



**Highways Department**

**Hong Kong Section of  
Hong Kong-Shenzhen Western Rail Link  
(Hung Shui Kiu-Qianhai)**

**Project Profile**

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## **Figure**

Figure 1                      Location Plan

## **1 BASIC INFORMATION**

### **1.1 Project Title**

- 1.1.1 The Project Title is “Hong Kong Section of Hong Kong-Shenzhen Western Rail Link (Hung Shui Kiu-Qianhai)”.

### **1.2 Purpose and Nature of the Project**

- 1.2.1 The Hong Kong-Shenzhen Western Rail Link (Hung Shui Kiu-Qianhai) (HSWRL) was one of the railway projects proposed in the 2021 Policy Address and the Northern Metropolis Development Strategy (NMDS) for improving Hong Kong’s cross-boundary transportation network and promoting efficient flow of people between Hung Shui Kiu (HSK) of Hong Kong and Qianhai (QIH) of Shenzhen. It was further elaborated in the 2022 Policy Address that HSWRL will promote connectivity and integrated development between Hong Kong and other cities in the Greater Bay Area (GBA).
- 1.2.2 In December 2023, the Government of the Hong Kong Special Administrative Region (HKSAR) promulgated the “Hong Kong Major Transport Infrastructure Blueprint” (the Blueprint) which provides a vision for strategic railway and major road networks for meeting the transport and logistics demand up to 2046 and beyond. The Blueprint also promotes cross-boundary integration with the Mainland, particularly with other Guangdong-Hong Kong-Macao GBA cities and linking up with the world.
- 1.2.3 HSWRL is proposed as a strategic and essential piece of transport infrastructure to support the development of Northern Metropolis by enhancing connectivity of Northern Metropolis with the Mainland and other parts of Hong Kong. The addition of stations at Ha Tsuen and Lau Fau Shan along the railway alignment of HSWRL will also increase the Hong Kong’s railway network coverage and unleash the development potential along the railway. With improved cross-boundary facilities and seamless connectivity with transport networks, the time for cross-boundary commuting can be further shortened and the Hong Kong-Shenzhen One-hour Cross-boundary Commuting Network can also be dynamically expanded.
- 1.2.4 The proposed HSWRL is about 18.1km long linking up HSK of Hong Kong and QIH of Shenzhen, with the length of the Hong Kong section around 7.3km. Possible intermediate stations at Ha Tsuen (HAT) and Lau Fau Shan (LFS) are recommended to serve the residents along the alignment. Passengers will be able to interchange at HSK Station with Tuen Ma Line (TML). It could serve the areas with development potential in the northern New Territories and enhance cross-boundary movement.

### **1.3 Name of the Project Proponent**

- 1.3.1 The Project Proponent is the Northern Metropolis Railways Office, Highways Department (HyD) of the HKSAR Government.

### **1.4 Location and Scale of the Project**

- 1.4.1 The Project is located in the western part of the New Territories. The HSWRL is an underground railway line composing five stations with a route length of about

18.1km, where the length of Hong Kong Section is 7.3km and Shenzhen Section is 10.8km. It starts from the HSK Station on the TML, passing through Ha Tsuen and Lau Fau Shan and crossing the Deep Bay to reach QIH Station through the Shenzhen Bay Port Station. The preliminary railway scheme of Hong Kong Section is shown at **Figure 1**.

1.4.2 Subject to the findings of the investigation study and design, the Scope of the Project comprises the following:

- (a) Construction of an approximately 7.3-km long underground railway line, with 3 underground stations namely Hung Shui Kiu, Ha Tsuen and Lau Fau Shan, then crossing the Deep Bay to the boundary of Hong Kong and connecting with the Shenzhen section of the HSWRL;
- (b) Provision of an at-grade depot at Ha Tsuen; and system-wide facilities, such as signaling system, operation control and monitoring facilities, passengers facilities and off-board fare collection system, electrical and mechanical installations, and rolling stocks, etc. necessary for the railway operations;
- (c) associated civil, geotechnical, landscape, road and drainage works, ancillary buildings such as ventilation buildings and power supply buildings, tunnels, pedestrian connection facilities, passengers facilities and off-board fare collection system, traffic control and surveillance system, electrical and mechanical installations, re-provisioning of facilities affected by the proposed infrastructural works, environmental mitigating measures and associated works.

## **1.5 Rationale and Justification for Underground Railway**

1.5.1 The key considerations for designing HSWRL as a fully underground railway include the planning requirements and development proposals of both the Hong Kong Government (including the Hung Shui Kiu/Ha Tsuen New Development Area and developments at Lau Fau Shan, Tsim Bei Tsui, and Pak Nai areas) and the Shenzhen Government's existing and planned developments/ facilities; and achieving the necessary depth for the proposed sub-sea tunnel alignment.

## **1.6 History of Site**

1.6.1 The Project Site was mainly occupied by agriculture lands, rural residential villages and natural vegetation in 1960s to 1980s. Since 1990s, more infrastructures (e.g., roads) and brownfield land uses have been observed around the area.

1.6.2 Currently, the areas in vicinity to the preliminary alignment in the HSK/HT NDA are mainly brownfield sites, featuring open storage areas, port logistics, car parking areas, vehicle maintenance facilities, recycling factories, construction machinery and material storage areas, which are considered of low ecological value.

1.6.3 Nearer the northern portion of the preliminary alignment, there are intertidal mudflat, mangrove, watercourse and ponds near the alignment.

**1.7 Number and Types of Designated Project to be covered by this Project Profile**

- 1.7.1 The Project is a designated project by virtue of Item A.2 - a railway and its associated stations, Item A.7 - a road or railway tunnel more than 800 m in length between portals, and Item A.4 - a railway siding, depot, maintenance workshop, marshalling yard or goods yard, Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). Subject to the design in further study, the Project may also potentially constitute a designated project under Item I.1(b), Part I, Schedule 2 of the EIAO, involving drainage channel or river training and diversion works located less than 300 m from the nearest boundary of an existing or planned site listed under I.1(b)(i) to I.1(b)(viii). An environmental permit is required under the EIAO for the construction and operation of the Project.

**1.8 Name and Telephone Number of Contact Person**

- 1.8.1 The contact details are shown as follows.

Name, Position & Title	LAW Chi Hang, Andy, Senior Engineer/Northern Metropolis (7), Northern Metropolis Railways Office
Telephone Number	2762 3505
Facsimile Number	2187 2971
Office Address	UG Floor, Ho Man Tin Government Offices, 88 Chung Hau Street, Ho Man Tin, Kowloon

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

### **2.1 Project Implementation**

- 2.1.1 The Project Proponent will engage third parties to undertake the investigation study and design for the Project. The construction works will be carried out by the qualified contractor.

### **2.2 Project Programme**

- 2.2.1 The investigation study for the Hong Kong Section of HSWRL is targeted to commence in 2025, for tendering for detailed design and construction works of the Hong Kong Section in 2027, with a view to realizing the common goal of the governments of Hong Kong and Shenzhen to commission the HSWRL in 2035.

### **2.3 Project Interface**

- 2.3.1 Major existing / ongoing / committed / planned projects that will potentially interface with this Project have been identified and are listed below. Any cumulative impact from the concurrent projects during both construction and operational phases of the Project will be addressed in the Environment Impact Assessment (EIA). The list below should be re-visited during the EIA Study to ensure all of the latest projects available from the respective stakeholders are incorporated.

- (a) Hung Shui Kiu/Ha Tsuen New Development Area (HSK/HT NDA)
- (b) Investigation study on the Developments at Lau Fau Shan/Tsim Bei Tsui/Pak Nai areas (collectively referred as LFS Study), which covers the Remaining Phase of HSK/HT NDA)
- (c) TML HSK Station
- (d) Site Formation and Infrastructure Works for Public Housing Development at Tin Wah Road, Lau Fau Shan
- (e) Feasibility Study on the Development of Coastal Protection Park (CPP) at Tsim Bei Tsui / Lau Fau Shan / Pak Nai
- (f) Other developments in vicinity to the Project

### **3 POSSIBLE IMPACT ON THE ENVIRONMENT**

#### **3.1 General**

3.1.1 As outlined in Section 1.4, the HSWRL is a fully underground railway line, featuring an at-grade depot located at Ha Tsuen, as indicated on **Figure 1**.

3.1.2 During the construction phase, the construction works will mainly involve the following:

- tunneling works by Tunnel Boring Machine (TBM) for the coastal/ cross-sea portion of railway alignment;
- tunneling works by TBM and/or cut-and-cover for the land portion of railway alignment
- temporary diversion of existing watercourse(s) (e.g. the Ha Tsuen Channel (Ping Ha Path Section));
- site formation, foundation, open cut excavation, structural works for underground stations, at-grade depot, and at-grade ancillary buildings;
- foundation works, for the potential future residential development above the at-grade depot will be anticipated. The building development will not form part of the Scope of the Project;
- temporary/offsite works areas and works sites may be required for the provision of site office, workshops, temporary storage of construction materials, utility or temporary access to support the construction of the Project;
- No marine works are anticipated for the project.

3.1.3 During operation phase, the Project will involve the operation of a heavy mass transit railway on a dedicated corridor along the HSWRL alignment and that of the associated stations and depot.

3.1.4 The potential impacts arising from the construction and the operation of the Project are discussed in the following paragraphs. Detailed impact assessments will be carried out during the EIA Study.

#### **3.2 Air Quality**

##### Construction Phase

3.2.1 The potential major source of air quality impact to the air sensitive receivers (ASRs) during the construction phase of the Project will be the dust, odour and gaseous emissions generated from various construction activities, including excavation of materials, handling of materials at temporary stockpile areas, temporary diversion of existing watercourse(s), movement of construction traffic, use of powered mechanical equipment (PME), demolition of existing structures and building work. During tunnelling works by TBM, fresh air will have to be provided for the tunnel, and stale air may have to be extracted via the tunnel portals. Cumulative impact from other potential interfacing projects planned within 500m from the Project will be identified and taken into account in the EIA Study.



Operation Phase

- 3.2.2 The trains of HSWRL is electrically-powered, and no dust and gaseous emissions will arise from the operation. Tunnel ventilation exhausts and smoke extraction facilities will be carefully positioned to minimise air quality impacts. The potential air quality impacts associated with the operations of train stations, depot, and any other related facilities will be assessed during the EIA stage.

**3.3 Noise**

Construction Phase

- 3.3.1 The use of PME for various construction activities will likely cause potential noise impact on the existing, committed and planned Noise Sensitive Receivers (NSRs) located in the vicinity of the works sites/areas. Major construction activities include site clearance and formation, tunnel construction, general earthworks and spoil removal, piling and foundation works, construction of stations/depot/ancillary buildings, demolition of existing structures, and general construction activities. Insurmountable construction ground-borne noise impact from the use of TBM is unlikely during construction phase. In the EIA Study, a construction noise impact assessment with the project implementation details and proposed noise mitigation measures will be submitted for demonstrating no adverse construction noise impact would be associated with the Project.

Operation Phase

- 3.3.2 Unlike conventional public road transport, which runs on diesel-power with engines, the trains of HSWRL are electrically-powered, and the alignment will be fully underground and no air-borne noise impact is anticipated. On the other hand, the provision of the at-grade depot at Ha Tsuen and its associated provision of stabling sidings might pose potential airborne rail noise impact or fixed plant noise to nearby NSRs.
- 3.3.3 There will be fixed plant noise generated from the electrical and mechanical equipment to be provided at stations, depot and ancillary buildings. It is expected that most of the fixed noise sources will be housed within plant rooms, which will be effective in minimising potential noise impact. Fixed plant noise assessment will be conducted to identify mitigation measures required to control the noise impact (e.g. maintenance works at the open area of the proposed depot, shunting train movement, etc.) within relevant standards.
- 3.3.4 Air-borne / ground-borne railway noise impact assessment should be taken into consideration in the EIA so as to demonstrate the railway noise be in compliance with the relevant noise criteria.

**3.4 Water Quality**

Construction Phase

- 3.4.1 The Project will involve various construction activities undertaken at various times and durations. The activities which may have an impact on water quality include site formation, bored piling, tunneling, construction of stations and depot, construction of

access roads, temporary diversion of existing watercourse(s) (e.g. the Ha Tsuen Channel (Ping Ha Path Section)), etc. Construction site runoff and drainage; construction wastewater, debris, refuse; accidental liquid spillages of chemicals; potential infiltration/ drawdown of groundwater from tunnel construction; and sewage from the on-site construction workforce will be potential sources of water quality impact near and across Water Sensitive Receivers (WSRs).

3.4.2 With tunneling works for the coastal/ cross-sea portion of railway alignment to be carried out by TBM, the Project will not involve any marine-based construction works.

3.4.3 The project will not involve filling of ponds.

#### Operation Phase

3.4.4 Potential water quality impact during the operational phase will mainly be related to sewage effluents from the staff, passengers and trade effluents from shops at the stations, surface run-off from station areas, and maintenance works in the depot where they are planned to be discharged into the public sewerage system.

### **3.5 Waste Management**

#### Construction Phase

3.5.1 Waste generated from the construction of the Project will include inert construction and demolition (C&D) soft materials (e.g. soil, earth, slurry) and hard materials (e.g. rocks, broken concrete), general refuse from workforce and some chemical wastes from the maintenance of construction plant and equipment. Soft spoil may be generated during the foundation and tunneling work, and sediment may be excavated during the temporary diversion of watercourse(s) (e.g. Ha Tsuen Channel (Ping Ha Path Section)). These wastes may have the potential to give rise to environmental impact if not properly handled and disposed of. Non-inert C&D materials, such as packaging materials, timber, plywood etc. may also arise from other construction activities.

3.5.2 Good site practices would be implemented to minimise potential environmental impact associated with the handling, collection and disposal of waste. Opportunities for re-use and potential alternative disposal sites will be studied, and the potential waste management implications will be assessed in the EIA Study.

#### Operation Phase

3.5.3 The key issue concerning waste is anticipated to be mainly related to the management of general refuse and small amounts of chemical waste generated from the operation of the stations and depot. No adverse impact from operational wastes is expected with the implementation of proper waste management and waste recycling practices.

### **3.6 Hazard to Life**

#### Construction Phase

3.6.1 Hazard-to-life impact during construction phase may arise from the existing Sinopec LPG cum Petrol Filling Station located at Ping Ha Road. A quantitative risk assessment (QRA) would be conducted in the EIA study to assess the hazard-to-life impact. No

explosive will be used in the Project. Subject to QRA results, mitigation measures may be provided to ensure meeting the relevant criteria, as necessary.

#### Operation Phase

- 3.6.2 Hazard-to-life impact during operation phase may arise from the existing Sinopec LPG cum Petrol Filling Station located at Ping Ha Road. A QRA would be conducted in the EIA study to assess the hazard-to-life impact

### **3.7 Ecology**

- 3.7.1 The sites of conservation importance, habitats and species of conservation importance, for which the HSWRL will pass through underground, are identified as detailed in the following sections.
- 3.7.2 Recognised sites of conservation importance within the 500m Assessment Area include:
- Coastal Protection Area (CPA) under the Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12;
  - CPA under the Approved Lau Fau Shan and Tsim Bei Tsui OZP No. S/YL-LFS/11;
  - Conservation Area (CA) under the Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12;
  - Hung Shui Kiu Egrettry;
  - Tin Shui Wai Hospital Egrettry and ardeid night roost near Tin Shui Wai Hospital.
- 3.7.3 The Ngau Hom Shek Egrettry is located in the vicinity of the Assessment Area, at around 1km from the underground tunnel alignment.
- 3.7.4 The areas in vicinity to the preliminary alignment in the HSK/HT NDA are mainly brownfield sites, featuring open storage areas, port logistics, car parking areas, vehicle maintenance facilities, recycling factories, construction machinery and material storage areas, which are considered of low ecological value.
- 3.7.5 Nearer the northern portion of the preliminary alignment, there are intertidal mudflat, mangrove, watercourse and ponds near the alignment. Nevertheless, given the underground alignment and TBM method adopted for the coastal/ cross-sea section, the ecological impact is anticipated to be limited and will be assessed in detail during the EIA process.
- 3.7.6 Desktop literature review has identified a number of habitats within the 500m Assessment Area, including woodland, fung shui woodland, plantation, shrubland/grassland, semi-natural/natural watercourse, channelized watercourse, pond, mangrove, mudflat, dry agricultural land, village area and developed area.
- 3.7.7 Based on the environmental review, species of conservation importance recorded within the 500m Assessment Area include:
- Flora (e.g. *Pavetta hongkongensis*, etc.)
  - Mammals (e.g. Short-nosed Fruit Bat, Japanese Pipistrelle, etc.)

- Avifauna (e.g. Little Egret, Chinese Pond Heron, etc.)
- Butterflies (e.g. Grass Demon, Cornelian, etc.)
- Freshwater Species (e.g. Predaceous Chub, etc.)
- Marine Species (e.g. Horseshoe crabs)

3.7.8 The potential ecological impacts arising from the Project include:

Construction Phase

3.7.9 The primary ecological impact during the construction phase would be habitat loss. However, the proposed HSWRL alignment has been designed underground to avoid key ecological areas. The following impacts are anticipated based on current information and will be assessed in detail during the EIA process.

3.7.10 The anticipated works for the land portion of the Project include the following:

- tunneling works by TBM and/or cut-and-cover for the land portion of railway alignment;
- site formation, foundation, open cut excavation, structural works for underground stations, at-grade depot, and at-grade ancillary buildings;
- temporary diversion of existing watercourse(s) (e.g. the Ha Tsuen Channel (Ping Ha Path Section));
- temporary/offsite works areas and works sites may be required for the provision of site office, workshops, temporary storage of construction materials, utility or temporary access to support the construction of the Project;
- foundation works, for the potential future property development above the at-grade depot will be anticipated. The property development will not form part of the Scope of the Project.

3.7.11 The potential ecological impacts arising from the land portion of the Project during the construction phase include:

- Potential direct impacts to habitats;
- Indirect impact (e.g. dust, noise, vibration, site run-off) affecting the habitats and its associated fauna;
- Indirect disturbance / impacts to habitats and wildlife due to artificial light, construction noise, vibration, dust, and other forms of human disturbances, etc. Attention should be paid to the potential disturbances to the egrettries, ardeid night roosts, and the Conservation Area in the Assessment Area;
- Direct/ indirect impacts to water quality, hydrology and the associated aquatic fauna.

3.7.12 For the coastal/cross-sea portion of the HSWRL underground railway alignment, tunneling works will be carried out using a TBM, well below the seabed. Given the underground alignment and TBM method, no direct habitat loss or direct ecological impact is anticipated on the coastal natural habitats (e.g. mudflat and mangrove) and associated fauna.

- 3.7.13 Separately, the coastal portion of the proposed Coastal Protection Park (CPP) at Lau Fau Shan (seaside) may interface on plan with the marine tunnel of HSWRL approaching the land area at Lau Fau Shan. Though there may not be direct impact on the CPP as no physical interface due vertical level differences, the interface in terms of project time, construction period and cross-sea interface should be coordinated with Agriculture, Fisheries and Conservation Department (AFCD) who is carrying out a feasibility study for the CPP. Any potential interface issues and impacts will be assessed during the EIA Study.

Operation Phase

- 3.7.14 It is anticipated that the potential impact to ecology during the operation phase of the Project will be the human activities, noise and light due to the operation of the stations, depot and other facilities, and will be assessed during the EIA Study.
- 3.7.15 While the railway alignment and stations will be built underground, the at-grade depot site and ancillary buildings may potentially obstruct avifauna flight paths, and will be assessed during the EIA Study.

**3.8 Fisheries**

- 3.8.1 Existing ponds are identified at over approximately 150m away from the proposed alignment of HSWRL, located in the areas of Lo Uk Tsuen, Sik Kong Wai, Sha Kong Wai, and in the vicinity of Hang Hau Tsuen. However, there is no record indicating that these ponds are currently used for fish culture activities. Therefore, no direct impact on pond fish culture activities is envisaged.
- 3.8.2 On the other hand, oyster farms are present on extensive mudflats along the coast near Ngau Hom Shek, with structures such as oyster rafts and poles used for oyster culture activities. Also, there may be capture fish activities at the coastal area. As the coastal/cross-sea portion of the underground railway alignment will be carried out using a Tunnel Boring Machine (TBM), given the underground alignment and TBM method, no direct impact is anticipated on the oyster culture activities.
- 3.8.3 Consultation with fishery stakeholders (including oyster farmers, pond fish farmers (if any), and capture fishermen (if any) )to collect their views and comments on the project and the potential impact shall be carried out at the appropriate juncture. The impacts on the oyster culture, pond fish culture, and fishing activities will be assessed during the EIA Study.
- 3.8.4 Potential indirect impacts on oyster culture, pond fish culture (if any), and fishing activities (if any) arising from the Project include:

Construction Phase

- (a) Impacts on hydrology (e.g. water seepage);
- (b) Deterioration of water quality in nearby water bodies due to site runoff, dust, silt and chemical waste (if any);
- (c) Impacts on oyster culture activity in Deep Bay (locations and extents to be agreed with EPD and AFCD);

(d) Impacts on fishing and pond fish culture activities (if any) in Deep Bay and inland area (locations and extents to be agreed with EPD and AFCD);

(e) risk of groundwater drawdown and impact on pond bund stability.

Operation Phase

(a) Degradation / deterioration of marine environmental conditions due to induced-water quality impacts from sewage and runoff from the Project.

(b) risk of groundwater drawdown and impact on pond bund stability.

### **3.9 Cultural Heritage**

Construction Phase

3.9.1 The preliminary alignment of HSWRL does not fall within a site of cultural heritage, or a site of special scientific interest. Yet, four Sites of Archaeological Interest (SAIs), an Archaeological Potential Area (APA), two declared monuments and nine graded historic buildings are identified located with a separation distance ranging from about 100m to 500m from the preliminary alignment. Direct cultural heritage impact on known heritage sites will not be anticipated, potential indirect impact due to construction activities such as foundation and tunneling works is anticipated. A Cultural Heritage Impact Assessment, including the Built Heritage Impact Assessment and Archaeological Impact Assessment, will be carried out to assess the potential impact on cultural heritage resources. Possible mitigation measures for the impact, where necessary, will be proposed and implemented with prior agreement with the Antiquities and Monuments Office (AMO).

3.9.2 A declared monument, the Yeung Hau Temple is located within 300m from the potential temporary drainage diversion works at the Ha Tsuen Channel (Ping Ha Path Section). Impacts to this declared monument are not anticipated as there is a substantial separation distance (about 290m) between the proposed temporary diversion works and the declared monument.

3.9.3 For the coastal/ cross-sea portion of railway alignment, tunneling works will be carried out by TBM well below the seabed, and no marine works are anticipated. No archaeological impact is anticipated for the cross-sea tunnel section, thus no Marine Archaeological Impact (MAI) would be required.

Operation Phase

3.9.4 No potential cultural heritage impact during the operation phase of the Project is anticipated.

### **3.10 Landscape and Visual**

Construction Phase

3.10.1 Landscape impact may arise during the construction of the Project as a result of the removal of existing trees and vegetation. The degree of impact will be subject to further study and survey in the EIA Study.

Operation Phase

- 3.10.2 While the tunnel alignment and its railway stations of the Project will be fully underground, the potential sources of landscape and visual impact arising from the Project are the associated at-grade structures, including the at-grade portal, the at-grade depot and ancillary buildings. There may be potential change of visual quality to the adjacent viewers due to the Project. The degree of changes will be subject to further study in the EIA Study.

### **3.11 Land Contamination**

#### Construction Phase

- 3.11.1 According to the EIA Study of HSK/HT NDA and preliminary reviews of aerial photos, the HSWRL alignment passes through some local areas which are currently occupied by carparks, maintenance workshop and open storage with potential land contamination issues. Under the current planning based on the latest anticipated delivery programme of the HSK/HT NDA project, TML HSK Station project and the Project, the land decontamination works along the HSWRL alignment within HSK/HT NDA Second Phase development will be carried out under the HSK/HT NDA project by CEDD and PlanD. As such, the need for land decontamination is not anticipated under the Project, subject to the further coordination among CEDD, PlanD, Mass Transit Railway Corporation Limited (MTRCL) and HyD on their respective delivery programme, in particular the site areas to be occupied by MTRCL for TML HSK station construction. Further liaison with relevant departments and review will be conducted in the EIA Study.
- 3.11.2 For the HSWRL alignment falling within the Remaining Phase of HSK/HT NDA whose land use is being reviewed/studied under the LFS Study, subject to the delivery programme of the respective project, close liaison will be carried out with CEDD and PlanD on the arrangement of land decontamination works in these areas and review to be carried out in the EIA Study.

#### Operation Phase

- 3.11.3 No land contamination impact is expected during the operation phase of the Project.

### **3.12 Landfill Gas Hazard**

- 3.12.1 There is no landfill within or in the vicinity of the Project. Therefore, no assessment of landfill gas hazard will be necessary.

## **4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

### **4.1 Surrounding Environment including Existing and Planned Sensitive Receivers**

4.1.1 The Project originates from the Regional Plaza within the planned HSK/HT NDA and extends northwards, traversing the HSK/HT NDA, which will feature residential developments alongside employment and community facilities, towards the Lau Fau Shan area. The alignment further extends north through the planned developments in Lau Fau Shan area, which form part of the HSK/HT NDA extension as outlined in the Northern Metropolis Action Agenda promulgated in October 2023, comprising a mix of residential developments, business and technology parks, eco-tourism facilities, etc. The alignment then proceeds towards the shoreline, crossing Deep Bay to connect with Shenzhen Bay.

4.1.2 The areas in vicinity to the preliminary alignment in the HSK/HT NDA are mainly brownfield sites, featuring open storage areas, port logistics, car parking areas, vehicle maintenance facilities, recycling factories, construction machinery and material storage areas, which are considered of low ecological value.

4.1.3 Environmental sensitive receivers which are existing developments include:

- (a) Villages (e.g. San Sang Tsuen, Kau Lee Uk Tsuen, San Uk Tsuen, Sik Kong Wai, Sik Kong Tsuen, Lo Uk Tsuen, Tung Tau Tsuen, Hong Mei Tsuen, San Hing Tsuen, Hang Hau Tsuen, Fung Kong Tsuen, etc.);
- (b) Residential developments (e.g. Tin Shui Estate, Kingswood Villas, Tin Shing Court, Deep Bay Grove, etc.);
- (c) Educational institutions (e.g. T.W.G.H. Leo Tung-Hai Lee Primary School, Caritas Lok Kan School, the Yuen Yuen Institute MFBM Chan Lui Chung Tak Memorial College, Lok Sin Tong Leung Kau Kui Primary School, Po Leung Kuk Chan Seng Yee Kindergarten, etc.);
- (d) Recreational parks (e.g. Tin Shui Road Park, Tin Ho Road Playground, etc.);
- (e) Places of worship (e.g. Yeung Hau Temple, Kwan Tai Temple (Ha Tsuen Shi), the Evangelical Lutheran Church of Hong Kong Wing Jan Lutheran Church, etc.);
- (f) Health care institutions (e.g. The Pok Oi Hospital Yeung Chun Pui Care and Attention Home, Ching Chung Care and Attention Home for the Aged, Tin Shui Wai Hospital, etc.);
- (g) Watercourses (e.g. Tin Shui Wai Nullah, Ha Tsuen Channel (Ping Ha Path Section), etc.);
- (h) Ponds;
- (i) Oyster culture activities in Deep Bay;
- (j) Areas of conservation value (e.g. Coastal Protection Area, Conservation Area, egrettries and ardeid night roost, intertidal mudflats and mangroves, etc.);
- (k) Places of visual value (e.g. ridge line of Yuen Tau Shan, etc.); and
- (l) Sites of archaeological interest (SAI) (Tseung Kong Wai SAI, Tung Tau Tsuen SAI,



Sha Kong Miu (North) SAI, Hang Hau Tsuen SAI), Declared Monuments (Yeung Hau Temple and Tang Ancestral Hall), graded historic buildings (Kwan Tai Temple (Ha Tsuen Shi) (Grade 2), Gate Tower of Ha Tsuen Shi (Grade 2), Entrance Gate of San Wai (Grade 2), Shi Wang Study Hall (Grade 3), Old Village School, No. 1 Tung Tau Tsuen (Grade 3), Wong Yun Wui Ancestral Hall (Grade 3), Former Lau Fau Shan Police Station (Grade 3), Chi Hong Po Jai (Grade 3), Entrance Gate of Sha Kong Wai (Grade 3))

4.1.4 Environmental sensitive receivers which are planned developments include:

- (a) According to the planned land uses for HSK/HT NDA and its extension, the planned sensitive receivers include the planned private and public housing developments, the potential future residential development above the at-grade depot at Ha Tsuen, school, sport centres, general clinic, and other community facilities, etc.

4.1.5 Any potential sensitive receivers will be identified and confirmed under the EIA study.

## **4.2 Air Quality**

4.2.1 Existing Air Sensitive Receivers (ASRs) include villages (e.g. San Sang Tsuen, Kau Lee Uk Tsuen, San Uk Tsuen, Sik Kong Wai, Sik Kong Tsuen, Lo Uk Tsuen, Tung Tau Tsuen, Hong Mei Tsuen, San Hing Tsuen, Hang Hau Tsuen, Fung Kong Tsuen, etc.), residential developments (e.g. Tin Shui Estate, Kingswood Villas, Tin Shing Court, Deep Bay Grove, etc.), educational institutions (e.g. T.W.G.H. Leo Tung-Hai Lee Primary School, Caritas Lok Kan School, the Yuen Yuen Institute MFBM Chan Lui Chung Tak Memorial College, Lok Sin Tong Leung Kau Kui Primary School, etc.), recreational parks (e.g. Tin Shui Road Park, Tin Ho Road Playground, etc.), places of worship (e.g. Yeung Hau Temple, Kwan Tai Temple, the Evangelical Lutheran Church of Hong Kong Wing Jan Lutheran Church, etc.), and health care institutions (e.g. Pok Oi Hospital Yeung Chun Pui Care and Attention Home and Tin Shui Wai Hospital, etc.). Planned ASRs include private and public housing developments, the potential future residential development above the at-grade depot at Ha Tsuen, schools, general clinic, Residential Care Homes for the Elderly (RCHE), etc. in HSK/HT NDA and its extension.

4.2.2 The EIA study will comprehensively review and identify all relevant emission sources and air-sensitive receivers within the 500 m assessment area for this Project, and assess the air quality impact on the ASRs.

## **4.3 Noise**

4.3.1 The noise climate is dominated by the road traffic along Castle Peak Road, Kong Sham Western Highway, Deep Bay Road, Lau Fau Shan Road, Tin Ying Road, Ping Ha Road and Tin Ha Road.

4.3.2 Existing Noise Sensitive Receivers (NSRs) include villages (e.g. San Sang Tsuen, Kau Lee Uk Tsuen, San Uk Tsuen, Sik Kong Wai, Sik Kong Tsuen, Lo Uk Tsuen, Tung Tau Tsuen, Hong Mei Tsuen, San Hing Tsuen, Hang Hau Tsuen, Fung Kong Tsuen, etc.), educational institutions (e.g., Caritas Lok Kan School, Po Leung Kuk Chan Seng Yee Kindergarten, etc.), places of public worship (e.g. Yeung Hau Temple, Kwan Tai Temple (Ha Tsuen Shi), the Evangelical Lutheran Church of Hong Kong Wing Jan

Lutheran Church, etc.) and health care institutions (e.g. Pok Oi Hospital Yeung Chun Pui Care and Attention Home and Tin Shui Wai Hospital, etc.). Planned NSRs include proposed private and public housing developments, the potential future residential development above the at-grade depot at Ha Tsuen, schools, general clinic, and RCHE etc. The EIA study would assess the noise impact on the NSRs.

#### **4.4 Water Quality**

4.4.1 The Project passes through the HSK/HT NDA which is located in Tin Shui Wai Nullah catchment, the rivers of which are historically of poor quality, although in recent years, conditions have improved through control measures. The streams of rivers of the NWNT encompass a wide range of flows and water quality. There are two main receiving water bodies for all NWNT watercourses: Inner Deep Bay and Outer Deep Bay. In addition, all waterbodies around the HSK/HT NDA, existing ponds, and the immediate inshore areas of Deep Bay are considered to be sensitive receivers.

4.4.2 The alignment passes through the extension of HSK/HT NDA and towards the shoreline, crossing Deep Bay. Existing pollution sources include treated sewage effluent (TSE) from Yuen Long STW, and surface runoff at the vicinity collected by the channelized nullahs such as Tin Shui Wai Nullah, Shan Pui River, Kam Tin River, and Shenzhen River. Planned sources may include the planned STW and discharge from District Cooling System (DCS) in the HSK/HT NDA.

4.4.3 The existing potential Water Sensitive Receivers (WSRs) mainly include the vicinity of ecological or fisheries important areas including Conservation Areas, SSSIs, Coastal Protection Areas, Ha Tsuen Channel (Ping Ha Path Section) and Tin Shui Wai Nullah, oyster culture activities in Deep Bay (locations and extents to be agreed with EPD and AFCD, etc. In addition, nearby waterbodies including streams and rivers identified above, existing ponds are also identified as potential WSRs.

#### **4.5 Hazard to Life**

4.5.1 The LPG cum Petrol Filling Station at Ping Ha Road, proposed energy station located in the vicinity of the Project. The planned town gas offtake and pigging station (O/P Station) is located to the east of the Project. The potential hazard to life implications would be subject to further review and findings under this Project.

#### **4.6 Ecology**

##### Egrettries and Ardeid Night Roost

4.6.1 A total of three active egrettries, Ngau Hom Shek Egrettry, Hung Shui Kiu Egrettry, Tin Shui Wai Hospital Egrettry and ardeid night roost near Tin Shui Wai Hospital were identified within 1km from the railway alignment according to the egrettry monitoring by AFCD in 2024.

##### Coastal Protection Area

4.6.2 A portion of the Assessment Area of the Project falls into the zoning of Coastal Protection Area (CPA) under Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12 and the Approved Lau Fau Shan and Tsim Bei Tsui OZP No. S/YL-LFS/11 which are situated along the coastal line of Deep Bay. This zoning is intended to conserve,

protect and retain the natural coastlines and the sensitive coastal natural environment, including attractive geological features, physical landform or area of high landscape, scenic or ecological value, with a minimum of built development. It may also cover areas which serve as natural protection areas sheltering nearby developments against the effects of coastal erosion.

- 4.6.3 Ecologically sensitive receivers in the area includes intertidal mudflats and mangroves.

Conservation Area

- 4.6.4 A portion of the zoning of Conservation Area (CA) under the Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12 falls within the Assessment Area of the Project. This zoning is intended to protect and retain the existing natural landscape, ecological or topographical features of the area for conservation, educational and research purposes. The CA covers an extensive area of shrubland west of Kong Sham Western Highway

Sites with Records of Horseshoe Crab

- 4.6.5 The Horseshoe Crab (*Carcinoscorpius rotundicauda*) was observed within the Assessment Area of the Project, based on the findings of Environmental Impact Assessment (EIA) for the Hung Shui Kiu New Development Area (EIA-248/2016).

Tin Shui Wai Nullah

- 4.6.6 A portion of the Tin Shui Wai Nullah falls within the Assessment Area and has been identified as an ecological sensitive receiver, considering its potential utilization by avifauna species.

**4.7 Fisheries**

- 4.7.1 Culture of oyster has been practiced for more than 300 years in Hong Kong along the intertidal mudflat of Deep Bay, which has remained the only site of oyster culture in Hong Kong. Deep Bay is shallow and protected from wave action as a sheltered waterbody. It also receives fluvial discharges from various major river channels including Shenzhen River, Kam Tin River, Sheung Yue River, and Tin Shui Wai Nullah. The nutrient-rich brackish water in Deep Bay also provides an ideal environment for oysters. As such, the unique conditions of Deep Bay are particularly favorable for oyster culture. As at April 2025, there are over 10,000 oyster rafts covering an area larger than 25km<sup>2</sup> within Deep Bay. Some oyster farmers are still practicing the traditional bottom culture method on mudflats near Lau Fau Shan. Oyster culture activities in Deep Bay (locations and extents to be agreed with EPD and AFCD) are considered as potential fisheries sensitive receivers.
- 4.7.2 According to AFCD's Port Survey 2021, the Deep Bay Water Control Zone (WCZ) mostly had between 50 and 100 vessels, mostly sampans, operating along the coastal waters at Deep Bay. However, the number of vessels was higher, ranging from 100 to 200 towards the western end of the Deep Bay WCZ near Urmston Road. The annual production yield in these waters was mostly below 50kg per hectare.
- 4.7.3 Fish fry collection is concentrated in the eastern waters of Hong Kong and has not been recorded within the Deep Bay WCZ. No important fish spawning ground or

nursery area was identified within the Deep Bay WCZ. No marine fish culture zone is present within or near the Assessment Area.

#### **4.8 Cultural Heritage**

- 4.8.1 The Assessment Area includes 4 SAIs, including Tseung Kong Wai SAI, Tung Tau Tsuen SAI, Sha Kong Miu (North) SAI, Hang Hau Tsuen SAI, and Lau Fau Shan APA identified in the EIA Report of Hung Shui Kiu New Development Area (AEIAR-203/2016).
- 4.8.2 Furthermore, there are declared monuments (Yeung Hau Temple and Tang Ancestral Hall) and graded historic buildings (Kwan Tai Temple (Ha Tsuen Shi) (Grade 2), Gate Tower of Ha Tsuen Shi (Grade 2), Entrance Gate of San Wai (Grade 2), Shi Wang Study Hall (Grade 3), Old Village School, No. 1 Tung Tau Tsuen (Grade 3), Wong Yun Wui Ancestral Hall (Grade 3), Former Lau Fau Shan Police Station (Grade 3), Chi Hong Po Jai (Grade 3), Entrance Gate of Sha Kong Wai (Grade 3) ) are located in Assessment Area.

#### **4.9 Landscape and Visual**

- 4.9.1 The following site of landscape with distinctive character/ resources have been identified within the 100m from the work limit of Project:
- Coastal Protection Area (CPA) under the Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12 (near the underground railway alignment)
  - Tin Shui Wai Nullah (at approx. 70m from the at-grade depot site)
- 4.9.2 Considering the HSWRL is an underground railway line, and the at-grade structures of the Project are located at a considerable distance from the existing CPA and Tin Shui Wai Nullah, there are no direct impacts on the aforementioned landscapes with distinctive character or resources.
- 4.9.3 No registered Old and Valuable Trees (OVTs), stone wall trees are recorded within the Assessment Area. According to the literature review, some trees of particular interest (trees with trunk diameter equal to or exceeding 1m, measured at 1.3 m above ground level) have been recorded within the Assessment Area, including the at-grade depot site, and potential direct impact may be imposed on these trees.
- 4.9.4 For visual, the major visual resources enjoyed by the public within the Assessment Area mainly comprise the open sea water of Deep Bay and Shenzhen Bay Bridge, the ridge lines from Yuen Tau Shan, Lam Han Shan and Kai Pak Ling, the coastal area, Tin Shui Wai Nullah as well as View Corridors as indicated in the approved HSK/HT OZP No. S/HSK/2 and approved Tin Shui Wai OZP No. S/TSW/18, impacts to major visual resources will be assessed in the EIA study.
- 4.9.5 The Key public viewing points (VPs) of the Project are identified. According to the location of the at-grade depot as annotated in Figure 1, the key public VPs may include existing riverside promenade along Tin Shui Wai Nullah, Regional Park and Sports Ground, planned open space in Planning Area 51 and 57B, and view corridors in the approved Hung Shui Kiu/Ha Tsuen (HSK/HT) Outline Zoning Plan (OZP) No. S/HSK/2. All relevant public VPs/viewers will be identified as the Project proceeds with more details for visual impact assessment in the EIA Study.

4.9.6 The landscape and visual impacts of the Project will be addressed in the EIA study.

## **5 ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS**

### **5.1 General**

- 5.1.1 The EIA Study will investigate those environmental impact (both cumulative impact and those arising from the Project) and propose the appropriate mitigation measures with the intention that the Project will be environmentally acceptable and cost effective. The residual impacts, if any, will be confined within the allowable limits. Environmental monitoring and auditing of potential impacts that may arise from the works of the Project would be provided for the construction and operational phases. Subject to the findings of the EIA Study, the following mitigation measures will be incorporated in the design and construction of the Project, where appropriate.

### **5.2 Air Quality**

#### Construction Phase

- 5.2.1 Appropriate mitigation measures and site practices as stipulated in the Air Pollution Control (Construction Dust) Regulation will be implemented to minimize the air pollutant emissions. Subject to EIA findings, the following key mitigation measures would be considered during construction period to minimize the air quality impacts on nearby ASRs:
- Watering on the active works sites/areas, exposed areas and paved haul roads to reduce dust emission;
  - The surface of all surge piles and stockpiles of blasted rocks or aggregates shall be kept sufficiently wet by water spraying wherever practicable;
  - Dusty materials on-site should be covered or stored with containment;
  - Any vehicles/marine vessels with an open load compartment used for transferring dusty materials off-site will be properly fitted with side and tail boards and cover;
  - Establishment and use of vehicle wheel and body washing facilities at the exit points of works sites;
  - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines;
  - Where possible, the routing of construction vehicles, positioning of construction plant and dusty activities should be at the maximum possible distance from ASRs;
  - Excavated channel/ nullah bed materials that are placed on trucks for disposal should be properly covered with tarpaulin sheets during transportation to minimise the release of any potential odour. The odorous excavated material should be placed as far away from the sensitive receivers as possible. Odorous channel/ nullah bed material excavated during construction phase should be removed off-site as soon as practicable within 24 hours to avoid any odour nuisance;

- Erect higher hoarding at the location with ASRs in immediate proximity to the project site boundary.

5.2.2 To minimize the exhaust emissions from Non-road Mobile Machinery (NRMM), the following mitigation measures, which are not exhaustive, will be considered during construction period to minimize impacts on air quality for nearby ASRs.

- Connect construction plant and equipment to main electric supply and avoid use of diesel generators and diesel-powered equipment as far as practicable;
- Consider to restrict the use of exempted NRMMs;
- Deploy electrified NRMMs as far as practicable.

#### Operation Phase

5.2.3 Potential air pollutant emissions may arise from the operations of train stations, depots, and related facilities. Mitigation measures may be required based on the findings of the EIA study.

### **5.3 Noise**

#### Construction Phase

5.3.1 Construction noise impact can be minimised through adoption of good site practice and management, the use of quiet plant and adoption of noise barriers/enclosures. All construction works should be carried out during non-restricted hours (i.e. 0700 to 1900 hours, Monday to Saturday) unless a Construction Noise Permit (CNP) is obtained from Environmental Protection Department (EPD). For works sites/areas near schools, the construction activities should be scheduled to avoid school examination period as far as possible. The contractor shall also refer to the mitigation measures available in the Guidance Note “Preparation of Construction Noise Impact Assessment under the EIAO [GN 9/2023]”. Subject to EIA findings, the following noise mitigation measures are recommended to reduce the noise impact during construction.

- Use of quality powered mechanical equipment (QPME) as far as possible;
- Use of quiet construction method/equipment should be prioritized and adopted e.g. use of Tunnel Boring Machine (TBM), use of prefabricated structure as a replacement or in-situ concrete construction;
- Provision of temporary/movable noise barriers and enclosures where practicable;
- Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- The plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;

Good site practice and noise management techniques could considerably reduce the noise impact from construction site activities on nearby NSRs. The following measures should be practiced during each phase of construction:

- Plant which is well maintained should be operated on-site and regularly serviced during the construction works;
- Silencers or mufflers on construction equipment should be utilised and properly maintained during the construction works;
- Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; and
- Location of items of PME should be sited as far from NSRs as possible.

#### Operation Phase

- 5.3.2 Potential noise mitigation measures in the form of vertical noise barriers, semi enclosures and/or full enclosures at specified locations may be required to alleviate the noise impact on nearby sensitive receivers during the operation phase of the Project. The mitigation measures should be further reviewed in the EIA Study.
- 5.3.3 The equipment will be designed to meet the relevant noise criteria under EIAO – Technical Memorandum (TM), subject to detailed study during EIA study stage.
- 5.3.4 The fixed plant items should have due regard to the characteristics of tonality, impulsiveness and intermittency as specified in TM on Noise from Places Other Than Domestic Premises, Public Places or Construction Sites. On-site measurement should be carried out during the testing and commissioning stage to confirm compliance.
- 5.3.5 For operational ground-borne rail noise, the use of low vibration trackform, where appropriate, to minimize the ground-borne noise impact may be considered subject to the findings of the EIA study.
- 5.3.6 As the railway line is fully underground, no adverse airborne railway noise from the operation is anticipated.

### **5.4 Water Quality**

#### Construction Phase

- 5.4.1 The following measures are recommended as good site practices to mitigate water quality impact during the construction phase:
- Construction site effluents, including surface runoff, should be appropriately collected, handled, treated and disposed of in accordance with the guidelines in Professional Persons Environmental Consultative Committee Practice Notes (ProPECC PN 2/24) and provisions of Water Pollution Control Ordinance (WPCO);
  - Good housekeeping and stormwater best management practices should be implemented to ensure that all construction runoff is well controlled;
  - All site construction runoff should be controlled with regularly maintained site drainage system, and silt removal facilities incorporated to prevent high levels of suspended solids from entering surrounding waters or drainage network;
  - Appropriate monitoring and mitigation measures should be developed for groundwater control (e.g. probing ahead and pre-grouting during tunnel construction, and installation of waterproof lining after the formation of the tunnel) to minimise the potential groundwater drawdown/ infiltration due to



tunnel construction;

- Temporary sanitary facilities should be provided for on-site workers during construction;
- Proper measures should be implemented to prevent oil or fuel spillage, e.g. removal of construction plant with identified oil/fuel leakage from site;
- The contractor shall apply for a discharge license under the WPCO, and any discharge should comply with the terms and conditions of the license;
- Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff and erosion;
- Construction works should be programmed to minimise surface excavation works during the rainy season (April to September) if possible;
- For unavoidable removal/ diversion of waterbodies such as watercourse and ponds, adequate impact assessment, good site practices and appropriate mitigation measures shall be adopted with reference to the ETWB TC(W) No. 5/2005 “Protection of natural streams/ rivers from adverse impacts arising from construction works” and ProPECC PN 2/24;
- Earthworks final surfaces should be well compacted, and the subsequent surface protection works (e.g. hydro-seeding) should be carried out immediately after the final surface is formed to prevent erosion caused by rainstorms; and
- Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable.

#### Operational Phase

- 5.4.2 All effluents and wastewater arising from the operation of the Project should be directed to the public sewerage system via proper connections for treatment and disposal. The practices outlined in ProPECC PN 1/23 for handling, treatment and disposal of operational stage effluent should also be adopted where applicable.
- 5.4.3 Mitigation measures to reduce storm water pollution arising from the Project, include:
- Drainage system designed to avoid flooding;
  - Screening facilities such as standard gully grating and trash grille, with a spacing which is capable of screening large substances such as fallen leaves and rubbish, should be provided at the inlet of the drainage system;
  - Road gullies with standard design and silt traps and oil interceptors should be incorporated during the detailed design to remove particles present in stormwater runoff, where appropriate;
  - Good management measures such as regular cleaning and sweeping of running surfaces are suggested;
  - Manholes, as well as stormwater gullies and ditches provided should be regularly inspected and cleaned; and
  - Additional inspection and cleansing should be carried out at manholes, ditches

stormwater gullies before forecast heavy rainfall.

## **5.5 Waste Management**

### Construction Phase

- 5.5.1 Standard waste management measures and good site practices that should be implemented to manage C&D materials generated from the Project include preparation of a Waste Management Plan, on-site sorting and reuse of C&D materials, implementation of a trip-ticket system and appropriate handling, storage and disposal of chemical waste in accordance with the Waste Disposal (Chemical Waste) (General) Regulation and the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. A waste collector shall be employed by the Contractor to remove general refuse stored in bins or other types of containers with cover separately from C&D materials and chemical wastes. To minimize environmental impact, the contractor should employ licensed waste collectors/haulers to regularly remove general refuse from the site, separate from C&D materials and chemical wastes. Also, the separation of recyclable materials from general refuse for recycling purposes shall be encouraged during the construction phase.
- 5.5.2 Excavated spoil should be considered for reuse on-site or other concurrent projects as far as practicable, given that the excavated spoil is uncontaminated and would not be regarded as sediment under paragraph 4.2.1, Chapter 4 of the Project Administration Handbook for Civil Engineering Works.
- 5.5.3 Sediment for marine disposal should be handled in accordance with paragraph 4.2.1, Chapter 4 of the Project Administration Handbook for Civil Engineering Works, and must comply with the requirements of the Dumping at Sea Ordinance (Cap. 466).

### Operational Phase

- 5.5.4 General refuse should be collected and removed in appropriate covered containers to prevent odour and windblown litter. Separation of recyclable materials, such as paper and metals, from other waste streams should be encouraged to minimise waste disposal to landfills. All chemical wastes from equipment maintenance should be handled, stored and disposed of properly and in accordance with the requirements of the Waste Disposal (Chemical Waste) Regulation.

## **5.6 Ecology**

### Construction Phase

- 5.6.1 Subject to the ecological baseline studies and impact assessment, examples of mitigation measures during construction phase that will be considered as appropriate to avoid, minimize and compensate for the ecological impact include:
- Avoid / minimize habitat fragmentation and unnecessary damage / disturbance to the natural habitats;
  - Adopt alternative design or construction methods;
  - Carefully plan the placement of equipment and stockpile area in the designated area within the existing disturbed land;

- Translocation / transplantation of unavoidably affected species of conservation importance;
- For unavoidable removal/ diversion of waterbodies such as watercourse and ponds, adequate impact assessment, good site practices and appropriate mitigation measures shall be adopted with reference to the ETWB TC(W) No. 5/2005 “Protection of natural streams/ rivers from adverse impacts arising from construction works” and ProPECC PN 2/24;
- Compensation for unavoidable loss of important natural habitats; and
- Good site practices and mitigation measures aiming to reduce impact from air, noise and water pollution, as well as to minimize the potential groundwater drawdown / infiltration due to tunnel construction would also minimize potential indirect impact to the ecological resources.

#### Operational Phase

- 5.6.2 During operation phase, appropriate measures, including but not limited to noise control and water quality control, and control of direction / intensity of light not spilling into the sensitive areas, should be incorporated into the design of the HSWRL to avoid / minimize the ecological impact.

### **5.7 Fisheries**

#### Construction Phase

- 5.7.1 Appropriate construction site management protocols and mitigation measures on ecology, hydrology and water quality will be adopted to minimize impacts on fisheries. If there is the loss of fisheries resources and habitats and aquaculture sites, where it is assessed to be significant, the project shall adopt "avoid and minimize" principle, followed by mitigation measures such as mitigation of fisheries resources and habitats and re-provisioning of aquaculture sites.

#### Operational Phase

- 5.7.2 Subject to the findings of assessments in the EIA study, effective control and mitigation measures will be identified to ensure the impact are at acceptable levels.

### **5.8 Cultural Heritage**

#### Construction Phase

- 5.8.1 A Cultural Heritage Impact Assessment (CHIA) will be carried out under the EIA study stage. Impacts on heritage sites in the CHIA will be avoided as far as practicable, by amending alignment to allow preservation of the heritage resources in-situ. If unavoidable, mitigation measures to the direct impact on built heritage and archaeological resources will be implemented, including but not limited to the followings:
- The cultural heritage will be preserved by record (a full cartographic and photographic record) before removal when preservation in-situ is not possible;
  - Rescue excavation prior to the commencement of construction works to avoid impact on archaeological deposits; and

- Carry out archaeological watching brief during construction to preserve the deposits by record.

Operational Phase

- 5.8.2 No potential operational impact are anticipated, subject to further review and findings under the EIA Study.

**5.9 Landscape and Visual**

Construction Phase

- 5.9.1 Possible key landscape mitigation measures include but not limited to the followings:

- Tree preservation, transplanting and compensatory planting in accordance with Development Bureau Technical Circular (Works) (DEVB TC(W)) No. 4/2020 – Tree Preservation (or Lands Administrative Office Practice Note 6/2023) and DEVB TC(W) No. 5/2020 – Registration and Preservation of Old and Valuable Trees;
- Control of night-time lighting glare;
- Erection of decorative screen hoarding compatible with the surrounding setting; and
- Hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis, or to the satisfaction of the relevant Government Departments.

Operational Phase

- 5.9.2 Subject to the landscape and visual impact assessments, the following mitigation measures will be considered as appropriate:

- Alignment - Review of alignment, station and depot location at detailed engineering design stage should aim to minimise impact on landscape and visual resources;
- Design of Built Structures - Aesthetic design of stations, depot and associated structures to minimise landscape and visual impact and provide aesthetic mitigation of the existing streetscape should be adopted;
- Greening and planting introduce into station structures, facades, noise barriers, columns and portal structures, as well as the depot to both minimise visual impact and act as a positive mitigation of the existing visual environment;
- Tree transplanting and/or compensatory planting for the loss of existing vegetation (including trees, shrubs, mangroves, etc.) due to the Project should be proposed as appropriate to mitigate the impact to the existing trees.

**5.10 Land Contamination**

- 5.10.1 As mentioned in Section 3.11.1, land decontamination works along the HSWRL alignment within HSK/HT NDA Second Phase development will be carried out under the HSK/HT NDA project during the construction phase. Otherwise, it will be necessary to reassess the potential contaminated sites along the railway alignment

and report in detail in the EIA Study.

5.10.2 As mentioned in Section 3.11.2, close liaison will be carried out with CEDD and PlanD on the arrangement of land decontamination works for area falling within the Remaining Phase of HSK/HT NDA. Further review will be conducted in the EIA Study.

5.10.3 The following mitigation measures will be implemented during the construction phase to minimise any potential exposure to contaminated soils or groundwater:

- Site workers should wear gloves, masks and other protective clothing where exposure to vapour or contaminated soil may be encountered;
- Contaminated materials should be removed with bulk earth movers to prevent human contact;
- Adequate washing facilities should be provided and smoking/eating should be prohibited in the area;
- Contaminated sediments which have been stockpiled or are being transported should be covered with tarpaulin;
- Leakage of pollutants or leaching from excavated soil should be prevented by storing on an impermeable surface;
- Only licensed waste haulers should be used to collect and transport any contaminated material to an appropriate disposal site and procedures should be developed to ensure that illegal disposal of wastes does not occur; and
- The necessary waste disposal permits should be obtained, as required, from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), as required.

5.10.4 Mitigation measures will also be determined with reference to EPD's documents such as "Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management", "Guidance Notes for Contaminated Land Assessment and Remediation", and "Practice Guide for Investigation and Remediation of Contaminated Land".

## **5.11 Hazard to Life**

5.11.1 Quantitative risk assessment (QRA) should be undertaken in the EIA stage to confirm the compliance with the risk guidelines in Annex 4 of the Technical Memorandum of Environmental Impact Assessment Ordinance. Mitigation measures, such as the adoption of a contingency plan, location of works site away from the Project boundary as far as practicable, and minimisation of works force within the Project boundary during the construction phase to reduce the risk associated with the Project, if required, would be developed as part of the QRA to be undertaken during the EIA stage to ensure compliance with the "As Low As Reasonably Practicable" (ALARP) level under the Hong Kong Government Risk Guidelines (HKRG).

**5.12 Severity, Distribution and Duration of Environmental Effects and Further Implications**

- 5.12.1 Subject to the findings of assessments, effective control and mitigation measures will be identified to ensure the impact are at acceptable levels. The possible severity, distribution and duration of environmental effects and further implications would be considered and addressed in the EIA Study, where applicable.

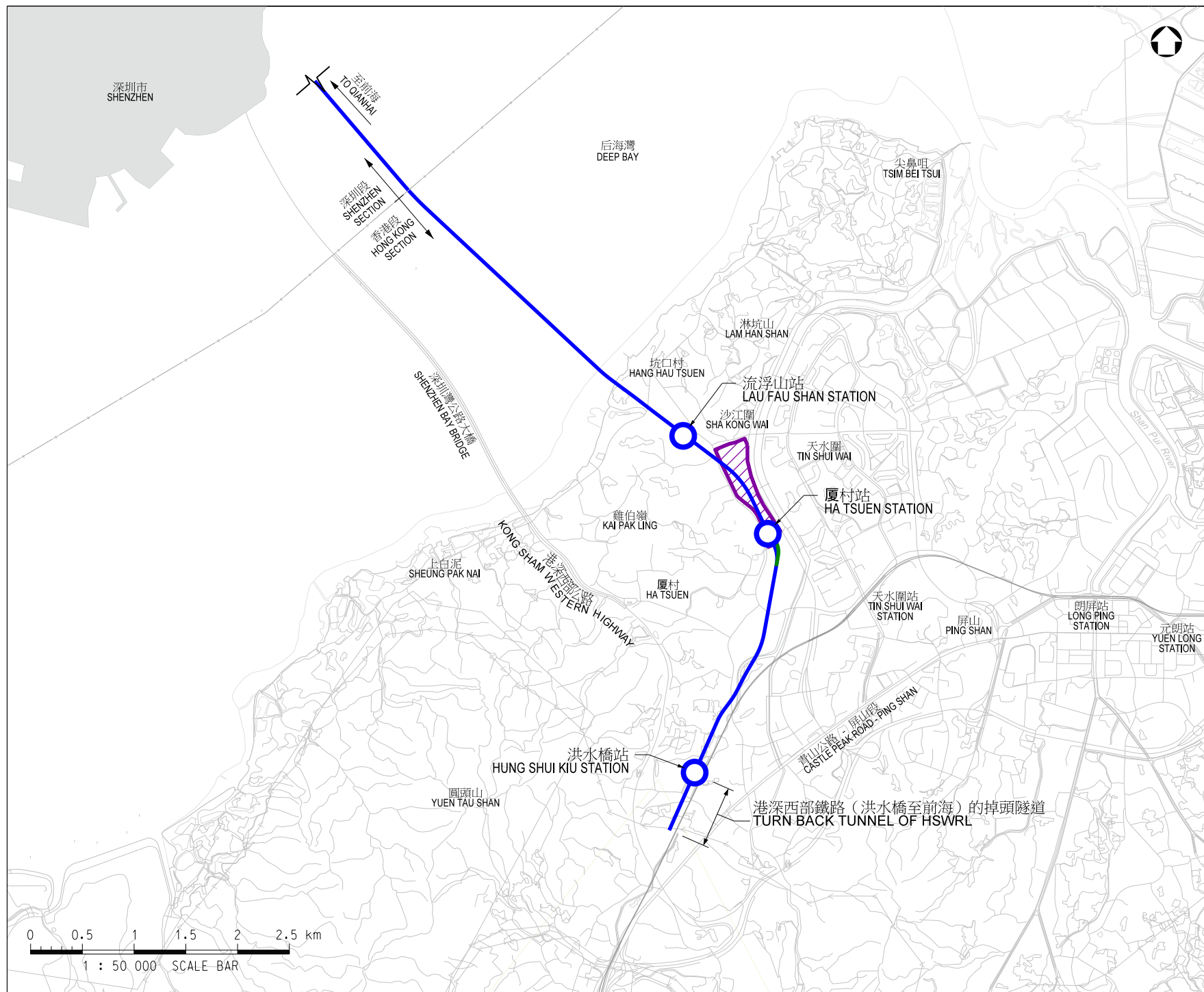
## **6 USE OF PREVIOUSLY APPROVED EIA REPORTS**

- 6.1.1 There is no previously approved EIA report under EIAO for the Project. Nonetheless reference may be made to the following previously approved EIA reports and will be referred to in the subsequent EIA Study:

<b>Register No.</b>	<b>Title</b>
AEIAR-134/2009	Hang Hau Tsuen Channel at Lau Fau Shan
AEIAR-064/2002	Deep Bay Link
AEIAR-203/2016	Hung Shui Kiu New Development Area
AEIAR-143/2009	Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link
AEIAR-259/2024	Northern Link

**Figure 1 – Location Plan**





- 注釋:  
NOTES:
- 鐵路方案僅供參考，需視乎研究進行的審查及更新。  
THE RAILWAY SCHEME IS INDICATIVE ONLY AND SUBJECT TO REVIEW AND UPDATING UNDER THE STUDY.
  - 附屬建築物的數量及位置將於研究中確定。  
THE NUMBER AND LOCATIONS OF ANCILLARY BUILDINGS WILL BE CONFIRMED UNDER THE STUDY.

- 圖例:  
LEGENDS:
- 擬議港深西部鐵路（洪水橋至前海）的地下鐵路走線及車站  
PROPOSED UNDERGROUND STATIONS AND ALIGNMENT OF HONG KONG - SHENZHEN WESTERN RAIL LINK (HUNG SHUI KIU - QIANHAI) (HSWRL)
  - 擬議車廠連接隧道  
PROPOSED DEPOT CONNECT TUNNEL
  - 擬議地面車廠  
PROPOSED AT-GRADE DEPOT

圖則名稱 drawing title  
港深西部鐵路（洪水橋至前海）  
香港段 - 項目位置圖  
HONG KONG SECTION OF  
HONG KONG - SHENZHEN WESTERN  
RAIL LINK (HUNG SHUI KIU - QIANHAI) -  
LOCATION OF THE PROJECT

圖號 drawing no. 圖1  
FIGURE 1  
比例 scale  
1:50 000

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