.

A Feathered Tree shall meet the total height, rootball and stem diameter, dimensions as specified for Standard or Light Standard Trees according to size, a well defined straight and upright leader which has not been pruned, branches growing from the stem with good symmetry, vigorous lateral shoots starting no more than 1000mm above root collar in the case of Standards and 750mm above root collar in the case of Light Standards.

A Whip Tree shall have a single central stem and elementary branch system and

6.3.1 Trees

6.3.1 Trees

A Heavy Standard Tree shall have a sturdy, straight stem not less than 2100mm in height from soil level to the lowest branch, a stem diameter between 60-100mm depending on species when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level greater than 3500 mm, and a rootball not less than 400mm in diameter and 350mm in depth.

A Semi-mature Tree shall have a sturdy, straight stem, not less than 2500mm in height from soil level to the lowest branch, a stem diameter, greater than 200mm when measured at a point one metre from soil level, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry, still providing a head. A Semi-mature Tree should have a total height above soil level greater than 5000mm grown on in Hong Kong, a root ball not less than 1000mm in diameter and 600mm in depth, and a root system previously under cut a minimum of one year prior to lifting to encourage compact fibrous growth.

A Standard Tree shall have a sturdy straight stem not less than 1800mm in height between the soil level and the lowest branch, a stem diameter between 36 – 60mm when measured at a point one metre above the root collar, a well balanced branching head, or a well defined straight and upright leader with branches growing out from the stem with good symmetry still providing a head, a total height above soil level between 2751 – 3500mm and a rootball not less than 350mm in diameter and 300mm in depth.

A Light Standard Tree shall have a stem diameter between 20 – 35mm when measured at a point one metre above the root collar, a strong, upright and reasonably straight unpruned stem well furnished with side branches, a branching head or a well defined straight and upright leader with branches growing out from the stem with good symmetry, a rootball not less than 350mm in diameter and 300mm in depth and a total height above soil level between 1751mm – 2750mm.

A Feathered Tree shall meet the total height, rootball and stem diameter, dimensions as specified for Standard or Light Standard Trees according to size, a well defined straight and upright leader which has not been pruned, branches growing from the stem with good symmetry, vigorous lateral shoots starting no more than 1000mm above root collar in the case of Standards and 750mm above root collar in the case of Light Standards.

A Whip Tree shall have a single central stem and elementary branch system and



KOWLOON - CANTON
RAILWAY CORPORATION
MOS RAIL: EIA STUDY



a well developed vigorous root system, a height above soil level of 601 – 1500mm grown in a container not less than 125mm in diameter and 200mm deep.

A Seeding Tree shall have a single slender stem, a well developed vigorous root system, height above soil level of 150-600mm, grown in a container not less than 75mm in diameter and 200mm deep.

6.3.2 Palms

A Semi-mature Palm shall have a well developed upright form with good symmetry and vigorous fronds, well developed healthy root system, no less than ten fronds, a sturdy straight stem not less than 5000mm, in height from soil level to the base of the crown shaft, a root ball of not less than 1000mm in diameter and 600mm in depth and a stem diameter of not less than 175mm measured at a height of 1000mm from soil level.

An Extra Heavy Palm shall have a well developed upright form with good symmetry and vigorous fronds, a well developed healthy root system, no less than seven fronds, a sturdy straight stem not less than 3500mm in height from soil level to the base of the crown shaft and a root ball not less than 750mm in diameter and 600mm in depth.

A Heavy Palm shall have a well developed upright form with good symmetry and vigorous fronds, a well developed healthy root system, no less than five fronds, a sturdy straight stem not less than 1500mm in height from soil level to the base of the crown shaft, a root ball not less than 400mm in diameter and 350mm in depth.

A Palm Tree shall have a well developed upright form with good symmetry and vigorous fronds, a well developed healthy root system, no less than the 5 fronds per plant, an overall height above ground of between 1200mm and 2000mm and a root ball not less than 350mm in diameter and 300mm in depth.

A Small Palm shall have a well developed form with good symmetry and vigorous fronds a well developed healthy root system an overall height above ground of between 750mm and 1200mm unless stated otherwise on Drawings grown and supplied in a container not less than 200mm in diameter and 250mm deep.

6.3.3 Shrubs

A Small Shrub shall be a seedling or rooted cutting which has a bushy habit, two or more one year old vigorous shoots, a well-developed, vigorous root system, a height between 150mm and 400mm, grown and supplied in a container not less than 125mm in diameter and 150mm deep.

A Medium Shrub shall be a seedling or rooted cutting which has a bushy habit two or more years old, bushiness encouraged by pruning with a minimum of three vigorous branches well furnished with shoots to produce a plant with a diameter two-thirds of the height, 401-700mm in height, a well developed vigorous root system, grown and supplied in a container not less than 175mm diameter and 200mm deep.

A large Shrub shall be a seedling or rooted cutting that has been transplanted and which has a bushy habit, bushiness encouraged by pruning with a minimum of three one year old vigorous shoots well furnished to produce a diameter two-thirds of the height, a well-developed, vigorous root system, 701-1000mm in height, grown and supplied in a container not less than 200mm in diameter and 250mm deep.

6.3.4 Ground cover shrubs

A Ground-cover Plant shall have ell developed vigorous shoots, a well-developed vigorous root system, an average diameter between 100mm and 350mm, grown and supplied in a container not less than 125mm in diameter and 150mm deep.

6.3.5 Climbers

A Climber shall have one, or more, one year old, vigorous main shoots not less than 500mm long, one to two years old, a well developed vigorous root system, grown and supplied in a container not less than 125mm in diameter and 150mm deep.

6.3.6 Conifers

A Conifer shall be a seedling which has been transplanted not less than 2 years old and shall have a well developed upright stem and vigorous shoots with good symmetry a well-developed vigorous root system, a height between 200mm and 600mm grown and supplied in a container of dimensions not less than 175mm diameter and 200mm deep.



Table 6.4a Tree Species/ Function / Location Matrix (SHEET 1 OF 2)
x - indicates plant species suitable for specific location

Species	Origin			Plant Function/ Location							Eventual Height				
	Native	Naturalised	Exotic	Screen planting	Structure Planting	Woodland Planting	Street Trees	Ornamental Planting	Fast Growing Planting	Embankments	Trees with narrow crown spread for planting near viaduct	Trees with wide crown spread for planting away from viaduct	Greater than 12m	Between 6m and 12m	6m and less
Trees & Palms															
Acacia confusa															
Acacia mangium			x	x											
Albizia julibrissin			x	x											
Aleurites moluccana	x														
Araucaria heterophylla			x	x											
Archontophoenix alexandrae			x												
Bauhinia blakeana	x														
Bauhinia variegata															
Bischofia trifoliata			x												
Bombax malabaricum	x			x											
Callistemon rigidus			x												
Callistemon viminalis			x												
Caryota ochlandra															
Cassia fistula															
Cassia siamea			x												
Cassia surattensis			x												
Casuarina equisetifolia			x												
Celtis sinensis															
Cerbera manghas	x			x											
Cinnamomum burmannii	x			x											
Cinnamomum camphora	x														
Crataeva religiosa				x											
Delonix regia			x	x											
Erythrina coraliodendron			x	x											
Erythrina crista-galli			x												
Erythrina variegata			x												
Eucalyptus citriodora															
Eucalyptus robusta			x												
Eucalyptus torelliana			x												
Ficus benjamina			x												
Ficus elastica															
Ficus microcarpa	x			x											
Ficus superba	x			x											

Table 6.4b Shrub Species/ Function / Location Matrix (SHEET 1 OF 2)
x - indicates plant species suitable for specific location

Species	Origin			Plant Function/ Location				Eventual Height				
	Native	Naturalised	Exotic	Structure Planting	Woodland Planting	Ornamental Planting	Embankments	Cuttings	2.5-4.5m	1.2-2.5m	1.0-1.5m	0.3-1.0m
Shrubs												
<i>Agrave americana</i> 'Marginata'			x			x						
<i>Aglaia odorata</i>	x									x		
<i>Alocasia odorata</i>	x			x				x				
<i>Allamanda neriiifolia</i>			x							x		
<i>Alpinia zerumbet</i> 'Variegata'			x									
<i>Barleria cristata</i>			x							x		
<i>Calliandra haematocephala</i>		x		x								
<i>Camellia japonica</i>		x										
<i>Catharanthus roseus</i>		x										
<i>Chlorophytum comosum</i>	x											
<i>Clerodendrum kaempferi</i>	x			x								
<i>Cordyline terminalis</i>			x									
<i>Cuphea hyssopifolia</i>												
<i>Dracaena</i> spp.	x			x								
<i>Duranta repens</i>			x									
<i>Eranthemum nervosum</i>		x		x								
<i>Ficus microcarpa</i> 'Golden Leaf'		x										
<i>Gardenia jasminoides</i>		x										
<i>Hibiscus rosa-sinensis</i>		x		x								
<i>Hymenocallis americana</i>			x									
<i>Ixora chinensis</i>			x									
<i>Ixora stricta</i>	x			x								
<i>Jasminum mesnyi</i>		x										
<i>Jasminum sambac</i>		x										
<i>Lagerstroemia indica</i>		x										
<i>Ligustrum sinense</i>			x									
<i>Melastoma candidum</i>	x			x								
<i>Melastoma sanguineum</i>	x			x								
<i>Michelia figo</i>	x			x								



KOWLOON - CANTON RAILWAY CORPORATION
MOS RAIL: EIA STUDY



Table 6.4b Shrub Species/ Function / Location Matrix (SHEET 2 OF 2)
x - indicates plant species suitable for specific location

Species	Origin			Plant Function/ Location						Eventual Height			
	Native	Naturalised	Exotic	Structure Planting	Woodland Planting	Ornamental Plantin	Embankments	Cuttings	2.5-4.5m	1.2-2.5m	1.0-1.5m	0.3-1.0m	
Shrubs (Cont'd)													
<i>Monstera deliciosa</i>		x				x							
<i>Murraya paniculata</i>		x				x							
<i>Nandia domestica</i>		x				x							
<i>Nerium oleander</i>		x				x							
<i>Philodendron selloum</i>		x				x							
<i>Phyllanthus emblica</i>	x					x							
<i>Pittosporum tobira</i>						x							
<i>Phapholepis indica</i>	x					x							
<i>Rhododendron Spp.</i>						x							
<i>Rhoeo discolor</i>						x							
<i>Sansevieria trifasciata var. laurentii</i>			x			x							
<i>Schefflera arboricola</i>		x				x							
<i>Spathiphyllum spp.</i>		x				x							
<i>Tecoma stans</i>						x							
<i>Thryallis glauca</i>						x							

Table 6.4c Groundcover Species/ Function / Location Matrix
x - indicates plant species suitable for specific location

Species	Origin			Plant Function/ Location					Eventual Height	
	Native	Naturalised	Exotic	Structure Planting	Woodland Planting	Ornamental Planting	Embankments	Cuttings	150-300mm	0-150mm
Groundcovers										
<i>Alocasia odora</i>	X					X	X	X	X	
<i>Alternanthera versicolor</i>			X			X				X
<i>Asparagus densiflorus 'Sprengerii'</i>			X			X			X	
<i>Asplenium nidus</i>			X		X	X			X	
<i>Chlorophytum laxum</i>	X				X	X				X
<i>Hedera helix</i>			X			X	X			X
<i>Lantana montevidensis</i>	X				X	X				X
<i>Liriope spicata</i>						X				X
<i>Nephrolepis exaltata</i>	X				X	X			X	
<i>Ophiopogon japonicus</i>	X				X	X			X	
<i>Scindapsus aureus</i>			X			X				X
<i>Stecreasea purpurea</i>			X		X	X				
<i>Spathiphyllum x Cleveland</i>			X		X	X			X	
<i>Stenotaphrum secundatum</i>			X			X			X	
<i>Wedelia trilobata</i>			X			X				X
<i>Zebrina pendula</i>			X			X			X	X

