

南港島綫 (東段)
South Island Line (East)

工程項目簡介
Project Profile

2008 年 2 月
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TABLE OF CONTENTS

	Page
1. BASIC INFORMATION	1
1.1 Project Title.....	1
1.2 Purpose & Nature of the Project	1
1.3 Name of Project Proponent	1
1.4 Location & Scale of the Project	1
1.5 Number & Type of Designated Project.....	1
1.6 Name and Telephone Number of Contact Person(s)	2
2. OUTLINE OF PLANNING & IMPLEMENTATION PROGRAMME	2
2.1 Tentative Project Programme.....	2
3. POSSIBLE IMPACT ON THE ENVIRONMENT	3
3.1 Proposed Methods of Construction	3
3.2 Potential Impact on the Environment	3
4. MAJOR ELEMENTS OF THE SURROUNDING ELEMENTS	7
5. ENVIRONMENTAL PROTECTION MEASURES	9
5.1 Description of Mitigation Measures	9
5.2 Public Consultation.....	11
6. CONCLUSIONS	11
7. USE OF PREVIOUSLY APPROVED EIA REPORTS	11

FIGURE 1

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1. BASIC INFORMATION

1.1 Project Title

1.1.1 The project is known as South Island Line (East) (SIL(E)).

1.2 Purpose & Nature of the Project

1.2.1 The project profile describes the construction and operation of a new railway line to serve the southern part of Hong Kong Island. The introduction of the electric-powered railway system in this major population and employment centres will offer a faster and more convenient transport system than the road-based system while bringing an overall improvement to the environment.

1.3 Name of Project Proponent

1.3.1 The project proponent is the MTR Corporation Limited.

1.4 Location & Scale of the Project

1.4.1 The SIL(E) will run for approximately 7km from South Horizons (SOH), Lei Tung (LET), Wong Chuk Hang (WCH), Ocean Park (OCP) to Admiralty (ADM) where it will interchange with the existing Island Line and Tsuen Wan Line. There are two options for the section between OCP and ADM, depending on whether station at Happy Valley (HAV) is provided. The proposed routes of the line are indicated in **Figure 1**.

1.4.2 The route of the railway will partly located underground in tunnels. It will be carried on viaduct from Lei Tung on Ap Lei Chau via Wong Chuk Hang and Ocean Park to the tunnel entrance adjacent to Nam Fung Road portal.

1.4.3 The section on Ap Lei Chau crosses the Aberdeen Channel on a bridge parallel to the existing Ap Lei Chau road bridge. The elevated tracks then follow the Wong Chuk Hang nullah and Heung Yip Road alongside the industrial area to WCH station and to OCP station.

1.4.4 The SIL(E) will be a medium capacity railway system which will better match the transport demand. As the rolling stock is different to that of the existing MTR lines, a new depot is required and is proposed to be built on the Wong Chuk Hang Estate site next to WCH station. Possible facilities at the depot include train stabling, maintenance workshop (including heavy maintenance track with inspection pits), washing plant, train lifting facility and stores.

1.5 Number & Type of Designated Project

1.5.1 This project is classified as a Designated Project under Category A - Roads, Railways and Depots in Schedule 2 Part 1 of the Environmental Impact Assessment Ordinance (EIAO).

1.6 Name and Telephone Number of Contact Person(s)

1.6.1 For details of the project please contact:

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2. OUTLINE OF PLANNING & IMPLEMENTATION PROGRAMME**2.1 Tentative Project Programme**

2.1.1 The preliminary timetable of project implementation is shown below.

Activity	Time Period
Preliminary Design	February 2008 – May 2009
Detailed Design	May 2009 – May 2011
Gazette & Authorization under Railways Ordinance	May 2009 – June 2010
Construction	January 2011 – August 2014
Test & Trial Running	September 2014 – December 2014
Open to Public	December 2014

2.1.2 The Corporation will appoint a specialist environmental consultant to undertake an Environmental Impact Assessment (EIA) providing interactive environmental inputs to the engineering design team. Environmental monitoring and audit activities of the project will be conducted by the Corporation.

2.1.3 Possible interface with other major projects has been identified: Repositioning and Long Term Operation Plan of Ocean Park; Decking of Staunton Creek Nullah in Wong Chuk Hang; Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel and Shatin to Central Link (SCL) at Admiralty.

2.1.4 It is assumed that the SIL ADM station will be constructed before the SCL Admiralty station. However, in order to minimize disruption to the public and nuisance to passengers, it may be more efficient to carry out the enabling works (advance works) for the SCL Admiralty station in parallel with the SIL as part of the SIL(E) project.

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 Proposed Methods of Construction

3.1.1 The envisaged methods of construction for various stations and alignment sections are outlined as below:

- Tunnels will be constructed by drill-and-blast, tunnel boring machine, cut-and-cover and sequential excavation method (also known as New Austrian Tunnelling Method).
- For viaducts, precast segmental construction and cast-in-situ construction will be adopted and, foundations will be constructed by conventional methods with the majority formed by bored piling.
- The new railway bridge across the Aberdeen Channel will be constructed by segmental, balanced cantilever method, and bored pile foundations or pad footing will be adopted for the piers. The new bridge should have a similar structural form and pier locations to the existing Ap Lei Chau road bridge to minimize the visual impacts.
- Stations will be constructed using cut-and-cover method or by drill-and-blast for stations within rock cavern. For above-ground stations, the construction will follow a conventional approach with the construction of the piles, substructure, followed by precast concrete viaduct girders and then platform and roof elements.
- The depot will be constructed by reinforced concrete construction.

3.2 Potential Impact on the Environment

3.2.1 Potential environmental impacts associated with the construction and operation of the project have been identified based on the preliminary design information and are described below.

Construction Phase

3.2.2 Air Quality

- The air quality issue will be related to dust generation from construction activities e.g. excavation, materials handling, and gaseous emission from construction plants and vehicles.

3.2.3 Noise

- The airborne construction noise is likely to be generated from construction of cut-and-cover sections, above-ground structures, tunnel portals and ventilation shafts, with key impacts expected at SOH station.
- Ground-borne construction noise from tunnelling works will be limited. Straightforward methodology for assessing ground-borne noise would be adopted and, noise surveys for existing noise conditions inside noise sensitive receivers (NSRs) are considered unnecessary.

3.2.4 Water Quality

- Potential sources of water pollution include site runoff and drainage from land-based construction activities; effluent from general construction activities, tunnelling and underground works, and; sewage effluent from the construction workforce.
- Potential impacts on water quality and hydrodynamic condition at Aberdeen Channel due to the construction of the piers of the new railway bridge are expected. However, the new bridge would be designed to closely follow the alignment and profile of the existing Ap Lei Chau road bridge and have similar pier locations.
- Potential impacts on water quality and hydrodynamic condition at the Wong Chuk Hang nullah are expected due to the construction of the viaduct section over the nullah. Temporary decking of the nullah may be required in some of the locations for constructing the piers and viaducts. The viaducts would be designed to be supported by portal spanning across the nullah and the piers will be spaced to avoid encroachment into the nullah.

3.2.5 Waste Management

- Wastes generated by the construction are likely to include construction and demolition materials, excavated materials from tunnelling works, chemical wastes and general refuse.

3.2.6 Ecology

- Direct impact to the areas of recognized conservation interest (e.g. Nam Fung Woodland Site of Special Scientific Interest and Aberdeen Country Park) is not anticipated.
- Indirect disturbance to habitats and associated wildlife may arise from the construction activities.

3.2.7 Landscape and Visual

- Potential impacts to mature trees and Green Belt areas between LET and WCH stations and at the Nam Fung Road portal are expected.
- Visual impacts are likely from above-ground construction works, particularly the viaduct section from Ap Lei Chau Bridge Road to Nam Fung Road.

3.2.8 Cultural Heritage

- Potential disturbance to sites of archaeological interest, sites of cultural heritage and historic buildings is anticipated.

3.2.9 Hazard to Life

- Potential hazards may arise from the existing Potentially Hazardous Installation (PHI), the Liquefied Petroleum Gas (LPG) Transit Depot/ Bulk Domestic Supply at Lee Nam Road in Ap Lei Chau. The construction of the SOH railway section is approximately 450m away from the PHI and is within the consultation zone.

- Potential hazards may arise from an explosives magazine needed for the tunnel construction by drill-and-blast method. Use of explosives will be controlled by the requirements on mining, quarrying and explosives by Civil Engineering and Development Department.

Operation Phase

3.2.10 Air Quality

- No impact is expected from the emission free electric-powered rail system and the normal exhaust air from railway operations would be insignificant.

3.2.11 Noise

- The key noise impact will be from the trains on viaduct sections and above-ground stations. Noise from the depot entry and launching tracks may also be an issue. They can be controlled to acceptable levels by standard noise engineering measures and appropriate rolling stock.
- Operational ground-borne railway noise impacts are not expected due to the type of rolling stock to be adopted. Assessment methodology will be the same as noted in S3.2.3.
- Operational noise would be generated from fixed plants e.g. ventilation shafts. No adverse noise impact is expected since the ventilation shafts will be properly designed to comply with the stipulated noise criteria.

3.2.12 Water Quality

- Runoff from above-ground structures and tunnel drainage and wastewater discharge e.g. from station and tunnel operations, air conditioning systems are potential sources of water pollution during operation.
- Potential impacts on water quality and hydrodynamic condition at Aberdeen Channel are expected due to presence of the piers of the new railway bridge. However, the new bridge would be designed to closely follow the alignment and profile of the existing Ap Lei Chau road bridge and have similar pier locations.
- Impacts on water quality and hydrodynamic condition at the Wong Chuk Hang nullah will be insignificant since the viaduct piers will be spaced to avoid encroachment into the nullah.

3.2.13 Waste Management

- Wastes generated during operation are likely to include general refuse, industrial wastes and chemical wastes.

3.2.14 Ecology

- Potential disturbance from railway operations may arise if disturbance-sensitive species are present.

3.2.15 Landscape and Visual

- Potential loss of landscape resources e.g. natural hill slopes, amenity areas, mature trees is anticipated.
- Visual impacts are likely from above-ground structures, such as, elevated stations, viaducts, the railway bridge across the Aberdeen Channel and ventilation shafts.

3.2.16 Cultural Heritage

- Indirect vibration impact to sites of cultural heritage and historic buildings are not expected given the type of rolling stock to be adopted.
- Potential visual impact may arise from viaducts to historic buildings e.g. in Wong Chuk Hang San Wai.

3.2.17 Hazard to Life

- Potential hazards may arise during operation of the railway from the PHI, the LPG Transit Depot/ Bulk Domestic Supply at Lee Nam Road in Ap Lei Chau.

4. MAJOR ELEMENTS OF THE SURROUNDING ELEMENTS

4.1 The major existing and planned sensitive receivers and sensitive parts of the natural environment which might be affected by the proposed project are outlined as below.

Type of Sensitive Uses	Sensitive Receivers / Sensitive Parts of Natural Environment
Residential developments	<ul style="list-style-type: none"> – Ap Lei Chau Estate – South Horizons – The Oasis – Residences at Ap Lei Chau Bridge Road – Lei Tung Estate – Yee On Court – Sham Wan Towers – Residences at Nam Long Shan Road – Wong Chuk Hang Police Quarters – Residences at Shouson Hill Road – Wong Chuk Hang San Wai – Wong Chuk Hang Kau Wai
Education institutions	<ul style="list-style-type: none"> – Schools at Ap Lei Chau Bridge Road – Schools at Ap Lei Chau Estate – Schools at Lei Tung Estate – Schools at Nam Long Shan Road – Police Training School – Schools at Nam Fung Path
Health care facilities	<ul style="list-style-type: none"> – Tung Wah Group of Hospitals Jockey Club Rehabilitation Complex – Home for the aged at Welfare Road – Wong Chuk Hang Hospital – Wong Chuk Hang Complex for the Elderly
Places of worship	<ul style="list-style-type: none"> – Holy Spirit Seminary at Welfare Road – Tai Wong Ye Temple
Water bodies	<ul style="list-style-type: none"> – Aberdeen Channel – Aberdeen South Typhoon Shelter – The Aberdeen Marina Club – Wong Chuk Hang nullah
Areas of conservation value	<ul style="list-style-type: none"> – Green Belt – Nam Fung Road Woodland SSSI – Aberdeen Country Park
Sites of cultural heritage	<ul style="list-style-type: none"> – Wong Chuk Hang San Wai

- 4.2 The following existing land uses might affect the construction and operation of the proposed project.
- Potential PHI hazards may arise from the LPG Transit Depot/Bulk Domestic Supply at Lee Nam Road in Ap Lei Chau during the construction and operation of the SOH railway section.

5. ENVIRONMENTAL PROTECTION MEASURES

5.1 Description of Mitigation Measures

5.1.1 Broad mitigation measures for the project to minimize potential environmental impacts are indicated below, subject to further detailed assessment in the EIA.

Construction Phase

5.1.2 Air Quality

- Implement dust suppression measures set out in the Air Pollution Control (Construction Dust) Regulation, such as provision of wheel-washing facilities and watering of exposed ground

5.1.3 Noise

- Adopt quieter powered mechanical equipment (PME) and construction method as well as good site practices
- Provide purpose-built noise barriers or enclosures where applicable e.g. acoustic enclosures to enclose vertical shafts for tunnelling
- Plan tunnelling works in particular during restricted hours in noise sensitive areas
- Control charge amount and carefully schedule blasting activities to minimize ground-borne noise impacts

5.1.4 Water Quality

- Consider site practices as recommended in EPD's Practice Note for Professional Persons PN1/94 "Construction Site Drainage"
- Install appropriate drainage facilities to control site runoff
- Provide adequate treatment facilities to treat wastewater from construction activities prior to discharge
- Provide proper toilet facilities
- Deploy appropriate water quality control measures at Aberdeen Channel and Wong Chuk Hang nullah such as cofferdams, silt curtains, closed grab dredgers and sand traps

5.1.5 Waste Management

- Implement waste management practices to minimize waste generation and maximize waste recovery and recycling
- Sort and segregate waste for reuse and disposal
- Dispose waste to landfills only as a last resort

5.1.6 Ecology

- Avoid and minimize disturbance to conservation areas and any flora/ fauna and habitats of conservation interest
- Minimize indirect construction disturbance, e.g. fence off works areas
- Mitigate unavoidable impacts, e.g. transplantation and provision of compensatory habitats

5.1.7 Landscape and Visual

- Avoid and minimize disturbance to significant landscape resources such as Green Belt, e.g. minimize works areas
- Mitigate unavoidable landscape impacts through compensatory planting or transplantation
- Use decorative screen hoarding and control night time lighting

5.1.8 Cultural Heritage

- Avoid and minimize disturbance to sites of archaeological interest, sites of cultural heritage and historic buildings

5.1.9 Hazard to Life

- Undertake quantitative risk assessment (QRA) for the railway construction works within the consultation zone of LPG Transit Depot/ Bulk Domestic Supply PHI and identify any necessary mitigation measures
- Undertake QRA for the explosives magazine needed for tunnel construction and identify any necessary mitigation measures

Operation Phase

5.1.10 Noise

- Adopt appropriate rolling stock
- Incorporate noise control features for viaducts such as track-side parapets/ barriers
- Locate and orientate fixed plants away from noise sensitive receivers
- Use silencers, mufflers or acoustic shields for noisy fixed plants

5.1.11 Water Quality

- Install appropriate treatment facilities e.g. divert surface runoff to silt traps and oil interceptors before discharge to local drainage system and divert wastewater from depot to a dedicated treatment facilities before discharge
- Locate the piers of the new railway bridge at Aberdeen Channel in line with those for the existing Ap Lei Chau road bridge thus minimizing the impact upon the channel flow
- Avoid encroachment of the viaduct piers into the Wong Chuk Hang nullah thus minimizing the impact to the existing nullah

5.1.12 Waste Management

- Implement waste management practices to minimize waste generation and maximize waste recovery and recycling

5.1.13 Landscape and Visual

- Restore temporary works areas
- Carry out landscape planting
- Adopt appropriate architectural form, colour and finishes to above-ground structures

5.2 Public Consultation

- 5.2.1 The Corporation has already undertaken considerable public consultation on the project. The views gathered have been considered and where appropriate incorporated into the scheme being developed. The Corporation will continue the consultation throughout the preliminary and detailed design of the SIL(E) as well as the construction stage. Appropriate tools and technologies will be applied as needed to facilitate the public consultation process.

6 CONCLUSIONS

- 6.1 In summary, the key environmental issues during construction are expected to be airborne noise, marine water quality, spoil management and landscape and visual, while during operation, the key issues would be airborne noise from rolling stock on viaduct sections and visual impacts from above-ground structures.
- 6.2 At present, it would appear that there will be no insurmountable environmental impacts during the construction and operation of the SIL(E). Detailed assessments will be undertaken in the EIA. The Corporation is committed to fully integrate the environmental issues with the project design and construction and, will ensure adoption of suitable mitigation measures for compliance with relevant environmental legislation and standards.

7 USE OF PREVIOUSLY APPROVED EIA REPORTS

- 7.1 References could be made to recent MTR and KCR projects with approved EIA reports, such as those for the Penny's Bay Rail Link, East Rail Extensions - Tai Wai to Ma On Shan and Kowloon Southern Link.



金鐘
Admiralty

跑馬地
Happy Valley

跑馬地方案
Happy Valley Option

南港島線(東段)
South Island Line (East)

黃竹坑
Wong Chuk Hang

海洋公園
Ocean Park

海怡半島
South Horizons

利東
Lei Tung

南港島線(東段)
SOUTH ISLAND LINE (EAST)

Figure No. 1

