

## 15 Conclusion

### 15.1 Overall

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An EIA Report has been prepared for Shatin to Central Link - Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] to satisfy the requirements given in the EIA Study Brief ESB-233/2011 and the Technical Memorandum on Environmental Impact Assessment Process. All the latest design information has been incorporated into the EIA process. Aspects that have been considered in this EIA Report include:

- Consideration of Alternative options
- Project Description and construction methodology
- Cultural Heritage
- Ecology
- Landscape and Visual
- Construction Dust
- Airborne Noise
- Groundborne Noise
- Water Quality
- Waste Management
- Land Contamination
- Environmental Monitoring and Audit

All the existing and planned environmental sensitive receivers in the vicinity of the alignment have been identified by conducting site surveys and reviewing relevant planning information. The receivers identified include residential blocks, educational institutions and quarters. These receivers have all been considered in this EIA study.

The key assessment assumptions, limitation of assessment methodologies and all related prior agreements with EPD on assessment of different environmental aspects are given in **Appendix 15.1**.

### 15.2 Options Evaluation

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Training stabling sidings is an essential element for the operation of the SCL (TAW – HUH) to accommodate trains for deployment to meet the demand during morning peak hours. In non-operational hours, the sidings would be used for train stabling. Maintenance works, such as regular cleaning and inspection, but not for major repairing works, would be conducted during non-operational hours as well.

During the design process, a number of alternatives have been identified and their suitability has been investigated. Various alternatives have been developed and factors which include operational requirements, engineering factors, views from the public as well as environmental benefits and impacts have been considered during the design process.

A site search exercise has therefore been conducted to identify possible sites for the train stabling sidings. All the existing depots that are managed by the Project Proponents and other sites in the vicinity have been critically examined. The site search has concluded no existing depots could be adopted and it is also difficult to identify other appropriate sites or alternatives. Among the possible sites, the Diamond Hill CDA Site and the former Hung Hom Freight Yard Site are considered as feasible locations for train stabling sidings in terms of operational requirements and engineering factors.

The environmental implications of DHS and the HHS options have been reviewed (see **Section 2**). It is found that, based on the assessment findings of the EIA report of SCL (TAW-HUH) and this EIA, providing the stabling sidings at either DHS or HHS would both be considered as environmentally acceptable and could be adopted to support the operation of SCL (TAW-HUH).

The train stabling sidings at former Hung Hom Freight Yard is mostly within the footprint of the existing railway facilities. All the siding tracks facilities would also be accommodated underneath the existing deck of Hung Hom Station to avoid noise and visual impact as much as possible. Although the new fan area to the north of the HHS would inevitably generate additional noise and visual impacts, direct mitigation measures including semi-enclosure and vertical noise barriers with appropriate aesthetic design would be implemented to alleviate any impacts that may be generated. Although engineering considerations are also being given, it is considered that the arrangement of having only the HHS would be slightly preferred from environmental perspective.

### 15.3 Construction Method

According to the latest programme, the construction works for the Project would commence in 2012 with completion in 2018.

#### 15.3.1 Train Stabling Sidings and Hung Hom Station

HHS and HUH are located within the densely built up area in Hung Hom. The lack of space available at the surface for locating HHS and HUH and the need of connecting to future SCL (TAW-HUH) alignment poses constraint on the location and design of HHS and HUH and thereby limited the options of construction methods available.

The tentative construction methodologies for the HHS and HUH are summarized below.

**Table 15.1:** Tentative Construction Methods for HHS and HUH

Key Design Elements	Tentative Construction Methodologies
HHS	<p><u>Train stabling sidings under the existing deck of Hung Hom Station</u></p> <ul style="list-style-type: none"> <li>• Piling for underpinning of existing structure</li> <li>• General concreting work</li> <li>• At-grade track laying</li> <li>• General utilities</li> </ul> <p><u>Fan area to the north of the train stabling sidings</u></p> <ul style="list-style-type: none"> <li>• At-grade track laying within a trough structure</li> <li>• Installation of semi-enclosures with piled support (see <b>Section 8.6</b>)</li> <li>• General utilities</li> </ul> <p><u>Shunt neck to the north of the train stabling sidings</u></p> <ul style="list-style-type: none"> <li>• At-grade track laying within a trough structure</li> <li>• Construction of tunnel box under Chatham Road North</li> <li>• Installation of vertical noise barriers (see <b>Section 8.6</b>)</li> <li>• General utilities</li> </ul> <p><u>Launching and retrieval tracks to the south of the train stabling sidings</u></p> <ul style="list-style-type: none"> <li>• At-grade track laying within a trough structure</li> <li>• General utilities</li> </ul>
HUH Modification	<p><u>Hung Hom Station and Associated Plant Rooms</u></p> <ul style="list-style-type: none"> <li>• D-wall, Pre-bored H-piles and barrettes for foundation</li> <li>• Underpinning Scheme</li> </ul>

Key Design Elements	Tentative Construction Methodologies
	<ul style="list-style-type: none"> <li>General concreting works</li> </ul> <p><u>Ventilation shafts and plant rooms</u></p> <ul style="list-style-type: none"> <li>Pre-bored H-piles for foundation</li> <li>Relocation of facilities displaced by HHS</li> </ul> <p><u>Others such as utility diversion</u></p> <ul style="list-style-type: none"> <li>Typical smaller scale excavation, concreting etc</li> </ul>

### 15.3.2 DIH and KAT

Both DIH and KAT would be underground. Their tentative construction methodologies and associated entrances are summarized in **Table 15.2**.

**Table 15.2:** Tentative Construction Methods for DIH and KAT

Key Design Elements	Tentative Construction Methodologies
KAT	<p><u>Underground Station</u></p> <ul style="list-style-type: none"> <li>Foundation is constructed by open-cut method.</li> </ul> <p><u>Underground Refuge Sidings</u></p> <ul style="list-style-type: none"> <li>The refuge sidings would be within the temporary works areas of KAT. Typical open cut for tunnel construction as part of the KAT Station construction would be required.</li> </ul> <p><u>KAT Associated Tunnel</u></p> <ul style="list-style-type: none"> <li>Cut and cover</li> </ul>
DIH	<p><u>Underground Station</u></p> <ul style="list-style-type: none"> <li>Station foundation would employ either bored piles or D-walls and the underground structure will be constructed by in-situ concreting</li> <li>SCL (TAW-HUH) tunnel section approaching to Diamond Hill Station by bored tunnelling. .</li> </ul> <p><u>Others such as utility diversion</u></p> <ul style="list-style-type: none"> <li>Typical smaller scale excavation, concreting etc</li> </ul>

## 15.4 Cultural Heritage Impact

Built heritage survey and archaeological survey have been conducted within the study area of the Project. Some archaeological sites and three historical buildings are identified within the Study Area. However, there are no Sites of Cultural Heritage (namely Declared Monuments) in the Project Study Area.

Though the archaeological survey at former Tai Hom Village revealed the Tang/ Song Dynasty remains to be sparse and redeposited and hence of lesser archaeological significance, assemblage of Tang/ Song archaeological finds within urban setting is considered rare in Hong Kong. A survey-cum-excavation is recommended to be conducted at the former Tai Hom Village to recover the archaeological remains.

The construction of DIH would affect the Former Royal Air Force Hanger and the Old Pill Box within the former Tai Hom Village, but would not have encroachment onto the Stone House (No 4 Tai Koon Yuen). The physical conditions of the Former Royal Airforce Hanger are not satisfactory for total preservation. The condition of Pillbox is better and may be feasible for total preservation. A conservation plan would be separately submitted to agree on the most appropriate approach to preserve these 2 historical buildings. Depending on the recommendation on the conservation plan, part of the hangar together with a model would be displayed and old pill box would be reinstated within the CDA Site.

Overall, it is considered that the cultural heritage impacts in the construction and operation phases are acceptable with mitigation measures.

### **15.5 Ecological Impact**

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Ecological considerations have been integrated into the development of the Project. Literature reviews of existing information with supplement findings from recent field surveys identified that terrestrial habitats within the assessment area are of low ecological value.

Terrestrial habitats within the Study Areas are largely urban/ residential areas with high disturbance and low ecological value. Habitats affected will include 0.44 ha of channelised watercourse, 1.35 ha grassland, 1.62 ha plantation and 40.08 ha urban/ residential area.

Direct and indirect ecological impacts arising from the Project during the construction and operational phases have been identified and evaluated. Impacts are considered to be of low significance. Other indirect impacts arising from the Project would be temporary and considered as negligible in nature. Overall, no significant and unacceptable ecological impacts to terrestrial resources were anticipated in this assessment.

### **15.6 Landscape and Visual Impact Assessment**

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The proposed works will inevitably result in some landscape and visual impacts during construction and operation phases. These impacts have been minimized through careful consideration of alternatives, minimization of works sites, incorporation of aesthetic external designs and landscape treatments of proposed aboveground structures which include ventilation shafts, CLP transformer plant, noise semi enclosure and vertical noise barriers at Hung Hom, as well as entrances and ventilation shafts at Kai Tak and Diamond Hill Stations.

Having reviewed the Outline Zoning Plans within the Study Area, it is considered that the proposed Project would fit in well with the current and future planning settings and would not conflict with statutory town plans of the areas.

Approximately 405 existing trees will be affected by the proposed works, of which approximately 45 trees will be transplanted and approximately 360 trees will be felled. The affected trees vary from small to mature size. None of these are Registered Old and Valuable Trees. There are no rare species or endangered species but only common species. Under the proposed scheme for the Project, opportunities for tree compensation within the Project boundary has been fully explored and incorporated in the proposed mitigation measures as much as practicable. Tree removal application and compensatory planting proposal will be prepared and submitted to seek approval from relevant authorities in accordance with ETWBTC 3/2006 requirements, prior to construction of the Project.

There would not be any temporary and permanent loss of existing open space due to the Project. All landscape areas that will be temporarily alienated will be reinstated on a like to like basis after completion of temporary works. Meanwhile, in addition to the compensated trees, new landscape resources such as green roof and climbers are proposed as far as practicable to optimize greening opportunities within the Project boundary. It is considered that with the proposed compensated trees and the proposed new landscape resources, the overall residual impact on existing trees and greenery would be reduced to an acceptable level.

The proposed works are within Transport Corridor at Hung Hom, City Centre of Kai Tak Development and CDA site in Diamond Hill. During construction phase, there would be moderate to insubstantial residual impact. The residual impact would be further reduced to slight to insubstantial in Day 1 and Year 10 of Operation.

Due to the construction works proposed in Hung Hom, Kai Tak and Diamond Hill, there would be inevitably slight to substantial residual visual impact during construction phase.

With the implementation of proposed mitigation measures, the residual impact in Day 1 and Year 10 of Operation will be reduced to slight to insubstantial.

Overall, it is considered that the residual landscape and visual impacts of the proposed project are considered acceptable with mitigation measures to be implemented during construction and operation phases.

### **15.7 Construction Dust Impact**

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Potential dust impact may be generated from the soil excavation activities, backfilling, site erosion, storage of spoil on site, transportation of soil etc. Quantitative fugitive dust assessments have been conducted, taking into account the cumulative impact caused by nearby concurrent projects.

Assessment results suggested that all the predicted TSP concentrations at identified ASRs would comply with the respective criteria. Adverse residual air quality impacts are not expected.

Effective dust control can also be achieved by implementing the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation and in accordance with the EM&A programme during construction. With the implementation of dust suppression control and good site practice, adverse fugitive dust impact is not anticipated.

### **15.8 Airborne Noise Impact**

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#### **15.8.1 Construction Noise**

Potential construction noise impacts would be caused by the various construction activities including excavation, backfilling and construction of superstructure etc.

Construction noise assessment has concluded that the unmitigated construction noise impacts would be high at the neighbouring NSRs. Suitable noise mitigation measures have been identified which could reduce the noise impacts at most of the NSRs. Careful selection of construction equipment and working methods including the use of smaller, electrically driven and quiet plant are adopted, where practicable. Other measures including good site practice, the use of site hoarding, and installation of movable barriers and sequential operation of construction plant have been recommended. With the incorporation of the recommended mitigation measures, the predicted construction noise levels due to the Project would comply with the stipulated noise criterion at all the NSRs.

The predicted cumulative noise levels at most of the NSRs would comply with the corresponding noise criteria, except for one NSR near to the works areas in north of HHS. However, the EIA study of concurrent projects indicated that all practicable mitigation measures are exhausted and the residual impacts are minimised.

#### **15.8.2 Operational Noise**

Operational noise impacts associated with railways and fixed noise sources have also been investigated. Semi-noise enclosures and vertical noise barriers would be required for the at-grade fan area and the shunt neck to the north of the HHS to mitigate airborne railway noise.

Fixed noise sources during the operational phase include station plant building and ventilation shafts. Operational noise impacts can be effectively mitigated by implementing noise control treatment (e.g. silencers, acoustic louvers and acoustic enclosures) at source during the design stage and hence adverse residual operational airborne noise impacts are not anticipated.

## **15.9 Groundborne Noise**

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### **15.9.1 Construction Phase**

Potential groundborne noise sources during the construction phase have been identified. The noise impacts on neighbouring sensitive receivers have been quantified. Results indicate that the predicted impacts are within the statutory requirements and hence mitigation measures are not required. There are no adverse residual construction groundborne noise impacts.

### **15.9.2 Operational Phase**

Potential groundborne noise would be caused by the trains running along the alignment and shunt neck of HHS. The predicted groundborne noise impacts during the operational phase are within the statutory requirements and hence mitigation measures are not required.

## **15.10 Water Quality**

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### **15.10.1 Construction Phase**

Potential water pollution sources have been identified as construction runoff, sewage from site workforce, drainage diversion and groundwater contamination. Mitigation measures including covering excavated materials, providing sedimentation tanks on-site, as well as other good construction practices are recommended to mitigate any adverse water quality impacts.

### **15.10.2 Operational Phase**

The operational water quality impact for track run-off and tunnel seepage will have no adverse water quality impact with the incorporation of mitigation measures in the design.

## **15.11 Waste Management**

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### **15.11.1 Construction Phase**

The quantity and proposed programme for the generation of waste during the construction phase have been estimated. Measures, including the opportunity for on-site sorting, reusing excavated fill materials (stored in stockpiles) etc, have been maximised in the construction methodology to minimise the surplus materials to be disposed off-site at designated locations. The annual disposal quantities for C&D materials and their disposal methods have also been assessed. Certain amounts of surplus of rock and spoils materials would be accepted by other projects, such as Hong Kong Boundary Crossing Facilities or disposed to Mainland and Fill Banks.

### **15.11.2 Operational Phase**

The types and quantities of waste that would be generated during the operational phase are assessed. Recommendations have been made to ensure proper treatment and disposal of these wastes.

## **15.12 Land Contamination**

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Relevant documents of land contamination assessment under SCL (MKK-HUH) and SCL (TAW-HUH) have been reviewed as they both shared the same assessment area with the Project. A site survey was also conducted to verify previous findings/ desktop review and to visit the track area at the eastern portion of Hung Hom Works Site which have not been surveyed in previous land contamination studies. A Contamination Assessment Plan (CAP) has also been prepared and submitted to EPD on 26 August 2011 to set out the requirements for a contamination evaluation of the Study Area of the Project. It is confirmed in the CAP that no adverse land contamination impacts would be anticipated within or in close proximity to the Study Area of the Project.

### **15.13 Environmental Monitoring and Auditing Requirements**

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It is recommended to implement an EM&A programme throughout the entire construction period to regularly monitor the environmental impacts on the neighbouring sensitive receivers. All the requirements (including cultural heritage, ecology, landscape & visual, dust, airborne and groundborne noise, water quality, waste and land contamination) in the EM&A Manual shall be complied with.

An Environmental Mitigation Implementation Schedule has also been included in the EM&A Manual to summarise all the measures, the implementation location, time frame, agency etc.

### **15.14 Overall**

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The EIA has been conducted based on the best and latest available information during the course of the EIA study. The findings of this EIA have provided information on the nature and extent of environmental impacts arising from construction and operation of the Project. The EIA has, where appropriate, identified mitigation measures to ensure compliance with environmental legislation and standards.

Overall, this EIA has demonstrated general compliance with the environmental standards and legislation with the implementation of the proposed mitigation measures during the construction and operational phases. This EIA has also demonstrated general acceptability of the residual impacts and thus the population and environmentally sensitive resources in the vicinity of the site would be sufficiently protected. Environmental monitoring and audit mechanisms have been recommended for the construction and operation of the Project, where necessary, to verify the effectiveness of the recommended mitigation measures. A summary of the environmental impacts associated with the Project is presented in **Table 15.3**.

**Table 15.3** Summary of Environmental Impacts Associated with the Project

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
<b>Cultural Heritage</b>					
<i>Construction Phase</i>					
Archaeological Sites	<p><u>Former Tai Hom Village</u></p> <ul style="list-style-type: none"> <li>The presence of the sparse Tang/ Song Dynasty layer extends to the north-eastern part of the former Tai Hom Village site would be directly impacted by the construction of the proposed DIH at Diamond Hill</li> </ul> <p><u>Lung Tsun Stone Bridge and Former Kowloon City Pier</u></p> <ul style="list-style-type: none"> <li>The remains of the Lung Tsun Stone Bridge and former Kowloon City Pier would not be affected by the construction of the proposed KAT and refuge sidings at Kai Tak</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines for Cultural Heritage Impact Assessment</li> <li>EIAO-TM Annex 10 and Annex 19</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<p><u>Former Tai Hom Village</u></p> <ul style="list-style-type: none"> <li>A survey-cum-excavation works to be conducted prior to the construction works at the former Tai Hom Village. The tentative extent for the survey-cum-excavation within former Tai Hom Village is shown in Figure 4.3. An Archaeological Action Plan (AAP) following the Guideline for Archaeological Impact Assessment should be submitted to the Antiquities and Monuments Office (AMO) for agreement.</li> </ul> <p><u>Lung Tsun Stone Bridge and Former Kowloon City Pier</u></p> <ul style="list-style-type: none"> <li>A buffer zone for Lung Tsun Stone Bridge and Former Kowloon City Pier (as shown in Figure 4.1.2) would be maintained</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>



Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
Built Heritages	<p><u>Former Royal Air Force Hangar</u></p> <ul style="list-style-type: none"> <li>The entire structure of the Former Royal Air Force Hangar will be directly impacted by the construction of the DIH</li> </ul> <p><u>Old Pillbox</u></p> <ul style="list-style-type: none"> <li>The proposed east end of the DIH station box will encroach onto the footprint of the Old Pillbox</li> </ul> <p><u>Stone House</u></p> <ul style="list-style-type: none"> <li>There will not be any impact on the Stone House as it is located outside the temporary at-grade works sites</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines for Cultural Heritage Impact Assessment</li> <li>EIAO-TM Annex 10 and Annex 19</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<p><u>Former Royal Air Force Hangar</u></p> <ul style="list-style-type: none"> <li>Documentation prior to disassembling, temporary storage of portions of historical interest</li> <li>Display of retained portions and a model (as per the conservation plan) within CDA site</li> </ul> <p><u>Old Pillbox</u></p> <ul style="list-style-type: none"> <li>Documentation prior to disassembling, temporary storage</li> <li>Reinstatement (as per the conservation plan) within CDA site</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>
<i>Operational Phase</i>					
Archaeological Sites	<p><u>Former Tai Hom Village</u></p> <ul style="list-style-type: none"> <li>Recommended mitigation measures would be conducted prior to the construction and thus further mitigation measure during the operational phase is therefore not considered</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines for Cultural Heritage Impact Assessment</li> <li>EIAO-TM Annex 10 and Annex 19</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<p><u>Former Tai Hom Village</u></p> <ul style="list-style-type: none"> <li>No mitigation measures are recommended during operational phase.</li> </ul> <p><u>Lung Tsun Stone Bridge and Former Kowloon City Pier</u></p> <ul style="list-style-type: none"> <li>No mitigation measures are</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	<p>necessary</p> <p><u>Lung Tsun Stone Bridge and Former Kowloon City Pier</u></p> <ul style="list-style-type: none"> <li>No impacts anticipated during operation phase of the Project due to its considerable distance from proposed KAT and refuge sidings</li> </ul>			<p>recommended during operational phase.</p>	
Built Heritages	<p><u>Former Royal Air Force Hangar</u></p> <ul style="list-style-type: none"> <li>As detailed photographic and cartographic records are recommended to document the Hangar prior to disassembling them, no further mitigation measure is required during the operational phase of the Project</li> </ul> <p><u>Old Pillbox</u></p> <ul style="list-style-type: none"> <li>As detailed photographic and cartographic records are recommended to document the Pillbox prior to disassembling them, no further mitigation measure is required during the operational phase of the Project</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines for Cultural Heritage Impact Assessment</li> <li>EIAO-TM Annex 10 and Annex 19</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<p><u>Former Royal Air Force Hangar</u></p> <ul style="list-style-type: none"> <li>No mitigation measures will be required for the built heritage</li> </ul> <p><u>Old Pillbox</u></p> <ul style="list-style-type: none"> <li>No mitigation measures will be required for the built heritage</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
<b>Ecology</b>					
<i>Construction Phase</i>					
Ecological resources within and in the vicinity of the Project area	<p><u>Habitat Loss (Project Site)</u></p> <ul style="list-style-type: none"> <li>Habitats affected will include 0.44 ha of channelised watercourse, 1.35 ha grassland, 1.62 ha plantation and 40.08 ha urban/ residential area</li> </ul> <p><u>Tree Felling</u></p> <ul style="list-style-type: none"> <li>Plantation trees (mostly non-native) will be affected (transplanted or felled)</li> </ul> <p><u>Disturbance</u></p> <p>Indirect impacts which cause local disturbance to habitats and fauna</p> <p><u>Water Quality</u></p> <ul style="list-style-type: none"> <li>Indirect impact associated with construction site run-off to channelised watercourse and associated fauna.</li> </ul>	<ul style="list-style-type: none"> <li>EIAO-TM Annex 8 and Annex 16</li> <li>Forests and Countryside Ordinance (Cap. 96)</li> <li>Wild Animals Protection Ordinance (Cap. 170)</li> <li>Country Parks Ordinance (Cap. 208)</li> <li>Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)</li> <li>IUCN Redlist</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>Habitat loss restricted to areas of low ecological value</li> <li>Tree compensation will be made according to ETWB TCW No. 3/2006 as far as practicable</li> <li>Good site practice</li> </ul>	<ul style="list-style-type: none"> <li>Residual ecological impacts resulting from the proposed works would largely be limited to the loss of relatively low ecological value habitats. Residual impacts on terrestrial ecology caused from the Project are considered as very minor and acceptable</li> </ul>
<i>Operational Phase</i>					

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
Ecological resources within and in the vicinity of the Project area	<u>Flora and fauna</u> <ul style="list-style-type: none"> <li>Indirect</li> </ul>	<ul style="list-style-type: none"> <li>EIAO-TM Annex 8 and Annex 16</li> <li>Forests and Countryside Ordinance (Cap. 96)</li> <li>Wild Animals Protection Ordinance (Cap. 170)</li> <li>Country Parks Ordinance (Cap. 208)</li> <li>Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)</li> <li>IUCN Redlist</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>No mitigation would be required</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>
<b><u>Landscape and Visual</u></b>					
<i>Construction Phase</i>					
Landscape Resources (LRs), Landscape Character Areas (LCAs) within the Study Area  Visually Sensitive	<ul style="list-style-type: none"> <li>Substantial to insubstantial significance on LR within the Study Area</li> <li>Moderate to insubstantial significance on LCAs within the</li> </ul>	<ul style="list-style-type: none"> <li>EIAO (Cap. 499).</li> <li>EIAO-TM Annex 10 and Annex 18</li> <li>ETWB TC(W) No.</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>CM1 - Decorative Hoarding</li> <li>CM2 - Management of facilities on work sites</li> <li>CM3 - Tree Transplanting</li> </ul>	<ul style="list-style-type: none"> <li>Substantial to insubstantial significance on LR within the Study Area</li> <li>Moderate to</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
Receivers (VSRs) within the Primary Zone of Visual Influence	Study Area <ul style="list-style-type: none"> <li>Substantial to slight significance on VSRs within Primary Zone of Visual Influence</li> </ul>	2/2004 <ul style="list-style-type: none"> <li>ETWB TC(W) No. 3/2006</li> </ul>			insubstantial significance on LCAs within the Study Area <ul style="list-style-type: none"> <li>Substantial to slight significance on VSRs within Primary Zone of Visual Influence</li> </ul>
<i>Operational Phase</i>					
Landscape Resources (LRs), Landscape Character Areas (LCAs) within the Study Area  Visually Sensitive Receivers (VSRs) within the Primary Zone of Visual Influence	<ul style="list-style-type: none"> <li>Substantial to insubstantial significance on LR within the Study Area</li> <li>Slight to insubstantial significance on LCAs within the Study Area</li> <li>Moderate to slight significance on VSRs within Primary Zone of Visual Influence</li> </ul>	<ul style="list-style-type: none"> <li>EIAO (Cap. 499).</li> <li>EIAO-TM Annex 10 and Annex 18</li> <li>ETWB TC(W) No. 2/2004</li> <li>ETWB TC(W) No. 3/2006</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>OM1 - Compensation Tree Planting</li> <li>OM2a - Screen Planting</li> <li>OM2b - Landscape Re-instatement</li> <li>OM3 - Aesthetic landscape and architectural treatment on Station / Entrances/ Ventilation Shaft</li> <li>OM5 - Re-instatement of excavated area</li> <li>OM7 - Aesthetic landscape and architectural treatment for DIH</li> <li>OM8 - Roof greening of large built structures</li> <li>OM9 - Aesthetic design on</li> </ul>	<ul style="list-style-type: none"> <li>Slight to insubstantial significance on LR within the Study Area in Year 10 of operation</li> <li>Slight to insubstantial significance on LCAs within the Study Area in Year 10 of operation</li> <li>Slight to insubstantial significance on VSRs within Primary Zone of Visual Influence in Year 10 of operation</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				Noise Barrier	
<b>Construction Dust</b>					
<i>Construction Phase</i>					
Existing residential, premises, educational, industrial, clinic/ home for the aged, worship, government, institution and community and performance art centres in Hung Hom, Kai Tak and Diamond Hill  Future residential premises in Hung Hom and Kai Tak area  50 assessment points (refer to <b>Figures 7.1.1-7.1.3</b> )	<ul style="list-style-type: none"> <li>1-hour Average TSP Conc.: 294 – 3079 <math>\mu\text{g}/\text{m}^3</math></li> <li>24-hour Average TSP Conc.: 127 – 1102 <math>\mu\text{g}/\text{m}^3</math></li> <li>Annual Average TSP Conc.: 75.5 – 83.3 <math>\mu\text{g}/\text{m}^3</math></li> </ul>	<ul style="list-style-type: none"> <li>EIAO-TM and AQO</li> <li>1-hr Average TSP Conc: 500 <math>\mu\text{g}/\text{m}^3</math></li> <li>24-hr Average TSP Conc: 260 <math>\mu\text{g}/\text{m}^3</math></li> <li>Annual Average TSP Conc: 80 <math>\mu\text{g}/\text{m}^3</math></li> </ul>	<ul style="list-style-type: none"> <li>Exceed EIAO-TM (1-hr) criterion by up to 2579 <math>\mu\text{g}/\text{m}^3</math></li> <li>Exceed AQO (24-hr) criterion by up to 842 <math>\mu\text{g}/\text{m}^3</math></li> <li>Exceed AQO (Annual) criterion by up to 3.3 <math>\mu\text{g}/\text{m}^3</math></li> </ul>	<ul style="list-style-type: none"> <li>Watering on the active works areas, exposed areas and paved haul roads to reduce dust emission</li> <li>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices would be carried out to further minimise construction dust impact.</li> </ul>	<ul style="list-style-type: none"> <li>The mitigated impact prediction results for 1-hr, 24-hr and Annual Average TSP Conc. are as follows.</li> <li>1-hour Average TSP Conc.: 137 – 484 <math>\mu\text{g}/\text{m}^3</math></li> <li>24-hour Average TSP Conc.: 89 – 202 <math>\mu\text{g}/\text{m}^3</math></li> <li>Annual Average TSP Conc.: 75.3 – 78.3 <math>\mu\text{g}/\text{m}^3</math></li> <li>No adverse residual 1-hr, 24-hr and annual dust impacts would be anticipated.</li> </ul>
<i>Operational Phase</i>					
As the train will be electrically operated, air quality impact is therefore not anticipated during operational phase.					

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
<b><u>Airborne Noise</u></b>					
<i>Construction Phase</i>					
<p>Existing residential premises and educational institutions in Hung Hom and Diamond Hill</p> <p>Future residential premises in Kai Tak and Diamond Hill</p> <p>24 assessment points (refer to <b>Figures 8.1.1-8.1.3</b>)</p>	<ul style="list-style-type: none"> <li>Predicted noise levels would range from 62 to 90 dB(A)</li> </ul>	<ul style="list-style-type: none"> <li>EIAO-TM Annex 5 for non-restricted hours for domestic premises: 75 dB(A), for educational institution is 70 dB(A) (65 dB(A) during examination period).</li> </ul>	<ul style="list-style-type: none"> <li>Exceed the EIAO-TM noise criterion by up to 15 dB(A)</li> </ul>	<ul style="list-style-type: none"> <li>Adoption of good site practices, optimisation of construction methodology, quieter plant, temporary movable noise barriers enclosure and acoustic mat to minimise construction noise impact</li> </ul>	<ul style="list-style-type: none"> <li>The mitigated predicted noise levels for the Project alone would range from 55 to 75 dB(A)</li> <li>Residual cumulative impact of 3 dB(A) for 1 month at NSR HUH-1-3 (Wing Fung Building) due to construction induced from the Project, SCL (TAW-HUH), SCL(MKK-HUH), SCL(HUH-ADM) and KTE. It is considered that all practicable measures have been exhausted to minimise the residual impact.</li> </ul>
<i>Operational Phase (Railway Noise)</i>					
<p>Existing residential premises in Hung Hom.</p> <p>6 assessment points</p>	<p><u>Daytime</u>(<math>L_{eq, 30mins, dB(A)}</math>)</p> <p>Predicted noise levels would be in</p>	<ul style="list-style-type: none"> <li>EIAO-TM Annex 5: ANL</li> </ul>	<ul style="list-style-type: none"> <li>No exceedance was anticipated.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of noise barrier and semi-enclosure during the design stage</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
(refer to <b>Figures 8.1.1</b> )	the range of 38 to 53 dB(A)  <u>Night-time (L<sub>eq</sub> 30mins, dB(A))</u>  • Predicted noise levels would be in the range of 38 to 53 dB(A)				
<i>Operational Phase (Fixed Noise)</i>					
Existing residential premises in Hung Hom, Kai Tak and Diamond Hill  21 assessment points (refer to <b>Figures 8.1.1-8.1.3</b> )	• Maximum sound power level was predicted to meet the relevant noise criteria	• EIAO-TM Annex 5: ANL-5dB(A)	• No exceedance was anticipated.	<ul style="list-style-type: none"> <li>• Louvers should be orientated away from adjacent NSRs, preferably onto main roads which are less sensitive.</li> <li>• Direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosures should be allowed for in the design for the ventilation shafts, stations and stabling sidings.</li> <li>• The façade for these plant areas/ ventilation shafts should have adequate sound insulation properties to minimise the noise emanating through the building fabric.</li> </ul>	• No adverse residual impacts would be anticipated.
<b><u>Groundborne Noise</u></b>					
<i>Construction Phase</i>					



Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
Existing residential premise in Diamond Hill.  1 assessment point (refer to <b>Figure 9.1.3</b> )	<u>Daytime</u> <ul style="list-style-type: none"> <li>36 dB(A) for residential NSR</li> </ul>	<ul style="list-style-type: none"> <li>TM-Places</li> <li>Daytime: 65 dB(A) for residential premises</li> </ul>	<ul style="list-style-type: none"> <li>No exceedance was predicted.</li> </ul>	<ul style="list-style-type: none"> <li>No mitigation would be required.</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>
<i>Operational Phase</i>					
Existing residential premises in Hung Hom and Diamond Hill  Future residential premises in Kai Tak and Diamond Hill.  10 assessment points (refer to <b>Figures 9.1.1-9.1.3</b> )	<u>Daytime (Leq 30mins. dB(A))</u> Predicted operation ground-borne noise levels would range from <20 to 43 dB(A) during daytime  <u>Nighttime (Leq 30mins. dB(A))</u> <ul style="list-style-type: none"> <li>Predicted operation ground-borne noise levels would range from &lt;20 to 40 dB(A) during nighttime.</li> </ul>	<ul style="list-style-type: none"> <li>TM-Places</li> <li>Operational ground-borne noise criterion: 55 dB(A) during daytime, and 45 dB(A) during nighttime</li> </ul>	<ul style="list-style-type: none"> <li>No exceedance was predicted.</li> </ul>	<ul style="list-style-type: none"> <li>No mitigation would be required.</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>
<b><u>Water Quality</u></b>					
<i>Construction Phase</i>					
Kai Tak Nullah	<ul style="list-style-type: none"> <li>Water quality would be affected.</li> </ul>	<ul style="list-style-type: none"> <li>EIAO-TM;</li> <li>Water Pollution Control Ordinance (WPCO) (Cap. 358);</li> <li>Technical</li> </ul>	<ul style="list-style-type: none"> <li>No exceedance was predicted.</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate and practicable mitigation measures (see <b>Section 10.7.1</b>) have been proposed to control the following:</li> </ul>	<ul style="list-style-type: none"> <li>No unacceptable water quality impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS); <ul style="list-style-type: none"> <li>Practice Note for Professional Persons (ProPECC) PN 1/94</li> </ul>		<ul style="list-style-type: none"> <li>Construction Runoff and Site Drainage;</li> <li>Tunnelling Works and Underground Works;</li> <li>Sewage Effluent;</li> <li>Groundwater Seepage; and</li> <li>Accidental Spillage</li> </ul>	
<i>Operational Phase</i>					
Kai Tak Nullah	<ul style="list-style-type: none"> <li>Water quality would be affected.</li> </ul>	<ul style="list-style-type: none"> <li>Relevant standards/criteria stipulated under the EIAO-TM, WPCO, TM-DDS and ProPECC 5/93</li> </ul>	<ul style="list-style-type: none"> <li>No exceedance was predicted</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate and practicable mitigation measures have been proposed to control runoff from train stabling sidings (see <b>Section 10.7.2</b>)</li> </ul>	<ul style="list-style-type: none"> <li>No unacceptable water quality impacts would be anticipated.</li> </ul>
<b>Waste</b>					
<i>Construction Phase</i>					
Not applicable	<ul style="list-style-type: none"> <li>Inert C&amp;D Materials from construction and excavation works with a total volume of approximately 1,376,660m<sup>3</sup></li> <li>36,930 m<sup>3</sup> of non-inert C&amp;D material.</li> </ul>	<ul style="list-style-type: none"> <li>EIAO-TM Annex 7 and Annex 15</li> <li>Waste Disposal Ordinance (Cap. 354);</li> <li>Waste Disposal (Chemical Waste)</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>	<ul style="list-style-type: none"> <li>C&amp;D wastes would be reused (i.e. within the site and other concurrent projects) as far as practicable before off-site disposal</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
	<ul style="list-style-type: none"> <li>General refuse from workforce with a daily volume of 300 kg</li> <li>Chemical waste from equipment cleansing and maintenance activities</li> </ul>	(General) Regulation (Cap. 354C); <ul style="list-style-type: none"> <li>Land (Miscellaneous Provisions) Ordinance (Cap. 28);</li> <li>Public Health and Municipal Services Ordinance (Cap. 132) - Public Cleansing and Prevention of Nuisances Regulation;</li> <li>Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N); and</li> <li>Dumping at Sea Ordinance (Cap. 466).</li> </ul>			
<i>Operational Phase</i>					
Not applicable	<ul style="list-style-type: none"> <li>Insignificant amount of general refuse, industrial waste and chemical wastes to be generated from the cleansing and maintenance activities of the Project.</li> </ul>	<ul style="list-style-type: none"> <li>Waste Disposal Ordinance (Cap. 354); and</li> <li>Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C).</li> </ul>	• Not applicable.	<ul style="list-style-type: none"> <li>Employ reputable waste collector to remove general refuse and industrial wastes from the stations on a daily basis.</li> <li>Follow Code of Practice on the Packaging, Labelling and Storage of Chemical Waste in</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
				handling of chemical waste. <ul style="list-style-type: none"> <li>Employ licensed waste collector and trip-ticket system for the collection of chemical waste.</li> </ul>	
<b><u>Land Contamination</u></b>					
<i>Construction Phase</i>					
Potential land contamination sites within the Project Area	<ul style="list-style-type: none"> <li>No soil or groundwater contamination was identified and therefore no remediation is required.</li> </ul>	<ul style="list-style-type: none"> <li>Section 3 (Potential Contaminated Land Issues) of Annex 19 "Guidelines for Assessment of Impact on Sites of Cultural Heritage and Other Impacts" of the EIAO-TM.</li> <li>Guidance Note for Contaminated Land Assessment and Remediation"</li> <li>Practice Guide for Investigation and Remediation of Contaminated Land</li> <li>Guidance Manual for Use of Risk-based</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>Not Applicable</li> </ul>	<ul style="list-style-type: none"> <li>No adverse residual impacts would be anticipated.</li> </ul>

Sensitive Receivers/ Assessment Points	Impact Prediction Results (Without Mitigation)	Key Relevant Standards/ Criteria	Extents of Exceedance (Without Mitigation)	Impact Avoidance Measures/ Mitigation Measures	Residual Impacts (After Implementation of Mitigation Measures)
		Remediation Goals for Contaminated Land Management			
<i>Operational Phase</i>					
Not Applicable					