

## Multiple EIAs and Follow-up Management for a Strategic Rail Link

**Lisa Poon**  
**MTR Corporation**

MTR SCL Hung Hom Site Office  
Cheong Tung Road South, Hung Hom, Hong Kong  
Tel: (852) 3127 6295 Fax: (852) 3127 6422  
Email: lcspoon@mtr.com.hk

**Josh Lam**  
**AECOM / HKIEIA**

8/F Grand Central Plaza, Tower 2  
138 Shatin Rural Committee Road, Shatin, Hong Kong  
Tel: (852) 3922 9000 Fax: (852) 3922 9797  
Email: Josh.Lam@aecom.com

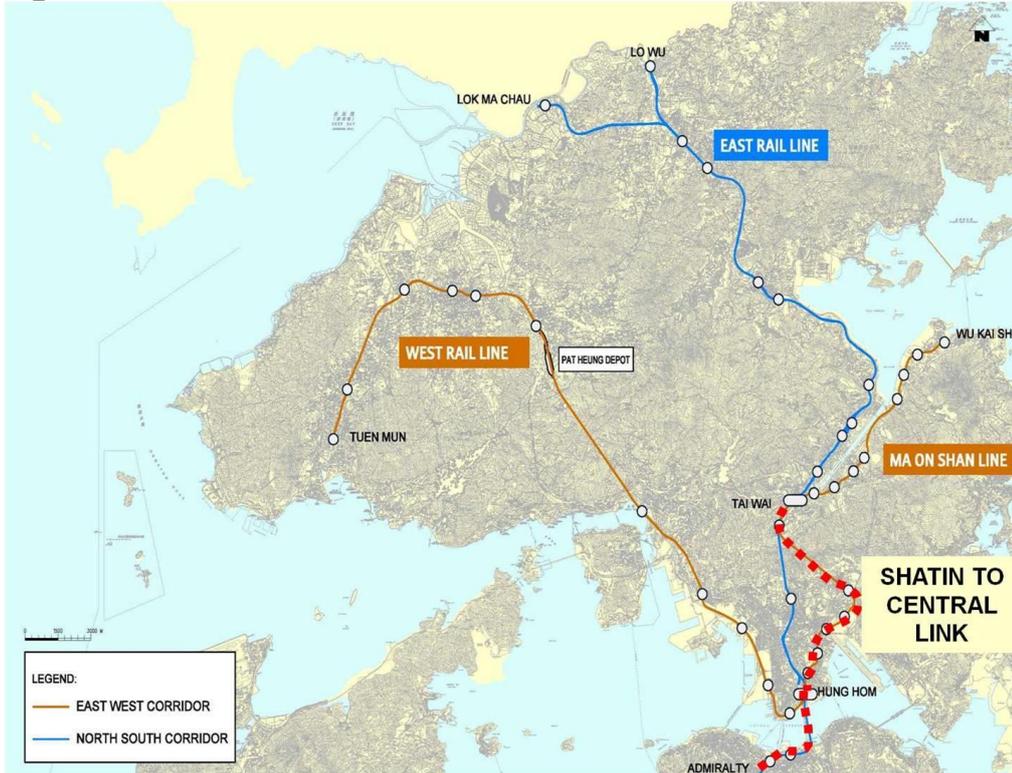
### Abstract

The Shatin to Central Link (SCL) is a major strategic railway project in Hong Kong, “Connecting East and West, Linking North to South”, as the project slogan goes. Complementing the urban development of Hong Kong, the SCL builds on the existing rail network with convenient interchanges and improves connectivity. The project will link up several rail lines and cross multiple districts, and will have numerous interfaces with existing railways and land uses, as well as various development plans and infrastructure projects along its alignment. To cater for the complexities, uncertainties and risks of the project, five Environmental Impact Assessment (EIA) reports under Hong Kong’s EIA Ordinance were prepared to support the project, from planning and design to current construction stages, in compliance with environmental regulations to obtain Environmental Permits (EPs). Key challenges included interfaces with two existing railways, two concurrent railway projects, and a transport bypass and development project, all with their own respective EPs. Another challenge was the incorporation of the new Hung Hom Stabling Sidings option into the SCL scheme at late stages of the EIA process taking into account stakeholder management considerations. Implementation of the multiple EPs requires effective management during the construction stage. This paper presents the management and technical issues that arose during the EIA and follow-up process, in meeting the complexity of project implementation requirements. Effective and efficient approaches and solutions to these challenges as well as the interfacing issues are presented.

### Introduction

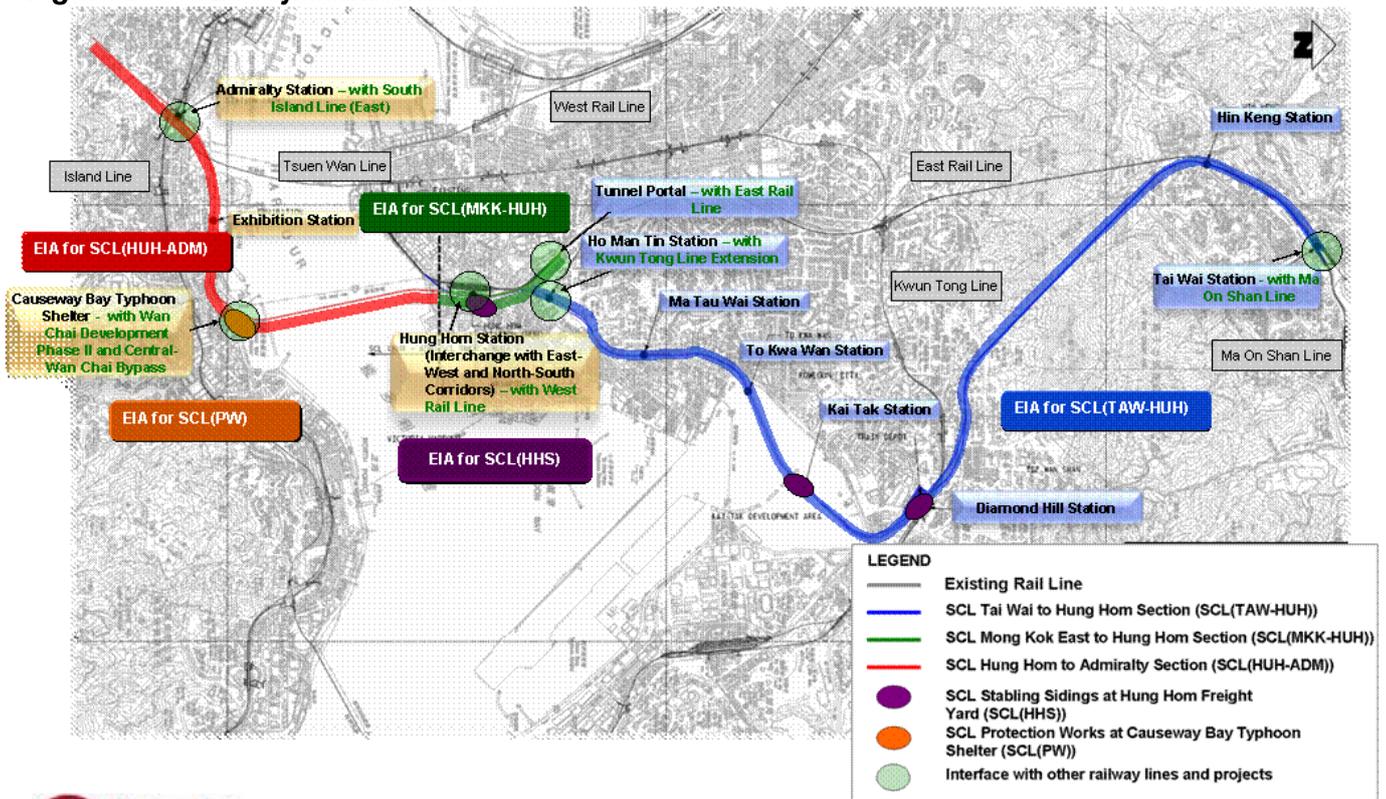
The Shatin to Central Link (SCL) is a major railway project with a total length of about 17km designed to link up several railway lines and connect various districts in Hong Kong. It will provide 10 stations, 6 of which are interchange stations. The project is being implemented by MTR on behalf of Hong Kong Government as two sections, namely the *Tai Wai to Hung Hom Section* and the *Hung Hom to Admiralty Section*. The former will extend the existing *Ma On Shan Line* (MOL) from Tai Wai to the West Rail Line (WRL) via East Kowloon to form the “East-West Corridor” and the latter will extend the existing East Rail Line across the harbour to Wan Chai North and Central to form the “North-South Corridor” (see Figure 1). The SCL construction cost is estimated to be approximately US\$8.4 billion (in September 2011 prices), and there are some 20 main civil works contracts.

**Figure 1 - Shatin Central Link Route Plan**



The SCL project will have numerous interfaces with existing railways and concurrent railways projects: eg. SCL interchanges with Kwun Tong Line Extension (KTE) at Ho Man Tin Station and South Island Line (East) (SIL(E)) at Admiralty Station. Additional land uses, as well as various development plans and infrastructure projects along its alignment are also envisioned (see Figure 2). Environmental Impact Assessment (EIA) studies were carried out and approved in February 2011 and 2012. Construction works have commenced since the summer of 2012 and the SCL will be operational by 2018 for the East-West Corridor and 2020 for the North-South Corridor.

**Figure 2 - SCL Project Interfaces**



This paper presents the challenges that arose during the EIA and follow-up process for the SCL, and the management approaches and solutions to tackle them, in meeting the complexity of project implementation requirements. The EIA stage will present considerations during the initial planning and environmental study stage detailing issues in specific alignment sections, and the follow up section will detail issues involved in implementing the multiple EIA approach.

## EIA Stage

Five separate EIAs were conducted for the SCL project, in accordance with the EIA Ordinance requirements:

- SCL Protection Works at Causeway Bay Typhoon Shelter [SCL(PW)], 2010
- SCL Tai Wai to Hung Hom Section [SCL(TAW-HUH)], 2011
- SCL Mong Kok East to Hung Hom Section [SCL(MKK-HUH)], 2011
- SCL Hung Hom to Admiralty Section [SCL(HUH-ADM)], 2011
- SCL Stabling Sidings at Hung Hom Freight Yard [SCL(HHS)], 2011

Under the Ordinance, each EIA must undergo the regulatory process prior to the issue of an Environmental Permit: a Project Profile, Study Brief, Final EIA Report and public consultation. Key environmental issues included airborne noise, air quality, ecology, landscape and visual, water quality and cultural heritage. (Refer to the Hong Kong EIA website for detailed information on the above and further information on the EIA Ordinance).

In addition to the environmental issues, project risk management and timing were considered in detail. The five EIAs were undertaken to resolve the following key considerations.

- Substantial uncertainty pertaining to the cross harbour section;
- Timing mis-match for the section interfacing the concurrent Wan Chai Development Phase II and Central-Wan Chai Bypass (WDII&CWB) projects which crosses the SCL alignment;
- Late design developments of the Stabling Sidings at Hung Hom Freight Yard (HHS), a result of further stakeholder considerations

In order to progress the environmental studies in an efficient manner, the EIA reports were carried out at the same time within a very tight programme. Careful coordination with the different consultants and various teams was undertaken for each EIA to maintain consistency. The following section summarises each of the studies and their respective challenges.

### *Tai Wai to Hung Hom [SCL(TAW-HUH)], Mong Kok East to Hung Hom [SCL(MKK-HUH)], and Hung Hom to Admiralty [SCL(HUH-ADM)] Sections*

In the early planning stages, the uncertainty of the SCL(HUH-ADM) cross harbour section due to the potentially controversial reclamation works governed under the Harbour Protection Ordinance necessitated prudent risk management. The viability of the entire North-South Corridor was therefore a concern. To avoid affecting the progress of the SCL(TAW-HUH), a separate EIA was decided to be undertaken for this SCL section. As the SCL(MKK-HUH) links up with the cross harbour section to the south, the viability of this section was also uncertain. However, this section includes the Hung Hom Station (HUH), which is an important interchange for both the East-West Corridor and North-South Corridor. Since HUH is an integral part of the East-West Corridor and needs to be assessed together with SCL(TAW-HUH), a separate EIA was also decided for this section to minimise the risk of affecting the progress of SCL(TAW-HUH). The three EIA reports were later approved in February 2012.

### *SCL Protection Works at Causeway Bay Typhoon Shelter [SCL(PW)]*

The concurrent Wan Chai Development Phase II and Central-Wan Chai Bypass (WDII&CWB) projects involve reclamation and building a highway bypass in the Causeway Bay Typhoon Shelter area, where SCL alignment crosses in the form of a tunnel. If SCL were to be constructed after

WDII&CWB completes the interface section, SCL would have had to excavate the same area in the typhoon shelter and residents in the neighbourhood would face repeated disruptions. To minimize the extent and duration of environmental impacts with repeated temporary reclamation, it was agreed that the Highways Department (HyD) would undertake the construction of an approximately 160m long overlapping section of twin track railway tunnel structure for MTR prior to the construction of the main railway alignment. This cost-effective and environmentally friendly arrangement, however, triggered the requirement for a separate fast-track SCL(PW) EIA due to programme mis-match between the two projects in order to facilitate the earlier construction programme of the WDII&CWB. This EIA report was approved in February 2011 in time for incorporation of its EP into the WDII&CWB project.

#### *Hung Hom Stabling Sidings [SCL(HHS)]*

The Stabling Sidings for the East-West Corridor was originally proposed to be located in Diamond Hill. This generated significant public concerns primarily from the local residents. However, a suitable site was not available until freight services were terminated at the former Freight Yard in Hung Hom in June 2010. The engineering, operational and environmental feasibility for this site was explored in parallel and the complex interface to incorporate the respective requirements into the design in the late stages of the project was a challenge.

As the feasibility and public sentiment of the new scheme was not known at the time, a new EIA was conducted to include the proposed HHS scheme as an option to the original scheme already included under the SCL(TAW-HUH) without affecting the progress of the other EIA reports. The EIA study was carried out in advance during the HHS design process in order to meet the extremely tight submission programme of approximately 2 months after the issue of the Study Brief. This allowed the SCL(HHS) EIA report to be submitted with the other three EIA reports as a contiguous project (excluding the SCL(PW) EIA which was submitted earlier) simultaneously in February 2012 for review by the various authority departments under the EIA Ordinance. Public consultations and stakeholder management were carried out that resulted in general public support for the HHS scheme.

### **EIA and Follow-up Management and Implementation**

Following the approval of the EIA Reports, Environmental Permits (EPs) were received for the SCL works, which specify EIA follow-up conditions to be fulfilled during implementation of the project, for example, specific mitigation measures, environmental monitoring and reporting. This is the first time in Hong Kong that multiple EPs have been undertaken for a single railway project. Efficient and effective management is important during the follow-up implementation stage.

To ensure proper management of the EPs, interface requirements with site control considerations were incorporated during tender preparation while including requirements for upholding the environmental standards under the multiple EPs.

#### *Environmental Consultancy Management*

Due to the scale and complexity of the project, two EIA consultancies were employed by MTR to conduct the EIAs. The management strategy was to assign a consultant for each of the corridors, East-West and North-South. One important consideration was to align the operational requirements of the different sections of the same railway corridor which will be a long-term requirement to fulfil operational conditions under the relevant EPs. Management of the two consultancies demanded good leadership and coordination for technical consistency of implementing EIA requirements. At the EIA follow-up stage, Environmental Consultants were employed for implementing the EP requirements. A single consultancy for the Independent Environmental Checker was employed to align submission verification and site audit practices. One Environmental Term Consultancy was awarded on a task basis to provide technical support to MTR on specific EP submissions and Variations of EP (VEPs) for project design changes, thus minimizing coordination and interface issues.

### *Environmental Permit Applications*

The typical arrangement for EP applications is to have one EP for each EIA. However, the HHS scheme is an option that covers the updated design at the Diamond Hill, Kai Tak and Hung Hom areas. Overlapping in these areas, the two EIAs possess different environmental impact results and requirements.

The preferred HHS option was first decided at the time of the EP applications. As the HHS option supersedes the original scheme, the SCL(HHS) EIA was incorporated into both the EP applications for SCL(TAW-HUH) and SCL(MKK-HUH) EPs. This minimises the number of EPs while facilitating a more public friendly reading of the project and EIA scope. In addition, clearer requirements for contractors minimising submissions, site requirements and redundancy under each EP result, leading to more efficient environmental controls during the construction stage. The project now effectively has three EPs instead of four, spread amongst the various SCL contractors for implementation (excluding the SCL(PW) EP).

### *Management of Multiple EPs during Construction Stage*

There are some construction contracts that require the implementation and compliance of two EPs. For the Hung Hom area where the East-West Corridor and North-South Corridor interface, the EPs for the SCL(TAW-HUH) and SCL(MKK-HUH) sections have been incorporated into the contract requirements. Considerations to adopt the same monitoring stations to be implemented by one single contractor have minimised the interface in this complex area. Coordination requirements such as interface meetings with nearby contractors for cumulative impact considerations and resolution of site issues have also been incorporated.

### *WDII&CWB Interface during Construction Stage*

Extensive discussions between the HyD and MTR also resulted in the incorporation of the EM&A responsibilities under the Contractor of WDII&CWB and their Environmental Team. The relevant EP requirements from the SCL(PW) EIA have been aligned as much as possible (eg. similar mitigation measures) and incorporated into their contract while specifying their EM&A arrangements (eg. same monitoring station locations, reporting of environmental data). These arrangements enable a more simple and efficient transition of SCL requirements for the WDII&CWB Contractor to implement in the same works site.

### *The Public*

The EIA and follow up process has been managed with continuous engagement of the public. Since 2009, green groups have been regularly engaged, typically on a quarterly basis. Beyond the legal announcement requirement of the EIA Ordinance, a project website detailing the EIA and its recommendations was published in Chinese and English to encourage public input. Community Liaison Groups (CLG) have been set up across districts to facilitate local public communication, enquiries and complaints handling on all environmental issues. Through regular CLG meetings, continuous interactive dialogues between stakeholders could be maintained and effective communication platforms were formed to address the public's concerns.

### *Variation of West Rail Line and Ma On Shan Line EPs*

Consequential to the SCL, modifications at WRL and MOL are required for accommodating the future operational requirements of the East-West Corridor. This means that their respective existing EPs, already in use since their issuance in 1998 and 2000, must be reviewed. Part of the strategy for minimising the risks to the SCL project is to manage these modifications under the existing EPs while separated from the SCL EPs. This will be a challenge.

## Conclusions

The multiple SCL EIAs is an outcome of the considerations on risk management, reduction of environmental impacts and stakeholder engagement. The reduction of the number of EPs during the application process has resulted in a reduced number and simplified EP scope, avoiding redundancy with clearer requirements, while facilitating a public friendly reading of the project. At the implementation stage, multiple EP requirements and coordination mechanisms for effective interfacing have been incorporated into contract specifications. As the railway network expands complementing the urban development of Hong Kong, the future generation of railway projects may face similar challenges. Since SCL is the first railway project in Hong Kong with multiple EPs, it sets an example of effective and efficient management of the EIA processes for a complex project with multiple interfaces and risk management considerations.

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MTR Corporation Limited, Shatin to Central Link Project Web Site  
( <http://www.mtr-shatincentrallink.hk/en/home/> )

Hong Kong EPD website: <http://www.epd.gov.hk/eia/>