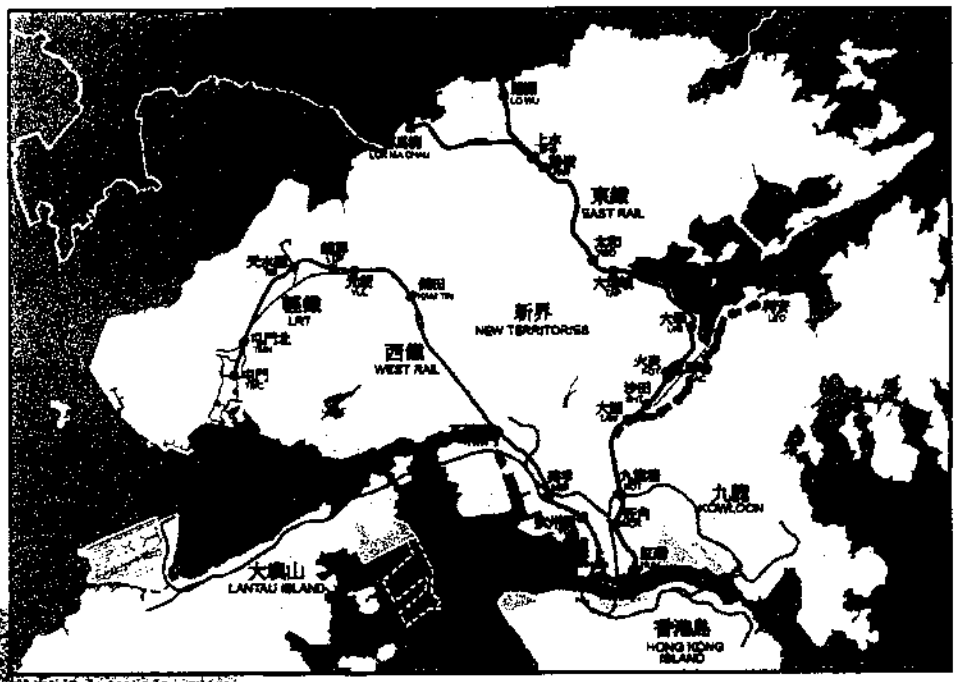

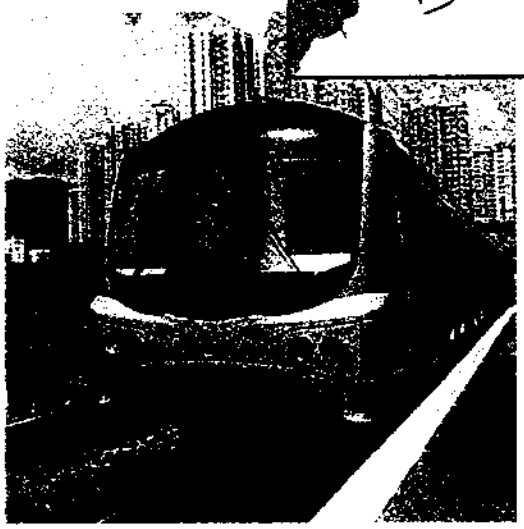

KCR

East Rail Extensions
KCR Extension from Hung Hom to Tsim Sha Tsui

Project Profile
Oct 1998

CONTENTS:

1	*INTRODUCTION*	1
1.1	*BACKGROUND*	1
1.2	*KCR EXTENSION FROM HUNG HOM TO TSIM SHA TSUI*	1
1.3	*STRUCTURE OF THE PROJECT PROFILE*	1
2	*BASIC INFORMATION*	3
2.1	*PROJECT TITLE*	3
2.2	*PURPOSE AND NATURE OF THE PROJECT*	3
2.3	*NAME OF PROJECT PROPONENT*	3
2.4	*LOCATION AND SCALE OF PROJECT*	3
2.5	*HISTORY OF SITE*	4
2.6	*NUMBER AND TYPES OF DESIGNATED PROJECTS*	4
2.7	*NAME(S) AND TELEPHONE NUMBER(S) OF CONTACT PERSON(S)*	4
3	*PLANNING AND IMPLEMENTATION PROGRAMME*	5
3.1	*PLANNING AND IMPLEMENTATION*	5
3.2	*PROJECT PROGRAMME*	5
4	*POSSIBLE IMPACT ON THE ENVIRONMENT*	6
4.1	*OUTLINE OF PROCESSES INVOLVED*	6
4.2	*POTENTIAL ENVIRONMENTAL IMPACTS*	8
5	*SURROUNDING ENVIRONMENT*	13
5.1	*EXISTING AND PLANNED SENSITIVE RECEIVERS*	13
5.2	*OTHER KEY FACTORS IN THE SURROUNDING ENVIRONMENT*	15
6	*ENVIRONMENTAL PROTECTION MEASURES AND FURTHER ENVIRONMENTAL IMPLICATIONS*	16
6.1	*POTENTIAL MEASURES WHICH MAY BE INCORPORATED TO MINIMISE ENVIRONMENTAL IMPACTS*	16
6.2	*POTENTIAL SEVERITY, DISTRIBUTION AND DURATION OF KEY ENVIRONMENTAL IMPACTS*	19
6.3	*FURTHER IMPLICATIONS*	19
7	*USE OF PREVIOUSLY APPROVED EIA REPORTS*	20

1 INTRODUCTION

1.1 BACKGROUND

The Tai Wai to Ma On Shan Rail Link (MOS Rail) and KCR Extension to Tsim Sha Tsui (TST Extension) together form one of the three priority projects under the Railway Development Strategy (RDS) in 1994. Following receipt of Kowloon-Canton Railway Corporation (KCRC)'s proposal to implement them as a package, Government has asked KCRC to proceed with detailed planning and design of the two projects.

In drawing up its proposal, KCRC has undertaken the Preliminary Environmental review (PER) for both rail lines, the findings of which are issued as three separate volumes:

- *Tsim Sha Tsui Extension - Preliminary Environmental Review;*
- *Ma On Shan Line - Preliminary Environmental Review: Volume 1 - Main Report; and;*
- *Ma On Shan Line - Preliminary Environmental Review: Volume 2 - Technical Annexes.*

This document is a formal Project Profile as defined by Part II of the *EIA Ordinance* and relates to the proposed East Rail Extension to Tsim Sha Tsui. A separate application and associated Project Profile will be submitted for the MOS Line.

1.2 KCR EXTENSION FROM HUNG HOM TO TSIM SHA TSUI

The KCR Extension from Hung Hom to Tsim Sha Tsui will provide a direct KCRC link to the employment areas of the Kowloon peninsula and a second interchange at Tsim Sha Tsui with the Mass Transit Railway (MTR), thereby relieving congestion at Kowloon Tong Stations by providing passengers the alternative to interchange between MTR and KCR in Tsim Sha Tsui.

1.3 STRUCTURE OF THE PROJECT PROFILE

The structure of this document conforms to the checklist requirements in Annex 1 to the *Technical Memorandum on EIA Process*.

The remainder of the Project Profile is arranged as follows:

- *Section 2* presents basic information pertaining to the project, including the purpose and nature, location and scale, the history of the site and project proponent contact details;
- *Section 3* outlines programme planning and implementation details;
- *Section 4* outlines the construction processes involved and associated potential environmental impacts, as well as potential operational impacts;
- *Section 5* presents a list of sensitive receivers and other key details of the surrounding environment;

- *Section 6* outlines the mitigation measures to be employed and further impact details; and

- *Section 7* lists the use of previously approved EIA Reports referenced for this project.

2 BASIC INFORMATION

2.1 PROJECT TITLE

KCR Extension from Hung Hom to Tsim Sha Tsui

2.2 PURPOSE AND NATURE OF THE PROJECT

To expand the KCRC rail network in order to meet projected population growth and rail ridership demands.

2.3 NAME OF PROJECT PROPONENT

The Kowloon-Canton Railway Corporation.

2.4 LOCATION AND SCALE OF PROJECT

The proposed KCR Extension alignment will comprise an approximate 1.5 km length of new rail track and a new station, to be situated under the existing Middle Road Children's Playground (see *Figure 2.4a*). Additionally, an approximately 9,000 m^2 plot of land northwest of the current KCR Hung Hom Station will also be gazetted (see *Figure 2.4b*) and is proposed as the site for a high voltage depot and a new feeder station with an adjacent China Light and Power substation, in order to provide the required electricity supply to the railway extension. This site will also be used as a temporary works area during construction along with four temporary works areas on Hung Hom Reclamation (see *Figure 2.4c)*.

Alignment and Station

The alignment will commence at the existing KCR Hung Hom Station, where three tracks are extended, then joining to become two which will extend southward at-grade in box structure past the western corner of the International Mail Centre (IMC). The alignment will then pass through a narrow window formed by Hung Hom Bypass (HHB), which is currently under construction and the Cross Harbour Tunnel (CHT) before descending into a more conventional tunnel structure below ground level.

The railway alignment will parallel the TST promenade directly under the eastern most lane of Salisbury Road for about 400 m and then curve westward at the Shangri-La Hotel passing under Salisbury Road and close to Wing On Plaza. From Wing On Plaza Garden, the alignment will continue under Chatham Road and on to Middle Road Childrens' Playground where the proposed East Tsim Sha Tsui Station (ETS) will be constructed below ground level. A pedestrian subway will also be constructed from the station, north to Minden Avenue and Minden Row before turning west down Mody Road and connecting with the Mass Transit Railway Corporation TST station at Nathan Road.

From ETS, the alignment will continue westward down Middle Road, crossing under Nathan Road and above the MTRC Tsuen Wan line tunnels in a specially designed box structure to alleviate uplifting and vibration issues. The alignment will then continue along Middle Road past the Kowloon Hotel under Hankow Road and Kowloon Park Drive before entering a rock tunnel under the ex-Marine Police Headquarters. The alignment will terminate under Canton Road.

2.5 *HISTORY OF SITE*

The majority of the proposed alignment and station is to be developed on land in the heart of the Kowloon Peninsula which has primarily been heavily developed for commercial use, or recently reclaimed land developed for primarily commercial uses. Beginning in 1904 and at various intervals throughout the 1960's, portions of the historic Kowloon Peninsula were reclaimed. There is little available information to indicate that there has been any major industrial usage in reclamation areas along the alignment, with the exception of the old KCR rail line and dockside activities and some associated storage and warehouse areas along the rail sidings, all of which were removed by the late 1970s.

2.6 *NUMBER AND TYPES OF DESIGNATED PROJECTS*

The alignment, station and ancillary structures are all one designated project.

2.7 *NAME(S) AND TELEPHONE NUMBER(S) OF CONTACT PERSON(S)*

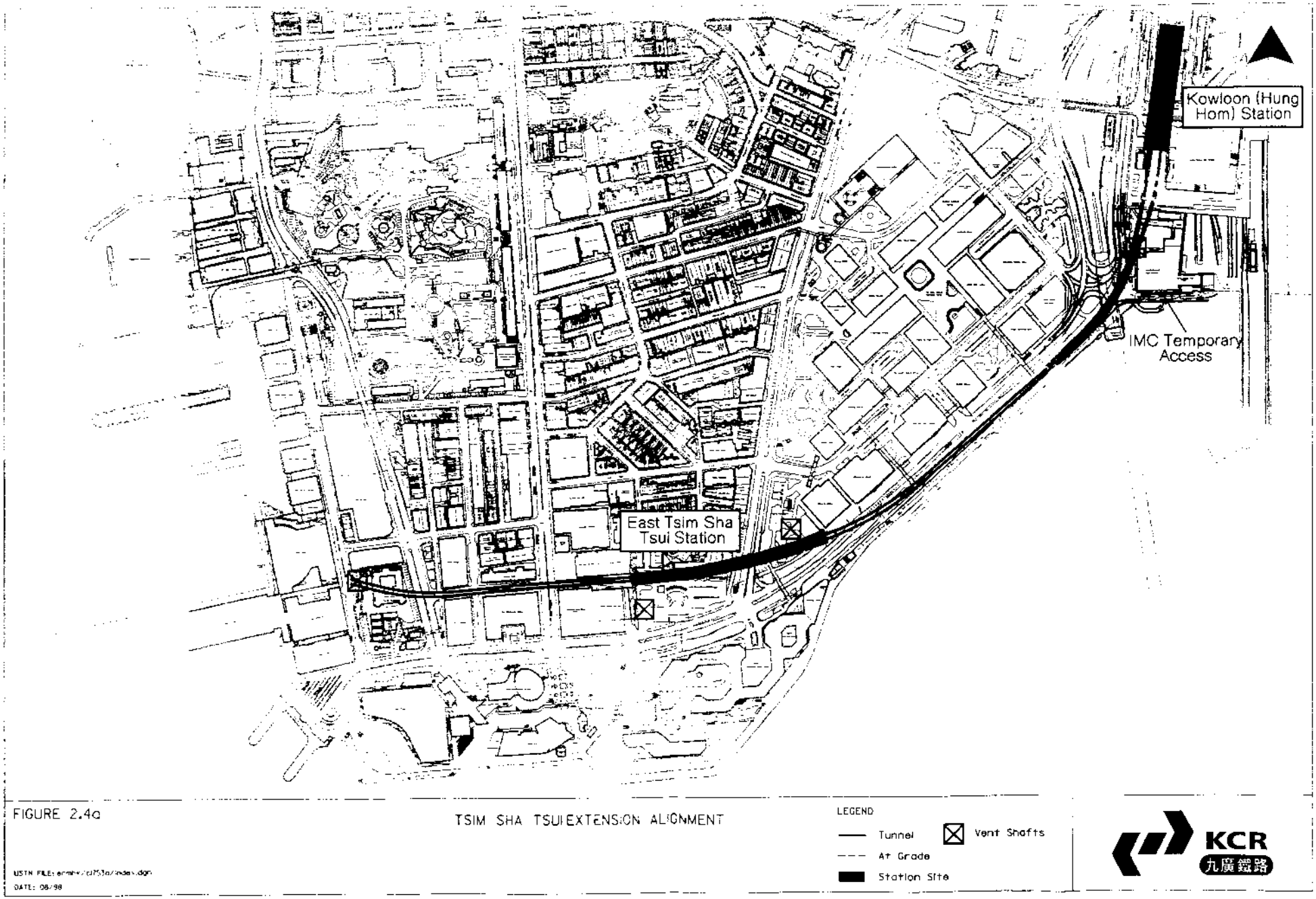

FIGURE 2.4a

TSIM SHA TSUI EXTENSION ALIGNMENT

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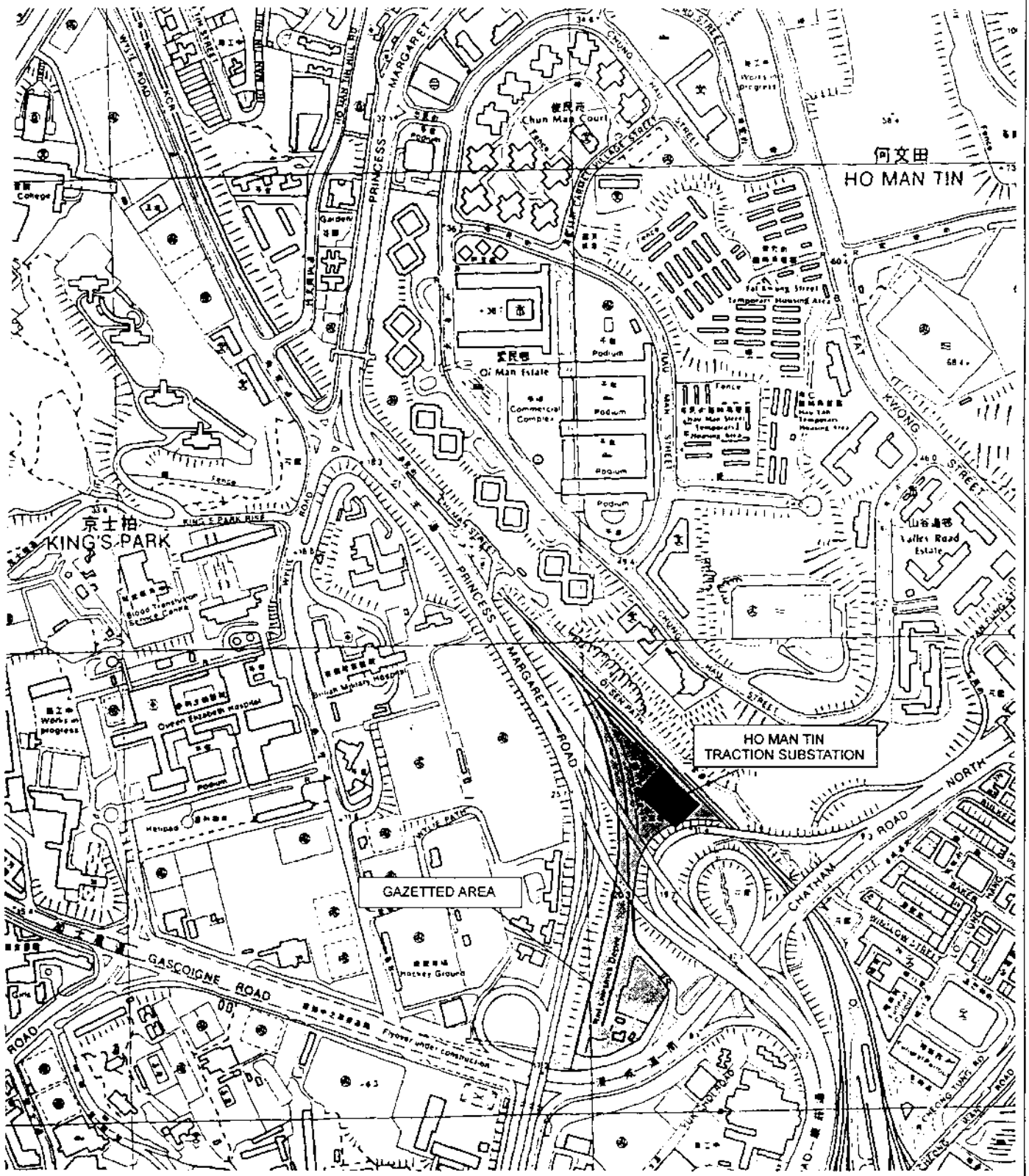

FIGURE 2.4b

HO MAN TIN TRACTION SUBSTATION

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KCR 九廣鐵路

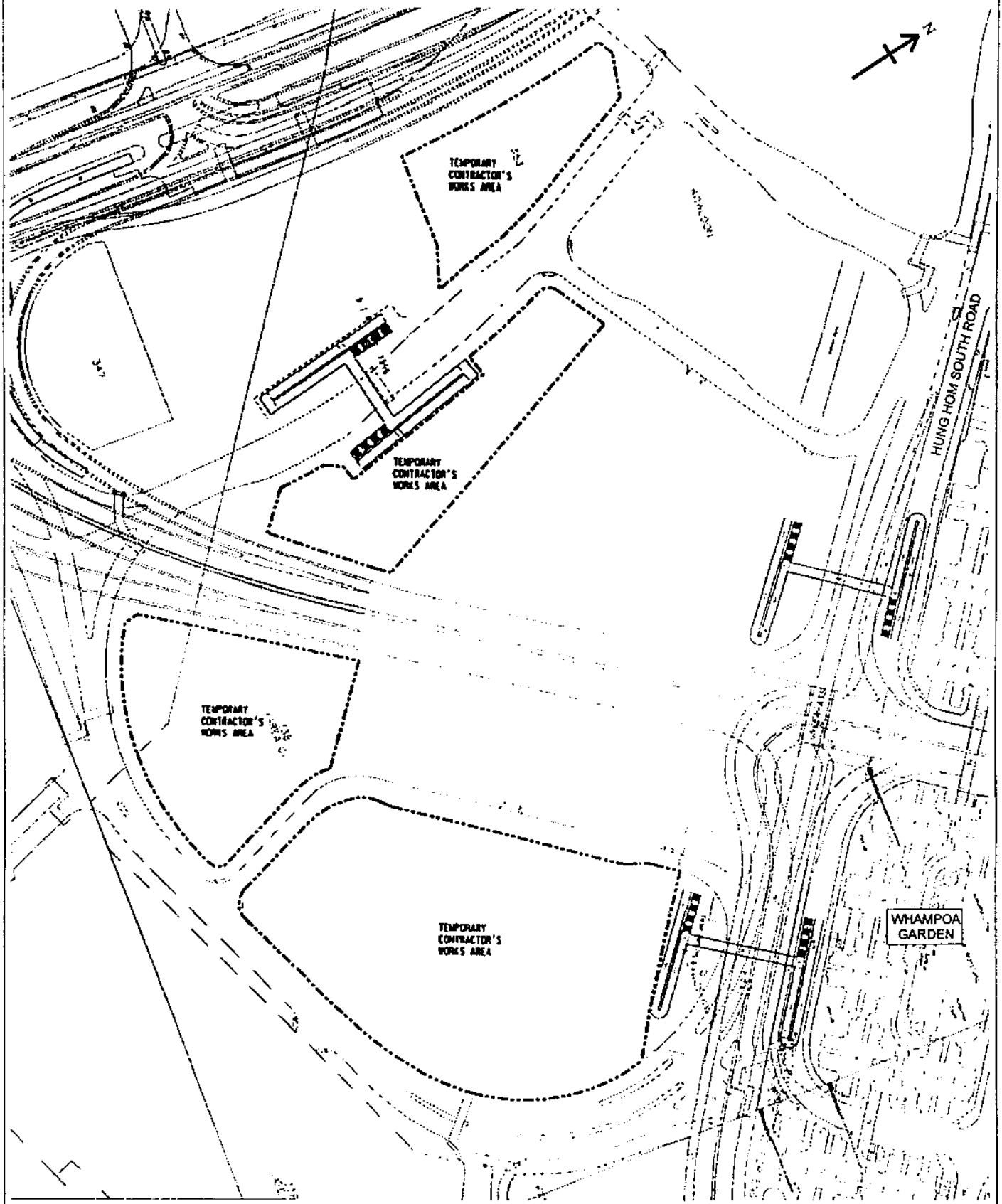

FIGURE 2.4c HUNG HOM RECLAMATION - TEMPORARY WORKS AREAS

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DATE: 07/08/98

KCR 九廣鐵路

3 *PLANNING AND IMPLEMENTATION PROGRAMME*

3.1 *PLANNING AND IMPLEMENTATION*

The whole project will be planned and implemented by KCRC's in-house divisions together with external consultants. Construction will be carried out by contractors.

3.2 *PROJECT PROGRAMME*

The current projected programme identifies detailed design being undertaken by Consultants during 1999 with completion in 2000. Construction work will commence in 2000 with completion targeted for 2004. Trial operation will commence immediately following completion of construction with the commencement of the commercial train service to Tsim Sha Tsui following the trial operation period.

4 POSSIBLE IMPACT ON THE ENVIRONMENT

4.1 OUTLINE OF PROCESSES INVOLVED

General

The construction of the KCR Extension alignment will be a substantial engineering challenge given the number of utilities and other transport infrastructure items which must be reprovisioned, regraded, crossed or tunnelled under. Primarily, the works are to be undertaken using traditional methods of excavation with a mixture of cut and cover and bored tunnel excavation. A specialist tunnelling method is proposed for the Nathan Road crossing which will enable the road to remain open at all times as well as provide security to the existing MTRC Tsuen Wan line tunnels. The principal worksites to be used for the construction works other than the alignment itself are the Wing On Plaza Garden, Middle Road Children's Playground adjacent to Signal Hill and the Mariners Club and a small section of median south of the sitting out area adjacent to Ashley Road / Middle Road intersection.

Advanced Works

Advance works in the form of substantial utilities reprovisioning will be required prior to commencement of railway alignment works along the TST waterfront promenade. Gas mains, telecommunication lines, foul sewer, fresh water mains, drainage culverts and cooling water intakes and outlets for numerous hotels along Salisbury Road are to be diverted from their present location to the northern side of Salisbury Road and also along both sides of Mody Lane. This will be undertaken via cut and cover methods with depths of excavations varying between a few hundred millimetres to in excess of 1.5 m such that trench support methods such as sheetpiling will be required in certain locations.

Hung Hom Station to East Tsim Sha Tsui Station

Reprovisioning works at the existing KCRC Hung Hom station will be mostly operational in nature, although some demolition and removal of walls and columns and associated finishes are expected as existing platforms, services and structures are reprovisioned/renewed to allow for future extension. The alignment will be at grade at this location so significant earthworks are unlikely.

Road regrading works are anticipated above the CHT at and around the Salisbury Road intersection. These works will be necessary in order that the alignment box structure has adequate clearance over the CHT. These works will involve removing the existing road surface, placement of additional road pavement materials and resurfacing.

As the proposed KCR Extension alignment will permanently sever existing access to the IMC and the KCRC freight yard at its rear, it is proposed that access be reprovided around the southern end of the IMC under the HHB viaduct. This will be undertaken by constructing several rows of piles in the seabed at the southern end of the IMC and constructing a three lane access roadway.

Alignment construction under Salisbury Road will be undertaken using traditional cut and cover methods. Site preparation activities will involve the removal of the existing road pavement surface, followed by sheetpiling which will be used both as temporary trench support and as a means to restrict water ingress. Grouting and

pumps may also be used in particularly difficult situations to further reduce the influx of water and keep the excavation dry. Excavation will proceed along the route, followed by tunnel box construction which will require formworking, steelfixing and concreting. Backfilling of removed material and reinstatement of road and footpath infrastructure will follow.

East Tsim Sha Tsui Station (ETS)

The construction of ETS will be split by Chatham Road. East of Chatham Road, the station construction will be undertaken in mainly soft ground requiring the use of diaphragm walling and bored piling techniques to act as a temporary trench support and coffer dam for water ingress. A conventional station box will be constructed inside the diaphragm wall temporary works. Wing On Plaza Garden will be occupied for use as a temporary worksite by the Contractor for a period of about 4 years for station construction and Salisbury Road Underpass works.

West of Chatham Road, ground conditions are characterised by varying degrees of weathering of granite rock and excavation by drill and blast methods is necessitated in terms of the overall project programme. A significant portion of Signal Hill will be cut away to make way for the station box. The Mariners Club is also to be demolished to make way for the proposed station. A pedestrian subway connection from the proposed station to the MTRC TST station will be routed initially in bored tunnel north under Signal Hill and will surface in Minden Row. From here, the subway construction will continue in cut and cover to Mody Road before turning west and connecting with the existing MTRC TST station.

Overrun Tunnels (East Tsim Sha Tsui Station to Canton Road)

West of ETS, the alignment will follow Middle Road, crossing Nathan Road (Microtunnelling technique) and Hankow Road and Kowloon Park Drive in cut and cover. Bored tunnelling will again commence at Kowloon Park Drive, under the ex-Marine Police Headquarters Building before finally coming to an end under Canton Road. At the western end of the ex-Marine Police Headquarters site, a ventilation building will be constructed on top of a vertical shaft drilled from the surface to intersect the railway tunnel.

Apart from the tunnelling under Nathan Road and the section of drill and blast tunnelling mentioned above, the remainder of the alignment west of ETS will be excavated by cut and cover utilising diaphragm walling techniques as initial trench support systems. The necessity to keep Middle Road open at all times means that excavation will need to be sequential; first closing one side of the road for construction works before decking and then constructing the other in a similar manner. After reaching this point, the excavation and construction of the tunnel box can proceed with little external effect, with most activities (except for the removal of spoil and ventilation and utilities) being undertaken underground. Backfilling and road surface reinstatement will again be undertaken on completion of the construction work. In some areas, chemical grouting will need to be undertaken in advance of diaphragm walling to ensure allowable limits on settlement of nearby buildings are not exceeded.

A drilling and excavation technique called Microtunnelling will be utilised for the Nathan Road Crossing in order to ensure that the road remains fully operational at all times. Essentially, the process involves excavating a pit either side of the crossing, lowering in a drilling machine which is jacked forward on rails and onto which, drill bits are continuously attached until the cutting head reaches the other side. A symmetrical drilling pattern is adopted which ensures on completion that the entire

cross section of spoil is removed. Spoil is removed periodically from the drilling pit and formation and concreting of the box tunnel is performed incrementally as drilling proceeds.

Traction Feeder Station

An area northwest of Kowloon station at Hung Hom has been identified for potential use as a construction storage area and as the location of a traction feeder station to serve the new extension. The land, is on long term lease to KCRC and lies between Princess Margaret Road and Gascoigne Road. The current landuse is for two railway sidings where pigs are transferred from rail to road transport for delivery to local produce stores. During construction it is proposed that the area be used to store bulky materials and to launch track laying vehicles, then for the operation of the railway the area will accommodate a high voltage depot and a new feeder station with a CLP substation adjacent to this to provide the required electrical input supply.

4.2 POTENTIAL ENVIRONMENTAL IMPACTS.

4.2.0 Construction Phase

Air Quality

During the construction phase, dust impacts are likely from site preparation activities, earthworks and excavations. It is expected that the impacts from construction plant exhaust emissions will be limited as relatively small numbers will be required. Unmitigated dust impacts from the alignment works are not expected to cause adverse impacts at any sensitive receivers even if works are conducted simultaneously at all worksites, which is unlikely.

Noise

The frequently noisy nature of construction works and the proximity of sensitive receivers in a busy urban area such as Tsim Sha Tsui means that adverse noise impacts are likely to occur. Unmitigated noise impacts from the station and alignment construction are predicted to exceed the daytime noise limit established under the *Technical Memorandum on Environmental Impact Assessment Process* (TMEIA) at all of the identified sensitive receivers during one or more stages of the works. Noise impacts from the construction of the overrun tunnels are predicted to be particularly severe. A package of mitigation measures has, therefore, been designed to control construction noise impacts and these are described in *Section 6.*

Water Quality

Unmitigated construction site runoff from tunnelling and excavation activities is a potential problem, however, under the *Water Pollution Control Ordinance* all sites will be required to obtain a discharge licence. In meeting the discharge requirements, the contractor will prevent adverse impacts upon receiving water bodies. Sewage effluent arising from the construction workforce has the potential to cause adverse impacts if dealt with in an inappropriate manner.

Effluent generated from dewatering associated with piling activities close to the International Mail Centre is likely to be contaminated with silt and suspended solids and will require treatment before disposal.

Waste Management

The potential for the uncontrolled disposal of wastes arising from the construction works to generate adverse impacts has been identified, however, observance of the relevant legislation will prevent this. Waste materials will be removed from the sites by lorry and impacts will be limited to the effects associated with increases in vehicle movements.

Inert excavated material, demolition and construction waste shall either be reused on site, taken to other reclamation or construction projects, or sent to a public dump. Materials containing not more than 20% by volume (or 30% by weight) of inert material may be sent for disposal at a landfill. Other waste, including general refuse, will also be disposed of in a responsible manner and will not give rise to significant impacts.

Ecology

The entire alignment is within the urban environment of Tsim Sha Tsui. This area is of little ecological value and adverse unmitigated construction impacts are unlikely. Although none of the sites are of particular value or contain rare or endangered species, Wing On Garden and Signal Hill Garden contain many mature trees and shrubs which have a high recreational value. In keeping with the general conservation policy in the Territory, they should be protected from unnecessary disturbance.

Landscape and Visual

Unmitigated adverse landuse and visual impacts are predicted from the construction of the KCR Extension and whilst landuse impacts can be largely overcome by careful planning, some residual visual impacts from construction works will remain even after mitigation. However, these impacts should be considered in the context of the local urban environment near the alignment which is one of ongoing urban renewal and new development.

The construction works will generate considerable impacts to the surrounding physical landscape. These impacts will generally take the form of tree losses, particularly those trees that are mature specimens and provide a valuable role in the landscape amenity of the areas in which they are located.

There will be a small proportion of trees lost along TST East Promenade, as well as a 500m length planting strip along the northern edge of Salisbury Road and tree and shrub planting in Salisbury Road central median. Additionally, Many of the mature trees in the southern portion of Wing On Plaza Garden, and in the northern portion of Middle Road Childrens Playground will be lost along with trees and shrubs on the south, east and west sides of Signal Hill and close to the ex-Marine Police Headquarters at the site of the ventilation building.

Historic and Cultural Resources

The preliminary review of impacts to historic and cultural resources has indicated that there appear to be no insurmountable impacts associated with the construction of the KCR Extension.

The proposed construction of the KCR Extension will give rise to a change in the setting of the Grade 2 listed Signal Tower and will involve the regrading of the historic Signal Hill, however, it is intended that the hill top be reinstated and be subject to sympathetic restoration and regrading.

There is also the potential for there to be impacts to the Grade 1 listed ex-Marine Police Headquarters. Tunnelling for the overrun tunnels will be some distance below the building but it is recommended that there be a pre-construction survey of this site.

No direct impacts are expected at the Peninsula Hotel and any indirect impacts should be easily mitigated.

Land Contamination

There has generally been no historical industrial use of the southern portion of Kowloon within the study area. The only exceptions are the historical rail terminus/dockside activities and warehouse storage godowns that occupied portions of land along Chatham Road prior to reclamation and development of TST East and in the location of the New World Centre (old pier and freight warehouses). The rail operations had all ceased and been removed by the late 1970s however these specific areas should be the focus of further historical investigations to more accurately determine the potential for land contamination concerns.

There is a small potential for alluvial fill in reclaimed areas to be underlain by contaminated marine sediments however, comparison of the vertical profile of the railway with geological information arising as a result of current site investigations should clarify the level of this potential in due course.

The most significant potential contamination issue identified as a result of this study is that related to the petrol filling station on Middle Road adjacent to the Mariners Club and Middle Road Children's Playground (see *Figure 2.4a*). The need to construct ventilation structures for ETS station requires the removal of underground petrol storage tanks within the playground and although age and integrity of the underground tanks at the petrol station site are unknown, there is considered to be a medium to high contamination potential by hydrocarbons on removal of these tanks. This aspect in particular should be a focus for further investigations in subsequent stages the project assessment.

Hazard Assessment

No hazards are foreseen during the construction of the rail line.

Night-Time Operations

Construction activities are not proposed during night-time hours, however, if they were to be implemented, the Contractor would need to apply to the EPD for a noise control permit and abide by the stricter night-time criteria set out in the *Noise Control Ordinance*.

Traffic Generation

The main generation of extra traffic loading will arise from vehicles removing excavated spoil. Their numbers will not be significant however, in comparison with the existing high traffic loading in the TST area.

4.2.1 *Operational Phase*

Air Quality

The only potential impacts will arise from the station and tunnel ventilation systems (see *Figure 2.4a*) and as these are primarily used for the circulation of fresh air no adverse impacts are expected during normal operations. The ventilation system is also designed to extract smoke in the event of a fire and the vent locations and orientations should be selected to avoid facing onto sensitive receivers.

Trains are to be electrically powered and thus there will be no adverse air quality impacts due to gaseous emissions

Noise and Vibration

Uncontrolled night-time noise levels at source from the ventilation systems could exceed the requirements of the *Noise Control Ordinance*. However, the most current assessment indicates that the separation distance between the vents and the nearest sensitive receivers is sufficient to prevent adverse impacts.

Impacts caused by vibration from the operation of the railway could affect adjacent sensitive receivers through existing foundations and other sub-surface structures along the proposed alignment.

Water Quality

No water quality issues are expected during the operation of the railway.

Waste Management

Solid waste arisings during the operation phase will be small. Some chemical and industrial waste will be generated from station maintenance and during occasional refurbishment works but the implementation of good housekeeping practices and the observation of the requirements of the *Waste Disposal Ordinance* will prevent adverse impacts.

Ecology

No ecological impacts are anticipated during the operation of the railway.

Landscape and Visual

Other than a short section of the line immediately West of Hung Hom Station the entire alignment will be below ground and as such, provided that the above ground ancillary structures are designed to fit in with the existing urban landscape, there will be minimal adverse impacts.

Historic and Cultural Resources

No historic and cultural impacts are expected during the operation of the railway.

Land Contamination

No land contamination impacts are expected during the operation of the railway.

Hazard Assessment

There are two external hazards of concern for the KCR Extension - the existing Middle Road petrol filling station and the cross-harbour gas pipelines which cross the alignment near the junction of Salisbury Road and Mody Road.

The Petrol Station is to be relocated.

5 SURROUNDING ENVIRONMENT

5.1 EXISTING AND PLANNED SENSITIVE RECEIVERS

Air Quality (See Figures 5.1a/5.1b/5.1c)

Potential Air Sensitive Receivers (ASR) have been identified under the TMEIA. Representative ASRs include:

- International Mail Centre;
- Pak Sui Yuen;
- Fire Services Headquarter's Building;
- Chinachem Golden Plaza;
- Hotel Nikko;
- South Seas Centre;
- Grand Stanford Harbour View Hotel;
- Urban Council Centenary Garden;
- Regal Meridian Hotel;
- Empire Centre;
- Royal Garden Hotel;
- Tsim Sha Tsui Centre;
- Houston Centre;
- Shangri-La Hotel;
- Wing On Plaza;
- Wing On Plaza Garden;
- Wang Fu Building;
- New World Centre;
- Hermes House;
- Police Office;
- Far East Mansion;
- Titus Square;
- Sheraton Hong Kong Hotel;
- Kowloon Hotel;
- Peninsula Hotel;
- Hankow Centre;
- YMCA Building;
- Marine Police Headquarters;
- Yau Ma Tei and TST Culture and Arts Association;
- Hong Kong Cultural Centre;
- Hong Kong Hotel;
- Ocean Centre;
- No. 19 Mody Road;
- Peninsula Apartment;
- Minden Apartment;
- Star Mansion;
- Mirador Mansion; and
- Golden Mile Holiday Inn Hotel.

Various other developments in the vicinity of the alignment and works areas will potentially also be impacted.

The nature and timing of a future development on the plot at Minden Row/Minden Avenue intersection has not yet been decided. If it is completed before or during the KCR Extension works, it is likely to also be an ASR.

TST is not within a designated Airshed, having a low surrounding topography, therefore the only possible limitation for air pollution dispersal would be the numerous high-rise buildings in the vicinity of the alignment.

Noise (See Figures 5.2a/5.2b/5.3c)

Potential Noise Sensitive Receivers (NSR) have been identified under the TMEIA. Representative NSRs include:

- Pak Sui Yuen;
- Wang Fu Building;
- Star Mansion;
- Far East Mansion;
- Hankow Centre;
- Yau Ma Tei and TST Culture and Arts Association
- Minden Apartments;
- Minden House;
- No. 7 Minden Avenue;
- No. 19 Mody Road;
- Peninsula Apartment;
- Mirador Mansion.

Various other developments in the vicinity of the alignment and works areas will potentially also be impacted.

The nature and timing of a future development on the plot at Minden Row/Minden Avenue intersection has not yet been decided. If it is completed before or during the KCR Extension works, it may be an NSR.

Water Quality

Potential Water Sensitive Receivers (WSR) have been identified under the TMEIA. The only nearby water receiving body is the Hong Kong Harbour. WSRs which have cooling water intakes and outfalls that could be impacted by a decrease in water quality include:

- Hotel Nikko;
- Chinachem Golden Plaza;
- Royal Garden Hotel;
- Regal Meridian Hotel;
- Empire Centre;
- South Seas Centre;
- Grand Stanford Harbour View Hotel;
- Hong Kong Polytechnic University; and
- Queen Elizabeth Hospital.

There are no other water sensitive uses nearby.

Ecology

There are no areas of ecological significance that will be impacted by the railway construction or operation.

Landscape and Visual Resources

The environ surrounding the alignment is a major urban area, dominated by hotels, commercial buildings and some residential developments. This area does not have a high visual value, though there are several small sitting out areas/gardens that construction works may visually intrude upon, namely:

- Urban Council Centenary Garden;
- East TST Promenade;
- Wing On Plaza Garden (section not used as works area);
- Signal Hill Garden; and
- Middle Road Children's Playground.

Historic and Cultural Resources

Major historic and cultural resources in the vicinity of the alignment include:

- Grade 2 listed Signal Tower;
- listed Peninsula Hotel; and
- Grade 1 listed ex-Marine Police Headquarters.
- Archaeological Potential (See Figure 5.3)

5.2 *OTHER KEY FACTORS IN THE SURROUNDING ENVIRONMENT*

The background noise in the vicinity of the alignment is dominated by traffic on numerous major roads, namely: Salisbury Road, Mody Road, Chatham Road South, Nathan Road, Hankow Road, Kowloon Park Drive, Canton Road and the Cross Harbour Tunnel.

The majority of the proposed alignment and station is to be developed on land in the heart of the Kowloon Peninsula which has primarily been heavily developed for commercial use, or recently reclaimed land developed for primarily commercial uses. Beginning in 1904 and at various intervals throughout the 1960's, portions of the historic Kowloon Peninsula were reclaimed. There is little available information to indicate that there has been any major industrial usage in reclamation areas along the alignment, with the exception of the old KCR rail line and dockside activities and some associated storage and warehouse areas along the rail sidings, all of which were removed by the late 1970s.

Two potentially hazardous installations exist close to the alignment:

- the Middle Road petrol filling station and associated underground storage tanks; the filling station is to be relocated.
- cross-harbour gas pipelines.

6 *ENVIRONMENTAL PROTECTION MEASURES AND FURTHER ENVIRONMENTAL IMPLICATIONS*

6.1 *POTENTIAL MEASURES WHICH MAY BE INCORPORATED TO MINIMISE ENVIRONMENTAL IMPACTS*

The KCR *Extension Preliminary Environmental Review* has proposed various mitigation measures which aim to minimise environmental impacts; these are outlined in *Sections 6.1.1* and *6.1.2* below. It should be noted however, that these mitigation measures may be further refined during later stages of the EIA process.

6.1.1 *Construction Phase*

Air Quality

Even though no exceedances are predicted, standard dust suppression measures, as set out in the *Air Pollution Control (Construction Dust) Regulations,* should be adopted as standard procedures. These include:

- on site vehicle speed restrictions and vehicle washing before leaving the site;
- careful handling and the containment or damping of dusty materials; and
- frequent watering or covering of exposed areas of ground and prompt site restoration.

These measures should be used as general good practice on all construction sites to ensure that potential dust emissions are controlled and impacts upon sensitive receivers minimised.

Noise

A package of mitigation measures has been designed to control construction noise impacts. Whilst not sufficient to fully resolve the predicted noise impacts, general good site practices will help to control noise impacts. These include:

- care in the placement and orientation of noisy plant away from sensitive receivers;
- the use and correct fitting of silencers, mufflers and acoustic shields; and
- regular maintenance of plant and equipment.

A series of further mitigation measures have been identified, including the use of quiet plant, noise barriers and reducing the number of plant in use at one time which should be sufficient to control day-time noise impacts to within the established limit at most NSRs.

At the NSRs where residual noise exceedances remain, impacts can be brought to within acceptable levels through refinement of the construction programme, use of noise enclosures and further restrictions on plant numbers and on-time.

Water Quality

To meet the discharge requirements, mitigation measures should include:

- appropriate drainage facilities to control site runoff;
- proper site management to prevent debris and harmful materials from reaching drainage facilities of water bodies; and
- the provision of adequate toilet facilities and proper disposal of sewage by a recognised waste disposal company.

Waste Management

In order to control waste issues mitigation measures will include:

- general good housekeeping practices;
- sorting and segregation of wastes for reuse and disposal;
- observing the requirements of the disposal permits; and
- meeting the requirements of the *Waste Disposal Ordinance*.

Ecology

As there are no areas of ecological significance that will be impacted by the railway, no mitigation measures will be required.

Landscape and Visual Impacts

Reinstatement of visually amenable features and revegetation shall commence upon completion of the construction works.

In addition, boundary fences shall be erected around construction sites before the commencement of works to reduce the potential visual impacts of the proposed works and to prevent tipping, vehicle movements and egress of personnel off site, and all work sites, particularly those where vegetation has been removed, shall be reinstated to a standard as good as, or better than the original state, at the earliest opportunity.

Historic and Cultural Resources

It is recommended that further investigations be conducted at a later stage of the EIA process in order to evaluate the potential of any buried archaeological resources along the alignment.

Land Contamination

Potential exposure to contaminated materials can be limited by minimising construction workers' direct contact with soils, wearing of protective clothing, providing adequate hygiene and washing facilities and preventing smoking and eating during soil interface activities.

Only licensed waste hauliers should be used to collect and transport contaminated materials for disposal and vehicles should be suitably covered to limit dust emissions or contaminated wastewater run-off, and truck bodies and tailgates sealed to prevent any discharge during transport or during wet conditions

Environmental Monitoring and Audit

An Environmental Monitoring and Audit (EM&A) programme has been identified for Air Quality and Noise issues. This will help identify any problematic issues as they arise and speed their resolution.

6.1.2 *Operational Phase*

Air Quality

No specific mitigation measures are specified.

Noise

Mitigation is in the form of track design, and incorporation of a section of floating slab track. This will also limit vibration issues.

Water Quality

Oil interceptors are recommended for the station to treat potentially contaminated runoff and as any operational discharges will be required to comply with the *Water Pollution Control Ordinance*, no adverse impacts will occur.

Waste Management

Implementation of good housekeeping practices and the observation of the requirements of the *Waste Disposal Ordinance* will prevent adverse impacts.

Ecology

No ecological impacts are anticipated during the operation of the railway, therefore no mitigation will be required.

Landscape and Visual Impacts

Above ground structures will be designed to fit in with the existing urban landscape and planting will minimise their visual intrusion.

Historic and Cultural Resources

No historic and cultural impacts are expected during the operation of the railway; therefore no mitigation measures will be required.Land Contamination
No land contamination impacts are expected during the operation of the railway; therefore no mitigation measures will be required.

Hazardous Installations

A petrol filling station located at Middle Road poses a potential hazard risk to the development. The filling station will be relocated.

[Were the station to remain then further risk mitigation measures would need to be considered in line with the principle of reducing risks to as low a level as reasonably practicable. This would be determined by a more detailed risk assessment in accordance with Fire Services Department requirements].

The presence of the cross-harbour gas pipelines presents primarily a construction phase hazard. The Technical Consultants are aware of this hazard and appropriate action is being taken either to re-route the pipelines or modify the rail tunnel.

6.2 *POTENTIAL SEVERITY, DISTRIBUTION AND DURATION OF KEY ENVIRONMENTAL IMPACTS*

Air, noise, water quality, waste and visual impacts will be an issue for the duration of construction (2000 - mid 2004). Their severity and distribution is outlined in *Sections 4 and 5.*

Air quality impacts will be most severe during earthworks and excavation activities. Noise impacts will be most severe during excavation, piling and concreting. Water quality impacts will be most severe during excavation, drilling and marine piling.

Cumulative effects could potentially arise from the Salisbury Road Underpass construction works, the possible redevelopment of the Mariner's Club or the development of the Minden Row/Minden Avenue plot, if any of these works were to be conducted concurrently with the KCR Extension project.

6.3 *FURTHER IMPLICATIONS*

Public interest in the project is likely to be moderate in view of the fact that the alignment will be passing through such a major commercial district, with temporary disruption caused to various businesses and residential properties in the area. The rail line, however, is for the good of the public and will potentially create job opportunities and promote business prospects for restaurants, shops and hotels in the vicinity.

The Railway Development Study Phase II (Part 1) Feasibility Study for Tai Wai to Ma On Shan and KCR Extension to Tsim Sha Tsui, Maunsell et al, December 1997 has been endorsed by the Advisory Council on the Environment in April 1997, subject to a detailed EIA study in a later stage.