

## 2 Considerations of Alternative Options

### 2.1 Introduction

A new stabling siding is an essential element for the operation of the SCL. The major function of the stabling sidings is to accommodate trains for deployment to meet the demand during morning peak hours. In non-operational hours, the stabling sidings would also be used for regular cleaning and inspection, but not for major repairing works.

As indicated above, stabling sidings is an integral part of the SCL (TAW-HUH). During the design process, a number of alternatives have been identified and their suitability has been investigated. This section presents how various alternatives have been developed and factors that have been considered during the design process. This includes operational requirements, engineering factors, views from the public as well as also environmental benefits and impacts.

### 2.2 Consideration of Alternative Sites for Stabling Sidings

#### 2.2.1 Operational Requirements for Stabling Sidings

In order to meet the train stabling requirements, it has been established with the Railways Development Office (RDO) that additional stabling facilities would be required. Some operational requirements for allowing proper function of the stabling sidings are listed below:

- Location requirement to allow efficient train launching to meet the service requirement;
- Sufficient stabling capacity to support operation of SCL (TAW-HUH);
- Allow for routine maintenance works such as regular cleaning and inspections but not for major repairing works;
- To achieve adequate length and width (including allowance for EVA, access roads, turn outs, staff accommodation, plant rooms, but excluding structures)
- To provide sidings at intervals that would allow disabled trains to be removed from the running line to enable service requirements to be restored within a reasonable period.

#### 2.2.2 Using Existing Train Depots

Investigation has been conducted for using existing train depots so as to avoid having a new train stabling sidings for SCL (TAW-HUH). A summary of the findings is given below:

##### Existing MTR Train Depot

Tai Wai Depot and Pat Heung Depot

##### Reasons that cannot be adopted for SCL (TAW-HUH) Train Stabling Sidings

The future SCL (TAW-HUH) will have a journey time of about 70 minutes (Wu Kai Sha to Tuen Mun). Train launching can only start at 5:30am but each station along the line must have the arrival of the "first train" at or around 6:00am to allow morning train service to commence. With just 30 minutes after launching, the first train from Tai Wai Depot and Pat Heung Depot will not be able to reach the other end of the line (as stated above the single trip will take 70 minutes) and hence a third launching point is required. In addition, the stabling capacity at Pat Heung Depot and Tai Wai Depot is unbalanced and hence the stabling sidings must be located east of HUH to allow trains to be launched evenly to meet the morning service requirement.

There might be an argument for commencing the morning train launching earlier than 5:30am to resolve

the launching issue above. This means further reduction of the current tight maintenance window during non-traffic hours which will seriously affect the effectiveness and efficiency of essential maintenance activities (e.g. grinding of rail, inspection/maintenance of overhead line, repair of structures and trackside railway equipment, etc.) during non-traffic hours. There will be increasing chances of human errors and equipment failures if maintenance period is reduced from the current minimum.

#### Ho Tung Lau Depot

It is currently used as the depot for the East Rail Line and the fleet size will actually be increased after extending its service across the harbour (SCL (HUH-ADM)). There is already a lack of space along the East Rail Line for additional stabling and there is no room to accommodate any trains of SCL (TAW-HUH).

The East Rail Line signalling system is not compatible with SCL (TAW-HUH) and hence it is not possible to stable the SCL (TAW-HUH) trains in Ho Tung Lau Depot as they cannot run by themselves to the SCL (TAW-HUH) line tracks.

#### Kowloon Bay Depot

It is currently used as the depot for the Kwun Tong Line. The SCL (TAW-HUH) is an extension of the former KCR lines where the rolling stock, signalling and traction power supply systems are incompatible with the urban line systems of the Kwun Tong Line. In addition, the ex-KCR trains are bigger and cannot fit into the Kwun Tong Line tunnels

### 2.2.3 Using Other Areas

Other than the existing train depots, the investigation has also covered a number of other sites further away. A summary of the findings is given below.

#### Other Areas

#### Reasons on whether it could be adopted for SCL (TAW-HUH) Train Stabling Sidings

#### Shatin Pass Quarry

The approximate 8 ha disused quarry requires extensive site formation works. The site at +100mPD will require a 3.3km spur line bifurcating near the Toll Plaza of the Lion Rock road tunnel from the SCL (TAW-HUH) track level at +0mPD. Such level difference will impose significant technical problem for track connection. The rock cavern option inside Lion Rock with over 100m depth below ground will have problems in providing fireman access and is not considered further. This site is therefore not suitable for use as the SCL (TAW-HUH) stabling sidings.

#### Hin Keng

Using this site as the depot would take up the site available for the proposed HIK and the entry/exit tracks would need to pass through HIK, jeopardizing the design of the proposed HIK of SCL (TAW-HUH).

<b><u>Other Areas</u></b>	<b><u>Reasons on whether it could be adopted for SCL (TAW-HUH) Train Stabling Sidings</u></b>
Tai Shui Hang	<p>The site is located south of the MOL Tai Shui Hang Station and is opposite to the existing Shatin Sewerage Treatment Works. The site is however not sufficiently large to accommodate the stabling facilities. Even if the arrangement of the tracks and accommodation areas were to be adjusted, the limited headroom and the column arrangement of the Tate's Cairn Highway approach road viaducts do not permit straight stabling tracks to be constructed within the site. The site is therefore not suitable for use as the new SCL (TAW-HUH) stabling sidings.</p>
Wu Kai Sha CDA Sites	<p>Two CDA sites north of Wu Kai Sha Station are yet to be developed, and the size of two sites combined is sufficient to accommodate the additional stabling sidings. However, the southern CDA site consists of a large number of lots, which have been acquired by a local developer. The northern site comprises of a golf club under a Short Term Tenancy and a number of Government Land Allocations (GLAs). Unless Government is willing to revoke the GLAs and resume the private lots, development of stabling sidings in the CDA sites will not be possible.</p>
Kai Tak	<p>As a result of the change in the alignment along Ma Tau Wai Road, the site reserved for the depot at Kai Tak has already been occupied by TKW. Also, the depot will be in direct conflict with the Lung Tsun Stone Bridge which was uncovered in 2008 and is now proposed to be preserved in-situ by the Antiques and Monuments Office. The previously proposed site at Kai Tak is therefore no longer available for use as the new stabling sidings.</p>
Diamond Hill CDA Site	<p>The site is considered a feasible location for the train stabling sidings as this location is suitable for train deployment to meet the demand during morning peak hours. However, this site has been identified as a site with potential cultural values and landscape resources. Assemblage of Tang/Song archaeological finds was uncovered at the archaeological site. Three historical buildings and over 1000 trees are located within the site.</p> <p>This option (i.e. the DHS), as a designated project under Item A4 of Schedule 2 of EIAO, is assessed in a separate EIA study prepared according to EIA Study Brief (ESB-191/2008 <a href="http://www.epd.gov.hk/eia/register/study/latest/esb-191.pdf">http://www.epd.gov.hk/eia/register/study/latest/esb-191.pdf</a>).</p>

**Other Areas****Reasons on whether it could be adopted for SCL (TAW-HUH) Train Stabling Sidings**

Former Hung Hom Freight Yard

Following the termination of freight services in the former Hung Hom Freight Yard in June 2010 and cessation of container cargo operation in April 2011, there is a possibility for modifying the former Freight Yard at Hung Hom for use as the new SCL (TAW-HUH) stabling sidings. However, the existing column grids were not designed for stabling and the associated connection tracks to the SCL (TAW-HUH) mainline and would need to be modified to accommodate the different stabling configuration and facilities. In addition the distance between Tai Wai and Hung Hom is such that if a train were disabled on the mainline, the time to retrieve the disabled train to these sidings would significantly impact the service frequency. As a result, it may be necessary to make appropriate changes in the Diamond Hill, Kai Tak and Hung Hom Stations and its associated alignment and facilities of this Project to suit the SCL operational arrangement. With these adjustments in place, the former freight yard can thus be as well considered as one possible site to accommodate the train stabling requirement for SCL.

**2.2.4 Preferred Sites for Stabling Sidings**

It can be seen from **Section 2.2.1** that it is essential to have separate stabling sidings for SCL (TAW-HUH) and there are no existing depots that could be adopted. Among the possible sites, the Diamond Hill CDA Site (i.e. the former Tai Hom Village) and the former Hung Hom Freight Yard Site are considered as feasible locations for train stabling sidings having considered operational requirements and engineering factors.

Further to the selection of preferred sites for train stabling sidings, investigation was conducted to identify different options to make the best use of the two preferred sites in order to maximize the efficiency of stabling sidings and minimize the adverse views from the public and environmental impacts. As such, three different options have been developed, including using only the Diamond Hill CDA Site (i.e. DHS), only the Hung Hom Freight Yard (i.e. HHS) and combination of HHS and DHS, for operation of SCL (TAW-HUH). The option of having stabling sidings at both Diamond Hill CDA Site and Hung Hom Freight Yard could help to share the need of providing a stabling sidings at either one of the possible sites therefore reducing the capacity of stabling sidings required at either one of the possible sites. However, a reduction in the stabling facilities at the former Hung Hom Freight Yard site would still result in constraining the remainder of the former Hung Hom freight yard being utilised for other uses due to operational constraints. Similarly even with a reduction of stabling facilities at the Diamond Hill CDA Site, the stabling sidings would still occupy a significant portion of the Diamond Hill CDA Site and would pose a constraint to the future use of this site. Therefore, the option of providing stabling sidings at both Diamond Hill CDA Site and former Hung Hom Freight Yard was found to be not preferred during the design process, and was not pursued further.

The option of using DHS is assessed under SCL (TAW-HUH) EIA Report, while the option of using HHS is assessed in this EIA Report.

**2.3 Public Consultation**

As one of the SCL Project Objective, an extensive series of meetings/ consultations with public has been conducted during the preliminary design stage of the Project, with an objective to formulate a final scheme which meets the needs of the local community and is fully supported by the general public.

After the Executive Council approved the further planning and preliminary design of SCL by the MTR in March 2008, the Government and the MTR subsequently visited the District Councils and consulted local communities on the SCL project. Extensive public consultation, including roving exhibitions and public forums, was conducted in collaboration with various District Councils and the local community to further collect views from the public on the new links.

Following the termination of freight services in the former Hung Hom Freight Yard in June 2010 and cessation of container cargo operation in April 2011, the Government and MTR visited the District Councils on the option of HHS for operation of SCL in July 2011.

The public generally welcomes and looks forward to the implementation of SCL as early as possible. However, the public also have concern on the environmental impacts induced by operation of a stabling sidings. In response to comments received, some modifications have been made on the design of the DHS and HHS to address their concerns, as highlighted below.

#### DHS

Owing to the level difference between Choi Hung Road and Lung Cheung Road, there is a long wall alongside Choi Hung Road. To minimize the wall effect, it will be architecturally treated to blend with the surrounding environment and the structure will be partially sunken below the level of Choi Hung Road.

#### HHS

Owing to the above-ground nature of HHS, the public are concern on the impacts resulted from the operation of HHS. Airborne railway noise impacts are assessed in **Section 8** of this report. In accordance with the assessment results, direct noise mitigation measures will be implemented to minimize the airborne railway noise impact.

Both DHS and HHS are a good demonstration of this process of balancing railway needs against environmental concerns.

### **2.4 Comparison of Options of Stabling Sidings Arrangement**

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The environmental implications arising from the two different options of stabling sidings arrangement including DHS and HHS have been examined, and the environmental implications have been compared and presented in **Table 2.1**.

**Table 2.1:** Comparison of Options of Stabling Sidings Arrangement

Train Stabling Sidings Options		Environmental Benefits	Environmental Impacts	Engineering Considerations	Remarks
Location	Design				
Diamond Hill (DHS)	Semi-underground	<ul style="list-style-type: none"> <li>The majority of the depot roof would be handed over to the future developer at Diamond Hill CDA site for development, including but not limited to landscaping design.</li> <li>All the new train stabling siding tracks would be underneath the deck to be constructed and hence any environmental noise and visual impacts would have been avoided.</li> </ul>	<ul style="list-style-type: none"> <li>The construction work for DHS would inevitably affect the plantation and habitats within the boundary of the Diamond Hill CDA site. Nevertheless, the ecological value of the plantation and habitat has been concluded to be low (see <b>Section 5</b>).</li> <li>The DHS Option would require felling approximately 1100 trees in Diamond Hill area which is more than that of approximately 300 for the works for DIH under the HHS Option.</li> <li>This DHS Option would have direct impact on the Former Tai Hom Village archaeological site and the three built heritages at Former Tai Hom Village. As compared to the proposed HHS option, this DHS option would affect more on the archaeological site and would also have direct impact on the Stone House which would not be affected by the HHS Option.</li> </ul>	<ul style="list-style-type: none"> <li>The semi-underground DHS will require bulk excavation that needs to be sequenced with the construction of the proposed SCL DIH.</li> <li>As DHS would occupy a large portion of the former Tai Hom Village site, extensive enabling works for the future CDA development will need to be incorporated into the works. As the CDA development is yet to be defined this in turn would constrain the options that could be developed.</li> <li>Due to the constraint of DHS the traffic diversion for the DIH works in Lung Cheung Road are more extensive compared to the situation if the stabling siding was located at HHS.</li> <li>The connection tunnels to DHS will require the diversion of a number of existing utilities in Choi Hung Road to enable the implementation of the cut and cover tunnel works. The cut and cover works will also necessitate local traffic diversions to enable the works to be implemented in the road.</li> <li>The connection tunnel to DHS will require a retrieval shaft near Rhythm Garden.</li> <li>In the operational phase pedestrian access from Choi Hung Road will require pedestrians to pass over the top of DHS before descending down to the DIH.</li> </ul>	Environmental assessments have been included in the EIA for SCL (TAW – HUH)
Hung Hom (HHS)	Above-ground	<ul style="list-style-type: none"> <li>The works for HHS would be within the footprint of the existing railway facilities in former Hung Hom Freight Yard and hence would achieve a high degree of</li> </ul>	<ul style="list-style-type: none"> <li>Configuration and number of ventilation shafts / plant room required for HUH to support HHS Option would be different from that required to support DHS Option.</li> </ul>	<ul style="list-style-type: none"> <li>The stabling tracks are at grade and will only require a relatively shallow excavation to accommodate the tracks below the existing podium structure. The stabling</li> </ul>	This option also requires implementing amendments to the originally proposed works for Hung Hom Station, Kai Tak

Train Stabling Sidings Options		Environmental Benefits	Environmental Impacts	Engineering Considerations	Remarks
Location	Design				
		<p>landuse compatibility.</p> <ul style="list-style-type: none"> <li>The works for DIH would only require to fell approximately 300 trees which is less than that of the approximately 1100 for the DHS Option adopted under the SCL (TAW-HUH).</li> <li>The works for DIH would have direct impact on the two of the three historical buildings at Former Tai Hom Village, namely Pillbox and Former Royal Air Force Hanger. However the DHS Option would also have direct impact on the Stone House.</li> <li>All the new train stabling siding tracks would be underneath the deck of Hung Hom Station and hence any environmental noise and visual impacts would have been avoided to a large extent.</li> <li>Overall construction waste generated by the HHS is lesser than the DHS options as shallow excavation would involve for accommodate the tracks under podium structure.</li> </ul>	<p>This would introduce additional visual impacts and hence require mitigation measures to alleviate impacts.</p> <ul style="list-style-type: none"> <li>The new fan area to the north of HHS would generate additional noise and visual impacts to the neighbouring receivers. Direct noise mitigation measures such as semi-enclosures and vertical noise barriers would be required (see <b>Section 8</b>). These noise mitigation measures would also require aesthetic consideration to alleviate any visual impacts.</li> </ul>	<p>sidings are therefore largely unseen by the public whereas the DHS option has a visible structure above Choi Hung Road level.</p> <ul style="list-style-type: none"> <li>The former Hung Hom Freight Yard is no longer utilised and the adaption to a stabling sidings is a productive use of this area that would be otherwise limited for other usage. Rail connections to the freight yard already exist however they will need to be modified due to the different operational requirements for the stabling sidings.</li> <li>The connection tunnel proposed between KAT and DHS under the DHS option will not be required.</li> <li>A refuge sidings will be required at KAT for taking out of service trains that would not be required under the DHS option.</li> <li>The part of the Tai Hom village unaffected by DIH is available for the CDA development with less constraint on the future development options.</li> <li>In the operational phase the pedestrian access to DIH can be more convenient for pedestrians accessing from Choi Hung Road as they would not need to pass over the DHS structure.</li> <li>The HHS option would avoid impact on the Stone House at Tai Hom village and also the part of the Kai Tak nullah within the site.</li> </ul>	<p>Station and Diamond Hill Station. Environmental assessments of these amendments along with HHS are assessed in this EIA Report.</p>

## **2.5 Selection of Preferred Option of Stabling Sidings Arrangement**

As illustrated in **Table 2.1**, the two different arrangement options of stabling sidings would bring about different environmental benefits and impacts.

As concluded in the EIA reports for SCL(TAW-HUH) and this Project, the environmental impacts of both DHS and HHS options would comply with the respective criteria stipulated in the TM-EIAO, and would be considered as acceptable with implementation of appropriate mitigation measures. For this reason, both options of using only the DHS and only the HHS would be considered as environmentally acceptable and could be adopted to support the operation of SCL (TAW-HUH).

It should be noted that the HHS would affect less trees, archaeological site and built heritages. The train stabling sidings at Former Hung Hom Freight Yard is also mostly within the footprint of existing railway facilities. Even including the necessary modification works at Hung Hom Station and construction works at Kai Tak Station and Diamond Hill Station, it would still affect less trees. All the siding tracks would also be accommodated underneath the existing deck of Hung Hom Station to minimise noise and visual impacts as much as possible. Although the new fan area to the north of the HHS would inevitably generate additional noise and visual impacts, direct noise mitigation measures including semi-enclosure and vertical noise barriers with appropriate aesthetic design would be implemented to alleviate any impacts that may be generated. It is therefore considered that the HHS option would be slightly preferred from an environmental perspective. However, train stabling, launching and retrieval requirements are complex. In addition to environmental factors, it is important to consider other factors such as engineering, operational requirements and safety aspects in determining the preferred scheme. The ultimate suitability of using either the DHS or HHS for train stabling would be subject to the findings of both detailed EIA and engineering studies.