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# 1. INTRODUCTION

## 1.1 Introduction

1.1.1 The 2013 Policy Address first stated the need to take forward further development of the New Territories North (NTN) with a view to developing a modern new town there on a similar scale of the Fanling or Sheung Shui New Towns. In 2014, the Government commissioned the Preliminary Feasibility Study on Developing NTN (referred hereafter as "the Preliminary Study") and an area in San Tin / Lok Ma Chau (STLMC) was identified as having potential for further development. In October 2016, a Broad Land Use Concept Plan (BLCP) of the area was promulgated in the public engagement of "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" (Hong Kong 2030+)".

1.1.2 Following the announcement of advancing the studies on developing brownfield sites in the NTN in the 2018 Policy Address and the acceptance of the eight land supply options recommended by the Task Force on Land Supply in February 2019, the Feasibility Study on STLMC Development Node (STLMC FS) as the first phase development of NTN was jointly commissioned by the Civil Engineering and Development Department (CEDD) and the Planning Department (PlanD) in September 2019 to further develop the BLCP into a Preliminary Outline Development Plan (PODP) and confirm its feasibility. The PODP was presented to the Legislative Council in mid-2021 in the form of an Initial Land Use Plan.

1.1.3 In October 2021, the 2021 Policy Address proposed to expand STLMC Development Node into San Tin Technopole together with the Hong Kong-Shenzhen Innovation and Technology Park (HSITP) at the Loop. By making use of the land to be released by the Lok Ma Chau Boundary Control Point (LMC BCP) upon commissioning of the new Huanggang Port with co-location arrangement, and replanning the rural areas and fishponds around LMC BCP, it is proposed to increase the land supply for innovation and technology (I&T) development so as to achieve industry clustering effect with economy of scale. It is also proposed to increase the housing supply in San Tin Technopole to help address the housing shortage in the territory, in which some of the units can be used as talent apartments for I&T enterprises and research institutes. The Northern Metropolis has been incorporated in the Conceptual Spatial Framework promulgated in the Final Report of Hong Kong 2030+.

1.1.4 In the same month, CEDD and PlanD jointly commissioned AECOM Asia Co. Ltd. (AECOM) to undertake the Investigation Study on STLMC Development Node (hereinafter referred to as "the Project") to take forward the San Tin Technopole initiative and formulate the Recommended Outline Development Plan (RODP) for STLMC area, carry out engineering and technical assessments including the statutory Environmental Impact Assessment (EIA), and conduct public engagement (PE) to facilitate public discussions and foster consensus building. A 2-month PE was conducted between June and August 2023 to solicit public views on the RODP. Taking into account the public views collected in the PE, planning and engineering considerations, technical assessments as well as departmental comments and advice, a Revised RODP was formulated.

1.1.5 According to the Revised RODP, STLMC area will be developed into an I&T hub and a new community providing about 50,000 to 54,000 flats for a new population of about 147,000 to 159,000. It will generate about 165,000 jobs including 120,000 jobs on I&T sites. It will be an integral part of San Tin Technopole, providing ample amount of I&T land in various sizes for different I&T uses, as well as an integrated community with wide range of commercial, retail, community, recreational and cultural facilities.

1.1.6 A Project Profile (PP) (No. PP-621/2021) for the Project was submitted to Environmental Protection Department (EPD) on 20 May 2021 for application of an EIA Study Brief (EIA SB), which was subsequently issued on 30 June 2021 (No. ESB-340/2021). To accommodate new demand for land uses and associated infrastructure, the development area has expanded to about 610ha. With reference to the Revised RODP, the Project area as set out in the EIA SB issued in June 2021 has been expanded. In this connection, confirmation from EPD has been sought on the validity of the EIA SB issued in June 2021 pursuant to Clause 6.2 of the EIA SB. EPD confirmed that the EIA SB issued in June 2021 remains applicable for the latest project area as all the potential environmental issues which need to be assessed in the EIA are already covered in the EIA SB.

## 1.2 Environmental Impact Assessment Study

1.2.1 The EIA study was conducted for the Project in accordance with the requirements of the EIA Study Brief (No. ESB-340/2021) and the *Technical Memorandum on Environmental Impact Assessment Process* (EIAO-TM). The purpose of this EIA Study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project. The information obtained in the EIA Study will contribute to decisions by Director of Environmental Protection on:

i) the overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project and its staged implementation;

ii) the conditions and requirements for the detailed design, construction and operation of the Project to mitigate against adverse environmental consequences wherever practicable; and

iii) the acceptability of residual impacts after the proposed mitigation measures are implemented.

## 1.3 Purpose of this Executive Summary

1.3.1 This Executive Summary (ES) summarises the key findings, recommendations and conclusions of the EIA Report for the Project. The ES contains the following information:

- Section 2 presents purpose, scope and development of the Project;
- Section 3 presents the key findings of the environmental impact assessment;
- Section 4 describes the proposed environmental monitoring and audit programme for the Project;
- Section 5 presents a summary of environmental outcomes; and
- Section 6 presents the conclusions.

# 2. PROJECT DESCRIPTION

## 2.1 Need for the Project

2.1.1 The 2013 Policy Address first stated the need to take forward further development of the NTN with a view to developing a modern new town. Under the Preliminary Study, an area in STLMC was identified as having potential for further development. Subsequent to the BLCP of STLMC promulgated in 2016 and the eight land supply options recommended by the Task Force on Land Supply in 2019, STLMC FS and subsequent Investigation Study were commissioned in 2019 and 2021 respectively. With the National 14th Five-Year Plan supporting Hong Kong to develop into an international I&T centre, it is aspired to develop the Northern Metropolis into a "new international I&T city".

2.1.2 Located at the heart of Northern Metropolis and in close proximity to Shenzhen's (SZ)'s I&T zone in Huanggang and Futian, San Tin Technopole is strategically positioned to be a hub for clustered I&T development that creates synergy with SZ's I&T Zone. It will contribute to the development of the South-North dual engine (finance – I&T), and become a new community for quality, healthy and green living.

## 2.2 Appreciation of Existing Environment

2.2.1 The Project is located to the west of Kwu Tung North (KTN) and Fanling North New (FLN) Development Areas (NDAs) and Fanling and Sheung Shui New Towns, and to the northeast of Yuen Long and Tin Shui Wai New Towns (refer to **Figure 1.1** for location plan). The Project area has a mixed urban-rural character. Land in the northern portion is predominantly occupied by wetland as well as village developments with some brownfield sites mainly open storage and warehouse uses, whereas land in the southern portion is mainly occupied by domestic structures and village developments with some scattered brownfield operations (mainly open storage, warehouse and workshop uses). These are described further below.

**Northern Project Area**

2.2.2 The northern extent of the Project area refers to the portion located to the north of San Tin Highway and Fanling Highway. San Sham Road, which is an existing road, together with the LMC BCP, bisects the northern part of the Project area.

2.2.3 Area to the east of the San Sham Road is physically characterised by existing wetland, knolls and hills. Domestic structures, non-domestic structures and brownfield sites mainly vehicle parks and open storage are particularly prevalent within the eastern part of this area. The HSITP in the Loop of about 87 ha for I&T development locates at the immediate northeast of the Project area. Development of the HSITP has commenced and first phase development is estimated to be completed in phases from 2024 to 2027.

2.2.4 Area to the west of the San Sham Road is mainly occupied by existing wetland which stretches across the area and connects to the wetland to the west. Cluster of existing villages is located at the south to the LMC BCP but have been excluded from the Project area. Some other domestic structures, non-domestic structures and brownfield sites mainly open storage and warehouse sited within the Project area. The Mai Po Lung Village (MPLV) Egretry is also sited within the northern Project area. While the Mai Po Village (MPV) Egretry and a Site of Special Scientific Interest (SSSI) are located outside the Project area and partially within the Project area respectively, their combined ecologically importance should be considered.

2.2.5 There are two existing drainage channels, namely the San Tin Eastern Main Drainage Channel (STEMDC) and San Tin Western Main Drainage Channel (STWMDC) across the north and south of the Project area.

2.2.6 Currently, the northern Project area is bounded by the SZ River, fishponds as part of Wetland Conservation Area (WCA), the Loop and the hill of Tit Hang. This setup characterised the Northern area with flat and open view of wetland. Pockets of planting, green knolls and watercourses promote a sense of rural landscape character around the area. The existing blue resources are mostly fishponds / channelised watercourse with concrete bank. These natural surrounding host a great variety of mature/semi-mature trees, fauna and flora species in vicinity

and within the northern Project area. This includes but not limited to existing night roost, wetland habitat, mammals, water birds, etc.

**Northern Project Area at the north of San Tin Highway and Fanling Highway**

**Southern Project Area**

2.2.7 The southern and southeastern part of the Project area is bounded by Ki Lun Shan and Ngau Tam Shan. The southern part of the Project area is significantly dissected by existing roads with cultural heritage and knolls and hills scattered around. This has a significant impact on the morphology of this area and in combination with other transport routes effectively subdivides the area into definable parts.

2.2.8 The southern part of the Project area are currently proposed to be developed for land uses of various scales and characters under this Project. Shek Wu Wai village, which is an existing recognised village outside of the Project area, is located in the middle of the southern Project area. Domestic structures, non-domestic structures and brownfield sites mainly open storage, warehouse and workshops are particularly prevalent within the southern Project area. The domestic structures in these areas are widely dispersed and intermingled with many existing non-domestic temporary structures.

**Southern Project Area bounded by Ki Lun Shan and Ngau Tam Shan**

## 2.3 Constraints and Opportunities for Project Development

2.3.1 A number of existing and planned infrastructure, social and environmental features also create opportunities and impose constraints to the Project development.

**Development Opportunities**

- Sam Po Shue Wetland Conservation Park (SPS WCP)

2.3.2 The Agriculture, Fisheries and Conservation Department (AFCD) has commenced a Strategic Feasibility Study on the Development of Wetland Conservation Parks System, which proposed the SPS WCP as the first park to be developed. The Government will establish the SPS WCP to enhance the ecological quality and biodiversity of the Northern Metropolis, provide quality outdoor eco-education and recreation facilities for public enjoyment, as well as introduce modernised aquaculture in the park. The SPS WCP, with a proposed area of approximately 338 ha, will serve dual purposes. First, it allows the Government to enhance the overall ecological value, biodiversity and connectivity in the Deep Bay area through proactive conservation and management. Secondly, it will enhance the ecological function and capacity of 288 ha of wetlands with active conservation management and enhance the fisheries resources of 40 ha of fishponds with modernised aquaculture, to compensate for the loss in wetland habitats and fisheries resources arising from the development of San Tin Technopole and to achieve no-net-loss in ecological function and capacity of the wetlands concerned.

Within the SPS WCP, there will be 253 ha of ecologically enhanced fishponds compensating for pond habitat loss, 35 ha of enhanced freshwater wetland habitat compensating for other freshwater wetland habitat loss, 40 ha of enhanced fishponds compensating for fisheries loss, and about 10 ha reserved for other supporting facilities. The impact on these wetlands concerned, and the derivation of the enhancement area is further elaborated under this EIA Study.

- Highly Accessible

2.3.3 San Tin Highway is the major external road link between the Project and the rest of Hong Kong's strategic road network. The Project will connect to SZ's new Huanggang Port by an elevated primary distributor providing direct connection between the existing San Tin Interchange (STI) and an at-grade district distributor joining the Project's internal roads. It will also allow potential connection to the future Northern Metropolis Highway at the south-east for a direct and convenient connection with the rest of the Northern Metropolis.

- Enhanced Cross-Boundary Traffic Connectivity

2.3.4 With the future implementation of the "East-in East-out, West-in West-out" cross-boundary strategy, LMC BCP would carry much less cross-boundary goods vehicles' traffic. The strategic repositioning of the cross-boundary crossings would reduce the cross-boundary traffic flows at San Sham Road and its associated connections with STI.

- Enhanced Railway Network and Integrated Public Transport Network

2.3.5 The proposed San Tin Station under the proposed Northern Link (NOL) Main Line as well as the proposed NOL Spur Line with intermediate station near Chau Tau would serve as the backbone of the public transport network, multi-tier public transport systems would also be needed to serve both external and internal public transport demands to achieve transit-oriented development strategy. A comprehensive public transport network, including two Transport Interchange Hubs (TIHs) and a Public Transport Interchange (PTI) as an integral part of the smart and green mobility system would reduce private vehicle trips generated by the Project, thus further alleviating the traffic pressure at adjacent strategic roads, and allowing for further potential in the development scale of the Project.

- Favourable Geographical Location

2.3.6 Being located at the heart of Northern Metropolis and close to the KTN and FLN NDA, Tin Shui Wai, Yuen Long and Sheung Shui New Towns, Huanggang in SZ, and connected by a number of existing and planned strategic transport links to other parts of the Territory, the Hong Kong International Airport and SZ, there is potential for the Project to be developed as a regional centre and strategic employment hub. This geographically favourable location enables development of the area in promoting economic activities.

2.3.7 Since the site is bounded by natural hillsides in the south and east, significant elevation differences are foreseen subject to the site formation design. Locally, existing topography will be largely retained for smaller hillsides identified within the site particularly in the southern part. With appropriate slope works and natural terrain hazard mitigation measures implemented, continuity within the development areas can be maintained and the risk of landslide can be kept under control. Ground improvement works associated with reclaimed ponds can also boost future development potential of the northern part of the Project area.

- Plentiful Natural and Landscape Features

2.3.8 A number of natural and landscape features are identified within and surrounding of the Project area. These features could be utilised to create and enhance a pleasant living environment. This includes the uplands and valley landscape, green knolls, ridgeline/mountain backdrops of Ngau Tam Shan, Ki Lun Shan and Tit Hang, woodlands, and MPV Egretry and MPLV Egretry. The ponds and wetland to the north of the Project area foster a distinct local identity and openness. Proper planning and land use zoning could maintain these landscape and ecological capital and establish an integrated green network for the Project. The two major drainage channels namely STEMDC and STWMDC running through the Project area offer good

opportunities for blue-green infrastructure, creating distinct local character and provides a pleasant riverfront experience.

- Rich Cultural Heritage

2.3.9 The Project and its vicinity possess a significant collection of cultural heritage resources, including several Declared Monuments, graded historic buildings, and Mai Po Site of Archaeological Interest (SAI). By implementing suitable planning strategies and designating appropriate land use zoning, these valuable resources can be integrated into the Project for the benefits of existing and future residents.

- Land Resources

2.3.10 At present a large proportion of land is occupied by ponds, temporary structures and brownfield operation. The vast extent of the temporary structures and brownfield operation in the area are disorder and has created environmental and interface problems. However, with the aspiration to turn such land for more optimal uses, it provides opportunities for supporting the future development of Hong Kong.

**Development Constraints**

- Infrastructure Constraints

2.3.11 A number of constraints posed by the existing infrastructure require careful consideration in the planning of the Project:

i) The elevated section of LMC Spur Line and the two major distributors traversing the Project area, i.e. San Tin Highway and Fanling Highway, will pose environmental constraints to the nearby developments. Other existing major distributors including Castle Peak Road – San Tin, San Tam Road, Kwu Tung Road, Lok Ma Chau Road and Ha Wan Tsuen East Road are also potential air pollution and noise sources that will likely generate environmental impacts to the nearby developments.

ii) The existing overhead line cables near Chau Tau area at the east and Pang Loon Tei area at the south of the Project require vertical and horizontal separation distance from adjacent proposed land uses in accordance with the Hong Kong Planning Standards and Guidelines would limit the development potential of the adjacent Project areas.

iii) There is an existing pig farm falling outside of the Project area to the east of Chau Tau Village. Besides, a sewage treatment plant is located within San Tin Barracks in close proximity of the Project area. The future developments should observe relevant requirements on odour impacts, with reference to the findings of the EIA Report of this Project.

- Environment Constraints

2.3.12 The following constraints posed by the existing environment also require careful consideration in the planning of the Project:

i) The feasibility of surrounding lands is considered comprehensively when planning the land use of the Project. To fully leverage the strategic positioning of the Project, a substantial area of land for I&T purposes shall be provided. However, due to the presence of hills on the eastern and southern sides of the Project, particularly the natural slopes in the southeastern part of the Loop, where the terrain is high and steep, substantial earthwork, soil filling, and infrastructure works would be required to form extensive sites. Considering factors such as associated environmental impact, ground condition, cost, and development programme, the said natural slope is therefore not recommended for development for I&T purposes. Hence, the development lands shall expand towards the inland area closer to the fishponds, while minimising any impact on bird habitats and bird flight corridors. By utilising a portion of the fishponds in a reasonable manner, the planning layout of the Project can be enhanced.

ii) The existing conservation-related zonings, including CA, OU(CDWEA), OU(CDWRA), GB and SSSI zone have been carefully reviewed in the formulation of the Revised

RODP to uphold the principle of co-existence of development and conservation within the context of sustainable development.

- Consideration of the Traditional Villages and Permitted Burial Grounds during Planning

2.3.13 Existing recognised villages are retained and reserved for village development. Potential interface issues between the villages and the proposed developments will need to be addressed. PBG located mainly at the hillslopes of Ki Lun Shan and Ngau Tam Shan, and some isolated knolls in the Project area would generally be retained.

- Proliferation of Brownfield Operations Grounds

2.3.14 At present, considerable parts of the Project area are being utilised as brownfield operations including logistics, vehicle repair, vehicle parking, open storage and warehouse etc. While recognising that there may be opportunities to accommodate some brownfield operations through developing multi-storey buildings (MSBs) at the reserved sites in the area or other NDAs, this is likely to be an incremental process. The interface of new developments with the existing brownfield operations during the intervening period needs to be addressed.

- Government, Institution or Community Developments

2.3.15 A cluster of cultural facilities, service reservoirs, STLMC effluent polishing plant (EPP), electricity substations (ESSs), District Cooling System (DCS), STLMC water reclamation plant (WRP), refuse transfer station (RTS) as well as potential educational, healthcare and youth facilities are expected to be developed in the Project area. Facilities with potential environmental impact such as EPP and RTS should be sited away from sensitive uses such as residential and educational facilities.

- Preservation of Natural and Landscape Features

2.3.16 Due considerations should be given to avoid/minimise adverse impacts of the future developments on the existing ecological, natural and landscape features as mentioned in **Section 2.2.15** above.

- Flooding Risk

2.3.17 Areas adjoining Shek Wu Wai, Chau Tau, Wing Ping Tsuen and Yan Sau Wai are in the flood plain where flooding is evident. Site formation and the drainage system should be designed to minimise flooding risk to the planned developments and the nearby existing settlements.

## 2.4 General Description of the Project

2.4.1 The Project with an area of approximately 610 ha will accommodate 147,000 to 159,000 population with provision of about 165,000 jobs, upon full development. The project will mainly include land for residential, I&T, commercial and "Government, Institution and Community" ("G/IC") uses.

2.4.2 The Project mainly comprises the following elements:

- **Residential** sites for high density public and private residential developments. About 50,000 to 54,000 new flats will be provided to accommodate about 147,000 to 159,000 persons upon full development. The public and private housing mix under assessment is about 70:30.

- **Village resite** area for re-provisioning the affected village house/building lots.

- **Mixed use** developments comprising residential, commercial / office, hotel, retail, dining and entertainment uses as landmark developments around two proposed railway stations with Transport Interchange Hubs (TIHs).

- **I&T** sites to provide space for I&T development with a range of complementary uses, e.g. office, convention facilities, hotel, retail, dining and educational facilities, etc, to promote the concept of “work-live-learn-play”.

- **Logistics, Storage and Workshops** (LSW) sites for development of MSBs for modern industries, which may also accommodate brownfield operations affected by Government projects. Open-air operation are also allowed to suit the operational needs of various kinds of LSW uses.

- A wide variety of **G/IC facilities** such as social welfare facilities and educational facilities, community facilities, cultural and recreational facilities, etc. to serve the needs of the local residents and/or a wider district.

- A variety of **infrastructural facilities** such as DCS, EPP, ESSs, sewage pumping station (SPS), WRP to serve the needs of the local residents and/or a wider district.

- **Open space** including riverside park for greening, recreation and leisure use to increase liveability and to create a balanced and vibrant community and for enhancing climate resilience by incorporating floodable landscape with flood attenuation facilities.

- **Amenity strips** to enhance the amenity and to serve as visual buffers.

- **Green belt** to maintain the key natural features and protect existing natural areas.

- One **Primary Distributor Road** (Dual 2-lane Standard).

- Six **District Distributor Roads** (Single 2-lane / Dual 2-lane Standard).

- Twenty-six **Local Distributor Roads** (Single 4-lane / Single 2-lane Standard).

- **Comprehensive Pedestrian Walkway and Cycle Track Network** to promote walking and cycling within the Project area.

## 2.5 Revised Recommended Outline Development Plan (RODP)

2.5.1 The Revised RODP (**Figure 2.1**) has evolved from the from the RODP, taking into account the latest planning vision and positioning, technical assessments and the outcome and findings of the public engagement (PE) exercise. The key planning elements and land uses of the Revised RODP are summarised in **Table 2.1**.

**Table 2.1 Land Use Budget of the Revised RODP**

| Land Use | Area (ha) | % |
|---|---|---|
| Residential and Mixed Uses | 60.2 | 11.2% |
| Other Specified Uses (I&T) | 211.7 | 39.3% |
| Other Specified Uses (Logistics, Storage and Warehouse) | 16.2 | 3.0% |
| Public Facilities | 90.7 | 16.8% |
| Open Space | 55.6 | 10.3% |
| New Roads | 76.7 | 14.2% |
| Amenity | 27.5 | 5.1% |
| **Total Development Area** | **539** | **100%** |
| Existing Road | 33.5 | - |
| Green Belt | 37.5 | - |
| **Total Project Area** | **610** | **-** |

Remarks: The above Land Use Budget is based on the Revised RODP. Due to rounding, the figures presented may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

## 2.6 Designated Projects

2.6.1 The Project is a Designated Project (DP) under Item 1 Schedule 3 of Environmental Impact Assessment Ordinance (EIAO) - An urban development or redevelopment project covering an area more than 50 ha, as it covers an area of 610 ha.

2.6.2 Based on the Revised RODP, the Project would comprise the following designated projects by virtue of items A.1, F.1, F.2, F.4, G.2, H.1, I.1, and P.1, of Part I of Schedule 2 of the EIAO (**Table 2.2 and Figure 2.2**).

**Table 2.2 Schedule 2 Designated Projects in the STLMC DN**

| Ref. No. | Schedule 2 Designated Project | | Work Component /Reference in Revised RODP |
|---|---|---|---|
| DP1 [1] | A.1 | A carriageway for motor vehicles that is an expressway, trunk road, primary distributor road or district distributor road | Construction and operation of a new primary distributor (Road P1) and six new district distributor roads (Roads D1, D2, D3, D4, D5 and D6). |
| DP2 [1] | F.1 | Sewage treatment works with an installed capacity of more than 15,000$m^3$ per day | Construction and operation of STLMC Effluent Polishing Plant (treatment capacity of 125,000 $m^3$/day) |
| | F.2 | Sewage treatment works with an installed capacity of more than 5,000$m^3$ per day; and a boundary of which is less than 200m from the nearest boundary of an existing or planned residential area and educational institution | |
| DP3 [1] | F.4 | A facility for generating, from sewage effluent treated by a sewage treatment plant, reclaimed water for use by the general public | Construction and operation of STLMC Water Reclamation Plant |
| DP4 [2] | G.2 | A refuse transfer station | Construction and operation of a refuse transfer station |
| DP5 [2] | H.1 | A 400kV electricity substation and transmission line | Construction and operation of two 400kV electricity substations |

| Ref. No. | Schedule 2 Designated Project | | Work Component /Reference in Revised RODP |
|---|---|---|---|
| DP6 [1] | I.1 | A drainage channel or river training and diversion works located less than 300 m from the nearest boundary of an existing or planned conservation area | Revitalisation works (i.e. river training, diversion works) for San Tin Eastern Main Drainage Channel are located less than 300m from Conservation Area [3] |
| DP7 [1] | P.1 | A residential or recreational development, other than New Territories exempted houses, within Deep Bay Buffer Zone 2 | Recreational development for proposed Sites O.1.1, O.1.2, and O.1.3 (as open space) encroach into Deep Bay Buffer Zone 2 |

Note:
1 Subject to an Environmental Permit application for both construction and operation phases of the DP under this EIA Study.
2 Subject to separate EIA Study, as required.
3 The future zonings of the concerned 'Conservation Area' as shown in Figure 2.2 are subject to change due to the land use proposal as reflected in the Revised RODP.

## 2.7 Project Benefits

### Benefits of the Project

2.7.1 The Project aspires to turn the existing brownfield uses including logistics & freight operation, vehicle-related operation, warehouse/workshop, and open storage, which have created considerable environmental, traffic, visual, and other nuisance, to more optimal uses and better land utilisation for future development of Hong Kong. Meanwhile, the Project will have the opportunity to promote balanced development alongside the proposed Sam Po Shue Wetland Conservation Park (SPS WCP). The development of the Project could result in the following benefits and bring in environmental initiatives:

Direct Benefits

2.7.2 **Develop into an international I&T Hub –** The Project, together with the Loop to the northeast, is positioned as the "San Tin Technopole". Given its strategic location situated near SZ I&T Park and the proposed Futian Central Innovation District, it is critical to seize this unique opportunity to develop the Project area into the international I&T Hub to synergise with the I&T zone in SZ. As sustainable and long-term development of the I&T industry is essential to reach this target, some 212 ha land is planned for I&T use under the Project. Together with the 87ha of land of the HSITP at the Loop, about 300ha I&T land would be provided for the development of San Tin Technopole. This would establish a complete and vibrant I&T ecosystem in Hong Kong.

2.7.3 **Diverse housing options to meet long-term housing needs of Hong Kong** – Different housing types will be provided to meet long-term housing needs of Hong Kong, engendering a sense of belonging for people and ultimately enhancing their quality of life. The Project will provide about 50,000 to 54,000 new flats, in which about 70% would be public housing. Besides, by providing talent accommodation that will be integrated within I&T development, this offers a level of convenience and accessibility that is highly attractive to talents. Village resite area is also provided to the re-provision of affected village houses/building lots under the Village Removal Terms due to the Government projects.

2.7.4 **Diversify economic base to serve the Northern Metropolis –** Approximately 165,000 or more new jobs would be generated upon full development of the Project, through a mix of I&T, commercial (office, hotel, retail/dining/entertainment (RDE)), retail, logistics, storage and workshop, community and government land uses. This would promote the growth of I&T industry and ecosystem, providing diversified job choices and economic activities, hence to become a prominent employment node.

2.7.5 **Provide "G/IC" facilities** – To support both existing and planned population, as well as regional and territorial demand on specific aspects, a wide range of G/IC facilities including

educational, social welfare, sports, cultural and recreational, healthcare, youth facilities, etc. will be provided.

2.7.6 **Improving home-job balance to reduce cross-district commuting** – The Project is planned to become a prominent employment node. With the vast employment opportunities available in the Project, a higher level of self-containment could be achieved and in return minimising the need for cross-district commuting to improve home-job balance.

2.7.7 **Proposed infrastructures for future green transport** – Green transportation systems (GTS) such as automated and green feeder services are proposed within the Project area. TIHs / public transport interchange (PTI) will be equipped with ancillary facilities to support the operation of future green transport systems. Corridor of the GTS has been identified within the Project area to connect other NDAs in Northern Metropolis. The carriageway and roadside amenity areas along the potential GTS route have been designed to allow for the operation of the potential GTS in the future.

2.7.8 **Facilitate development of modernised aquaculture industry** – With the provision of the AFCD Fisheries Research Centre within the I&T uses in the northern portion of the Project, there is potential benefit on the development and promotion of scientific research on aquaculture to facilitate the upgrading and transformation of the fisheries industries supporting the proposed SPS WCP.

2.7.9 **Improving air quality by removing existing odour sources** – A number of existing livestock farms, including seven pig farms and two chicken farms, will be removed. As operation of livestock farms could be odorous, the clearance of farms would remove these sources of odour emissions thus improving the overall air quality in the area.

2.7.10 **Improving the degraded area by rezoning brownfield sites for development** - Within the Project area, there are about 126 ha of brownfield, mainly concentrated south to the existing San Tin Highway, and some fronting the existing wetland areas. These brownfield sites are replanned comprehensively for residential, open space, GIC facilities and economic uses. Hence the Project would improve the degraded areas due to various brownfield operations, especially their interface with the villages and wetland.

2.7.11 **Sewerage system provision and reuse of reclaimed water** – The Project will improve sewerage infrastructure and sewage treatment facilities of the areas, which would benefit both the population generated by the existing and proposed developments. To promote sustainable use of water, the potential of using reclaimed water for non-potable purposes within the Project would be explored.

Environmental Initiatives

2.7.12 **Minimise industrial / residential interface** – At present, the proliferation of brownfield operations in Project area has created considerable environmental, traffic,visual, flooding and other problems. One of the objectives of developing the Project is to convert these brownfield sites to other uses with orderly developments and improve the overall environment of the area. Several sites located along Fanling Highway and San Tin Highway, as well as at Pang Loon Tei near the potential connection with the future Northern Metropolis Highway, are reserved for "Other Specified Uses (Logistics, Storage and Workshop)" ("OU(LSW)"). These sites would accommodate some of the existing brownfield operations through the possible development of MSBs or other land efficient means. These sites would help to alleviate existing industrial/residential interface issues resulting from existing brownfield operations. Upon development, heavy goods vehicles to and from these sites would have direct access to major existing and proposed highways thereby eliminating the needs for travelling through built-up areas.

2.7.13 **Walkability and cycling** – Walkability and cycling are the key elements for the Project. A comprehensive and attractive pedestrian walkway and cycle track network is planned throughout the Project area. Key destinations, such as key public transport nodes, major employment nodes and residential communities, would be linked up by pedestrian walkways, cycle track and open spaces. This would allow a safe, convenient and comfortable movement within the Project area and create local communities with easily accessible daily necessities to

promote an active and healthy lifestyle to reduce mechanised vehicular trips and hence carbon emissions.

- **Comprehensive pedestrian network** – Comprehensive pedestrian network of the Project connects residential and employment nodes to provide continuous walkways for pedestrians. It could promote walking from homes to workplaces, retail and services, as well as the revitalised drainage channel for various purposes.
- **Open space network / green linkages** – A series of open space corridors branching off the main comprehensive pedestrian network, including the open spaces along drainage channel and linear parks along major road. They shall provide additional pedestrian connections to the surrounding residential communities and employment areas, and further to the green and natural areas.
- **Robust cycling network** – The Project provides a robust cycling network which link effectively to the existing and planned cycle tracks within and outside the Project. The proposed cycling network would connect to the existing cycle tracks from Yuen Long to KTN and the Loop to create a continuous cycling environment that extends to other destinations beyond the Project area. Routes within the Project would be provided parallel to the major roadways to serve commuting needs, as well as to provide some other routes within the proposed open space areas for leisure.

2.7.14 **Optimisation of ecological resources** – The core area of the MPLV Egretry within the Project area and MPV Egretry located to the western portion of the Project area will be preserved. MPV Egretry would be excluded from the Project area. The surrounding area of MPLV Egretry would be enhanced with provision of open space and a Non-Building Area (NBA) for bird flight corridor to promote ardeid use and enhance biodiversity. At the northern portion of the Project area adjacent to the Loop, NBA and building height control are stipulated to maintain the existing bird flight corridor for bird flight movement between the east and west. Wildlife corridors are proposed to facilitate movement of non-flying mammals. The principle of avoidance and minimisation for all other ecological resources have been considered in the development of the Revised RODP. Recommendation for compensation and enhancement have been provided as appropriate.

2.7.15 **Landscape buffer** – The proposed SPS WCP is adjacent to the Project. In this regard, a generous landscape buffer is proposed along the fringe area of "OU(I&T)" sites. They are proposed at area facing the proposed SPS WCP and between OU(I&T) and STEMDC area serving as natural landscape to create a sensible landscape transition between rural / natural assets and new developments. The landscape buffer is envisioned to have limited provision of recreation facilities to minimise human disturbance from lower activity level such that only appropriate landscape features for cyclist and pedestrian are proposed. The area would largely be characterised by natural habitats and natural trails where visitors are still welcome to the landscape buffer to appreciate the nature, but at a lower interaction and activity level. Nonetheless, more active open space corridors are proposed alongside within the corresponding development parcels to facilitate seamless integration between different green environment along the public realm.

2.7.16 **River revitalisation** – Two main drainage channels (STEMDC and STWMDC) are proposed for revitalisation. Various treatments have been proposed, such as to maintain or restore existing wetland, to serve as green buffer or to be integrated within the public open space for public enjoyment. These proposals would bring positive impacts to the nature and future population of the Project.

2.7.17 **Preserve and promote cultural heritage resources** – No graded historic buildings and declared monuments is identified within the Project area. Nevertheless, a number of cultural heritage spots, such as buildings in the new list of proposed grading items, declared monuments, proposed monuments and SAI are identified around the Project area. In particular, a cluster of ancestral halls, temple and the Tai Fu Tai Mansion are located within the San Tin Seven Villages and a portion of Mai Po SAI is located within the western portion of the Project area. To better harness the cultural values of these cultural heritage sites, improved connectivity to existing villages and archaeological sites shall be designed, incorporating appropriate interfaces that foster integration between existing and new uses. This aims at

creating a proper synergy that provides opportunities for heritage promotion and cultural tourism, ultimately resulting in an enhanced quality of life for the community as a collective benefit.

2.7.18 **Improve the infrastructures, transport connectivity and community services to the existing villages** – Existing villages can benefit from the comprehensive planning of G/IC facilities, an integrated open space network intertwined with blue-green elements, improved rail-and-road transport connectivity, and other infrastructure services brought by the Project. Water quality beneficial effect would be induced by providing new sewerage to the existing unsewered areas. These enhancements provide collective benefit and contribute to improving the quality of life within the existing villages.

Promoting Biodiversity

2.7.19 **Create liveable environment** - The landscape framework should be formulated based on the findings of the ecological survey. Below are the five core principles applied in the landscape framework: (i) Optimise key existing ecological capital where possible. (ii) Maximise green space coverage for habitat creation and leisure activities; (iii) Create linkages among habitats; (iv) Diversify landscape typologies through a rich mix of landscape characters and activities for both people and wildlife; and (v) Create a mutual respect culture between people and nature through design. While maintaining and enhancing ecological value of the Project, liveable environment will be reflected via the landscape network by creating a diverse set of natural habitats, leisure and recreation programs that caters for people of all ages, abilities, and backgrounds.

2.7.20 **Robust landscape network to promote biodiversity** – The landscape areas are presented in a network format to form a robust landscape network. The form and alignment of this network considers the following: (i) Ensuring that the retained ecological capital are not cut off or engulfed by urban components where possible; (ii) Maximising areas for potential greenery with an aim to create diverse habitats within the landscape network; (iii) Ensuring the network connects with adjacent woodlands, wetlands, and essential habitats to support wildlife movements where appropriate and possible; (iv) Synergy with adjacent land usage to lay foundation for future landscape design; (v) Relating future leisure and recreational provisions to the overall urban design; and (vi) Promoting walkability within the Project area through open space.

## 2.8 Development Programme for the Project

2.8.1 The Project would be commissioned in phases with the first population intake in Year 2031. The construction work is targeted to commence in Year 2024 and be completed by Year 2039 for full population intake.

**Initial Phase**

2.8.2 Initial phase comprises mainly the residential sites for the first population intake in Year 2031, first batch of lands for Innovation and Technology (I&T) use and the key supporting infrastructures. The existing Chau Tau area, LMC BCP and Ha Wan Tsuen will be developed in this phase to provide the lands for I&T use. Majority of these areas consist of road connection from existing road networks. The future key access roads for the above-mentioned areas will be implemented under this phase.

2.8.3 The major site formation and infrastructure works in this development phase will include:

- Site formation and development works for one “Public Housing” (“RSc”) site, one “Dedicated Rehousing Estate” (“DRE”) site, village resite and one “Private Housing” (“R1”) site at south-west of the Project area
- Site formation and development works for “Other Specified Uses” (“OU”) sites for key infrastructures including EPP, food waste pre-treatment facilities, fresh water service reservoir (FWSR) and reclaimed water service reservoir (RWSR), WRP, DCS, sewerage pumping stations (SPSs), stormwater pumping stations (SmPSs), ESS, RTS, refuse collection point (RCP), etc.
- Site formation and development works for “Government, Institution or Community”

("G/IC") sites

- Site formation and development works for "Other Specified Uses (Innovation and Technology)" ("OU(I&T)") sites and "OU(LSW)" sites
- Site formation and development works for "Education" ("E") sites
- Primary Distributor Road P1 and associated interchange/junction works connecting with San Sham Road, Castle Peak Road and San Tin Interchange
- District Distributors Road D1 (portion), D2 (portion), D3, D4 and D6, associated interchange/junction works connecting with San Tin Highway and Castle Peak Road, local roads, pedestrian connectivity including footbridge and subway, and associated pedestrian walkway and cycle tracks
- Common Utilities Enclosure (CUE) along the roads and utilities laying works for future development of relevant sites, such as watermains, power supply cables, DCS pipes, telecommunication cables, etc.
- Associated open spaces and amenity areas

**Main Phase**

2.8.4 Main phase comprises mainly the I&T lands at north-west of the Project area and the areas to the south of San Tin Highway. The development in this phase is to support mass population intake in Year 2034 and provide second batch of lands for I&T use. The future access roads for this area will be implemented under this phase. There will be interface with NOL in this phase.

2.8.5 The major site formation and infrastructure works in this development phase will include:

- Site formation and development works for "RSc" and "R1" sites at south and south-east of the Project area
- Site formation and development works for "OU" sites for key infrastructures including DCS, ESSs, PTI, FSD facilities, etc.
- Site formation and development works for "GIC" sites
- Site formation and building works for "OU(I&T)" sites at north-west and south-east of the Project area
- Site formation and development works for "E" sites
- District Distributors Road D1 (portion), D2 (remaining portion) and D5, associated interchange/junction works connecting with San Tin Highway and Kwu Tung Road, local roads, pedestrian connectivity including footbridge and subway, and associated pedestrian walkway and cycle tracks
- CUE along the roads and utilities laying works for future development of relevant sites, such as watermains, power supply cables, DCS pipes, telecommunication cables, etc.
- Associated open spaces and amenity areas

**Remaining Phase**

2.8.6 Remaining phase is the last phase and the remaining development at the area surrounding San Tin Station and proposed station near Chau Tau will be completed. It mainly comprises residential, mixed use and government land.

2.8.7 The major site formation and infrastructure works in this development phase will include:

- Site formation and development works for "RSc" site at south of the Project area
- Site formation and development works for "Other Specified Uses (Mixed Use)" ("OU(MU)") sites at proposed San Tin Station and proposed station near Chau Tau including the associated TIHs
- Site formation and development works for "G/IC" sites for Cultural and Recreational Complex and Wetland Conservation Park Management Office

- District Distributors Road D1 (remaining portion), local roads connecting the sites with existing and completed road network and associated pedestrian walkway and cycle tracks
- Utilities laying works for future development of relevant sites, such as watermains, power supply cables, DCS pipes, telecommunication cables, etc.
- Associated open spaces and amenity areas

## 2.9 Existing Brownfield Interface with New Development

2.9.1 The potential interface issues which could arise during the implementation stages have been assessed within individual chapters (e.g. air quality/construction dust, construction noise, and visual impacts on existing and planned sensitive receivers). Where required, mitigation measures have been recommended to avoid or minimise potential impacts. A review of existing land uses (with a particular focus on sites currently occupied by brownfield operations) and the phasing plan was also undertaken to identify any locations where other impacts may arise (e.g. population intake at locations adjacent to existing brownfield operations). In most cases the population moves in after clearance of the surrounding brownfield sites. As a result, any potential interface issues are minimised through the development phasing.

# 3. KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

## 3.1 Approach to the EIA

3.1.1 The EIA process provides a means of identifying, assessing and reporting the environmental impacts and benefits of the Project. It is an iterative process that has been undertaken in parallel with the formulation of the Revised RODP to identify the potential environmental effects of various design options, and develop alternatives as well as mitigation measures to be incorporated into the design, construction and operation of the Project. Public views obtained from the various public engagement exercise have been considered and incorporated into the EIA process, where appropriate. Mitigation measures have been proposed, where required, to avoid some potential environmental impacts, or to minimise impacts to acceptable levels. In addition, environmental benefits have been incorporated into the Project, where possible.

## 3.2 Air Quality Impact

3.2.1 Potential air quality impacts associated with the construction and operation phases of the Project have been assessed in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.3 and Appendix B of the EIA SB, as well as Annexes 4 and 12 of EIAO-TM. The assessment area for air quality impact assessment is within 500m from the Project boundary.

Construction Phase

3.2.2 Potential air quality impact from the construction works of the Project would mainly be related to construction dust from excavation, material handling, spoil removal and wind erosion. Construction activities of the concurrent projects within 500m assessment area would also pose cumulative dust impact. With the implementation of mitigation measures specified in the Air Pollution Control (Construction Dust) Regulation together with the recommended dust suppression measures including frequent watering on active works areas, exposed areas and unpaved haul roads and other site management measures such as good site practices, and environmental monitoring and audit (EM&A) programme, no adverse air quality impact on the air sensitive receivers (ASRs) in the vicinity of the work sites would be anticipated during the construction stage.

Operation Phase

3.2.3 Cumulative air quality impact arising from the vehicular emissions from existing, planned and proposed open roads within 500 m assessment area, emission from biogas facilities of the proposed EPP, and 4-km major point source has been evaluated. The prediction results concluded that the cumulative nitrogen dioxide ($NO_2$), RSP and FSP concentration at all existing and planned ASRs would comply with the Air Quality Objectives (AQOs), with no planned air sensitive use to be located within the exceedance zones at 5mAG or below.

3.2.4 Cumulative odour impact arising from operation of proposed facilities including EPP, FWPF, SPSs, RTS, and existing sources within 500m assessment area including a retained pig farm at Chau Tau and San Tin Barracks Sewage Treatment Works have been evaluated. With specific building considerations incorporated such as design of central air-conditionings for the buildings at Site G.5.8, G.5.9, G.5.10, G.5.11, G.5.12 and OU(I&T)3.1.8 and the fresh air intake of these buildings being positioned 20mAG or above, and appropriate positioning of school blocks at Site E.5.1 and E.5.2, the prediction concluded that the cumulative odour concentrations at all planned ASRs would comply with the criterion stipulated in EIAO-TM, and no adverse odour impact on the planned ASRs is anticipated from these facilities. Also, the prediction showed that the cumulative odour impact would comply with the odour criterion at existing ASRs except some existing ASRs located in the vicinity of the retained pig farm at Chau Tau and San Tin Barracks Sewage Treatment Works. However, the implementation of the Project would bring improvement in odour impact on the existing ASRs with exceedance of odour criterion. No adverse residual odour impact arising from the proposed facilities is anticipated.

### 3.3 Noise Impact

3.3.1 Potential noise impacts associated with the construction and operation phases of the Project have been assessed in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.4 and Appendix C of the EIA SB, as well as Annexes 5 and 13 of the EIAO-TM. The study area for noise impact assessment is defined by a distance of 300m from the Project boundary.

Construction Phase

3.3.2 Assessment on potential construction noise impact arising from the Project has been conducted. The predicted noise levels at the representative NSRs would be in the range of 60 dB(A) to 93 dB(A) which would exceed the noise criteria by up to 18 dB(A). The assessment results indicate that with the implementation of appropriate mitigation measures, including good site practices, adoption of quality powered mechanical equipment (QPME) / quieter construction methods including silent piling by press-in method, bursting system and quieter type blade saw, use of temporary noise barriers and enclosures and proper grouping of PME for some construction activities at critical work areas, the predicted construction noise levels at all representative noise sensitive receivers (NSRs) would comply with the noise criteria stipulated in the EIAO-TM and no adverse construction noise impact would be anticipated. Subject to the actual site conditions, as an enhancement measure to further improve the environmental performance of the construction of the Project, other quieter construction methods, such as use of hydraulic crusher or chemical expansion agent, would also be considered where practicable. A construction noise management plan, to verify the inventory of noise sources, and to assess the effectiveness and practicality of all identified measures for mitigating the construction noise impact of the Project, would be prepared before tendering and before commencement of the construction works. Regular site environmental audit during construction phase is recommended to ensure proper implementation of mitigation measures and good site practices.

Operation phase

3.3.3 Road traffic noise impact assessment has been conducted. The predicted overall noise levels at the representative NSRs would be up to 84 dB(A) which would exceed the respective noise criteria by up to 14 dB(A) in the unmitigated scenario during the assessment year 2046+. Direct noise mitigation at-source measures such as low noise road surfacing (LNRS), vertical noise barriers and cantilevered noise barriers have been considered to alleviate the potential road traffic noise impact. At-receiver noise mitigation measures such as acoustic window and acoustic balcony are recommended for those planned NSRs with noise exceedances under the scenario with the proposed direct noise mitigation at-source measures. With the proposed noise mitigation measures in place, predicted noise levels of all planned NSRs proposed in this Project would comply with noise criteria stipulated in the EIAO-TM and no adverse road traffic noise impact would be anticipated. For existing NSRs, the predicted noise impacts from “Project roads" at all representative existing NSRs would comply with the relevant noise criteria and the “Project roads” contributions to the overall noise levels at all representative NSRs would be insignificant, i.e. less than 1.0 dB(A). No further mitigation measures would be required. No insurmountable road traffic noise impact would be anticipated.

3.3.4 Noise impact assessment for the planned residential sites is proposed to be conducted by future developers at the detailed design stage to study whether the future development layout would avoid exposing excessive traffic noise levels so as to minimise the scale/extent of the proposed noise mitigation measures. The requirement of noise impact assessment would be included in the lease condition or planning briefs of the sites.

3.3.5 Fixed noise impact assessment and railway noise impact assessment have been conducted. The maximum allowable sound power levels (SWLs) of planned fixed noise sources would be specified in the tender specification to ensure the operational noise impact complying with relevant noise criteria. The relevant government department/future operator shall also take into account the latest available information at the time of detailed design to review and update the maximum allowable SWL as appropriate. For railway noise impact arising from Lok Ma Chau Spur Line, the predicted rail noise levels at all representative noise sensitive receivers (NSRs) would comply with the noise criteria stipulated in the EIAO-TM. No adverse impact from

proposed and existing fixed noise sources of the Project and airborne and ground-borne railway noise would be anticipated.

### 3.4 Water Quality Impact

3.4.1 The water quality impact assessment has been conducted in accordance with the requirements in Annexes 6 and 14 of the EIAO-TM and the requirements in Section 3.4.5 and Appendix D of the EIA SB. The study area for water quality impact assessment covered the Deep Bay Water Control Zone (WCZ) as designated under Water Pollution Control Ordinance (WPCO), including inland water bodies and service reservoir within 500m from the boundary of the Project.

Construction Phase

3.4.2 Water quality impacts from the construction works are associated with the general construction activities, construction site run-off, accidental spillage, and sewage effluent from construction workforce. The site practices as outlined in the ProPECC PN 2/23 "*Construction Site Drainage*" and the ETWB TC (Works) No. 5/2005 "*Protection of natural streams / rivers from adverse impacts arising from construction works*" are recommended to minimise the potential water quality impacts from the construction activities. Proper site management and good site practices are also recommended to ensure that construction wastes and other construction-related materials would not enter the nearby watercourses. Sewage effluent arising from the construction workforce would be handled through provision of portable toilets. Water quality monitoring and regular site inspection will be implemented for the construction works to ensure that the recommended mitigation measures are properly implemented.

3.4.3 An Emergency Response Plan is recommended to minimise the potential water quality impact from construction site discharges under failure of treatment facilities during emergency situations or inclement weather. With the implementation of the recommended mitigation measures, the construction works for the Project would not result in unacceptable impacts on water quality.

Operation Phase

3.4.4 As the existing sewerage network would not be able to cater for the additional sewage from the Project, a new STLMC EPP with capacity of 125,000 cum/d will be constructed.

3.4.5 All sewage generated from the Project will be discharged to the public sewerage system and diverted to STLMC EPP for proper tertiary treatment. The treated sewage effluent from the EPP will be treated at the proposed STLMC WRP and pumped to the RWSR. The Project would induce water quality beneficial effect by providing new sewerage to the existing unsewered areas.

3.4.6 In view of the potential adverse effect of emergency sewage bypass and sewage leakage on the quality of the nearby watercourses, various precautionary measures are proposed to be incorporated in the design of the SPS and rising mains to avoid emergency bypass and leakage of sewage to the maximum practicable extent. A Contingency Plan is also recommended to deal with the remote occurrence of emergency discharge. With the incorporation of the precautionary measures and Contingency Plan as recommended in this EIA, the possibility of emergency sewage bypass and sewage leakage would be remote and the potential water quality impacts in the unlikely event that an overflow / leakage does occur would be minimised.

3.4.7 Another source of potential impact during the operation phase will be the run-off or non-point source pollution from road surfaces and developed areas. Stormwater control measures including adequate stormwater drainage system with suitable pollutant removal devices, blue-green infrastructure and best stormwater management practices are recommended for the Project to minimise the non-point source pollution. With proper implementation of the recommended mitigation measures, it is anticipated that the water quality impacts associated with the non-point source discharge from road surfaces and developed areas would be minimised.

### 3.5 Sewerage and Sewage Treatment Implications

3.5.1 The assessment on potential sewerage and sewage treatment impacts on the downstream public sewerage, sewage treatment and disposal facilities arising from the Project has been conducted in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.6 and Appendix E of the EIA SB, as well as Section 6.5 of Annex 14 of the EIAO-TM.

3.5.2 There is no existing sewerage system within the vicinity of the Project. The Shek Wu Hui Sewage Treatment Works (SWHSTW) and Yuen Long Sewage Treatment Works (YLSTW) being upgraded would not have sufficient treatment capacity to cater for the additional sewage arising from the proposed development.

3.5.3 To cater the sewage discharge in the Project and the sewage collected from unsewered areas, it is proposed to construct a tertiary EPP with 125,000 cum/d capacity, water reclamation plant with 112,500 cum/d, and three SPSs in 2031. Reuse of reclaimed water is recommended for non-potable uses such as toilet flushing and irrigation. The reclaimed water will be provided from the STLMC EPP with tertiary treatment to ensure a higher water quality standard. The rest of treated sewage effluent will be discharged to Deep Bay.

3.5.4 Based on the sewerage impact assessment, it can be concluded that the proposed development is sustainable from sewerage collection, treatment and disposal prospective. There is no identified insurmountable sewerage and sewage treatment implications arising from the Project.

### 3.6 Waste Management Implications

3.6.1 The waste impact assessment has been conducted in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.7 and Appendix F of the EIA SB, as well as Annexes 7 and 15 of the EIAO-TM.

Construction Phase

3.6.2 Construction and demolition (C&D) materials, chemical waste, general refuse, excavated sediment and floating refuse would be generated from the construction of the Project. Reduction measures have been recommended to minimise the amount of materials generated by the Project by reusing C&D materials as far as practicable before off-site disposal. Provided that the waste is handled, transported and disposed of using approved methods, adverse waste management implications, including potential hazards, air and odour emissions, noise, wastewater discharge, ecology and public transport, associated with handling, storage and disposal of wastes during the construction phase of the Project are not expected.

3.6.3 The non-inert and inert (including soft materials, artificial hard materials and rock materials) C&D materials generated from the Project will be reused within the sites as much as possible. It is estimated that around 22,800 $m^3$ of non-inert C&D materials, 7,148,500 $m^3$ of soft materials, 18,300 $m^3$ of artificial hard materials and 2,181,800 $m^3$ of rock material will be generated from site clearance and site formation works. Some non-inert C&D materials generated from the Project will be suitable for reuse on-site and some will be reused in other projects. Disposal at the North East New Territories (NENT) / West New Territories (WENT) Landfill should only be considered as the last resort. 8,250,300 $m^3$ of inert C&D materials generated from the Project are assumed to be suitable for reuse on-site as backfilling materials and only 1,098,300 $m^3$ of inert C&D materials generated from site clearance and site formation works will be transported to other concurrent projects for reuse. Potential concurrent projects such as Remaining Phase of Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Area shall be sourced for reuse of inert C&D materials. It is estimated that around 2,568,000 $m^3$ of fill materials will need to be imported during the site clearance and site formation works of the Project. For construction of new buildings and infrastructures, it is estimated that around 74,400 $m^3$ and 988,900 $m^3$ of non-inert and inert C&D materials will be generated respectively. It is estimated that 646,400 $m^3$ of inert C&D materials generated from the construction of new buildings and infrastructures will be reused on-site, and approximately 1,921,600 $m^3$ of imported fill will be acquired from other concurrent projects. However, as the construction of new buildings is carried out by different entities based on land use, the reuse of construction and demolition materials on-site is subject to further coordination with the

respective parties involved. With proper implementation of good construction site practice and mitigation measures, the on-site handling and reuse of site clearance waste would not cause adverse environmental impacts.

Operation phase

3.6.4 The main waste types to be generated during the operation phase of the Project will include municipal solid waste (MSW), chemical waste, screenings, grits and sewage sludge. New RCPs and a new RTS which will be co-located with Resource Recovery Facilities and food waste pre-treatment facilities (FWPF) are included in the Revised RODP in preparation for the increased quantity of waste in the district. The proposed waste infrastructure will provide convenient collection of recyclables from the local community, and to provide synergy to achieve better operational efficiency and environmental sustainability. Provided that the waste is handled, transported and disposed of using approved methods, adverse waste management implications, including potential hazards, air and odour emissions, noise, wastewater discharge, ecology and public transport, associated with handling, storage and disposal of wastes during the operation phase of the Project are not expected.

## 3.7 Land Contamination

3.7.1 The land contamination assessment has been conducted in accordance with the criteria and guidelines as stated in the requirements given in Section 3.4.8 and Appendix G of the EIA SB, as well as Sections 3.1 and 3.2 of Annex 19 of the EIAO-TM.

3.7.2 The potential contaminative land use within the Project boundary and their potential impacts to future land use was examined. Based on the findings of the assessment, 195 potentially contaminated sites are identified from land uses including container storage, equipment/machinery storage, recycling facilities, vehicle repair/maintenance workshops, diesel refuelling facilities, waste dumping grounds, metal workshops, etc.

3.7.3 At all potentially contaminated sites, contamination (if any) is anticipated to be localised as the types of operations are not large-scale polluting installations / facilities, such as oil depots and power plants, where the nature of those operations has greater potential to result in widespread contamination.

3.7.4 Chemicals of concern (COCs) with potential to be present at potentially contaminated sites include metals, volatile organic chemicals (VOCs), semi-volatile organic chemicals (SVOCs), petroleum carbon ranges (PCRs) and polychlorinated biphenyls (PCBs). These COCs are treatable using established physical, chemical and biological techniques and have been successfully remediated using proven remediation techniques in Hong Kong. By implementing the recommended further works, all contaminated soil and groundwater within the Project boundary would be identified and treated properly.

3.7.5 The majority of 195 potentially contaminated sites were inaccessible for detailed reconnaissance at the time of reporting. As the identified potentially contaminated sites are still in operation and the development will only commence in phases from 2024, potential exists for changes in land use or the nature of operations prior to development within both the potentially contaminated site and other surveyed sites.

3.7.6 Detail site reconnaissance was carried out for 9 of 195 potentially contaminated sites. Access has not been granted by the Lands Department due to objections from villagers relating to the Simplified Temporary Land Allocation (STLA). The Project Proponent shall carry out site investigation and sampling works in accordance with the Contamination Assessment Plan at a later stage.

3.7.7 Further works, including site re-appraisal, SI works as well as submission of supplementary Contamination Assessment Plan(s) (CAP(s)) and Contamination Assessment Report(s) (CAR(s)) for EPD's endorsement are recommended to be carried out after the sites are handed over to the Project Proponent for development. If contaminated soil and/or groundwater were identified, remediation should be carried out according to the Remediation Action Plan(s) approved by EPD, (RAP(s)) and Remediation Report(s) (RR(s)) should be submitted to EPD for agreement after completion of the remediation works. No development works shall

commence prior to EPD agreement of the RR. The further works would need to follow EPD's guidelines and the recommendations in Section 8 of this EIA Report.

3.7.8 The recommended further works would not only minimise health risk to future occupants arising, the works would also demonstrate sustainable reuse of treated soils as useful materials (such as backfill), thereby minimising the amount of waste disposed to landfill.

3.7.9 Furthermore, the Project would allow the conversion of the contaminated site(s) into land that are safe for more optimal development (e.g. residential development).

3.7.10 High levels of naturally occurring arsenic in soil is confirmed by ground investigation works. Health Impact Assessment has calculated a risk based arsenic threshold of 571 mg/kg which acts as a remedial threshold concentration. Further arsenic assessment and a detailed treatment approach has been proposed based on the Revised RODP.

3.7.11 Further arsenic assessment should be carried out during site formation and during construction of foundation. The Project Proponent will treat the high arsenic containing soil in the shallow region before land allocation or land lease to ensure no adverse health impact to future occupants. The treatment depth will depend on the future land use. Subsequent developer/works departments will treat high arsenic content (HAC) soil in deep regions for excavations required for basements, piles and utilities.

### 3.8 Landfill Gas Hazard

3.8.1 The landfill gas hazard assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.9 and Appendix H of the EIA SB, as well as Section 1.1(f) in Annex 7 and Section 3.3 in Annex 19 of the EIAO-TM.

3.8.2 A small portion of the Project lies within Ngau Tam Mei Landfill Consultation Zone. Quantitative landfill gas hazard is conservatively assessed as "Very Low" risk for the construction phase and "Low" for the operation phase based on the source, pathway and target risk categories for the proposed development located within the Consultation Zone of the Ngau Tam Mei Landfill. Some precautionary measures will be required to ensure that the planned development is safe.

3.8.3 Generic measures may be limited to passive gas control such as provision of barriers to the movement of gas or high permeability vents such as no-fines gravel in trenches between the landfill and development.

3.8.4 The designer of the building works should undertake detailed design of the mitigation measures during the detailed design stage. Provided that the construction and operation phase protection measures are appropriately designed and properly implemented, safety will be safeguarded, and landfill gas impacts will be mitigated.

### 3.9 Ecological Impact (Terrestrial and Aquatic)

3.9.1 The ecological impact assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.10 and Appendix I of the EIA SB, as well as Annexes 8 and 16 of the EIAO-TM.

3.9.2 A total of 16 habitat types were identified within the Assessment Area (which covers an area of 500 m from the Project boundary), with wetland habitats including mitigation wetland, pond (includes fishponds), marsh / reed, natural watercourse, modified watercourse, semi-natural watercourse, seasonally wet grassland, wet agricultural land, and non-wetland habitats including dry agricultural land, woodland, mixed woodland, plantation, shrubland, grassland, village / orchard, and developed area / wasteland. Wetland habitats were mostly concentrated on the northern portion while wooded habitats were mostly on the southern portion.

3.9.3 Within the Project boundary, sites of conservation importance were identified, including the Wetland Conservation Area (WCA), Wetland Buffer Area (WBA), Conservation Area (CA), Priority Site for Enhanced Conservation (Priority Site), and Site of Special Scientific Interest (SSSI). All of these encroached sites of conservation importance are located on the northern portion of the Project site. Direct impacts on these sites of conservation importance and associated wetland habitats would arise from the proposed development. More specifically, among some 610 ha of proposed development area of San Tin Technopole, although 150 ha

are located in the WCA and 97 ha in the WBA making a total of 247 ha, about 158 ha among them (64%) are already brownfield sites, filled fishponds and developed areas including traditional villages and the boundary control point. The remaining area of about 89 ha are fishponds proposed to be filled for development, and about half of them no longer have any fish farming activities or have been abandoned for years.

3.9.4 A wetland compensation strategy has been developed to achieve the compensation requirement in accordance with the EIAO and EIAO-TM, by enhancement of ecological function and capacity of the existing wetland habitats to sufficiently compensate the wetland loss arising from the development of San Tin Technopole, and to achieve no-net-loss in ecological function and capacity of the wetlands concerned. The proposed enhanced wetland will be located within the future Sam Po Shue Wetland Conservation Park (SPS WCP) and is anticipated to provide ecological enhancement and improve the connectivity of wetland habitats in the region through proactive conservation and management.

3.9.5 Permanent loss of some habitats would arise from the proposed development. Habitats within the Project site were mainly made up of developed area / habitat (which was generally of very low ecological value), followed by ponds (which was assessed to range from low to high ecological values, depending on the location and the conditions of the ponds). Considering the size of the potential impact on pond habitats (direct permanent loss of contiguous pond habitat on the northern portion of Project site of about 89 ha, and indirect disturbance impact to adjacent contiguous pond habitat of about 63 ha), adverse ecological impacts may arise without mitigation measures. Other freshwater wetland habitats (including relatively scattered ponds of about 3 ha on the southern portion, marsh / reed, watercourses, etc.) within the Project site would also be subject to direct loss. The Government will develop the Sam Po Shue Wetland Conservation Park (SPS WCP) with a proposed area of approximately 338 ha to create environmental capacity for the development of San Tin Technopole. Among the 338 ha, while 10 ha is reserved for supporting facilities such as visitor center and other basic infrastructure, the Government will enhance the ecological function and capacity of 288 ha of wetlands and fisheries resources of 40 ha of fishponds by establishing the SPS WCP with active conservation management and modernised aquaculture to compensate for the loss in wetland habitats and fisheries resources arising from the development of San Tin Technopole and to achieve no-net-loss in ecological function and capacity of the wetlands concerned. Among the 288 ha, there will be 253 ha[1] of "ecologically enhanced fishponds" compensating for pond habitat loss, and 35 ha[2] of "enhanced freshwater wetland habitat" compensating for other freshwater wetland habitat loss. The Government aims to start the development of SPS WCP in around 2026/2027 for completion by 2039 or earlier to tie in with the full operation of San Tin Technopole. For the site formation works of the first batch of land at San Tin Technopole targeted for commencement in late 2024, no pond filling will be involved. On current planning, pond filling works will not start until 2026/2027, and the pace of pond filling will tie in with the development progress of the SPS WCP. To this end, a working group will be formed between CEDD (as San Tin Technopole's works agent) and AFCD (as SPS WCP's sponsoring department) to coordinate the progress of pond filling and SPS WCP implementation. Enhancement measures in the form of improvement of tidal channel near Mai Po Nature Reserve and removal of exotic mangrove species in the Deep Bay area will also be implemented. Furthermore, interim wetland enhancement works would also be conducted at suitable ponds in the Inner Deep Bay area prior to the commencement of pond filling works.

3.9.6 Aside from wetland habitat, small areas of woodland (about 1.70 ha) would be subject to direct loss under the proposed development. A woodland compensation plan would be formulated and submitted prior to the commencement of construction at the woodland habitat. With the

[1] The 253 ha will compensate for the potential impact on pond habitats in the northern portion of the Project site, including the direct loss of about 89 ha of contiguous pond habitat due to filling of fishponds within the development boundary of San Tin Technopole, and indirect disturbance to adjacent contiguous pond habitat of about 63 ha outside the development boundary of San Tin Technopole.

[2] The 35 ha will compensate for the potential impact on other freshwater wetland habitats, including the direct loss of about 28 ha (at a compensation ratio of 1:1) within the development boundary of San Tin Technopole, and indirect disturbance to about 8 ha outside of development boundary (at a compensation ratio of 1:1 to 1:0.5, depending on the distance of habitat from development boundary).

proposed compensation measures, no unacceptable ecological impact is anticipated to arise from the loss of habitats under the proposed development.

3.9.7 A total of two egretries and five night roosts were observed to be active within the Assessment Area, including the MPLV Egretry, San Tin Open Storage Area Night Roost and Ha Wan Tsuen Night Roost, which were recorded within the Project boundary; while MPV Egretry was recorded immediately adjacent to the west of the Project boundary. Other night roosts (namely Sam Po Shue Night Roost, Lin Barn Tsuen Night Roost, and Tam Kon Chau Night Roost) were recorded at considerable distances from the Project site and are not anticipated to be subject to adverse ecological impacts. Mitigation measures were proposed for the direct impacts on the MPLV Egretry and both night roosts within the Project site. For the encroachment of the MPLV Egretry, an "Open Space" was proposed under the Revised RODP, preserving the core area of the MPLV Egretry, the roosting substratum, and the associated vegetation. Enhancement measures (e.g. water features and planting of mature trees) were also proposed at the "Open Space" located adjacent to the MPLV Egretry to promote ardeid usage. To further minimise construction disturbance on both MPLV and MPV Egretries, a 100 m buffer area should be set up around both egretries. The breeding season at the egretry lasts from March to early-September. Construction activities within this 100 m buffer area for the egretries should only be conducted outside the breeding season, from late-September to February in the following year, unless AFCD's prior approval on construction method has been obtained and appropriate mitigation measures have been proposed and adopted. While the loss of San Tin Open Storage Area Night Roost and Ha Wan Tsuen Night Roost would be unavoidable, roosting areas would be re-provided in open space along the diverted WC-N8 (STWMDC) and at the nearby site of the proposed AFCD Fisheries Research Centre respectively, under the Revised RODP. The re-provided night roost would comprise water features and mature individuals of native tree species that are currently used as a roosting substratum. These features should be established prior to the dry season (prior to the arrival of overwintering birds) in order to provide suitable roosting opportunities. To further minimise construction disturbance on the night roosts, similar minimisation measures should be implemented, with a 100 m buffer area should be set up around the existing night roosts (prior to removal of roosting substratum), and around the re-provision night roosts (upon the re-provision of roosting substratum). During dry season (October to March), timing control of construction activities would be implemented within this 100 m buffer area for night roosts. Noisy construction activities (with the use of PME) should cease at least an hour before sunset, and shall commence at least an hour after sunrise on the following day, making reference to the time of sunrise and sunset from the Hong Kong Observatory. Potential ecological impacts on the egretries and night roost would be mitigated with the above measures.

3.9.8 Major flight paths were observed traversing through the Project site, including flight paths from the MPLV Egretry, and an east-west flight corridor across LMC BCP, near the existing Ha Wan Tsuen Night Roost. These flight corridors were maintained under the Revised RODP, with the incorporation of NBA (about 70 m wide flight corridor connecting the MPLV Egretry to the wetland habitats on the north; and about 300 m wide east-west flight corridor across the LMC BCP), and associated limitation of building heights (e.g. stepping height of the building structures adjacent to the 300 m wide flight corridor), in order to avoid obstruction and minimise the potential disturbance to the recorded flight corridors. Flight lines recorded at the MPV Egretry would also be preserved via a 35m wide NBA (in the form of an "eco-interface") along the northwest of the project boundary, with landscape buffer between the proposed development and the wetland habitats on the northwest; while building height of the proposed AFCD Wetland Conservation Park Management Office (located near the MPV Egretry) will also be restricted to two storeys.

3.9.9 Plant species of conservation importance (Cycad-fern, Incense Tree and Luofushan Joint-fir) were recorded within the Project boundary. A detailed vegetation survey should be conducted prior to the commencement of construction works to identify potentially affected plant individuals. All identified individuals would be labelled and fenced off on-site for better preservation, or in case of unavoidable loss, for transplantation or seedling planting according to the Protection and Transplantation / Seedling Planting Proposal. Fauna species of conservation importance with low mobility (two amphibian species Chinese Bullfrog and Spotted Narrow-mouthed Frog, freshwater fish species Rose Bitterling, and two freshwater crab

species *Cryptopotamon anacoluthon* and *Somanniathelphusa zanklon*) and breeding / nesting behaviour of three avifauna species (Little Ringed Plover, White-shouldered Starling, and White-throated Kingfisher) were also recorded within the Project boundary. Due to the low mobility of these species and/or potential breeding individuals, translocation or nest control measures should be implemented to ensure the preservation of these individuals. Detailed pre-construction surveys should be conducted for these species, followed by translocation of the low mobility species, or nest control measures for the potential breeding / nesting avifauna, in accordance with the Translocation Proposal and Nest Control Proposal.

3.9.10 Movement corridor of wildlife (including non-flying mammal species) has also been considered and maintained under the Revised RODP, in both northern and southern portions of the Project site to mitigate for potential impacts due to habitat fragmentation. Wildlife corridors (that comprise both above-ground and underpass elements) were incorporated in the Revised RODP between the Loop and the SPS WCP (on the north) and between wooded habitats (on the south). These wildlife corridors would provide opportunity for ecological linkage, allowing movement of non-flying mammals. Furthermore, while there were no recent records of Eurasian Otters from recent surveys and monitoring, a literature has revealed records of otter spraints, suggesting their historical presence and potential activity range across the Project area. The proposed wetland enhancement at SPS WCP and the incorporation of wildlife corridor would provide benefit to otters and promote potential usage. Pre-construction site check for Eurasian Otters was also proposed to minimise potential impact to the species.

3.9.11 With the implementation of the aforementioned mitigation measures, no unacceptable ecological impacts are anticipated to arise from the Project on the ecological resources recorded within the Project site and the assessment area.

### 3.10 Fisheries Impact

3.10.1 The fisheries impact assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.11 and Appendix J of the EIA SB, as well as Annex 9 and 17 of the EIAO-TM.

3.10.2 Key fisheries resources within the Assessment Area mainly includes active fishponds, which was mainly located at the northern portion (near San Tin, Sam Po Shue, Lok Ma Chau, and Ha Wan Tsuen), as well as small area of fishponds at Shek Wu Wai and Ngau Tam Mei. Inactive fishponds and abandoned fishponds were also observed within the Project boundary, but were not observed to contribute to aquaculture activities from recent site visits. Nevertheless, inactive fishponds are considered as key fisheries resources owing to its potential in converting into active fishponds for aquaculture activities.

3.10.3 Under a conservation approach, impact on aquaculture activities is anticipated from the Project, arising from the loss of active fishponds (about 53 ha) and inactive fishponds (about 30 ha) within the Project boundary, which is considered to be of potentially moderate and minor impacts respectively. Taking into account the cumulative loss of fisheries resources in the wider area, fisheries compensation would be implemented for the loss of active and inactive fishponds.

3.10.4 Secondary impact may also arise from ecological enhancement measures proposed under the wetland enhancement, to be implemented at the proposed Sam Po Shue Wetland Conservation Park (SPS WCP). Direct loss of fishpond areas is not expected within the proposed SPS WCP, but the ecological enhancement or management regime (e.g. re-profiling and/or partial drain-down of ponds) may result in secondary impact due to slightly reduced aquaculture production at existing active fishponds, which would result in potentially minor impact. On the other hand, conversion of inactive fishponds, abandoned fishponds, and brownfield within the proposed SPS WCP into active “ecologically enhanced fishponds” would result in an increase of aquaculture production. The secondary impact will not result in significant impact on aquaculture activities.

3.10.5 A fisheries enhancement area of 40 ha has been recommended to compensate for the direct permanent loss of active and inactive fishponds, located within the proposed SPS WCP, with measures to enhance fisheries resources. These measures include the incorporation of modernised aquaculture, the establishment of Fisheries Research Centre under the initial phase of the Project, and proper planning of aquaculture activities in the proposed SPS WCP.

This area for fisheries enhancement would also be delineated separately from the "ecologically enhanced fishponds" to minimise conflict with foraging birds.

3.10.6 Upon the implementation of the recommended measures, no adverse impact on fisheries resources is anticipated from the construction and operation of the Project, as well as the secondary impact arising from wetland enhancement measures.

### 3.11 Impact on Cultural Heritage

3.11.1 No Site of Cultural Heritage falls within the Project area and therefore there is no direct impact on any Site of Cultural Heritage. Hence, no mitigation measure is required for the conservation and preservation of Sites of Cultural Heritage and the requirements in Annexes 10 and 19 of the EIAO-TM have been met. In addition, no direct impact is anticipated on any proposed monument, graded historic building and Government historic site.

3.11.2 The cultural heritage impact assessment (CHIA), which covers Built Heritage Impact Assessment (BHIA) and Archaeological Impact Assessment (AIA), has been conducted in accordance with the requirements given in Clause 3.4.13 and Appendix L of the EIA SB.

3.11.3 Twelve (12) built heritage resources, including two declared monuments, one grade 1 historic building, five grade 2 historic buildings and four grade 3 and 164 other identified items are located within 500m of, but outside, the Project boundary. Beneficial impact is anticipated on Man Lun Fung Ancestral Hall, Tai Fu Tai and Gurkha Cemetery as opportunities on heritage promotion and cultural tourism could be enhanced by the Project.

3.11.4 Potential adverse indirect impacts of ground borne vibration, settlement and tilting during construction phase is anticipated on the Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (grade 3 historic building) due to its vibration-sensitive and dilapidated structures. Monitoring of ground-borne vibration, tilting and ground settlement shall be employed during the construction phase. The monitoring should be incorporated with a set of Alert, Alarm and Action (3As) system strictly following AMO's monitoring requirements for grade 3 historic building.

3.11.5 For other identified items, direct impact of demolition is anticipated for Tin Tak Heroes Temple, Mai Po Lung Vegetable Marketing Co-operative Society Ltd. and Sun Tin Vegetable Marketing Co-operative Society Ltd. A comprehensive record through 3D scanning, video recording and cartographic and photographic recording should be conducted prior to any construction works for record purpose and future use, such as research, exhibition and educational programmes.

3.11.6 Potential adverse impacts of ground borne vibration, settlement and tilting is anticipated at nine other identified items due to their close proximity to the development sites. Damages of building fabrics via contacting with construction machineries and construction trucks may be anticipated for Yeung Hau Temple which is located right next to the Project boundary close to Castle Peak Road – San Tin. Temporary change of access would be required for Yeung Hau Temple (San Tin) and five graves during construction phase. Yeung Hau Temple (San Tin) and Grave of Chong Yin Kei would have potential dust accumulation due to their close proximity to the works area nearby. Appropriate mitigation measures including baseline condition survey, baseline vibration impact assessment, monitoring of ground-borne vibration, tilting and ground settlement, provision of physical protective barriers/ covers or intervention/ cushioning materials, provision of safe access and implementation of dust suppression measures have been recommended to avoid and minimise any potential impacts to these other identified items.

3.11.7 No impact to built heritage and other identified items is anticipated during operation phase, no mitigation measure is required.

3.11.8 Eight archaeologically sensitive areas (ASA) are identified within the Project boundary, namely Shek Wu Wai ASA, Hop Shing Wai ASA, Mai Po ASA, Mai Po Lung (North) ASA, Mai Po Lung (South) ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA. Mai Po Lung (North) ASA is planned to be reserved for an egretry, hence no direct impact is anticipated, subjected to the detailed design of this area. Should construction works involving soil disturbance are anticipated during the detailed design stage, project proponent should review the impact assessment and propose adequate mitigation measures to AMO for approval.

For the remaining seven ASAs, direct impact would be anticipated should works involve soil disturbance occurred (such as site formation) during the construction phase.

3.11.9 Archaeological Watching Brief is recommended to be carried out in Shek Wu Wai ASA and Mai Po Lung (South) ASA should works involve soil disturbance occurred (such as site formation) during the construction phase. The other five areas cannot be accessed in the archaeological survey for this Project and further archaeological survey at later stages after land resumption but before site formation works is recommended. No impact to archaeology is anticipated during operation phase, no mitigation measure is required.

### 3.12 Hazard to Life

3.12.1 Hazard assessment has been conducted in accordance with the relevant requirements as specified in Section 3.4.14 and Appendix M of the EIA SB, as well as Annex 4 of the EIAO-TM.

3.12.2 The risks associated with operation of the proposed EPP, the high pressure gas pipeline, and the proposed green fuel stations (GFSs) during the construction and operation phases of the Project have been assessed. The results showed that both the individual risks and societal risks, taking into account the population induced by the Project, would be in compliance with the risk criteria stipulated in Annex 4 of the EIAO-TM, risk mitigation measures are therefore not required. However, should usage of the GFS other than LPG filling services, as assumed for assessment purpose, is proposed in the future, the risk assessment should be reviewed.

### 3.13 Landscape and Visual Impacts

3.13.1 The landscape and visual impact assessment has been carried out in accordance with Section 3.4.12 and Appendix K of the EIA SB, Annexes 10 and 18 of the EIAO-TM, and EIAO Guidance Note No. 8/2010.

3.13.2 Among the approximate 64,490 nos. existing trees within the Project boundary, potentially approximately 56,350 nos. (87%) of existing trees will be felled or transplanted, while 8,140 nos. (13%) of them would be retained, subject to detailed design. Among the identified 17 nos. of tree of particular interest (TPI), 8 nos. are proposed to be retained in-situ and 9 nos. are proposed to be felled or transplanted, subject to detailed design.

3.13.3 Within the Project boundary, as far as practicable, compensation and new tree planting will be provided at a 1:1 ratio when appropriate and applicable to compensate for the tree loss due to site development works. Compensatory planting would be considered in accordance with DEVB TC(W) No.4/2020, with due regard to the planting guidelines promulgated by the Greening, Landscape and Tree Management Section of the Development Bureau. The compensatory planting shall be selected based on the principle of "Right Plant, Right Place", i.e. to select suitable plants for planting in appropriate places, and with reference to Guiding Principles on Use of Native Plant Species in Public Works Projects promulgated by DEVB to improve the vegetation diversity, enhance ecological value and re-creation of vegetation habitat particular for areas adjoining the hillside area. Tree Preservation and Removal Proposals including compensation planting scheme shall be submitted in accordance with DEVB TC(W) No. 4/2020. To compensate for the unavoidable loss of woodland, a suitable area was identified near the compensatory woodland for the Loop. Details of preliminary woodland compensation plan are discussed in Ecological Section of this EIA Report. Mix of native tree species will be proposed in reference to Guiding Principles on Use of Native Plant Species in Public Works Projects promulgated by DEVB.

3.13.4 Under this Project, before mitigation, there would be substantial significance of impact on the following landscape resources. They are mainly permanent and irreversible loss. This includes approx. 41% of ponds near San Tin and Sam Po Shue (LR3.1), 83% of ponds in Siu Hum Tsuen and Shek Wu Wai San Tsuen area (LR3.2), all Wet Agricultural Land (LR8.0) and approx. 76% of dry Agricultural Land (LR9.0) are to be affected. Upon completion of works, this area will become new planned development including open space, residential development, mixed use development, residential and G/IC uses. With appropriate mitigation measures, it is considered that the residual impacts on these landscape resources will remain as “substantial” residual impact during construction stage. It will be reduced to “moderate” at day 1 of operation and further reduced to “slight” impact at year 10 of operation. For the loss in high sensitivity

landscape resources such as LR3.1, Woodland (LR10.0) and Mixed Woodland (LR11.0), they are well incorporated in the design process to minimise their impact as far as practicable within the landscape framework. However, in view of the potential loss due to the Project, it would be infeasible to include these compensation areas on-site (within Project site) due to the large area requirement for compensating these landscape resources. As such, wetland enhancement in the future SPS WCP and offsite woodland planting are anticipated to mitigate the aforementioned landscape impact. Other landscape resources are either not affected or can minimise their residual impact from slight to insubstantial during operation phase from Day 1 to Year 10 respectively by full implementation of the mitigation measures proposed.

3.13.5 For landscape character area, most permanent works are located within the Rural Inland Plain Landscape (LCA 4) and Rural Coastal Plain Landscape (LCA 3). During the construction phase, due to the proposed works in these LCAs, their predicted landscape impact would be substantial. For Settled Valley Landscape (LCA 1), some works are proposed within this LCA and moderate predicted landscape impact is anticipated.

3.13.6 For LCA 3 and LCA 4, there would be substantial residual landscape impact. The residual impact will be further reduced to moderate and slight respectively from Day 1 to Year 10 of operation phase due to the maturing of tree planting and vertical greening of mitigation measures proposed.

3.13.7 For LCA 1, there would be moderate residual landscape impact. The residual impact will be further reduced to slight and insubstantial respectively from Day 1 to Year 10 of operation phase due to the maturing of tree planting and vertical greening of mitigation measures proposed. For the remaining other landscape character areas (i.e. LCA 2, LCA 5 – LCA 10) are either not affected or are able to reduce their residual impact from slight to insubstantial during operation phase from Day 1 to Year 10 respectively by full implementation of mitigation measures proposed.

3.13.8 Despite the residual landscape impact during the operation phase is perceived to be adverse for all the LR, some LRs are enhanced in the long run. For LR5.0 (Modified Watercourse) and some of the LR17.0 (Waste land/Open storage), due to implementation of the proposed landscape framework, the overall impact on these resources would be enhanced via new amenity and native plantings and enhanced naturalised river/channel.

3.13.9 For visual impact assessment, there would be substantial visual impacts on the recreational visually sensitive receiver (VSR) of REC1 (Hikers along Ngau Tam Shan Hiking Trail), REC3 (Hiker of Ki Lun Shan) and Residential VSR R3 (Residents of San Tin Seven Villages). They are VSRs located near the proposed development, surrounded by the development, or viewed from an elevated position. The proposed development has significantly altered the existing visual context such as open view of San Tin and SZ skyline for REC1 and REC 3 ridgeline of Ngau Tam Shan and Kai Kung Leng, open sky view for R3. During construction phase, the substantial visual impact remains with the implementation of mitigation measure. Due to the scale of the proposed development, proximity of these VSRs to the sources of impact, with viewers located either close by or enclosed by the Project, views are full and, in some cases, all-encompassing for those enclosed by the Project. Mitigation measures are not able to adequately compensate for such a substantial magnitude of change for these VSRs. Nonetheless, when the proposed landscape mitigations including roadside and amenity planting, vertical green and compensatory trees will become mature. The above would help soften the building masses at year 10 of operation and visually blend in with the well-developed cityscape of SZ at the backdrop in Day 1 and Year 10 of operation phase.

3.13.10 Generally, GIC users located in proximity, residential VSR or travelling VSR through the Project area have a moderate residual impact at Day 1 of operation after implementation of mitigation measures such as the users of Tam Mei Barracks (GIC 4) and low-rise residents of Maple Garden, Palm Springs and Royal Palm (R1). Although their visual context are altered, their medium to low sensitivity to change contribute to the residual impact. There are also moderate residual impact at Day 1 operation on recreational VSR REC 2 and REC4. As such, the visual context is partially altered. Subject to the geographical location, some of these VSRs are located relatively far away and hence the potential blockage are partial and scale of development are of small scale. With appropriate mitigation measures applied, the residual impact would be slight in Day 1 and further reduced to insubstantial in Year 10 of operation

after the implementation of the mitigation measures. For T1, T2, R2, R9, R10, R11, O3, O6, REC5, REC6, GIC2 and GIC3, due to their relative closer distance from the source of impact and long viewing duration, despite the lower building profile as proposed in the design consideration and the mentioned mitigation measures, their residual impact at before mitigation, Day 1 of operation and year 10 will remain at moderate. This is due to the partial blockage of open sky view and view toward ridgeline is blocked by the development.

3.13.11 Residual impact on other VSRs are considered as slight to insubstantial (i.e. insubstantial for R4, R7, R8, O2 and slight for R5, T3, O1, O4, O5, GIC1) during construction phase. This is due to the relative far viewing distance, partial to no blockage of view and small scale of development in view. Hence there is no significant impact on existing visual context. Therefore, the residual impact in Day 1 would be slight to insubstantial and would be further reduced to insubstantial in Year 10 when the proposed landscape and visual mitigation measures are established and mature. For R5, due to its long viewing duration and proximity to source of visual impact and the size of development, its residual impact at year 10 will remain at slight.

3.13.12 With the aims to improve the overall quality of development within the Project, mitigation against adverse impacts, and to enhance existing landscape resources and visual environments, a number of key planning, urban design and landscape concepts are proposed in the Revised RODP, Master Urban Design Plan and Landscape Master plan. With this guiding principle set out in early stage, these mitigation measures during construction stage could optimise their effect by minimisation of the footprint of the works area, avoidance of significant topographical changes together with the retention, protection and compensatory planting of trees / vegetation. These measures if deployed, will have the capacity to reduce, in most cases, the level of residual impact experienced by the VSRs, LRs and LCAs at the construction stage.

3.13.13 Under the Project, the present large brownfield operations set within a rural landscape setting will be changed. The proposed planning, urban design and landscape framework will enhance the visual outlook and landscape characters of the proposed new town while ensuring ample green space, vibrant community and green initiatives are considered throughout the Project. Considering the scale of the Project, it will inevitably result in some landscape and visual impact. It is not possible to fully mitigate all landscape impacts in relation to the loss of agriculture land, woodlands, ponds or tree planting for affected LRs and LCAs in the construction period and early operational stage due to the long establishment period to sufficiently compensate for the associated impacts. Nevertheless, trees to be felled or transplanted will be in phases over the course of construction phases. Hence, the trees will not be affected all at once. This allows the establishment of some of the planting prior the first population intake and their positive impacts with be felt before the completion of the Project.

3.13.14 Furthermore, the urban design and landscape framework is an intrinsic part of the Project that must be viewed in connection with proposed mitigation measures. While it is mentioned that not all impacts can be fully reduced or eliminated through the implementation of mitigation measures, the design principles provide enhancement by specifically outlining and dedicating areas for open space, blue-green network, Green Belt, breezeway, view corridor, massing control, aesthetic above ground structure design, and provision of compensatory planting proposal. It is considered that the overall Project is appropriate to the planned context of the area and in the long term with beneficial landscape and visual impacts.

3.13.15 Cumulative landscape and visual impacts from other concurrent projects are discussed in the Landscape and Visual Impact Assessment (LVIA) Section of this EIA Report. Potential cumulative impact may arise from NOL. In view of the underground nature of the proposed San Tin Station, insurmountable cumulative landscape and visual impact would not be anticipated.

3.13.16 In view of the above, considering the development need of the Project, though the site's character shall be changed, with the full implementation of the proposed mitigation measures, it is considered that the residual landscape and visual impact are perceived to be acceptable with mitigation measures.

### 3.14 Impact from Electric and Magnetic Fields

3.14.1 Electric and magnetic fields impact assessment has been carried out in accordance with Section 3.4.15 and Appendix N of the EIA SB, as well as Annex 21 of the EIAO-TM.

3.14.2 According to the Revised RODP, the 400 kV overhead cable and pylons are situated at and/or are close to the eastern portion of the development area. As such, the potential Electric Field (ELF) and Electro-Magnetic Field (EMF) impacts to the proposed development at this portion of the development area have been assessed in accordance with the requirements in the EIA SB. On-site measurement of ELF and EMF at the selected locations which represent the proposed land uses of the development areas were conducted.

3.14.3 The measured ELF and EMF generated from the existing 400 kV overhead cable were well below the stipulated guideline limits issued by the ICNIRP in 1998. Hence, the existing 400 kV overhead cable located within the Project area would not pose adverse impact to proposed developments of the Project.

# 4. ENVIRONMENTAL MONITORING AND AUDIT

4.1.1 An Environmental Monitoring and Audit (EM&A) programme is recommended to be implemented throughout the entire construction period to regularly monitor the environmental impacts on the neighbouring sensitive receivers. Some of environmental aspects would extend the EM&A programme to the operation period to ensure no adverse environmental impacts arising from the Project.

4.1.2 The EM&A requirements including site inspection/audit and monitoring for air quality, noise, water quality, waste management, land contamination, landfill gas, ecology, cultural heritage, landscape and visual have been recommended during construction phase, whilst operation phase EM&A requirements for odour impact from proposed EPP, traffic noise impact, landfill gas, ecology aspects, landscape and visual aspects, as well as commissioning test for planned fixed noise sources have been proposed to ensure that the recommended mitigation measures are properly implemented. The EM&A requirements are specified and detailed in the EM&A Manual.

# 5. SUMMARY OF ENVIRONMENTAL OUTCOMES

5.1.1 The EIA has provided an assessment of the potential environmental impacts associated with the construction and operation of the Project, based on the engineering design information available at this stage. This has also included specific assessment for the five Schedule 2 DPs subject to environmental permit application under this EIA Study. The key outcomes are summarised in **Table 5.1**.

**Table 5.1 Summary of Key Environmental Problems Avoided and Sensitive Areas Protected**

| Design Approaches | Environmental Problems Avoided and Sensitive Areas Protected |
|---|---|
| Avoidance of impact on core area of Mai Po Lung Village Egretry and protection of the birds' flight path | • The core area of MPLV Egretry would be retained and protected in "O". A 70m wide NBA to the north of MPLV Egretry would be designated to protect the flight paths for birds. |
| Avoidance of impact on Mai Po Village Egretry and protection of the birds' flight path | • MPV Egretry falling outside of the Project boundary would be retained and not be affected.<br>• Most bird flight paths would not be affected by the Project while some bird flight paths would also be protected by 35m wide NBA at the western fringe of the I&T site and restricting the building height of AFCD Wetland Conservation Park Management Office to 2 storeys. |
| Reprovision of San Tin Open Storage Area Night Roost at "O" along the bank of the diverted STWMDC and Ha Wan Tsuen Night Roost at an area adjacent to the proposed AFCD Fisheries Research Centre | • To compensate the two affected night roosts (San Tin Open Storage Area Night Roost and Ha Wan Tsuen Night Roost) located within the Project area |
| Preservation of a 300m-wide bird flight corridor between LMC Meander and Sam Po Shue<br>(i) Providing 20m and 35m wide NBAs at I&T sites and imposing stringent building height control (≤15mPD) along the 300m wide bird flight corridor<br>(ii) Restricting building height adjacent to the 300m wide bird flight corridor to 35mPD | • To protect the east-west bird flight corridor near the Loop |
| Provision of 35m wide NBAs along the development boundary fronting Sam Po Shue with building height restrictions (35mPD / 15mPD) descending towards the NBAs | • NBA serving as "eco-interface" together with descending building height restrictions would minimise the disturbance impact on wetlands in Sam Po Shue |
| Enhancement of wetlands at Proposed SPS WCP | • The ecological function and capacity of wetlands in Sam Po Shue would be enhanced under the Proposed SPS WCP |
| Provision of Fisheries Enhancement Area at Proposed SPS WCP | • The fisheries resources of the proposed SPS WCP would be enhanced |
| Provision of AFCD Fisheries Research Centre | • Allow promotion of scientific research on aquaculture to facilitate the upgrading and transformation of the fisheries industries |

| Design Approaches | Environmental Problems Avoided and Sensitive Areas Protected |
|---|---|
| | supporting the proposed SPS WCP |
| Revitalisation of mitigation wetland and provision of 20m wide NBA along STEMDC | • STEMDC would be revitalised to enhance biodiversity<br>• The NBA could serve as “eco-interface” to minimise disturbance on the revitalised mitigation wetland and promote wildlife usage |
| Revitalisation of STWMDC | • STWMDC will be revitalised to serve as green buffer and enhance biodiversity |
| Provision of wildlife corridors | • Wildlife corridors are proposed to mitigate habitat fragmentation and maintain the movement corridor for non-flying mammals including species of conservation importance |
| Avoidance of encroachment on the existing recognised villages | • Existing recognised villages including Shek Wu Wai, Chau Tau Tsuen, Tung Chun Wai, Yan Shau Wai, On Loong Tsuen, Wing Ping Tsuen, Fan Tin, San Loong Tsuen and Ching Loong Tsuen would be preserved |
| Avoidance of encroachment on cultural heritage resources | • No Declared Monuments and Graded Historic Buildings within the Project boundary<br>• Declared Monuments and Graded Historic Buildings in the vicinity of Project boundary would not be affected |
| Reuse of treated sewage effluents | • To reduce amount of effluent discharge from the new EPP thus minimise pollution loading to Deep Bay |
| Clearing of existing odour sources | • All livestock farms within the Project boundary will be removed |
| Avoidance of direct impacts on natural watercourse | • The natural watercourse near the woodland habitat at Pang Loon Tei would be retained |
| Providing greening to create natural carbon sink | • Green coverage would be increased to include vertical greening and multi-layered green space |
| Providing sustainable transport infrastructure to promote low-carbon living | • Pedestrian-friendly environment and robust cycling network are proposed to promote walkability and cycling for low-carbon living |

# 6. CONCLUSION

6.1.1 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 **Table 6.1**.

6.1.2 Overall, the EIA concluded that the Project would comply with the requirements of the EIA SB and EIAO-TM with the implementation of the proposed mitigation measures during the construction and operation phases. The schedule of implementation of the proposed mitigation measures has been provided in the EIA Report. An EM&A programme has also been recommended to check the effectiveness of the proposed mitigation measures.

**Table 6.1 Summary of Environmental Impacts**

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| **Air Quality Impact** | | | | | |
| **Construction Impact** | | | | | |
| • Representative existing residential, commercial developments and government uses within 500m from the boundary of the Project site | The potential sources of air quality impact associated with the construction works would include excavation, material handling, spoil removal and wind erosion, as well as construction activities of other concurrent projects within 500m assessment area. | • Annexes 4 and 12 of the EIAO-TM<br>TSP<br>1-hr average conc.: 500 µg/m$^3$<br>• Air Quality Objectives (AQO)<br>RSP<br>○ 24-hr average conc.: 100 µg/m$^3$ (Number of exceedances allowed: 9)<br>○ Annual average conc.: 50 µg/m$^3$<br>FSP<br>○ 24-hr average | • N/A | Regular watering on construction work areas, exposed surface and paved haul roads to dust suppression.<br><br>Dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation and good site practices listed below should be carried out to further minimise construction dust impact.<br>• Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.<br>• Use of frequent watering for particularly dusty construction areas and areas close to ASRs.<br>• 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 shall be applied to aggregate fines.<br>• For the work sites close to the ASR with a separation distance less than 5m, provide hoardings of not less than 5m high from ground level along the site boundary; for the work sites close to the ASRs with a separation | • No residual impacts anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | conc.: 50 µg/m$^3$ (Number of exceedances allowed: 18)<br>○ Annual average conc.: 25 µg/m$^3$ | | distance less than 10 m, provide hoardings of not less than 3.5 m high from ground level along the site boundary; for the other work sites, provide hoarding not less than 2.4m high from ground level along site boundary except for site entrance or exit.<br>• Avoid position of material stockpiling areas, major haul roads and dusty works within the construction site close to concerned ASRs.<br>• Avoid unnecessary exposed earth.<br>• Locate all the dusty activities away from any nearby ASRs as far as practicable.<br>• Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.<br>• Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.<br>• Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.<br>• Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.<br>• Imposition of speed controls for vehicles on site haul roads.<br>• Instigation of an environmental monitoring and auditing program to | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. | |
| **Operation Impact** | | | | | |
| • Existing and planned residential, commercial developments and government uses within 500m from the boundary of the Project site | Air Quality Impact<br>Year 2031<br>$NO_2$<br>• 19th highest 1-hr average conc.: 105 – 154 µg/m³<br>• Annual average conc.: 11 – 33 µg/m³<br>RSP<br>• 10th highest 24-hr average conc: 68 – 72 µg/m³<br>• Annual average: 27 – 29 µg/m³<br>FSP<br>• 19th highest 24-hr average conc: 35 – 39 µg/m³<br>• Annual average: 15 – 17 µg/m³<br><br>Year 2034<br>$NO_2$<br>• 19th highest 1-hr average conc.: 108 – 168 µg/m³<br>• Annual average conc.: 11 – 32 µg/m³<br>RSP | • AQO<br>$NO_2$<br>○ 1-hr average conc.: 200 µg/m³ (Number of exceedances allowed: 18)<br>○ Annual average conc.: 40 µg/m³<br>RSP<br>○ 24-hr average conc.: 100 µg/m³ (Number of exceedances allowed: 9)<br>○ Annual average conc.: 50 µg/m³<br>FSP<br>○ 24-hr | $NO_2$, RSP and FSP<br>• No exceedance was predicted | • No mitigation measure is required. | • No residual impacts anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | • 10th highest 24-hr average conc: 68 – 72 µg/m3<br>• Annual average: 27 – 29 µg/m3<br>FSP<br>• 19th highest 24-hr average conc: 35 – 39 µg/m3<br>• Annual average: 15 - 17 µg/m3<br><br>Year 2039<br>$NO_2$<br>• 19th highest 1-hr average conc.: 107 – 172 µg/m3<br>• Annual average conc.: 10 – 30 µg/m3<br>RSP<br>• 10th highest 24-hr average conc: 67 – 72 µg/m3<br>• Annual average: 27 – 29 µg/m3<br>FSP<br>• 19th highest 24-hr average conc: 34 – 38 µg/m3<br>• Annual average: 15 – 17 µg/m3 | average conc.: 50 µg/m3 (Number of exceedances allowed: 18)<br>○ Annual average conc.: 25 µg/m3 | | | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | Odour Impact<br>< 5 odour units based on an averaging time of 5 seconds for planned RTS, EPP and SPSs, except at existing ASRs A26 and A33 | • Annex 4 of EIAO-TM<br>• 5 odour units based on an averaging time of 5 seconds | • Potential odour exceedances were predicted at two existing ASRs A26 and A33 for a short duration of time (up to 0.89% and 6.00% of time in a year) during operation phase of the Project. | • Specific building considerations has been incorporated in the assessment and are recommended to be implemented in the future designs. Fresh air intakes at Site G.5.8, G.5.9, G.5.10, G.5.11, G.5.12 and OU(I&T)3.1.8 should be positioned 20mAG or above. Air sensitive use lower than 20mAG should be avoid at these sites. School blocks at Site E.5.1 and E.5.2 should be positioned away from the exceedance area. | • The Project would only contribute less than 0.02 OU/$m^3$ and less than 0.07 OU/$m^3$ at A26 and A33 respectively, less than 0.1 OU/$m^3$.<br>• The Project will bring improvement in odour impact on the existing ASRs with exceedance of odour criterion. It is therefore concluded that there is no adverse residual odour impact arising from the Project. |
| **Noise Impact** | | | | | |
| **Construction Airborne Noise Impact** | | | | | |
| • Representative residential uses, education institution, place of public worship, barracks and noise sensitive temporary structures within 300m from the boundary of the | • 60 – 93 dB(A) | • Annexes 5 and 13 of the EIAO-TM<br>• $Leq_{(30\ min)}$ 75dB(A) at 1m from the façade of residential dwellings, place of public worship, | • Exceedance of the noise criteria by up to 18 dB(A) | • Use of Quality Powered Mechanical Equipment<br>• Use of Movable Noise Barrier, Purpose-built Noise Barrier, Noise Insulating Fabric and Noise Enclosure<br>• Sequencing Operation of Construction Activities at critical works area<br>• Reduction of PME at critical works | • No residual impacts anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| Project Site | | barracks and noise sensitive temporary structures<br>• $Leq_{(30\ min)}$ 70dB(A) at 1m from the façade of Educational Institutions and 65 dB(A) during examinations | | area<br>• Avoid carrying out particularly noisy construction activities during examination periods<br>• Use of Quieter Construction Methods such as silent piling by press-in method, bursting system and quieter type blade saw.<br>• Good site practices<br>- Only well-maintained plant should be operated on site and plant should be serviced regularly.<br>- Silencers or mufflers on construction plant should be utilised and should be properly maintained.<br>- Mobile plant should be sited as far away from sensitive uses as possible.<br>- Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.<br>- Plant known to emit noise strongly in one direction should, where possible, be orientated so that noise is directed away from the nearby sensitive uses.<br>- Material stockpiles and other structures should be effectively | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | utilized to screen noise from on-site construction activities. | |
| **Operation Impact** | | | | | |
| • Representative existing residential uses, educational institutions, place of public worship, barracks, noise sensitive temporary structures and planned residential developments within 300m from the boundary of the Project Site | <u>Road Traffic Noise Impact</u><br>• Predicted overall noise levels: up to 84 dB(A)<br>• Predicted road traffic noise levels of the Project roads: up to 83 dB(A)<br><u>Fixed Noise Sources Impact</u><br>• Predicted noise level: 27 – 56 dB(A)<br>• Maximum allowable SWL: 59 – 109 dB(A) | <u>Road Traffic Noise</u><br>• Annexes 5 and 13 of the EIAO-TM<br>• EIAO-GN 12/2010<br>• $L_{10(1\ hour)}$ 70dB(A) at 1m from the façade of residential dwellings / noise sensitive temporary structures<br>• $L_{10(1\ hour)}$ 70dB(A) at 1m from the façade of barracks<br>• $L_{10(1\ hour)}$ 65dB(A) at 1m from the façade of educational institute and place of public | <u>Road Traffic Noise</u><br>• Exceedance of the noise criteria by up to 14 dB(A)<br><u>Fixed Noise Sources Impact</u><br>• No exceedance predicted. | <u>Road Traffic Noise</u><br>• Provision of low noise road surfacing (LNRS)<br>• Provision of vertical barrier and cantilever noise barriers on Project Road sections.<br>• Provision of at-receiver mitigation measures such as acoustic window / acoustic balcony.<br><u>Fixed Noise Sources Impact</u><br>• No mitigation measure required.<br>• If the future fixed noise source will exceed the specified maximum SWLs as shown in **Table 4.24** in the EIA report, the relevant government department / future operator shall install acoustic silencers, noise barrier or acoustic enclosure to ensure the noise compliance of the fixed noise source. The relevant government department/future operator shall also take into account the latest available information at the | • No residual impacts anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | worship<br>Fixed Noise Sources Impact<br>• Annexes 5 and 13 of the EIAO-TM<br>• Appropriate ANL -5 dB(A) as shown in Table 2 of IND-TM or the prevailing background noise level | | time of detailed design to review and update the maximum allowable SWL as appropriate. Noise commissioning test for fixed noise sources will be carried out by relevant government departments/ future operators before operation of fixed noise sources. | |
| **Water Quality Impact** | | | | | |
| **Construction Impact** | | | | | |
| • Representative water sensitive receivers in the vicinity of the Project and within 500m from the boundary of the Project, covers the Deep Bay WCZ as designated under the WPCO | The potential sources of water quality impact associated with the construction works would include:<br>• General construction activities;<br>• Construction site run-off;<br>• Construction works near watercourses;<br>• Construction works in watercourses;<br>• Removal or diversion of watercourses;<br>• Removal or filling of ponds and wet areas;<br>• Accidental spillage; | • Annexes 6 and 14 of the EIAO-TM<br>• Water Quality Objectives for the Deep Bay WCZ<br>• Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal | • N/A | • Mitigation measures and good site practices in ProPECC PN 2/23 "Construction Site Drainage"<br>• Waste Disposal Ordinance<br>• Provision of temporary sanitary facilities, such as chemical toilets, for construction workforce<br>• Precaution measures in ETWB Technical Circular (Works) No. 5/2005<br>• Groundwater infiltration minimisation strategies and post-grouting<br>• Proper interception and treatment of contaminated site runoff and wastewater from land | • No residual impacts anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | • Sewage from construction workforce; and<br>• Groundwater from contaminated areas, contaminated site run-off and wastewater from land decontamination. | Waters (TM-DSS)<br>• Practical Note for Professional Persons (ProPECC) PN 1/23 and 2/23<br>• Hong Kong Planning Standards and Guidelines<br>• Environmental, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 5/2005 | | decontamination in compliance with the TM-DSS<br>• Proper treatment or recharge of contaminated groundwater in compliance with the TM-DSS | |
| **Operation Impact** | | | | | |
| • Representative water sensitive receivers in the vicinity of the Project and within 500m from the boundary of the Project, covers the Deep Bay WCZ as designated under the WPCO | Potential water quality impacts associated with the operation phase include:<br>• Sewage Disposal Strategy for the New Developments;<br>• Emergency Discharge from the New STLMC EPP;<br>• Sewage and Sewerage System;<br>• Emergency Discharge from Sewage Pumping Stations (SPSs);<br>• Treated Effluent Reuse; | • Annexes 6 and 14 of the EIAO-TM<br>• Water Quality Objectives for the Deep Bay WCZ<br>• Technical Memorandum on Standards for Effluents Discharged into | • N/A | • Provide back-up power for dual power supply in case of power failure to sustain the function of pumping and treatment facilities at the EPP and SPS.<br>• Provision of standby unit for all major equipment in case of break down / emergency at the EPP and SPS.<br>• Regular maintenance and checking of plant equipment.<br>• Emergency Response Plan / Contingency Plan | • No adverse residual impacts anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | • Surface Run-off from New Developments;<br>• Changes of Hydrology and Potential Flooding Risk<br>• Revitalisation and Greening of Drainage Channel Banks;<br>• Maintenance flushing for RWSR;<br>• Maintenance flushing for FWSR;<br>• Potential Impact from Refuse Transfer Stations and RCPs<br>• Spent Effluent from DCS; and<br>• Maintenance of Drainage System. | Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)<br>• ProPECC PN 1/23<br>• ETWB TC (Works) No. 14/2004<br>• Guidelines for the Design of Small Sewage Treatment Plant | | • Follow ETWB TC (Works) No. 14/2004 Maintenance of Stormwater Drainage Systems and Natural Watercourse | |
| **Sewerage and Sewage Treatment Implications** | | | | | |
| • Existing and planned sewerage system, sewage treatment and disposal facilities | • Increase in sewage discharge arising from the population<br>• Odour impact | • EPD Report No. EPD/TP 1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0<br>• DSD Sewage Manual Part 1 (Key Planning Issues and Gravity Collection | • N/A | • Enclose the pumping station inside building structure with odour control measures such as scrubber and activated charcoal filter at the exhaust of the ventilation system | • N/A |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | System)<br>• Annex 14 of EIAO-TM | | | |
| **Waste Management Implications** | | | | | |
| **Construction Impact** | | | | | |
| • N/A | • Around 97,200 $m^3$ of non-inert C&D materials and 10,337,500 $m^3$ of inert C&D materials will be generated from site clearance, site formation works, construction of new buildings and infrastructures.<br>• Chemical wastes will be generated from Building demolition, plant operation and maintenance of mechanical equipment, at a few cubic metres per month.<br>• Around 1,950 kg per day of general refuse will be generated from construction works and site- based staff and workers<br>• Small amount of excavated sediment from pond excavation works<br>• Insignificant amount of floating refuse from construction activities along river channels or water bodies | • Annexes 7 and 15 of the EIAO-TM<br>• Waste Disposal Ordinance (Cap. 354)<br>• Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)<br>• Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)<br>• Land (Miscellaneous Provisions) Ordinance (Cap. 28)<br>• Public Health | • N/A | • Implementation of good site practices, waste reduction measures and proper storage, collection and transport of waste<br>• Careful design, planning and good site management to reduce generation of C&D materials<br>• Monitoring of disposal of C&D waste with trip-ticket system and installing CCTV on site<br>• Precautionary measures for handling and disposal of asbestos containing materials | • No residual impact anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | and Municipal Services Ordinance (Cap. 132BK) – Public Cleansing and Prevention of Nuisances Regulation<br>• Air Pollution Control Ordinance (APCO) | | | |
| **Operation Impact** | | | | | |
| • N/A | • Small quantity of chemical wastes in the order of a few cubic metres per month will be generated from public facilities and maintenance of facilities and equipment<br>• More than 500 tonnes per day of municipal solid waste<br>• About 160 $m^3$/day of sewage sludge and 22 $m^3$/day of screening and grits will be generated from the EPP | • Annexes 7 and 15 of the EIAO-TM<br>• Waste Disposal Ordinance (Cap. 354)<br>• Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)<br>• Public Health and Municipal Services Ordinance (Cap. 132BK) – Public Cleansing and Prevention of | • N/A | • Implementation of waste reduction measures and proper storage, collection and transport of waste | • No residual impact anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | Nuisances Regulation | | | |
| **Land Contamination** | | | | | |
| • Future occupants | • A total of 195 potentially contaminated sites are currently used as container storage, equipment/machinery storage; recycling facilities, vehicle repair/maintenance workshops, diesel refuelling, waste dumping ground, metal workshops etc. | • Annex 19 of the EIAO-TM<br>• Guidance Note for Contaminated Land Assessment and Remediation (EPD, Revised in April 2023)<br>• Practice Guide for Investigation and Remediation of Contaminated Land (EPD, Revised in April 2023)<br>• Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (EPD, Revised in April 2023) | • N/A | • The Project Proponent shall carry out site investigation and sampling works in accordance with the Contamination Assessment Plan for 9 potential contaminated sites with detail site reconnaissance at a later stage.<br>• Recommended works include: site re-appraisal, SI works as well as submission of supplementary Contamination Assessment Plan(s) (CAP(s)), Contamination Assessment Report(s) (CAR(s)) and Remediation Action Plan(s) (RAP(s)) for the EPD's approval after the sites are handed over to project proponent for development. If contaminated soil and/or groundwater were identified, remediation should be carried out according to EPD's approved RAP(s) and Remediation Report(s) (RR(s)) should be submitted to EPD for agreement after completion of the remediation works. No development works shall be commenced prior to EPD's agreement of the RR(s).<br>• Any soil / groundwater contamination would be identified and properly treated prior to the construction works. | • No residual impact anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| • Future occupants | • High levels of naturally occurring arsenic in soil is confirmed by ground investigation works. | • Previous EIA Report (AEIAR-175/2013 – North East New Territories New Development Areas)<br>• Guidance Note for Contaminated Land Assessment and Remediation (EPD, Revised in April 2023)<br>• Practice Guide for Investigation and Remediation of Contaminated Land (EPD, Revised in April 2023)<br>• Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (EPD, Revised in April 2023) | • N/A | • Further arsenic assessment and a detailed treatment approach has been proposed based on the Revised RODP. | • No residual impact anticipated. |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| **Landfill Gas Hazard** | | | | | |
| **Construction Impact** | | | | | |
| • Onsite construction workers | • Quantitative landfill gas hazard is conservatively assessed as "Very Low" risk for construction phase based on the source, pathway and target risk categories for the proposed development located within the Consultation Zone of the Ngau Tam Mei Landfill. | • Annex 7 & 19 of the EIAO-TM<br>• Landfill Gas Hazard Assessment Guidance Note | • N/A | • No precautionary measures are required | • No residual impact anticipated. |
| **Operation Impact** | | | | | |
| • Future occupants | • Quantitative landfill gas hazard is conservatively assessed as "Low" for operation phase based on the source, pathway and target risk categories for the proposed development located within the Consultation Zone of the Ngau Tam Mei Landfill. | • Annex 7 & 19 of the EIAO-TM<br>• Landfill Gas Hazard Assessment Guidance Note | • N/A | • Generic measures may be limited to passive gas control such as provision of barriers to the movement of gas or high permeability vents such as no-fines gravel in trenches between the landfill and development.<br>• The designer of the building works should undertake detailed design of the mitigation measures during the detailed design stage. | • No residual impact anticipated. |
| **Ecological Impact (Terrestrial and Aquatic)** | | | | | |
| **Construction Impact** | | | | | |
| • Recognised Sites of Conservation Importance<br>• Wetland Habitats (e.g. ponds, marsh / reed, | • Major permanent loss of wetland habitats (ponds and other freshwater wetland habitats)<br>• Permanent loss of woodland habitat<br>• Fragmentation of terrestrial habitats<br>• Potential direct Impact on egretry | • Annexes 8 and 16 of the EIAO-TM<br>• EIAO Guidance Notes Nos. 3/2010, 6/2010, | • N/A | • Enhancement measure at Deep Bay and wetland enhancement in the proposed SPS WCP<br>• Avoided loss of woodland at Pang Loon Tei<br>• Off-site woodland compensation | • No adverse residual impact anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| watercourses)<br>• Other terrestrial habitats (e.g. woodland)<br>• Egretries, Night Roosts, and Flight Paths<br>• Wildlife (including flora and fauna species of conservation importance) | and roosting sites<br>• Potential obstruction of major flight paths<br>• Direct impact on species of conservation importance and associated habitats<br>• Potential direct injury / mortality of wildlife species<br>• Indirect disturbance impact (e.g. air quality, noise, light pollution, high-rise building, traffic and visual) on sites of conservation importance, natural habitats and associated wildlife in the vicinity | 7/2010 and 10/2010 | | • Minimisation of direct encroachment, pre-construction survey and establishing buffer area for both MPLV and MPV Egretries<br>• Seasonal control of construction works at egretries and night roosts<br>• Pre-construction survey, re-provision of roosting substratum for night roosts and establishing buffer area<br>• Pre-construction survey and transplantation / translocation, and nest control measures for species of conservation importance<br>• Establishment of hoarding and regular auditing<br>• Using non-transparent panels for noise enclosure, adopting non-glaring tinted materials, or superimposing dark patterns at the majority of glazing along barriers and structures<br>• Good site practices with mitigation measures for noise, dust, water quality impacts | |
| **Operation Impact** | | | | | |
| • Recognised Sites of Conservation Importance<br>• Wetland Habitats (e.g. ponds, marsh / reed, | • Disturbance impacts (e.g. air quality, noise, light pollution, high-rise building, traffic and visual) to the site of conservation importance, natural habitats and associated wildlife in the vicinity | • Same as construction phase | • N/A | • Wetland enhancement in the proposed SPS WCP<br>• Establishment of Open Space around MPLV Egretry with enhancement measures<br>• Provision of NBA and eco-interface | • No adverse residual impact anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| watercourses)<br>• Other terrestrial habitats (e.g. woodland)<br>• Egretries, Night Roosts, and Flight Paths | • Potential obstruction of flight path<br>• Bird collision with man-made structures | | | and landscape buffer along the edge of the Sam Po Shue WCP with stepped building height towards to the wetland to minimise disturbances to the wetlands concerned<br>• Provision of NBA with stepped building height to preserve birds' flight paths to/from the MPLV Egretry and MPV Egretry and the east-west birds' flight corridor in the northern part of the Project Area<br>• Provision of wildlife corridors<br>• Using non-transparent panels for noise enclosure, adopting non-glaring tinted materials, or superimposing dark patterns at the majority of glazing along barriers and structures<br>• Greening opportunity on buildings such as green façades and green roofs | |
| **Fisheries Impact** | | | | | |
| • Pond Culture Fisheries (aquaculture activities & fisheries production) | • Direct loss of active fishponds and inactive fishponds<br>• Secondary Impact from wetland compensation | • EIAO-TM Annexes 9 & 17<br>• Water Pollution Control Ordinance (Cap. 358) | • N/A | • Fisheries enhancement area<br>• Fisheries Research Centre<br>• Improving fisheries production by incorporating modernised aquaculture and innovative technological advancement for fisheries management | • No residual impact anticipated |
| **Cultural Heritage Impact** | | | | | |
| **Construction Impact** | | | | | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| • Cultural heritage and other identified items | • Indirect impacts of ground-borne vibration, settlement and tilting would be anticipated on a grade 3 historic building, namely Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (HBN186).<br>• For other identified items, indirect impacts of ground-borne vibration, settlement and tilting would be anticipated on seven (7) non-building structures, namely Gurkha Cemetery (BH03), Mans' Boundary Stone (BH06), Grave of Man Lun Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Man Chu Shui (BH10), Grave of Mrs Man Leung (BH11) and Grave of Chong Yin Kei (BH12), as well as two (2) buildings, namely, Yeung Hau Temple (San Tin) (MPT01) and Structure between No. 5 and No. 7, Shek Wu Wai (SWW01).<br>• Direct impact would be anticipated to Tin Tak Heroes Temple (MPL01), Mai Po Lung Vegetable Marketing Co-operative Society Ltd. (MPL02), Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01).<br>• Direct impact would be anticipated to seven (7) archaeologically sensitive areas (ASA), namely Hop | • EIAO-TM Annexes 10 and 19<br>• Guidelines for Cultural Heritage Impact Assessment<br>• Antiquities and Monuments Ordinance (A&MO) (Cap.53)<br>• Buildings Ordinance | • N/A | <u>Monitoring of vibration, settlement and tilting</u><br>• Monitoring of vibration, settlement and tilting incorporated with a set of Alert, Alarm and Action (3As) system shall be employed for Entrance Gate, Enclosing Walls and Shrine, Yan Shau Wai (HBN186) (grade 3 historic building) during the construction phase.<br>• Monitoring proposal should be submitted to AMO and relevant stakeholder(s) for consideration before commencement of works.<br>• Records of monitoring should be submitted regularly to AMO.<br>• AMO should be alerted in case any irregularities are observed.<br><u>Baseline condition survey and baseline vibration impact assessment</u><br>• Baseline condition survey and baseline vibration impact assessment should be conducted for the seven (7) non-building structures by a qualified building surveyor or qualified structural engineer during pre-construction stage of the proposed developments.<br>• Survey results shall be submitted to AMO for record.<br><u>Monitoring of vibration, settlement and</u> | • No residual impact anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | Shing Wai ASA, Mai Po ASA, Mai Po Lung (South) ASA, Shek Wu Wai ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA.<br>• Mai Po Lung (North) ASA is reserved as an egretry. No impact on archaeology is anticipated, no mitigation measure is required, subjected to the detailed design of this area. Should construction works involving soil disturbance are anticipated during the detailed design stage, project proponent should review the impact assessment and propose adequate mitigation measures to AMO for approval. | | | <u>tilting</u><br>• Monitoring of vibration, settlement and tilting incorporated with a set of Alert, Alarm and Action (3As) system shall be employed for other identified items including seven (7) non-building structures and two (2) buildings during the construction phase under Buildings Ordinance. The actual 3As criteria shall be further confirmed via an assessment on the effects of ground-borne vibrations, settlements and tilting on these items.<br>• Prior agreement and consent should be sought from the owner(s), stakeholder(s) and relevant Government department(s) for the installation of monitoring points on the building before commencement of the works.<br>• Record of monitoring should be submitted regularly to the Buildings Department during the construction under Buildings Ordinance.<br>• Buildings Department should be alerted in case any irregularities are observed.<br><u>Safe Access</u><br>• A safe access route shall be maintained for visitors during the construction stage for Yeung Hau Temple (San Tin) (MPT01), Gurkha Cemetery (BH03), Grave of Man Lun | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | Fung ("麒麟吐玉書") (BH07), Grave of Man Chung Luen (BH08), Grave of Man Chu Shui (BH10) and Grave of Mrs Man Leung (BH11).<br><u>Protective Barrier</u><br>• Physical protective barriers/ covers or intervention/cushioning materials, including but not limited to covering or sheltering, shall be provided during the proposed construction works to separate the works areas from Yeung Hau Temple (San Tin) (MPT01).<br>• No piling works shall be allowed within the protective zone.<br>• No worker or any construction related equipment(s) and material(s) should trespass the protective zone.<br>• The contractor should propose the actual extent of the protective zone and suitable protective covering materials to the satisfaction of AMO prior to the commencement of the proposed construction works.<br><u>Dust Suppression</u><br>• Implementation of mitigation measures in the Air Pollution Control (Construction Dust) Regulation, dust suppression measures and good site practice should be observed by the project proponent during the construction phase in order to avoid | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | dust accumulation on the Yeung Hau Temple (San Tin) (MPT01) and Grave of Chong Yin Kei (BH12).<br><u>Cartographic and Photographic Record</u><br>• Cartographic and photographic records, and other documentation means (such as 3D scanning or photogrammetry), on the Tin Tak Heroes Temple (MPL01), Mai Po Lung Vegetable Marketing Co-operative Society Ltd. (MPL02), Sun Tin Vegetable Marketing Co-operative Society Ltd. (SHT01) should be conducted before any works to commence. A copy of the documentation should be provided to AMO for record.<br><u>Archaeological Watching Brief</u><br>• Archaeological Watching Brief is recommended to be carried out in Shek Wu Wai ASA and Mai Po Lung (South) ASA should works involve soil disturbance occurred (such as site formation) during the construction phase.<br>• The scope, methodology and programme of the archaeological survey shall be agreed with AMO.<br><u>Further Archaeological Survey</u><br>• Further archaeological survey is required at later stage after land resumption but before site formation | |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | for these areas with archaeological potential, namely Hop Shing Wai ASA, Mai Po ASA, Siu Hum Tsuen (West) ASA, Siu Hum Tsuen (East) ASA and Pang Loon Tei ASA.<br>• The scope, methodology and programme of the archaeological survey shall be agreed with AMO.<br><u>Precautionary Measure</u><br>• If antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered, the project proponent is required to inform AMO immediately for discussion of appropriate mitigation measures to be agreed by AMO before implementation by the project proponent to the satisfaction of AMO. | |
| **Operation Impact** | | | | | |
| • Cultural heritage and other identified items | • No adverse impact would be anticipated on both built heritages, other identified items and archaeology during the operation phase. | • EIAO-TM Annexes 10 and 19<br>• Guidelines for Cultural Heritage Impact Assessment | • N/A | • No mitigation measure would be required | • No residual impact anticipated |
| **Landscape and Visual Impacts** | | | | | |
| **Construction Impact** | | | | | |
| • Landscape Resources (LRs) | • Insubstantial impact on Ponds near Ngau Tam Mei (LR3.3), Natural | • Annexes 10 and 18 of the EIAO- | • N/A | • Preservation of existing vegetation<br>• Transplantation of existing trees | • Insubstantial residual impact on |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | Watercourse (LR4)<br>• Slight impact on modified watercourse (LR5), plantation on slope (LR12.1), shrubland (LR13), and grassland (LR14)<br>• Moderate impact on Marsh/ Reedbed (LR1), Compensatory wetland (LR2), Semi-Natural Watercourse (LR6), Seasonal Wet Grassland (LR7), Woodland (LR10), Mixed Woodland (LR11), Plantation along roadside (LR12.2), Village/ Orchard (LR15), Vegetation in developed (Including residential area and man-made structure) (LR16), Vegetation in Waste land/open storage/ temporary area (LR17)<br>• Substantial impact on Ponds around San Tin and Sam Po Shue (LR3.1), Ponds around Siu Hum Tsuen and Shek Wu Wai San Tsuen (LR3.2), Wet Agricultural Land (LR8), Dy Agricultural Land (LR9) | TM<br>• EIAO-GN 8/2010 (Preparation of LVIA under the Environmental Impact Assessment Ordinance) | | • Reinstatement of temporarily disturbed landscape areas<br>• Minimising disturbance on watercourses<br>• Minimising topographical changes<br>• Construction of decorative hoarding around construction works<br>• Advancing planting of screen planting<br>• Management of construction activities and facilities<br>• Creating interface between ponds, wetland and the proposed Project | LR3.3, LR4<br>• Slight residual impact on LR5, LR12.1, LR13, LR14<br>• Moderate residual impact on LR1, LR2, LR6, LR7, LR10, LR11, LR12.2, LR15, LR16, LR17<br>• Substantial residual impact on LR3.1, LR3.2, LR8, LR9 |
| • Landscape Character Areas (LCAs) | • Insubstantial impact on Institutional Landscape (LCA8)<br>• Slight impact on Urban Peripheral Village Landscape (LCA5), Miscellaneous Rural Fringe Landscape (LCA6), Comprehensive Residential Development (LCA7), Transportation Corridor Landscape (LCA9) | • Annexes 10 and 18 of the EIAO-TM<br>• EIAO-GN 8/2010 (Preparation of LVIA under the Environmental Impact | • N/A | • Preservation of existing vegetation<br>• Transplantation of existing trees<br>• Reinstatement of temporarily disturbed landscape areas<br>• Minimising disturbance on watercourses<br>• Minimising topographical changes | • Insubstantial residual impact on LCA8<br>• Slight residual impact on LCA5, LCA6, LCA7, LCA9<br>• Moderate residual impact on LCA1, |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | • Moderate impact on Settled Valley Landscape (LCA1), Upland And Hillside Landscape (LCA2), Miscellaneous Urban Fringe Landscape (LCA10)<br>• Substantial impact on Rural Inland Plain Landscape (LCA4), Rural Coastal Plain Landscape (LCA3) | Assessment Ordinance) | | • Construction of decorative hoarding around construction works<br>• Advancing planting of screen planting<br>• Management of construction activities and facilities<br>• Creating interface between ponds, wetland and the proposed project | LCA2 and LCA10<br>• Substantial residual impact on LCA3, LCA4 |
| • Visually Sensitive Receivers (VSRs) | • Insubstantial impact on Residents of Fair View Park (R7), Residents of Proposed Kwu Tung New Town Development and Ma Tso Lung area (R8), Workers around Castle peak road (Mai Po section) (O2)<br>• Slight impact on Residents of Vineyard and low-rise residential area along Tam Mei Road (R5), Users of MTR Lok Ma Chau Station (T2), Traveler of Fan Ling Highway (T3), Workers of Open Storage/ Industrial usage of Ngau Tam Mei (O1), Industrial and potential tertiary users of Kwu Tung and Pak Shek Au (O4), Workers in open (O5), Lok Ma Chau Police Station (GIC 1)<br>• Moderate impact on Mid-rise residents of Maple Garden, Palm Springs and Royal Palm (R1), Residents of Mai Po San Tsuen, Mai Po Lo Wai (R2), Residents of Chau Tau Village ,Poon Uk Tsuen (R6), Future residents of the Loop (R9), Residents of Shek Wu Wai , | • Annexes 10 and 18 of the EIAO-TM<br>• EIAO-GN 8/2010 (Preparation of LVIA under the Environmental Impact Assessment Ordinance) | • N/A | • Preservation of existing vegetation<br>• Transplantation of existing trees<br>• Reinstatement of temporarily disturbed landscape areas<br>• Minimising disturbance on watercourses<br>• Management of construction activities and facilities<br>• Control of night-time lighting<br>• Construction of decorative hoarding around construction works<br>• Advancing planting of screen planting<br>• Creating interface between ponds, wetland and the proposed project | • Insubstantial residual impact on R4, R7, R8, O2<br>• Slight residual impact on R5, T2, T3, O1, O4, O5, GIC 1<br>• Moderate residual impact on R1, R2, R6, R9, R10, R11, T1, REC 2, REC 4, REC 5, REC 6, O3, O6, GIC 1, GIC 2, GIC 3<br>• Substantial residual impact on R3, REC1, REC 3 |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | recreational users of Shek Wu Wai Playground (R10), Residents of Fisherman San Tsuen (R11), Travelers of San Tin Highway (T1), Visitors of Mai Po Marsh Wetland reserve (REC 2), Park visitors of San Tin park and Man Tin Cheung Park (REC 4), Hikers of Lam Tsuen Country Park (REC 5), Future users of SPS WCP (REC 6), Farmer in Agricultural land near Lok Ma Chau Control Point (O3), Future workers of the Loop development (O6), Users of Gurkha Cemetery (GIC 2), Users of San Tin Barracks (GIC 3), Users of Tam Mei Barracks (GIC 4)<br>• Substantial impact on Hikers along Ngau Tam Shan Hiking Trail (REC 1) | | | | |
| **Operation Impact** | | | | | |
| • Landscape Resources (LRs) | • Insubstantial impact on LR2, LR3.3, LR4<br>• Slight impact on LR2, LR5, LR12.1, LR13, LR14<br>• Moderate impact on LR1, LR3.1, LR6, LR7, LR10, LR11, LR12.2, LR15, LR16, LR17<br>• Substantial impact on LR3.1, LR3.2, LR8, LR9 | • Annexes 10 and 18 of the EIAO-TM<br>• EIAO-GN 8/2010 (Preparation of LVIA under the Environmental Impact Assessment Ordinance) | • N/A | • Sensitive and aesthetically pleasing design of aboveground structures<br>• Landscape integration of build development<br>• Provision of roadside planting/ amenity planting/ peripheral screening or planting<br>• Provision of new tree planting<br>• Incorporation of green roof<br>• Watercourse impact mitigation within WCA | • Insubstantial residual impact on Day 1: LR2, LR3.3, LR4, LR5, LR12.1, LR13, LR14<br>• Slight residual impact on Day 1: LR1, LR3.1, LR6, LR7, LR10, LR11, LR12.2, LR15, LR16, LR17<br>• Moderate residual |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | • Revitalisation and naturalisation of river to create a blue green network<br>• Maximise greening on engineering structures and surfaces<br>• Landscape treatment on slope<br>• Sensitive design of landscape areas / provision of open space<br>• Creation of landscape buffer<br>• Watercourse impact mitigation within WCA | impact on Day 1: LR1, LR2, LR3.1, LR6, LR7, LR10, LR11, LR12.2, LR16, LR17<br>• Substantial residual impact on Day 1: LR3.2, LR8, LR9<br>• Insubstantial residual impact in Year 10: LR1, LR2, LR3.1, LR3.3, LR4, LR5, LR6, LR7, LR10, LR11, LR12.1, LR12.2, LR13, LR14, LR15, LR16, LR17<br>• Slight residual impact in Year 10: LR3.2, LR8, LR9 |
| • Landscape Character Areas (LCAs) | • Insubstantial impact on LCA8<br>• Slight impact on LCA5, LCA6, LCA7, LCA9, LCA10<br>• Moderate impact on LCA1, LCA2<br>• Substantial impact: LCA3, LCA4 | • Annexes 10 and 18 of the EIAO-TM<br>• EIAO-GN 8/2010 (Preparation of LVIA under the Environmental Impact Assessment | • N/A | • Sensitive and aesthetically pleasing Design of Aboveground structures<br>• Landscape integration of Build Development<br>• Provision of roadside Planting/ Amenity planting/ peripheral screening or planting<br>• Provision of new tree planting<br>• Incorporation of Green Roof | • Insubstantial residual impact on Day 1: LCA5-LCA10<br>• Slight residual impact on Day 1: LCA1 and LCA2<br>• Moderate residual impact on Day 1: LCA3 and LCA4 |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | Ordinance) | | • Sensitive design of noise barriers<br>• Revitalisation and naturalisation of river to create a Blue green network<br>• Landscape treatment on slope<br>• Sensitive design of landscape areas / provision of Open Space<br>• Off-site woodland compensation<br>• Creation of landscape buffer<br>• Stepped building height profile.<br>• Provision of breezeway/ airpaths<br>• Watercourse impact mitigation within WCA<br>• Maximise greening on engineering structures and surfaces<br>• Watercourse impact mitigation within WCA | • Insubstantial residual impact in Year 10 on all LCAs except LCA3 and LCA4 where residual impact would be slight |
| • Visually Sensitive Receivers (VSRs) | • Insubstantial impact on R4, R7, R8, O2,<br>• Slight impact on R5, T3, O1, O4, O5, GIC 1<br>• Moderate impact on R1, R2, R6, R9, R10, R11, T1, T2, REC 2, REC 4, REC 5, REC 6, O3, O6, GIC 2, GIC 3, GIC 4<br>• Substantial impact on R3, REC1, REC 3 | • Annexes 10 and 18 of the EIAO-TM<br>• EIAO-GN 8/2010 (Preparation of LVIA under the Environmental Impact Assessment Ordinance) | • N/A | • Sensitive and aesthetically pleasing Design of Aboveground structures<br>• Landscape integration of Build Development<br>• Provision of roadside Planting/ Amenity planting/ peripheral screening or planting<br>• Provision of new tree planting<br>• Incorporation of Green Roof<br>• Sensitive design of noise barriers<br>• Control of Night-time Lighting Glare | • Insubstantial residual impact on Day 1: R4, R7, R8<br>• Slight residual impact on Day 1: R5, T3, O1, O4, O5, GIC 1<br>• Moderate residual impact on Day 1: R1, R2, R6, R9, R10, R11, T1, T2, REC 2, REC 4, REC 5, O3, O6, GIC 2, GIC 3, GIC |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | | | | • Revitalisation and naturalisation of river to create a Blue green network<br>• Maximise greening on engineering structures and surfaces<br>• Landscape treatment on slope<br>• Sensitive design of landscape areas / provision of Open Space<br>• Off-site woodland compensation<br>• Creation of landscape buffer<br>• Stepped building height profile<br>• Provision of breezeway/ airpaths<br>• Provision of view corridor<br>• Sensitive layout design of above-ground structures<br>• Watercourse impact mitigation within WCA | 4<br>• Substantial residual impact on Day 1: R3, REC1, REC 3<br>• Insubstantial residual impact in Year 10: R4, R7, R8, T3, O1, O2, O4, O5, GIC 1<br>• Slight residual impact in Year 10: R1, R5, R6, REC 2, REC 4, GIC 4<br>• Moderate residual impact in Year 10: R2, R10, R11, T1, T2, REC5, REC6, O3, O6, GIC2, GIC3<br>• Substantial residual impact in Year 10: R3, REC1, REC 3 |
| **Hazard to Life** | | | | | |
| • Existing and planned population in the vicinity of the HP Gas Pipeline, EPP and the 2 GFSs | • The off-site individual risk level is far below $1\times10^{-5}$ per year, it is considered acceptable and in compliance with the relevant criterion in Annex 4 of EIAO-TM<br>• The societal risks fall within the | • Annex 4 of the EIAO-TM | • N/A | • No adverse impact is anticipated. Nonetheless, implementation of good safety practices and design measures for the EPP are recommended. | • No residual impact anticipated |

| Sensitive Receivers / Assessment Points | Impact Prediction Results (Without Mitigation) | Key Relevant Standards/Criteria | Extents of Exceedance Predicted (Without Mitigation) | Impact Avoidance Measures / Mitigation Measures | Residual Impacts (After Implementation of Mitigation Measures) |
|---|---|---|---|---|---|
| | "Acceptable" region in both assessment years | | | | |
| **Electric and Magnetic Field** | | | | | |
| • Existing 400kV overhead cable | • Electric field strength measured ranged from 0.2 V/m to 198 V/m<br>• Magnetic flux measured ranged from 0.04 μT to 1.48 μT | • Hong Kong Planning Standards and Guidelines<br>• International Commission on Non-ionizing Radiation Protection (Standard for General Public Exposure: 5,000 V/m & 100 μT; Standard for Occupational Exposure 10,000 V/m & 500 μT) | • N/A | • Not necessary | • No residual impact anticipated |