

---

**Shatin to Central Link**  
**Project Profile for Optimized SCL Conforming**  
**Scheme (North South Railway Corridor)**  
**April 2004**



**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

	<b>Page</b>
<b>1 BASIC INFORMATION.....</b>	<b>1</b>
1.1 Project Title.....	1
1.2 Purpose and Nature of the Project .....	1
1.3 Name of the Project Proponent.....	1
1.4 Location and Scale of Project and History of the Site.....	2
1.5 Number and Types of Designated Projects.....	4
1.6 Name and Telephone Number of Contact Persons.....	4
<b>2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME .....</b>	<b>4</b>
2.1 Project Planning and Implementation.....	4
2.2 Project Programme.....	5
2.3 Project Interface .....	5
<b>3 POSSIBLE IMPACTS ON THE ENVIRONMENT .....</b>	<b>6</b>
3.1 Outline of Processes Involved .....	6
3.2 Potential Environmental Impacts: Construction Phase.....	7
3.3 Potential Environmental Impacts: Operational Phase.....	11
<b>4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT.....</b>	<b>13</b>
4.1 Existing and planned sensitive receivers .....	13
4.2 Major Elements of the Surrounding Environment and Existing and/or Past Land Users on Site which might Affect the Area in which the Project is Located .....	17
<b>5 ENVIRONMENTAL PROTECTION MEASURES AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS.....</b>	<b>17</b>
5.1 Potential Measures to Minimize Environmental Impacts.....	17
5.2 Potential Severity, Distribution and Duration of Environmental Effects .....	21
5.3 Further Implications.....	21
<b>6 USE OF PREVIOUSLY APPROVED EIA REPORTS.....</b>	<b>21</b>

## **1 BASIC INFORMATION**

### **1.1 PROJECT TITLE**

Optimised Shatin to Central Link (SCL) Conforming Scheme – North South Railway Corridor (Mong Kok to Central Section)

### **1.2 PURPOSE AND NATURE OF THE PROJECT**

Construction and operation of SCL was awarded to Kowloon-Canton Railway Corporation (hereinafter, the Corporation) in June 2002. Submission of SCL project profile for the application of EIA study brief was made to EPD on 7 October 2002. The study brief for the SCL conforming scheme was issued by EPD on 19 November 2002 (ESB-106/2002).

Throughout the design development of the conforming SCL scheme, engineering feasibility and site investigation work was undertaken to determine all the technical parameters for the construction of the conforming scheme. In parallel, the Corporation has also studied alternative proposals to enhance the overall rail network for the benefit of the traveling public and the local community, taking account of all interfacing project and constraints. Subsequent to this study, the conforming scheme was optimized and developed into two railway corridors, namely the East West Railway Corridor and the North South Railway Corridor. This project profile covers only the North South Railway Corridor of the Optimised SCL Conforming Scheme (hereinafter, the Project).

The project consists of new sections of railway allowing a through-running line between Mongkok and the Central District of Hong Kong Island. This new strategic railway corridor will provide a through service between Lo Wu and Hong Kong Island. Coupled with the proposed East West Railway Corridor with a two-way interchange at the Hung Hom Mass Transportation Centre, the proposed railway corridor will help redistribute the flows and relieve existing congested railway corridors in Hong Kong and Kowloon.

Whilst electrified rail is considered an environmental friendly mode of transport, construction of a major railway will inevitably lead to certain levels of environmental impacts, but state of the art mitigation measures will be designed in consultation with the authorities, and diligently applied in order to mitigate the impact to an acceptable level.

### **1.3 NAME OF THE PROJECT PROPONENT**

Kowloon-Canton Railway Corporation (KCRC)

#### **1.4 LOCATION AND SCALE OF PROJECT AND HISTORY OF THE SITE**

The Project comprises a revised track alignment south of Mong Kok Station, the Fourth Rail Harbour Crossing and running line through Victoria Harbour to Central South on Hong Kong Island via Hung Hom, Causeway Bay North, Wanchai and Admiralty. Major components of the Project include the following:

- a) Revised track alignment south of Mong Kok Station (MKK) and running line to the underground platforms of Hung Hom Station (HUH)
- b) Hung Hom Mass Transportation Centre (MTC);
- c) North Ventilation Building (NVB) at Hung Hom Waterfront;
- d) Fourth Rail Harbour Crossing (FHC);
- e) Running line from HUH, crossing Victoria Harbour with new underground stations at Causeway Bay North (CBN), Exhibition (EXH), Admiralty East (ADE) and Central South (CES);
- f) South Ventilation Building (SVB) at Tin Hau Waterfront;
- g) Associated E&M plant and ventilation structures at stations, Tin Hau Waterfront and Causeway Bay Typhoon Shelter; and
- h) Dry Dock Casting Yard at Shek O for fabrication of the Immersed Tube Tunnel (IMT) segments.
- i) The temporary mooring site is at Tseung Kwan O Bay

The locations of the alignment are shown on Drawing Nos. SCL002/CA/S0570 to SCL002/CA/S0571.

#### **Running Line between Mong Kok and Hung Hom Mass Transportation Centre (MTC)**

This section of the line provides a new grade-separated junction between the existing East Rail tracks and a new extension to Hong Kong Island. The alignment will be formed in a combination of ramps and tunnels. To minimise impacts to the operating railway, mixed ground tunnelling techniques may be adopted if the ground conditions are found to be suitable. The tracks to the south of MKK will be realigned to accommodate the new alignment and to provide a pocket track.

#### **Running Line between MTC and South Ventilation Building**

The alignment from Hung Hom to the South Ventilation Building (SVB) forms the Fourth Rail Harbour Crossing (FHC). This section comprises three parts, each having a different method of construction.

The first part, from Hung Hom Mass Transportation Centre to a new ventilation building adjacent to the existing seawall, will be constructed using cut and cover methods. Two separate single track tunnels will be constructed to take the railway line beneath the Hong Kong Coliseum. A stub tunnel will form the reception chamber for the main part of the harbour crossing IMT.

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

About 1.4 km of IMT running from the Hung Hom reception chamber to the SVB on the Tin Hau waterfront forms the second part of the FHC. The IMT will land on Hong Kong Island at the Food and Environment Hygiene Department (FEHD) site at King Ming Road in Tin Hau and connect with the SVB.

The third part consists of the SVB constructed within a shaft located in the FEHD waterfront vehicle parking area. Tunnel cooling and ventilation will be provided through the ventilation buildings at either end of the harbour crossing.

**Running Line between South Ventilation Building and Admiralty East**

The twin tunnels from the SVB will be driven using tunnel boring machines (TBMs), commencing at a cut and cover structure adjacent to the SVB and extracted through a temporary shaft within ADE station. The SVB launching structure will either be a modified section of the immersed tube or a temporary cofferdam structure within the marine environment.

**Causeway Bay North Station (CBN)**

CBN will be located under Gloucester Road between Cleveland Street and Cannon Street. The station is planned with island platform configuration, and will be constructed by shallow cut and cover methods. It will be connected by subways and entrances into the Causeway Bay retail district, and to bus interchange along Gloucester Road to the west and Hennessy Road to the east.

**Exhibition Station (EXH)**

EXH will be a three-level underground station located beneath Harbour Road and will include a concourse and plant room structure under Harbour Road Garden. The excavation and construction works will be phased to allow the TBMs to pass through the station as the running tunnels are constructed. Convenient access to nearby facilities will be constructed and opportunities for future connection to the adjacent MTRC North Island Line Station will be provided.

**Admiralty East Station (ADE)**

ADE will be located across the eastern end of the MTRC Admiralty Station under the Harcourt Garden. The station will be constructed by a combination of the cut and cover, and drill and blast methods to suit the local ground conditions.

**Running Line between Admiralty East and Central South**

The approximately 1km of twin tunnel between ADE and CES will be constructed using drill and blast methods. Construction of the tunnels will be from both ADE and CES using the spoil handling systems established for the station construction.

### **Central South Station (CES)**

CES will be located very deep under Upper Albert Road south of Government House. The station will be constructed by drill and blast methods from shafts at either end of the main cavern structure.

### **Shek O Quarry Dry Dock Casting Yard**

This dry dock casting yard serves as an off-site casting basin for the Immersed Tube Tunnel (IMT) segments. It served as a casting basin before for Western Harbour Crossing (WHC) and Western Immersed Airport Tunnel. New dock gate and minor dredging will have to be carried out in front of the gate to remove material deposited since the completion of the WHC. After completion of the fabrication at Shek O, the IMT unit will be towed to a temporary mooring location at Tseung Kwan O (TKO) Bay.

### **Tseung Kwan O Storage Area**

It serves as a works site where the IMT units will be temporary moored into the sea before being transported to the crossing location and it is situated in TKO Bay. These mooring facilities envisaged will be located at areas with sufficient navigational depth so that no dredging will be required in this area.

## **1.5 NUMBER AND TYPES OF DESIGNATED PROJECTS**

The proposed Project is a single project comprising a railway and its associated stations as defined under Schedule 2, Part I, Categories A.2 and A.7 of the Environmental Impact Assessment Ordinance.

## **1.6 NAME AND TELEPHONE NUMBER OF CONTACT PERSONS**

The contact person is Mr. Richard Kwan, Environmental Manager, Kowloon-Canton Railway Corporation, at telephone no. 2684 8382.

## **2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME**

### **2.1 PROJECT PLANNING AND IMPLEMENTATION**

The whole project will be planned and implemented by KCRC in-house departments together with external consultants and contractors. The works contracts will be procured by a combination of “Design and Build” and Engineer’s Design” contract arrangement, under the construction management control of KCRC.

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

## 2.2 PROJECT PROGRAMME

The design contracts were awarded in early 2003. Works contracts are scheduled to be awarded after Exco Approval is obtained, which is envisaged in the third quarter of 2005. The Project will have a phased completion for each of the extensions. It is anticipated that this section of SCL from Mongkok to Central will be completed by 2011.

## 2.3 PROJECT INTERFACE

The Project will be constructed predominantly in tunnels and underground stations. No insurmountable impacts on any existing or planned projects have been identified. Committed and planned projects that may interface with the railway are listed in the table below:

<b>Stations/ Running Lines</b>	<b>Potential Interface Project</b>
Hung Hom Station	<ul style="list-style-type: none"><li>• Kowloon Southern Link</li><li>• Planned Relocation of International Mail Centre</li><li>• Planned Fifth Rail Harbour Crossing (subject to review)</li></ul>
Fourth Harbour Rail Crossing	<ul style="list-style-type: none"><li>• Wanchai Reclamation II (subject to review)</li><li>• Planned Eastern Corridor Extension</li><li>• Planned Fifth Rail Harbour Crossing (subject to review)</li></ul>
Causeway Bay North to Exhibition	<ul style="list-style-type: none"><li>• MTRC North Island Line (subject to review)</li><li>• Wanchai Reclamation II (subject to review)</li><li>• Planned Eastern Corridor Extension</li></ul>
Exhibition Station	<ul style="list-style-type: none"><li>• Planned MTRC North Island Line (subject to review)</li><li>• Planned Underground extension of Hong Kong Convention and Exhibition Centre</li><li>• Central Wanchai Bypass</li></ul>
Exhibition to Admiralty East	<ul style="list-style-type: none"><li>• MTRC North Island Line (subject to review)</li><li>• Central Wanchai Bypass (subject to review)</li></ul>
Admiralty East Station	<ul style="list-style-type: none"><li>• MTRC North Island Line (subject to review)</li><li>• Central Reclamation III (subject to review)</li><li>• Planned Justice Drive Extension (subject to review)</li></ul>

### **3 POSSIBLE IMPACTS ON THE ENVIRONMENT**

#### **3.1 OUTLINE OF PROCESSES INVOLVED**

A summary of processes involved in construction of the project and the associated environmental impacts during construction and operational phases are provided below.

Whilst electrified rail is considered an environmental friendly mode of transport, construction of the project will inevitably lead to certain levels of environmental impacts, but state of the art mitigation measures will be designed in consultation with the authorities, and diligently applied in order to mitigate the impact to an acceptable level.

##### **3.1.1 Worksites**

Worksites and works areas will be proposed at suitable locations along the alignment to support the railway construction works. Temporary works areas will be formed for the construction of cut and cover tunnels at both Hung Hom and Tin Hau water front for the reception of the harbour crossing IMT. Activities taking place at those locations including storage of equipment and materials, site offices, bentonite plant etc. In addition, a dry dock casting yard and a concrete batching plant will be proposed at the existing Shek O Quarry for the fabrication of IMT units and a temporary holding area for IMT units at Tseng Kwan O prior to the placement of the units across the harbour.

##### **3.1.2 Cut and Cover Construction**

Cut and cover methods will likely be adopted for the construction of short sections of running tunnels and stations including HUH, CBN, ADE, EXH, TBM launching and reception shafts and associated structures including station entrances, adits and ventilation buildings. Either “bottom-up” or “top-down” sequences may be selected in the cut and cover works. These methods rely on forming a cofferdam (by the installation of pipe pile walls, diaphragm walls, sheetpile wall, or contiguous bored pile walls) and excavating from within the cofferdam. The cofferdam will be suitably anchored or propped laterally to allow safe excavation and construction.

##### **3.1.3 TBM Construction**

TBMs will likely be used for the construction of the tunnels between the siding facility at Hung Hom and Wylie Road to the south of MKK Station, and from the IMT landing point in Tin Hau to ADE.

##### **3.1.4 Drill and Blast /Cavern Construction**

Drill and blast method will be adopted for the construction of the tunnel section from ADE to CES.



CES will be constructed using drill and blast methods by enlarging the previously formed tunnels. The rock caverns are self-standing structures with support provided by rock bolts or anchors to strengthen the rock where joints or fissures are encountered. A permanent lining will also be provided which will improve the stability and durability of the cavern structure from water ingress and rock fall.

### **3.1.5 Immersed Tube Tunnel (IMT)**

The 1.4km immersed tube tunnel alignment runs between Hung Hom and the SVB. The IMT construction methodology will be similar to the method used for the existing cross harbour road and railway tunnels: a reinforced concrete box type structure, cast in short sections in a dry dock casting yard and stressed into longer units (about 100-120m) will be floated in and set in a dredged trench in the harbour bed on a uniformly graded gravel mattress. After the IMT units have been assembled and joined together by stressed bars the trench will be back filled and the units covered over with an approximately 2m thick graded rock layer. The trench excavation will be carried out using traditional dredging methods and the excavated material will be disposed at designated marine disposal areas.

### **3.1.6 Demolition**

Some existing structures will be demolished to enable the construction of the railway infrastructure. The demolition will be carried out using traditional methods and the demolition waste disposed at designated disposal areas.

## **3.2 POTENTIAL ENVIRONMENTAL IMPACTS: CONSTRUCTION PHASE**

The following sections describe the potential environmental impacts during construction phase, which will be alleviated by effective and pragmatic mitigation measures designed according to the assessed levels of impact.

### **3.2.1 Air Quality**

Potential air quality impacts may arise from fugitive dust emissions generated by construction activities such as excavation, cutting, filling, concrete batching, rock crushing, stockpiling, construction vehicle movements, as well as demolition works such as that of the POC.

### **3.2.2 Noise & Vibration**

Airborne noise will be generated during construction of the Project. Airborne noise will be generated from cut and cover activities, diaphragm wall construction, excavation, backfilling, road reinstatement, operation of works trains and construction of above ground structures. Groundborne vibration may be generated due to TBM tunneling during construction of the Project.

### **3.2.3 Water Quality**

Water quality impacts may arise due to the following potential sources during the construction of the Project:

- Run off due to erosion of exposed surfaces, accidental spillage from plant maintenance, etc. materials handling and other works areas;
- Wash out from concrete batching plants;
- Wastewater due to diaphragm wall construction;
- Groundwater extracted during underground construction;
- Construction workforce sewage;
- Construction of the Fourth Rail Harbour Crossing;
- Maintenance dredging at the Shek O IMT Casting Basins;
- Marine disposal of potentially contaminated dredged/excavated sediment; and
- Construction of road diversion in CWBTS

### **3.2.4 Waste Management**

Construction activities will result in the generation of a variety of surplus materials that may include:

- Excavated materials;
- Construction and demolition (C&D) materials and wastes;
- Site clearance waste;
- Chemical waste of residual oil and lubricating fluid from construction plant and machinery;
- General refuse from worksites; and,
- Dredge/excavation of the submarine trench for the IMT and at the Shek O IMT Casting Basins.

It is estimated that approximately 2.7Mm<sup>3</sup> of spoil will need to be disposed from the Project construction works. Additionally, there will be hard rock and dredged marine sediments generated from the excavation process. Inert excavated materials and construction and demolition materials will be properly segregated and will either be used on site, or disposed of at available public filling areas in accordance with the guidance from Fill Management Committee.

### 3.2.5 Hazard

The proposed railway will not run into any consultation zone of Potentially Hazardous Installations. Explosive magazines may be required to provide overnight storage of explosives for drill and blast construction.

### 3.2.6 Ecology

Generally the ecological impacts associated with this project will be minimal given that the majority of the alignment is in the urban area and will be built underground. Small scale marine ecological impacts may arise due to maintenance dredging at the approach channels of the proposed dry dock IMT casting yard at Shek O.

### 3.2.7 Historical and Cultural Impacts

Potential impacts on historical and cultural heritage resources during the construction phase may arise due to activities associated with plant operation, temporary and permanent land take, excavation, change of the sites setting, and vibration impact during construction with mechanised or blasting methods.

Whilst it is not expected that any declared monument will be affected by the Project, a number of sites of historical and cultural heritage significance have been identified within or in close proximity to the proposed alignment. These are tabulated below. Although some of the heritage sites at Central are at close horizontal distance to the alignment, the tunnel and station are at some 50m below ground level. Potential adverse impacts to these structures therefore should be minimal.

Location	Description
Running Line between Hung Hom and Exhibition	<ul style="list-style-type: none"> <li>• The Noonday Gun situated at the coast near the Causeway Bay Typhoon Shelter</li> <li>• Wanchai Police Station located at approximately 150m from the Exhibition Station</li> <li>• Kellet Island Archaeological Site located some 150m from the alignment</li> <li>• Royal Hong Kong Yacht Club situated at Kellet Island</li> <li>• Police Officers' Club to the west of Causeway Bay Typhoon Shelter</li> </ul>
Running line between Admiralty East and Central South	<ul style="list-style-type: none"> <li>• Former French Mission Building in Battery Bath approximately 250m from the alignment</li> <li>• The Exterior of Main Building, the Helena May at Garden Road approximately 75m from the alignment</li> <li>• St. John's Cathedral at Garden Road located at approximately 150m from the alignment</li> <li>• Rawlinson House in Hong Kong Park</li> </ul>

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

Location	Description
	<p>approximately 175m from the alignment</p> <ul style="list-style-type: none"> <li>• Victoria Barracks near Hong Kong Park at various distances from 70m to 200m from the alignment</li> <li>• Sebourne Villas No.1 at Kennedy Road within 25m from the alignment</li> <li>• St. Joseph's College at Kennedy Road within 25m from the alignment</li> <li>• St. Paul's Co-educational College on MacDonell Road within 25m from the alignment</li> <li>• Former Explosive Magazine on Kennedy Road approximately 50m from the alignment</li> <li>• Former British Military Hospital at Borrett Road within 10m from the alignment</li> <li>• Government House on Upper Albert Road approximately 200m from CES</li> <li>• Bishop House at Lower Albert Road above a CES adit</li> <li>• Pedder Building on Pedder Street within 50m from a CES adit</li> <li>• Network No.1, Queen's Road Central War Time Air Raid Shelter near a CES adit</li> <li>• Staircase and old walls in Battery Path area next to CES entrances</li> <li>• Flight of Stone Steps and Gas Lamps on Duddell Street with 25m from a CES adit</li> <li>• Catholic Cathedral of Immaculate Conception at Glenealy, Central, approximately 50m from alignment</li> <li>• St. Paul's Church at Glenealy within 25m from CES</li> <li>• Old Dairy Farm Depot at Lower Albert Road, Central next to a CES adit</li> <li>• Old Kei Yan Primary School at Glenealy, Central within 25m from CES</li> <li>• Bishop House war time air raid tunnel at Glenealy next to CES</li> <li>• Victoria Prison at Old Bailey Street</li> <li>• Former Central Magistracy at No.1 Arbuthnot Road</li> </ul>

### **3.2.8 Land Contamination**

A review of historical maps and selected historical aerial photographs has indicated the proposed alignment and stations which are to be developed are on land which has primarily been heavily developed for residential, commercial and recreational uses or on recently reclaimed land. There is little available information to indicate that there have been any major industrial uses along the alignment and the potentially contaminated areas are:

- Petrol station on Princess Margaret Road near Oi Man Estate;
- Locomotive Running Shed at KCR Hung Hom freight yard;
- Two petrol station sites located along Gloucester and Victoria Park Road; and,
- Potential contamination from excavated marine sediments on the recently reclaimed land.

### **3.2.9 Landscape and Visual Impact**

The proposed route alignment involves construction through a well developed urban environment. The cut and cover tunnel construction and excavation, temporary noise barriers for the works sites and illumination within the construction sites may create short-term visual impacts.

## **3.3 POTENTIAL ENVIRONMENTAL IMPACTS: OPERATIONAL PHASE**

### **3.3.1 Air Quality**

Trains to be operated on the Project will be electrically powered so there will be minimal dust and gaseous emissions. Tunnel ventilation exhausts and smoke extraction facilities will be carefully positioned to avoid adverse air quality impacts. Air quality impact during the operational phase of the proposed railway is envisaged to be insignificant.

### **3.3.2 Noise**

Operational rail noise impact is not anticipated to be significant since the railway will be predominantly underground, except for the section between MKK station and Wylie Road. Potential stationary noise sources include tunnel ventilation shafts, tunnel ventilation fans and environmental control systems.

Apart from airborne noise, the passage of trains in the tunnel may give rise to potential ground-borne noise and vibration, which can be sufficiently mitigated by special trackforms.

### **3.3.3 Water Quality**

Limited quantities of oils and lubricants will be used on the trains and rail lubricators may be deposited on the tracks by passing trains. Iron dust will also be left on the tracks by the maintenance grinding of the rail. Small quantities of oil & grease and suspended solids may be contained in the runoff. Wastewater containing cleaning agents, discharge from air conditioning systems and sewage generated at the stations may also contribute to water quality impacts. These minor impacts will be dealt with in accordance with the WPCO requirements.

### **3.3.4 Waste Management**

Municipal waste, including litter, foodstuffs, plastics, wood, office waste and cleaning materials will be generated during the operation of the proposed railway.

### **3.3.5 Hazard**

As the proposed railway will not run into any consultation zones of Potentially Hazardous Installations, hazard is not anticipated during the operational stage.

### **3.3.6 Ecology**

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

### **3.3.7 Historical and Cultural Impacts**

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

### **3.3.8 Land Contamination**

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

### **3.3.9 Landscape and Visual**

Potential landscape impacts would result from the permanent loss of trees arising from the construction phase. Whilst the proposed alignment will be predominantly underground, there will be some above ground structures such as station entrances and adits, ventilation shafts and buildings which may impact the physical landscape and visual amenity of surrounding areas.

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

**4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

**4.1 EXISTING AND PLANNED SENSITIVE RECEIVERS**

**4.1.1 Noise**

Potential Noise Sensitive Receivers (NSRs) have been identified under the Technical Memorandum on Environmental Impact Assessment Process. Representative NSRs include:

Location of Noise Sensitive Receivers in Construction Phase

<b>Area</b>	<b>Location</b>
Running Line between Mong Kok and Hung Hom Station	<ul style="list-style-type: none"> <li>• Residential buildings along the existing East Rail track</li> <li>• Schools along Wylie Road between Waterloo Road and Princess Margaret Road</li> </ul>
Running Line between Hung Hom and HK landfall	<ul style="list-style-type: none"> <li>• Hong Kong Coliseum</li> <li>• Hotel Nikko HK</li> <li>• Residential properties adjacent to Island Eastern Corridor</li> </ul>
Causeway Bay North Station	<ul style="list-style-type: none"> <li>• Residential properties along Gloucester Road</li> <li>• Excelsior Hotel</li> </ul>
Running Line between Causeway Bay North and Exhibition	<ul style="list-style-type: none"> <li>• Elizabeth House</li> </ul>
Exhibition Station	<ul style="list-style-type: none"> <li>• Causeway Centre</li> <li>• Renaissance Hotel</li> </ul>
Running Line between Exhibition and Admiralty East	<ul style="list-style-type: none"> <li>• HK Academy for Performing Arts</li> </ul>
Admiralty East Station	<ul style="list-style-type: none"> <li>• JW Marriot Hotel</li> </ul>
Running Line between Admiralty East to Central West Station	<ul style="list-style-type: none"> <li>• St. Joseph Church</li> <li>• Residential properties at Kennedy Road and Cotton Tree Drive</li> <li>• Residential properties at Upper Albert Road and Arbuthnot Road</li> <li>• HK Central Hospital</li> <li>• St. Paul Church and Kindergarten</li> </ul>

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

Location of Noise Sensitive Receivers in Operational Phase

As most of the SCL operates underground, the main source of operational phase noise is from vent shaft and chiller plants, which are relatively minor. The potential noise sources and sensitive receivers locations are tabulated below:

Area	Location	Noise Sources
Running Line between Mong Kok and Hung Hom Station	<ul style="list-style-type: none"> <li>• Residential buildings along the existing East Rail track</li> <li>• Schools along Wylie Road between Waterloo Road and Princess Margaret Road</li> </ul>	Train operation  Train operation
Running Line between Hung Hom and HK landfall	<ul style="list-style-type: none"> <li>• Hong Kong Coliseum</li> <li>• Hotel Nikko HK</li> <li>• Residential properties adjacent to Island Eastern Corridor</li> </ul>	Train operation Vent Shaft Vent Shaft/Chiller Plant
Causeway Bay North Station	<ul style="list-style-type: none"> <li>• Residential properties along Gloucester Road</li> <li>• Excelsior Hotel</li> </ul>	Vent Shaft/Chiller Plant Vent Shaft/Chiller Plant
Exhibition Station	<ul style="list-style-type: none"> <li>• Causeway Centre</li> </ul>	Vent Shaft/Chiller Plant
Running Line between Exhibition and Admiralty East	<ul style="list-style-type: none"> <li>• HK Academy for Performing Arts</li> </ul>	Train operation
Running Line between Admiralty East to Central West Station	<ul style="list-style-type: none"> <li>• St. Joseph Church</li> <li>• Residential properties at Kennedy Road and Cotton Tree Drive</li> <li>• Residential properties at Upper Albert Road and Arbuthnot Road</li> <li>• HK Central Hospital</li> <li>• St. Paul Church and Kindergarten</li> </ul>	Vent Shaft/Chiller Plant Vent Shaft/Chiller Plant  Vent Shaft/Chiller Plant  Vent Shaft/Chiller Plant Vent Shaft/Chiller Plant

Detail identification of existing and planned NSRs and representative assessment locations would be made in the EIA report with reference to the prevailing situation and relevant planned uses proposed in the most up to date/available plans prepared under the TPO or any other land use plans published by the Government.

**4.1.2 Air Quality**

Potential Air Sensitive Receivers (ASRs) have been identified under the Technical Memorandum on Environmental Impact Assessment Process. Representative ASRs include:



**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

<b>Area</b>	<b>Location of Potential Air Sensitive Receivers</b>
Running Line between Mong Kok and Hung Hom Station	<ul style="list-style-type: none"> <li>• Residential buildings along the existing East Rail track</li> <li>• Schools along Wylie Road between Waterloo Road and Princess Margaret Road</li> </ul>
Running Line between Hung Hom and HK landfall	<ul style="list-style-type: none"> <li>• Hong Kong Coliseum</li> <li>• Hotel Nikko Hong Kong</li> <li>• Residential properties adjacent to Island Eastern Corridor</li> </ul>
Causeway Bay North Station	<ul style="list-style-type: none"> <li>• Residential properties along Gloucester Road</li> <li>• Excelsior Hotel</li> <li>• Royal Hong Kong Yacht Club</li> </ul>
Running Line between Causeway Bay North and Exhibition	<ul style="list-style-type: none"> <li>• Elizabeth House</li> </ul>
Exhibition station	<ul style="list-style-type: none"> <li>• Causeway Centre</li> <li>• Renaissance Hotel</li> <li>• District Courts in Wanchai Tower</li> </ul>
Admiralty East Station	<ul style="list-style-type: none"> <li>• JW Marriot Hotel</li> <li>• Commercial buildings along Queensway and Harcourt Road</li> </ul>
Shek O Dry Dock Casting Yard	<ul style="list-style-type: none"> <li>• Possible villagers at To Tei Wan Tsuen</li> </ul>
Running Line between Admiralty East to Central West Station	<ul style="list-style-type: none"> <li>• Government House</li> <li>• Hong Kong Zoological and Botanical Gardens</li> <li>• St. Joseph Church</li> <li>• Residential properties at Kennedy Road and Cotton Tree Drive</li> <li>• Residential properties at Upper Albert Road and Arbuthnot Road</li> <li>• HK Central Hospital</li> <li>• St. Paul Church and Kindergarten</li> </ul>

#### **4.1.3 Water Quality**

Potential Water Sensitive Receivers (WSR) have been identified under the Technical Memorandum on Environmental Impact Assessment Process as follows:

- i) Victoria Harbour;
- ii) Causeway Bay Typhoon Shelter;
- iii) WSD Saltwater Pumping Stations; and,
- iv) Shek O Tai Tam Bay.

#### **4.1.4 Cultural Heritage**

Major historical and cultural heritage in the vicinity of the alignment is listed in Section 3.2.7.

#### **4.1.5 Landscape and Visual**

##### **Landscape Impacts**

Potential landscape impacts caused by the Project include:

- Impacts on landscape character areas at Causeway Bay Waterfront, Harbour Road Garden and Harcourt Garden.
- Impacts on public open space and existing trees at Harbour Road Garden and Harcourt Garden.
- Impacts on existing immature trees and shrubs located around the boundary of the Indoor Sports Hall and PTI (Exhibition station construction).
- Impacts on existing mature trees located at Upper Albert Road.

##### **Visual Impacts**

Potential visual impacts to the following key Visual Sensitive Receivers (VSRs) have been identified in the vicinity to the alignment:

- Impacts on Hotel Nikko Hong Kong and residential properties adjacent to Island Eastern Corridor from construction activities and ventilation buildings at waterfront.
- Impacts on Excelsior Hotel and residential properties along Gloucester Road from construction activities and station ventilation structures at Causeway Bay Typhoon Shelter.
- Impacts on Causeway Centre and commercial buildings near the Exhibition Station (e.g. Great Eagle Centre, Harbour Centre and Sun Hung Kai Centre) from construction activities and station structures.
- Impacts on VSRs in the vicinity of the Admiralty East Station from construction activities and station structures.
- Impacts on VSRs along Queen's Road Central, Ice House Street, Wyndham Street, and Upper Albert Road from construction activities and station vent shafts and entrances.

**4.2 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT AND EXISTING AND/OR PAST LAND USERS ON SITE WHICH MIGHT AFFECT THE AREA IN WHICH THE PROJECT IS LOCATED**

Areas where land contamination may occur along the proposed alignment have been identified through a review of historical survey maps and relevant environmental assessment reports. Potential areas on Kowloon side which might impose land contamination concern include the petrol station at Princess Margaret Road near Oi Man Estate and the Locomotive Running Shed at Hung Hom KCR freight yard.

On Hong Kong Island, the majority of the proposed alignment and stations are to be developed on land which has primarily been heavily developed for residential, commercial and recreational uses or on recently reclaimed land. There is little available information to indicate that there had been any major industrial uses along this section of the alignment. The only potential areas which might impose land contamination concern are the two petrol filling stations located along Gloucester Road and Victoria Park Road.

**5 ENVIRONMENTAL PROTECTION MEASURES AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS**

**5.1 POTENTIAL MEASURES TO MINIMIZE ENVIRONMENTAL IMPACTS**

Potential measures have been proposed to minimize environmental impacts as outlined below. These measures will be further reviewed during the EIA process.

**5.1.1 Construction Phase**

**Air Quality**

Standard dust suppression techniques, set out in the Air Pollution Control (Construction Dust) Regulations and Air Pollution Control (Specified Processes) (Specification of Required Particulars and Information) Order 1993, would be sufficient to control the dust impacts on the nearby ASRs. These include on-site vehicle speed restrictions and wheel-washing facilities at all site access points, careful handling and the containment or damping of dusty materials and/or cement, and frequent watering or covering of exposed areas of ground and prompt site restoration. These measures will be specified as general practice to all construction sites to ensure that potential dust emissions are controlled and impacts upon sensitive receivers are minimised.

**Noise & Vibration**

A package of mitigation measures will be designed to control construction noise & vibration impacts. General good site practices will help to control the noise impacts. These include:

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

- i) Care in the placement and orientation of noisy plant away from sensitive receivers;
- i) The use and correct fitting of silencers, mufflers and acoustic shields; and
- ii) Regular maintenance of plant and equipment.

Further mitigation measures such as the use of quiet plant, noise barriers and reducing the number of plant in use at any one time will help to control daytime noise impacts to within the noise criterion specified under the Technical Memorandum on Environmental Impact Assessment Process. In circumstances where it will not be feasible to meet the noise criteria, Indirect Remedies will be considered.

### **Water Quality**

For land based construction, water quality impact mitigation measures will include the use of sand traps, wheel washing facilities for vehicles leaving the site, adequate maintenance of drainage systems to prevent flooding and overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, disposal) procedures in accordance with the Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN 1/94).

For the construction of the Immersed Tube Tunnel and the maintenance dredging at the Shek O IMT Casting Basins, handling and disposal methods including the use of mechanical grabs, silt curtains and selection of appropriate vessel size would be used as necessary to reduce the release of suspended solids and nutrients in the water column during the excavation of sediments dredging. Contaminated sediment will be handled according to the current Environment, Transport and Works Bureau (ETWB) requirements for disposal in open sea or confined marine pits.

### **Waste Management**

Waste management measures will be formulated to minimise potentially adverse impacts associated with handling, collection and disposal of waste arising from the construction and operation of the proposed railway. Waste management measures will include:

- i) General good housekeeping practices;
- ii) Sorting and segregation of wastes for reuse and disposal;
- iii) Observing the requirements of the waste disposal licenses; and,
- iv) Meeting the requirements of the Waste Disposal Ordinance.

In addition, both onsite and offsite reuse of excavated inert materials will be considered. Useful contents in the C&D materials will be recycled where practicable and disposal at landfill sites will be considered as a last resort. Waste Management Hierarchy will be implemented to minimize waste generation and maximize waste recovery and recycling.

**ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP499)S.5(1)(A)**  
**PROJECT PROFILE FOR SHATIN TO CENTRAL LINK (NORTH SOUTH RAILWAY CORRIDOR)**

---

Chemical wastes will be handled according to EPD's guidelines and in case temporary storage becomes necessary for the chemical waste, this would be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Waste.

Potential impacts associated with the exposure to and disposal of dredged marine sediments could be mitigated by the following measures:

- i) Contaminated sediment dredged would be quickly removed from the site.
- ii) All vessels for marine transportation of dredged sediment will be fitted with tight-fitting seals to their bottom openings to prevent leakage of materials; and
- iii) During transportation of contaminated sediment, the loading of barges and hoppers would be controlled to prevent splashing of contaminated material to the surrounding water, and barges or hoppers would not be filled to a level which may cause overflowing of materials or polluted water during loading and transportation.

### **Hazard**

Potential hazards associated with the overnight storage of explosives will be minimised through proper site selection by allowing sufficient buffer distance between the magazines and the nearby sensitive receivers, as well as proper design of the storage facilities.

### **Ecology**

Champion, protected and mature trees will be preserved as far as practicable. Transplantation would only be recommended where unavoidable. Tree felling will be taken as a last resort option.

### **Historical and Cultural Heritage**

Vibration monitoring will be conducted during the construction process to ensure that no adverse impact occurs on the nearby buildings of historical and cultural value.

### **Land Contamination**

The extent of special handling and treatment required prior to disposal would be based on results of site investigation available during the EIA stage. Licensed waste haulers will be used to collect and transport contaminated materials for disposal, and vehicles will be suitably covered to limit dust emissions, and truck bodies and tailgates sealed to prevent any spillage.

### **Landscape and Visual Impact**

Landscape and visual impact mitigation measures to be recommended for the construction stage include:

- i) Avoidance of impacts on adjacent landscape by minimizing temporary works areas;
- ii) Avoidance of impacts on existing mature trees;
- iii) Temporary re-provision of open space for any public open spaces affected by construction works;
- iv) Control of night-time lighting; and,
- v) Erection of decorative screen hoarding.

### **5.1.2 Operational Phase**

#### **Air Quality**

No mitigation is likely to be required since adverse impact is considered unlikely.

#### **Noise & Vibration**

Airborne train noise from the above ground section is expected to comply with the stipulated noise criteria after provision of noise barriers and enclosures. Mitigation of ground borne noise will be by means of appropriate track design including the use of Floating Slab Track (FST) or Low Vibration Track (LVT). For fixed plant noise, adequate noise control treatment such as silencers, acoustic louvres, quiet plant and an increase in the plant room wall thickness will be adopted.

#### **Water Quality**

At locations where elevated levels of silt and oil are expected, surface runoff will be diverted through sedimentation basins and oil interceptors before being discharged into the stormwater drainage system. Effluent arising from the operational phase will be discharged into the communal foul sewerage system where connections can be made.

#### **Waste Management**

Chemical waste generated during the operational phase will be handled according to EPD's guidelines. In case temporary storage becomes necessary for chemical waste, it will be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Waste.

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

#### **Cultural Heritage**

Vibration impacts on the nearby historical and cultural resources will be mitigated by appropriate railway track design.

### **Landscape and Visual**

Landscape impact mitigation measures to be incorporated within the permanent landscape design may include the following:

- i) Disturbance to planted slopes will be avoided where possible;
- ii) Compensatory tree planting will be incorporated along roadside, public open spaces, amenity areas affected by the project;
- iii) Permanent off-site re-provision of open space will be considered for permanent loss of public open space; and
- iv) Sensitive architectural design of all visible structures such as ventilation structures, plant buildings and station entrances.

## **5.2 POTENTIAL SEVERITY, DISTRIBUTION AND DURATION OF ENVIRONMENTAL EFFECTS**

It is anticipated that the construction work will commence in 2006 with completion targeted for 2011. Air, noise and vibration, water, waste, ecology, cultural heritage, and landscape and visual impacts will be an issue for the duration of construction. Their severity and distribution are outlined in Sections 3 and 4.

It is expected that proven means of mitigation in most instances will be sufficient to control adverse environmental impacts. However, where this is not possible or would likely cause greater disturbance to the travelling public or utilities, residual impacts may be likely.

## **5.3 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 dense population urban areas with temporary disruption caused to various business and residential properties in the area. The railway, however, is for the benefit of the public and will potentially create job opportunities.

## **6 USE OF PREVIOUSLY APPROVED EIA REPORTS**

No previously approved report exists for the project. However, reference may be made within the study area from KCRC East Rail Extension – Hung Hom to Tsim Sha Tsui which has been approved with conditions by the EPD. Reference will also be made to approved EIA reports on the EIAO register for other developments that will potentially interface with the Project.