

Agreement No. CE 80/2023 (CE)

Smart and Green
Mass Transit System in East Kowloon –
Investigation, Design and Construction

**Deliverable No. 56 - Environmental Impact
Assessment Executive Summary**

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1. Introduction

1.1 Project Background

- 1.1.1 The northern areas of Kwun Tong are densely populated. With the gradual population intake of the housing developments in the areas, the transport demand in the northern uphill areas of Kwun Tong will continue to increase. At present, residents in Kwun Tong uphill areas who wish to take the railway need to use the road-based transport feeder services to gain access to the nearby railway stations. To address the commuting needs of residents in the northern uphill areas of Kwun Tong, it is considered necessary to provide a feeder transit system to connect the Kwun Tong uphill areas to the existing railway network.
- 1.1.2 The Chief Executive's 2023 Policy Address announced to implement a Smart and Green Mass Transit System in East Kowloon (SGMTS-EK) with an aim to improving the overall transportation of East Kowloon and unleashing development potential. The Project has also been incorporated in the "Hong Kong Major Transport Infrastructure Development Blueprint" published by the Transport and Logistics Bureau in December 2023.
- 1.1.3 With a length of about 7 km, the proposed SGMTS-EK would connect the uphill areas of Kwun Tong, including Choi Wan, Shun Lee, Shun On, Sau Mau Ping, Po Tat, Ma Yau Tong and Lam Tin, and would pass through New Clear Water Bay Road, Lee On Road, Shun On Road, Sau Mau Ping Road, Po Lam Road, Lin Tak Road, Pik Wan Road, Lei Yue Mun Road, etc. The implementation of the SGMTS-EK would provide light and green transport feeder services in the northern uphill areas of Kwun Tong to the nearby railway stations and major public transport interchanges, facilitating access to MTR Choi Hung Station and Yau Tong Station, thus providing convenient access and more commuting options for the public. In addition, the provision of pedestrian linkage facilities to Anderson Road area would be studied with a view to providing convenient connections in response to the commuting needs of the residents of On Tai Estate and On Tat Estate.
- 1.1.4 The proposed SGMTS-EK is a light and green transit system of medium to low carrying capacity, which will adopt environmentally friendly and smart technologies and operate on a dedicated corridor to improve the transport efficiency, safety and convenience. On the other hand, the dedicated elevated corridor will be separated from road traffic along the alignment which would not be affected by traffic conditions.
- 1.1.5 Arup-AIS Joint Venture (AAJV) was commissioned by Railway Development Office of Highways Department (i.e. the Project Proponent) in July 2024 to provide consultancy services for the investigation and design of the Project, including the Environmental Impact Assessment (EIA) study to satisfy the statutory requirements under the Environmental Impact Assessment Ordinance (EIAO).

1.2 Site Location and History

- 1.2.1 The proposed SGMTS-EK is approximately 7 km long and runs between Choi Hung East and Yau Tong East across the upper East Kowloon area.

- 1.2.2 The Project will mainly pass through the major residential areas and hilly terrain in Kwun Tong covering Choi Hung East, Choi Wan, Shun Lee, Shun On, Shun Tin, Sau Mau Ping, Po Tat, Lam Tin North and Yau Tong East. The alignment of SGMTS-EK starts at Choi Hung East terminus and runs on viaduct structure to Lam Tin North. From Lam Tin North, the alignment passes over Lam Tin Park and goes into tunnel near the football pitch. This tunnel then travels underneath the Black Hill. Upon exiting the portal in the south of Hong Nga Court and Ping Tin Estate, the alignment continues to run on elevated structure and terminates at Yau Tong East.
- 1.2.3 Other than the overall alignment described above, there are a total of 9 stations and associated pedestrian link facilities, ancillary buildings (1 ventilation building, 2 Emergency Access Points (EAPs) along the alignment), and a depot to be located in Ma Yau Tong.

1.3 Scope of the Project

- 1.3.1 The scope of the Project mainly comprises the following:
- Viaduct sections of about 6 km long;
 - A tunnel section of about 1 km long under Black Hill between Lam Tin Park and Pik Wan Road;
 - 9 stations including Choi Hung East (CHE), Choi Wan (CWA), Shun Lee (SLE), Shun On (SON), Sau Mau Ping (SMP), Po Tat (POT), Ma Yau Tong (MYT), Lam Tin North (LTN) and Yau Tong East (YTE) and associated pedestrian linkage facilities;
 - A depot in Ma Yau Tong and system-wide facilities, such as signalling system, operation control and monitoring facilities, charging facilities, passenger facilities and fare collection system, etc.;
 - Ancillary buildings including ventilation building and EAPs for the tunnel section; and
 - Associated civil, geotechnical, landscape, road and drainage works, waterworks, electrical and mechanical installation, re-provisioning of facilities affected by the proposed infrastructural works and environmental mitigation measures.
- 1.3.2 The location of the Project indicating the alignment (viaduct and tunnel sections), stations and associated pedestrian link facilities, depot, ancillary buildings, etc. is shown in [Figure 1.1](#).
- 1.3.3 The Project comprises the following which are classified as Designated Projects (DPs) as per Part I, Schedule 2 of the EIAO:
- Item A.2 “A railway and its associated stations”;
 - Item A.4 “A railway siding, depot, maintenance workshop, marshalling yard or goods yard” or Item A.6 “A transport depot located less than 100m from the nearest boundary of an existing or planned (a) residential area”; and
 - Item A.7 “A road or railway tunnel more than 800m in length between portals”.

1.4 Scope of this EIA Report

- 1.4.1 After the submission of Project Profile (No. PP-684/2025), pursuant to Section 5(7)(a) of the EIA Ordinance, the Director of Environmental Protection issued an EIA Study Brief (No.: ESB-374/2025 dated 17 June 2025) for the EIA study. This EIA study focuses on assessing the potential impacts associated with the construction and operation of the Project in accordance with the requirements of EIA Study Brief and the Technical Memorandum on Environmental Impact Assessment Process.

1.5 Purpose of this Executive Summary

- 1.5.1 This Executive Summary (ES) highlights the key information and findings of the EIA Study of SGM-TS-EK.

2. Project Description

2.1 Objective of the Project

2.1.1 Section 2 of the EIA Report has described the approaches adopted to avoid and minimise various environmental impacts as far as practicable throughout the design process. The design has therefore been taken forward as the basis for this EIA to demonstrate that all statutory requirements under the EIA Study Brief (No.: ESB-374/2025) and the EIAO-TM regarding the DP elements are complied with.

2.2 Benefits of the Project

2.2.1 As the Project will adopt an electrically-powered transit system, it is a more sustainable form of transport than road transport in terms of carrying capacity and energy efficiency. The associated environmental benefits for adopting an electrically-powered transit system is apparent as compared to those road-based vehicles using internal combustion engines. With the anticipated increase in support of transit system and reduction in the overall road traffic volume through providing a more convenient, time-saving and easily accessible transport option proposed by the Project, there would be improvements in air quality, road traffic noise and the overall quality of the ambient environment. To summarise, the main environmental benefits of the Project include the following:

- Improve the transportation infrastructure and mobility to the existing communities;
- Reduced vehicles and associated road traffic air and noise emissions;
- Support future housing developments at Anderson Road and Anderson Road Quarry Site;
- Increase energy efficiency and promote green technology; and
- Preserve cultural heritage resources.

Improve the Transportation Infrastructure and Mobility to the Existing Communities

2.2.2 The Project will provide efficient and reliable transit services to the existing and future communities in Kwun Tong uphill areas. By encouraging greater use of public transportation, the Project aims to reduce reliance on private vehicles, the volume of road-based traffic would be reduced, and thereby alleviate the problem of traffic congestion in the neighbourhood. Together with the shorted commute times, the Kwun Tong uphill area can foster a more sustainable future and improve the quality of life for the residents thereat.

2.2.3 Also, the project will introduce a public transportation option that enhances accessibility and convenience for the residents in Lam Tin and Yau Tong, providing direct access to United Christian Hospital (UCH) through the proposed station in Shun On. With the planned expansion of UCH ahead, this initiative will create a synergy that addresses the community's pressing demand, benefiting both visitors and patients of the UCH in the long run.

Reduced Vehicles and Associated Road Traffic Air and Noise Emissions

- 2.2.4 The use of an electrically-powered Smart and Green Mass Transit System would not emit air pollutants such as Nitrogen Dioxide (NO₂), Respirable Suspended Particulates (RSP), Fine Suspended Particulates (FSP), Sulphur Dioxide (SO₂), Carbon Monoxide (CO), etc. on the roads as compared to conventional fossil fuel-based vehicles. Together with the reduction in road traffic volume, it would bring improvements to the local air quality condition in the neighbourhood.
- 2.2.5 Besides, the Project would adopt rubber tyres instead of steel wheels in heavy rail systems, and hence minimising transit system noise impacts. Together with the reduction in road traffic volume, it would therefore help reduce road traffic noise and contribute to a cleaner and quieter urban environment.
- 2.2.6 As the Project does not require overhead lines, cable maintenance works are not required. While such maintenance typically generated minimal noise, the primary source of night-time noise in conventional heavy rail systems arises from track repairs involving heavy machinery and metal grinding. In contrast, the transit systems adopted in this Project are designed with lightweight infrastructure and rubber-tired vehicles that significantly reduce the need for intensive track maintenance. This results in fewer night-time maintenance activities and substantially lowers the potential for noise nuisance, offering a quieter and more community-friendly transit solution.

Support Future Developments at Anderson Road and Anderson Road Quarry Site

- 2.2.7 The Project will offer an efficient and environmentally friendly transit system to the residents in the vicinity, reducing the travelling time for the existing population as well as the additional population arising from the planned developments in future, such as the developments of Anderson Road Site and Anderson Road Quarry Site. The vibrancy and economic vitality of the areas surrounding the transit stations would also be stimulated and enhanced. The availability of the Project can open up development opportunities with more efficient and concentrated land uses for the areas along its alignment, realising the infrastructure-led, capacity creating planning approach as advocated by the government.

Increase Energy Efficiency and Promote Green Technology

- 2.2.8 Being a Smart and Green Mass Transit System, the Project has a higher energy efficiency than conventional road-based vehicles such as private cars and buses. It utilises less energy for the mass transport of the same amount of population. As such, implementing the Smart and Green Mass Transit System would be a positive step to reduce its carbon footprint which contributes towards achieving carbon neutrality.
- 2.2.9 The Project will also incorporate advanced energy-efficient technologies and green practices. This includes use of regenerative braking systems, energy-efficient lighting, vertical green, and integration of renewable energy sources such as integration of solar photovoltaic (PV) panels on rooftop of viaduct and stations as appropriate, etc. These measures will reduce the overall energy consumption of the transit system.

Preserve Cultural Heritage Resources

- 2.2.10 A number of cultural heritage resources, such as Tin Hau Temple and Kwun Yam Temple at Po Lam Road and Graded Historic Building of St. Joseph's Home for the Aged are identified around the Project area. To effectively harness the cultural values of these cultural heritage resources, the Project shall be designed to avoid the demolition/modification/relocation/impact of these cultural heritage resources and incorporate appropriate interfaces that promote the integration between existing and new uses of land. This aims at creating a proper synergy that provides opportunities for heritage preservation, ultimately resulting in an enhanced quality of life for the community and sustainability of cultural resource as a collective benefit.

2.3 Scenarios "With" and "Without" the Project

Without Project Scenario

- 2.3.1 Without the implementation of the Project, majority of the residents in the Kwun Tong uphill areas have to take road-based transport to reach the existing MTR train services. This would inevitably impose the heavy traffic loading on the associated road network.
- 2.3.2 As more population moves into Kwun Tong uphill area, the traffic loading on existing roads in the vicinity of the Project would continuously increase. Hence, it is anticipated that these roads would experience different extent of traffic congestion especially during peak hours. This traffic congestion would also lead to higher vehicular emissions as the average traffic speed decreases during traffic congestion. The increase in vehicle volume may also exacerbate the potential noise nuisance on the neighbouring sensitive receivers.

With Project Scenario

- 2.3.3 With the implementation of the Project, the residents of both existing and planned developments in Kwun Tong uphill areas would be offered a swift accessibility to a modern and environmental transit system that would further connect them to existing MTR train services as needed. As such, they would have one more option instead of solely relying on road-based traffic mode for connection to MTR train services.
- 2.3.4 This would obviously be a positive step to contain or even reduce the demand for road-based traffic, which would in turn reduce the extent of traffic congestion especially during peak hours and hence the vehicular emissions generated.

2.4 Consideration of Alternative Options

Considerations for Alignment Selection

2.4.1 To assess the merits of each alignment option, the following key considerations on engineering, environmental, and general disruption on community factors have been identified for considerations. The alignment option that presents the most optimal balance between optimising engineering constructability, operational safety and flexibility, minimising environmental impacts and community disruption, and addressing public comments have been selected.

Table 2.4.1 Considerations and Constraints for Alignment Option Selection

Key Considerations	Description
Engineering factors	
Constructability	Ease and practicability of constructing viaducts, tunnels, stations, depot and ancillary buildings
Operational Safety and Flexibility	Suitable gradient for operation safety, and flexibility for interchange movements with the existing MTR stations
Environmental factors	
Ecology	Avoid and minimise disturbance to concerned habitats and species and woodland loss
Air, Noise, Landscape and Visual, Waste	Minimise the following: <ul style="list-style-type: none"> • Construction dust and noise impact • Airborne and ground-borne noise impact during operational phase • Landscape and visual impact • C&D waste
Other factors	
Public Acceptance	Address public demand on additional station serving for the population in Lam Tin North and enhanced pedestrian connectivity to United Christian Hospital and the future developments in Anderson Road and Anderson Road Quarry Site
Community Disruption	Minimise potential disruption to traffic and demolition of existing infrastructure

Design Considerations for the Depot

2.4.2 As the alignment of the Project is bounded by existing road and buildings, the only vacant land with sufficient size suitable for the depot is at the slope at the east of Po Tat Estate.

2.4.3 The building footprint of the depot has to accommodate the essential operation areas for the maintenance and stabling berths for the transit vehicles. The proposed depot size and arrangement have been duly optimised to reduce woodland loss and ecological impacts. The size of the proposed depot (~4ha) is smaller than other railway depots in Hong Kong such as the Tseung Kwan O Line Depot (~8ha). Moreover, the design has integrated the station of MYT within the depot footprint without the need to occupy extra area for the station. This contributes to optimising the total depot footprint as well.

Options for Transit Modes

2.4.4 The proposed Smart and Green Mass Transit System under this Project is a new transport system of its kind in Hong Kong. In order to gain a deeper understanding on various technical aspects of the Project, local, mainland and overseas suppliers

and operators were invited to submit Expressions of Interest (EOI) for the transit modes of the Project. Several transit modes as listed below have been suggested in the EOI and the specific transit mode would be selected through open tender process at a later stage for implementation under our Project:

- SkyShuttle;
- Rubber-tyred Rapid Transit (RRT);
- Automated People Mover (APM); and
- Trackless Tram (Autonomous Rapid Transit (ART), Digital Rail Transit (DRT)).

2.4.5 The transit modes of SkyShuttle, RRT and APM are guideway transit systems requiring physical tracks, while ART and DRT are trackless system that adopts virtual track, Global Positioning System (GPS) and vision positioning technique. These transit modes are capable to satisfy the passenger capacity required, to accommodate the steep alignment gradient and tight turning radius dictated by the hilly terrain in Kwun Tong uphill areas, and ensure safe means of evacuation. They pose no major constraints from engineering and operational perspectives. Nevertheless, the final decision of the transit mode is subject to the best offer to be proposed by the bidders during the subsequent tender stage.

2.5 Environmental Design Consideration

Greening

2.5.1 Greening such as green roof / vertical green would be duly explored for stations and ancillary buildings as far as practicable. It would help reduce heat island effect and facilitate cooling of the surroundings, mitigate visual impacts, and create habitats for flora and fauna. Plant species that require less watering by potable water supply, low maintenance and self-sustaining should be considered.

Sustainable Building Initiatives

2.5.2 The Project is designed for healthy, low-carbon and resource-efficient development. A number of sustainable building design features as listed below are considered to be practicable at this stage. The extent of their applications as well as other implementation details would be further established during subsequent detailed design stage.

- Integration of PV panels on rooftop of viaduct and stations as far as practicable;
- Use of certified environmentally sustainable building materials or those with high recyclable content;
- Optimise use of natural lighting, natural ventilation, passive cooling and sun shading to reduce energy consumption;
- Application of energy-saving installations and energy-efficient system such as building energy management system, energy efficient lighting, air-conditioning, and lift and escalator system; and
- Installation of water saving devices such as water-efficient water fixtures and flush systems.

2.6 Tentative Implementation Programme

2.6.1 Subject to the necessary statutory procedures and funding approval, the detailed design and construction works of the Project is anticipated to commence tentatively in Year 2027/28 for completion in Year 2032/33. The construction elements of the Project were identified based on the available preliminary design information and will be subject to further refinement during the subsequent detailed design stage.

2.7 Key Public Concerns

2.7.1 The Project Proponent has conducted series of consultation activities to collate comments from various stakeholders. These consultation activities include but not limited to the statutory public inspection period for the Project Profile, consultation meeting with Kwun Tong District Council, Sai Kung District Council and Wong Tai Sin District Council, public consultation forums / meetings / site visits with the Legislative Council members, representatives from Hang Hau Rural Committee, District Council members, resident associations, district organisations, Ma Yau Tong Village representatives, and green groups. The LegCo members, KTDC, SKDC, WTSDC and the general public expressed their support to the project.

2.7.2 The public mainly focused their interests on the additional intermediate station in Lam Tin North, pedestrian link facilities with planned developments in Anderson Road and Anderson Road Quarry Site, as well as Untied Christian Hospital, potential extension schemes, fast-tracking the implementation programme and the fare level under the Project. Nevertheless, some stakeholders expressed concerns on noise impact to the existing buildings/ facilities in close vicinity of the SGMETS-EK during both construction and operation phases while some stakeholders were concerned about the ecological impact and visual impact of the depot to the surroundings nearby. The key concerns received from stakeholders and responses are summarised in the table below.

Table 2.7.1 Key Concerns Received from Stakeholders and Responses

Key Concerns	Responses and Approach Adopted
1. Support the Project which would help to enhance mobility in East Kowloon, in particular the existing residential developments in Lam Tin North.	The needs of Project (i.e. improve the transportation infrastructure and mobility to the existing communities) and the benefits of the Project are presented in this EIA Report. The Project is revised to incorporate an additional intermediate station in Lam Tin North with refined alignment.
2. The provision of convenient pedestrian facilities with sufficient capacity to cope with the demand at each proposed station, in particular the planned developments in Anderson Road and Anderson Road Quarry Site.	In planning the location and pedestrian connections of the stations, due consideration were given to technical feasibility, spatial requirement as well as existing and planned pedestrian connections. The station entrances / exits together with the existing and new pedestrian connections have been designed to ensure that they would be capable to accommodate the projected pedestrian flows, meet the commuting needs of the residents and enhance connectivity of the system with the populated areas.
3. The need to provide more barrier-free facilities at Shun On Station for accessing United Christian Hospital should be considered.	The proposed Shun On Station will be located at Shun On Road near United Christian Hospital. Passengers could access the United Christian Hospital via the proposed barrier-free facilities, including a footbridge across Shun On Road and a covered walkway along Shun On Road, as well as a covered walkway along Sau Mau Ping Road which was under construction.
4. The programme of the Project should be accelerated to serve the public at the earliest possible time.	The construction works of the Project are targeted to commence tentatively in Year 2027/28 and target for completion in no later than Year 2032/33.

Key Concerns	Responses and Approach Adopted
<p>5. Noise nuisance to be generated during the construction and operation of the Project would affect the daily life of residents nearby. Sufficient noise mitigation measures should be provided alongside the road sections close to residential areas.</p>	<p>Assessment on qualitative construction noise shows that with proper implementation of noise mitigation measures, including the use of Quality Powered Mechanical Equipment (QPME), use of quieter equipment/method, use of noise barrier / enclosure, etc., adverse construction noise impact is not anticipated.</p> <p>Also, assessment on operational transit system noise shows that with the implementation of proposed noise mitigation measures including noise barrier, all the noise sensitive receivers would comply with the respective noise criteria.</p>
<p>6. The depot construction may cause potential ecological impacts such as habitat loss, direct loss of woodland, large amount of tree/vegetation removal and stream diversion.</p> <p>Various species of conservation importance could be spotted along a watercourse at Ma Yau Tong.</p> <p>The Project may cause potential ecological impacts to the natural watercourse located within the depot area.</p>	<p>The Project has reduced woodland loss by aligning the viaduct structure along existing roads with urban context as much as practicable. Building footprint of depot at Ma Yau Tong has been duly optimised to reduce woodland loss. Mitigation measures including woodland compensation, transplantation and/or replanting floral species of conservation importance and Aquatic Fauna Translocation Proposal have been proposed. With the proper implementation of the mitigation measures, the ecological impact is considered acceptable.</p> <p>The depot at Ma Yau Tong would be elevated with columns and vertically separated from the natural watercourse located within the depot area, thus further minimising disturbance impact on them.</p>
<p>7. The landscape and visual impact from the depot should be assessed.</p>	<p>The spatial design requirement of the depot has been optimised by striking a practicable balance between aesthetic, functionality, practicality, etc.</p>

3. Summary of Environmental Impact Assessment

3.1 Air Quality

Construction Phase

- 3.1.1 Potential construction dust impact would be generated from site clearance, soil excavation, backfilling, site formation works, spoil handling, slope works, vehicle movement on haul roads, wind erosion of open sites, tunnelling works and construction of viaduct, stations, depot and the ancillary buildings. With the implementation of mitigation measures as stipulated in the Air Pollution Control (Construction Dust) Regulation, Air Pollution Control (Non-Road Mobile Machinery) (Emission) Regulation, Air Pollution Control (Fuel Restriction) Regulations, along with dust control measures such as watering exposed construction areas once per hour and adhering to good site practices, there would be no adverse impact on construction air quality. Moreover, real-time dust monitoring would be conducted to ensure the compliance with the Air Quality Objectives (AQOs).

Operational Phase

- 3.1.2 No adverse air quality impact is expected from the operation of the Project as the transit system would be electrically-powered.

3.2 Noise Impact

Construction Noise Impact

- 3.2.1 Potential construction noise impact would be generated from the use of PME during the construction phase of the Project. An assessment on construction noise has been conducted according to the requirements in the EIA SB and the results indicated that, with the adoption of proposed noise mitigation measures, including the use of Quality Powered Mechanical Equipment (QPME), use of quieter equipment/method, use of noise barrier / enclosure, etc., there would be no adverse noise impact arising from construction works of the Project.
- 3.2.2 Nevertheless, a Construction Noise Management Plan (CNMP) containing a quantitative construction noise impact assessment, the adopted quieter construction method and equipment, noise mitigation measures and the construction noise impact monitoring and audit programme will be submitted to the EPD before the commencement of construction works.

Transit System Noise Impact

- 3.2.3 Potential transit system noise would be generated during the operational phase of the Project. An assessment with envelope approach on transit system noise has been conducted according to the requirements in the EIA SB.
- 3.2.4 The transit noise impacts of both Guideway Transit (rail-based) and Trackless Tram (road-based) were quantitatively assessed in the EIA report, by adopting the maximum noise source term (from APM and ART respectively) gathered during the Expression of Interest (EOI) invitation as conservative approach. The Acceptable

Noise Level (ANL) of the “Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites” (IND-TM) is adopted as the criteria for the transit system noise.

- 3.2.5 The unmitigated maximum predicted noise levels at representative NSRs at Shun Lee Estate and Yau Lai Estate would exceed the ANL by about 1-2dB(A) for both Guideway Transit and Trackless Tram. With the adoption of proposed noise mitigation measures (i.e. 3m high vertical noise barriers of 80m & 115m long for Guideway Transit and 3m high vertical noise barriers of 40m long for Trackless Tram), no adverse transit system noise impact is anticipated.
- 3.2.6 Nevertheless, a Transit Noise Management Plan (NMP), which contains a quantitative transit system noise impact assessment (accounting for all latest design and operation parameters) and mitigation measures to ensure compliance, should be submitted during the detailed design stage of the Project.

Fixed Noise Sources Impact

- 3.2.7 Potential fixed noise would be generated from the Public Address (PA) system at stations, maintenance activities inside Ma Yau Tong (MYT) Depot, opening or louvers of tunnel ventilation building located at Black Hill, and mechanical ventilation system of plantrooms at stations and depot. An assessment on fixed noise sources has been conducted on the design of these fixed noise sources and it is considered that with the adoption of proposed noise mitigation measures, including the use of quieter equipment, silencer, barrier, enclosure, etc., there would be no adverse noise impact arising from fixed noise sources.
- 3.2.8 Nevertheless, a Fixed Noise Source Management Plan (FNMP) containing the quantitative fixed noise sources impact assessment, noise mitigation measures and fixed noise sources impact monitoring and audit programme will be submitted to the EPD before commencement of operation of the Project.

3.3 Water Quality

Construction Phase

- 3.3.1 Potential water quality impact due to construction works has been reviewed. The potential water quality impacts from the construction activities including construction runoff, tunnelling and underground works, buildings construction, sewage effluent from the workforce, construction works in close proximity of inland water, removal or diversion of watercourses and accidental spillage of chemicals. With proper implementation of the recommended mitigation measures such as Best Management Practices (BMPs) and water control strategies during tunnelling and underground works, there would be no adverse water quality impact during construction phase.

Operational Phase

- 3.3.2 During the operational phase of the Project, the key potential source of water quality impact would be related to stormwater runoff, sewage and wastewater effluents from operation of stations, ancillary buildings and depot. All of the sewage and wastewater effluents generated from operation of depot and ancillary buildings would be connected to the public sewerage system. With proper design of

stormwater drain and sewerage systems and implementation of the recommended mitigation measures, there would be no adverse water quality impact during operational phase.

3.4 Waste Management Implications

Construction Phase

3.4.1 Potential waste management implications from the generation of waste during the construction phase have been evaluated. The main types of waste would be generated include Construction and Demolition (C&D) materials, chemical waste and general refuse. It has been estimated that 928,300 m³ of inert C&D materials, 87,700 m³ of non-inert C&D materials, a few hundred litres per month of chemical waste, 725 tons of general refuse would be generated.

3.4.2 In order to reduce the number of surplus materials to be disposed of, strategic mitigation measures such as the opportunity for on-site sorting, reusing C&D materials, etc. are devised. With the proper implementation of the recommended migration measures such as good site practices, waste reduction through good management and control, proper storage, collection and transportation of waste, all dump trucks engaged on site for delivery of inert C&D materials from the site to Public Fill Reception Facilities (PFRFs) equipped with GPS or equivalent system, preparation of a Construction and Demolition Management Plan (C&DMMP), etc., there would be no adverse environmental impacts from waste management during construction phase.

Operational Phase

3.4.3 Potential waste management implications from the generation of waste during the operational phase have been evaluated. The main waste types generated during the operation of the Project would include general refuse and chemical waste from the staff and maintenance activities. Recommendations including employing reputable waster collectors, providing recycling bins and using good quality containers compatible with chemical wastes have been made to ensure proper treatment and disposal of these wastes. It is anticipated that no adverse environmental impacts would arise with implementation of mitigation measures.

3.5 Land Contamination

3.5.1 Potential contaminative land uses within the assessment area and their potential impacts to future use have been examined. No potentially contaminated areas are identified within the assessment area based on the desktop review, site surveys and identification of potentially contaminated area. Land contamination issues are not anticipated and environmental Site Investigation (SI) works are not recommended.

3.5.2 Since major construction works for the Project are anticipated to commence in 2027/28, site re-appraisal would be conducted prior to the commencement of construction works to review and assess the latest site situation prior to the commencement of the construction. The objective of re-appraisal is to ensure any new changes in land use activities that might cause land contamination issue prior to the commencement of the construction could be addressed.

- 3.5.3 If environmental SI is deemed necessary upon site re-appraisal, a Contamination Assessment Plan (CAP) will be prepared. A Contamination Assessment Report (CAR) will be prepared following SI activities, if required. If contamination is identified in the CAR, a Remediation Action Plan (RAP) will be developed to deal with these areas prior to the construction works for the Project. The RAP would follow the requirements specified in EPD's Practice Guide for Investigation and Remediation of Contaminated Land. A Remediation Report (RR) would be prepared to demonstrate adequate clean-up and submitted to EPD for endorsement prior to the commencement of development works within the Project site.

3.6 Ecology (Terrestrial)

Construction Phase

- 3.6.1 Potential direct impacts during the construction phase include permanent habitat loss, habitat fragmentation, and harm/mortality to flora and fauna. The permanent loss of approximately 3.54ha of woodland of low to medium ecological value is expected to have a minor to moderate impact and will be mitigated by woodland compensation. Areas in Black Hill (around 3.54 ha) are identified as the potential woodland compensation area at this stage.
- 3.6.2 The potential direct impacts on plant, amphibian, and freshwater invertebrate species of conservation importance are also considered minor to moderate, requiring mitigation. Preservation and/or transplantation of plant species of conservation importance, including *Aquilaria sinensis*, *Artocarpus hypargyreus*, *Diospyros vaccinioides*, *Pavetta hongkongensis* and *Tectaria decurrens*, will be conducted before site formation works. Pre-construction detailed survey of amphibian and freshwater invertebrate species of conservation importance, including but not limited to Lesser Spiny Frog, *Cryptopotamon anacoluthon* and *Nanhaipotamon hongkongense*, will be conducted before the commencement of watercourse diversion and site formation works. Capture and translocation to a proper recipient site will be proposed and post-translocation monitoring will be carried out, if any. The permanent loss of terrestrial habitat (e.g. agricultural land, developed area, modified watercourse, natural watercourse, plantation, shrubland and woodland) of low ecological value is expected to result in minor impacts.
- 3.6.3 Potential indirect impacts during the construction phase include minor impacts arising from construction disturbance on recognized sites of conservation importance, habitats, roosting ground, breeding ground, nesting ground, nursery ground and fauna species of conservation importance, as well as potential issues related to groundwater drawdown. Water quality impact during the construction phase is expected to be minor to moderate, and good site practices will be implemented to further minimize the impacts for potential groundwater drawdown.

Operational Phase

- 3.6.4 During the operation phase, the only potential direct impact expected to occur is direct injury / mortality to wildlife and bird collision. Since the proposed viaducts, tunnel, depot, stations and ancillary buildings are situated in habitats with low abundance of birds, and the design of noise barriers will ensure the minimization of bird collision risk, potential direct impact is expected to be minor. While the potential indirect impacts include operation disturbance on recognized sites of

conservation importance, roosting ground, breeding ground, nesting ground, nursery ground and fauna species of conservation importance. Hence, these impacts are expected to be minor, and no specific mitigation is required.

3.7 Landscape and Visual

- 3.7.1 The Project will inevitably result in some landscape and visual impacts during construction and operation phases. These impacts have been minimized through the incorporation of aesthetic external designs and appropriate landscape and visual treatments along the viaduct alignment, stations, pedestrian links and ancillary buildings and facilities.
- 3.7.2 The tree survey was conducted from September 2024 to May 2025 and identified about approximately 14,740 trees within the assessment boundary. Subject to the detailed design of the Project, about 11,400 trees to be affected by the proposed works may need to be removed either by felling or transplanting and approximately 2,390 trees that would not be affected by the proposed works will be retained in-situ. Separately, about 815 nos. of undesirable species and 135 nos. of dead trees would be removed as arboriculture maintenance. It is anticipated that future consortium for construction and operation of the transit system (the Consortium¹) will conduct further tree surveys and adjust and finalise the tree treatments based on their detailed design of the Project, the required works area for construction and operation of the Project. Exact number of trees to be retained, transplanted and felled and associated compensation proposal would therefore be further explored during the preparation of detailed Tree Preservation and Removal Proposals (TPRP) in accordance with DEVB TC(W) No. 4/2020.
- 3.7.3 There is no Registered Old and Valuable Tree (OVT) within the 100m landscape impact assessment area. Meanwhile, total 55 nos. of Trees of Particular Interest (TPIs) are recorded, and 20 nos. to be affected by the proposed works will be required to be felled or transplanted, and 35 nos. will be retained in-situ. For removal of TPIs, irrespective of whether the tree concerned is alive or dead, the Consortium shall follow the Development Bureau's Guidelines for Tree Risk Assessment and Management Arrangement and submit sensitivity analysis and checklist in addition to the TPRP to the relevant Government Department for approval.
- 3.7.4 For trees unavoidably affected by the Project that have to be removed, where practical, transplantation will be chosen as the top priority method of removal but if this is not possible or practical (e.g. the tree is too large or has a low survival rate), compensatory planting will be provided for trees unavoidably felled. Compensation for these felled trees will be prioritized within the Project Boundary, and off-site compensation will be explored to achieve a 1:1 compensation ratio as far as practicable.
- 3.7.5 Impact on Landscape Resources (LRs) and Landscape Character Areas (LCAs) during construction would be primarily due to construction activities for the Project. With the implementation of mitigation measures, during operational phase, impacts from the Project on all the LRAs would be Negligible to Slight. For the LCAs, impacts from the Project on all the LCAs would be Negligible to Slight with the

¹ The Consortium will be responsible for design, build and operate SGMETS-EK.

implementation of mitigation measures, during operational phase. The Consortium for construction and operation of the transit system shall further develop the detailed design of the Project with a view to reducing the landscape impacts as far as practicable.

3.7.6 Visual impact focus on permanent visual impacts during operation of the Project. Representative public viewing points of the Project include the travellers at the road junctions along Clear Water Bay Road, Sau Mau Ping Road, Po Lam Road and Lei Yu Mun Road, Tseung Kwan O Tunnel Bus-Bus Interchange and visitors of public open spaces. With proper implementation of practicable design and mitigation measures, the overall visual impact will be ranging from Slight to Moderate. The Consortium shall further develop the architectural and landscape design during detailed design stage, taking into account the proposed design and mitigation measures to reduce the visual impacts and enhance the overall visual quality. The proposed depot, supported by a stilted structure, should incorporate appropriate design and landscaping treatments to mitigate its visual impact to blend in with the surrounding environment.

3.7.7 Considering the overall scale and nature of the Project, it would inevitably result in certain levels of residual landscape and visual impacts in relation to the loss of slope vegetation, open spaces' greening and roadside amenity plantings. Nevertheless, the residual landscape impacts are localized and limited to the extent of the viaduct and station construction only without affecting existing community, while the residual visual impacts are confined within the visual envelope either involving numbers of public viewers in open spaces, or relatively large numbers of public viewers along key pedestrian nodes and prominent travel routes. With the implementation of the proposed landscape and visual mitigation measures, the overall landscape residual impacts would be from negligible to slight during operational phase, and the overall visual residual impacts would be from slight to moderate in operational phase. As evaluated based on the relevant factors in Section 4.4.3 of the EIAO-TM and with full implementation of the recommended mitigation measures, unacceptable adverse residual landscape and visual impacts are not expected.

3.8 Cultural Heritage

Archaeology

3.8.1 An archaeological impact assessment has been conducted for the Project. No site of archaeological interest would be affected by the Project and associated works. An archaeological field survey with 4 test pits has been conducted for the depot in Ma Yau Tong. According to the result(s) of the survey, only top soil loam layer and sterile layer were identified, no cultural layers/deposits were identified. The surveyed area is concluded to have no archaeological potential. Moreover, the remaining areas are also considered with no archaeological potential. Thus, no mitigation measure was necessary.

3.8.2 Furthermore, if antiquities or supposed antiquities are identified during the construction works, the works should be suspended, and AMO shall be notified immediately.

3.8.3 Archaeological impact is not anticipated during operational phase and hence mitigation measures are not required. As a precautionary measure, AMO shall be

informed immediately when any antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the course of works.

Built Heritage

- 3.8.4 The literature review conducted for the built heritage impact assessment has also collated relevant information on Declared Monuments and Graded Historic Buildings. All built heritage resources within Cultural Heritage Assessment Area (CHAA) were identified. Three grade 1, three grade 2 and three grade 3 historic buildings, and one Other Identified Item are identified within CHAA.
- 3.8.5 Potential vibration impact on several historic buildings may be a concern. Special attention should be paid to design proposal, method of works and choice of machinery should be targeted to minimize adverse impacts to the items. Any vibration and building movement induced from the proposed works should be strictly monitored to ensure no physical damages made to the items during the course of works. Monitoring proposal for the items, including checkpoint locations, installation details, response actions for each of the Alert/ Alarm/ Action (3As) levels and frequency of monitoring should be submitted for AMO's consideration.
- 3.8.6 There would be no adverse impact on built heritage and Other Identified Items are not anticipated during operational phase and hence mitigation measures are not required.

3.9 Hazard to Life

- 3.9.1 Drill-and-blast works are required for the tunnel construction in Black Hill. A Quantitative Risk Assessment (QRA) has been carried out to evaluate the risk induced from the transportation and use of explosives during construction of the Project.
- 3.9.2 Explosives would need to be used for the construction of the tunnel section underneath Black Hill. The assessment results show that the societal risk for the transportation of explosives as well as the use of explosives lie within the "ACCEPTABLE" region. For individual risk, compliance is anticipated.
- 3.9.3 Given that the proper design and maintenance of the blasting face and provision of blast door or cover, together with the fact that the blasting would be conducted inside the tunnel section and with the blast cover shut, there would not be adverse risk during construction phase.

3.10 Landfill Gas Hazard

- 3.10.1 An assessment on potential hazards associated with landfill gas (LFG) migration from various landfills (i.e. Ngau Chi Wan (NCW), Jordan Valley (JV), Ma Yau Tong (West) (MYTW), Ma Yau Tong (Central) (MYTC) and Sai Tso Wan (STW) Landfills) along the alignment has been carried out. All these landfill sites have been closed for more than 30 years.
- 3.10.2 The sources of the landfills are ranging from "Minor" or "Medium. The source-pathway-target analysis shows that LFG risk posed by the concerned landfills to the Project is ranging from "Very Low" to "Medium" during construction phase, which

precautionary measures at the Project site within the Consultation Zones (CZs) such as regular monitoring on a daily basis and ad-hoc monitoring before each blasting activity, providing mechanical ventilation during the construction of tunnel section should be adopted. For operational phase, LFG risk posed by the concerned landfills to the Project is ranging from “Very Low” to “Medium” which engineering measures such as use of gas-proof membrane, providing mechanical ventilation system and gas detection system will be required.

- 3.10.3 Other precautionary and protection measures during construction and operational phases of the Project such as emergency management, following guidance for underground utility and monitoring have been recommended for elements within the CZ of the respective landfill sites. It is expected that with the proposed precautionary measures in place, the potential risk of LFG migration to the respective targets would be minimal.

4. Environmental Monitoring and Audit

- 4.1.1 An Environmental Monitoring and Audit (EM&A) programme has been formulated for Project which is a DP listed under Schedule 2 of the EIAO, with details presented in the separate EM&A Manual. Key aspects which require monitoring include air quality (i.e. construction dust), noise (i.e. construction noise and transit system noise), ecology (construction phase) and landfill gas hazard.

5. Conclusion

- 5.1.1 The Project will be a SGMTS which operate on a dedicated corridor separating from road-based traffic running between Choi Hung East and Yau Tong East to provide a convenient and fast feeder transport service in the upper East Kowloon area. It will cover areas in Choi Hung, Choi Wan, Shun Lee, Shun On, Shun Tin, Sau Mau Ping, Po Tat, Lam Tin North and Yau Tong.
- 5.1.2 An EIA Report has been prepared to fulfil the requirements as specified in the EIA Study Brief (No.: ESB-374/2025) and the EIAO-TM. All the latest design information has been incorporated into the EIA process. The aspects that have been considered in this EIA Report include:
- Project Description, Environmental Benefits and Consideration of Alternatives;
 - Air Quality Impact;
 - Noise Impact;
 - Water Quality Impact;
 - Waste Management Implications;
 - Land Contamination;
 - Ecological Impact (Terrestrial);
 - Landscape and Visual Impact;
 - Impact on Cultural Heritage
 - Hazard to Life;
 - Landfill Gas Hazard ; and
 - EM&A Requirements.
- 5.1.3 The findings of the EIA provided information on the nature and extent of the environmental impacts likely to arise from the construction and operation of the Project. The EIA has, where appropriate, identified mitigation measures to ensure compliance with environmental legislation and standards. The summary of the environmental impacts arising from the Project is presented in [Appendix 5.1](#).
- 5.1.4 Overall, the EIA Report has predicted that the Project would be environmentally acceptable and individual impacts are minimized with the implementation of the proposed mitigation measures for construction and operational phases. An EM&A programme has been recommended to check the effectiveness of recommended mitigation measures.