

Civil Engineering and Development Department

**San Tin / Lok Ma Chau
Development Node**

Project Profile

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1 Basic Information

1.1 Project Title

- 1.1.1.1 San Tin / Lok Ma Chau Development Node (the Project).

1.2 Purpose and Nature of Project

- 1.2.1.1 In recent years, various policy addresses have identified the New Territories North (NTN) as a potential area to be developed into a modern new town to help addressing land supply constraints.
- 1.2.1.2 The Project comprises San Tin / Lok Ma Chau Development Node (STLMC DN) which is identified as Phase One of the NTN development. STLMC DN was preliminarily studied under CE 42/2013(CE) - Preliminary Feasibility Study on Developing the NTN (the Preliminary NTN Study). The Preliminary NTN Study identified the STLMC DN as one of the Potential Development Areas (PDAs) and recommended further study for the development potential of the DN.
- 1.2.1.3 The STLMC DN is positioned as an accessible employment node with a balanced job to population ratio. The creation of an employment node is also intended to relieve the directional traffic demand in Hong Kong by drawing the working population from the metro area to STLMC DN. This seeks to improve the existing imbalanced directional traffic flow and to make optimal use of the spare capacity of the transport infrastructure during peak hour.

1.3 Name of Project Proponent

- 1.3.1.1 North Development Office (NDO), Civil Engineering and Development Department (CEDD), the Government of Hong Kong Special Administration Region.

1.4 Location and Scale of Project and History of Site

- 1.4.1.1 The STLMC DN is approximately 340ha, whilst the development area of the DN is about 293ha, and is bounded to the north by San Tin Highway, Chau Tau and Pun Uk Tsuen. The southern border of the STLMC DN is formed by the San Tin Barracks and hilly terrain. The Project is defined as the development of the STLMC DN, the potential cavern development to north of the Ngau Tam Mei Water Treatment Works (NTMWTW), the proposed Shek Wu Wai Interchange, water tubes to/ from the potential cavern site, and the area to be released at Lok Ma Chau Control Point (LMCCP)¹. Location of the STLMC DN is shown in **Figure 1.1** and **Figure 1.1a**.
- 1.4.1.2 The Project Site was mainly occupied by agriculture lands, rural residential villages and natural vegetation in 1960s to 1980s. Since 1990s, more infrastructures (e.g. roads including San Tin Highway/Fanling Highway and Castle Peak Road) and brownfield land uses have been observed at and in the vicinity of the Project Site.

¹ According to the Chief Executive's 2020 Policy Address and Supplement and the meeting of Panel on Security on 2 March 2021, the current LMCCP will be vacated and over 20 hectares of land concerned can be released for other uses due to the implementation of co-location arrangements at the new Huanggang Port in Shenzhen.

At present, the Project Site includes rural land uses such as agriculture and villages, government facilities such as LMCCP as well as brownfield land uses such as open storage, car parks, and workshops. A recognised village, i.e. Shek Wu Wai, is found within the Project Site. Moreover, there are number of recognised villages in close proximity to the Project Site, including Tsing Lung Tsuen, Tung Chan Wai, Chau Tau, Mai Po San Tsuen, and etc.

1.5 Number and Types of Designated Projects to be Covered by the Project Profile

1.5.1.1 As mentioned in **Section 1.4**, the STLMC DN is approximately 340ha with a development area of about 293ha. It is estimated that a population of about 84,800 and an employment of about 64,200 will be accommodated in the STLMC DN upon full development. Therefore, the Project is considered as a Designated Project (DP) by virtue of the following item in Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO):

- 1: Engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100,000.

1.5.1.2 In addition, the Project might also constitute the following DP elements in Schedule 2 of the EIAO, subject to more detailed design and planning at later stage:

Roads

1.5.1.3 The Project Site will be served by a network of district distributor (DD) and local distributor (LD) roads. The DD road will run through the development from east to west, providing access to all the planning areas and direct links to San Tin Highway. The proposed DD road will fall into the category of Item A.1 of Schedule 2 of EIAO:

- A.1: A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road.

Sewage

1.5.1.4 A sewage treatment works (STW) might be proposed within the Project Site, and probably within the potential cavern site. The preliminary design capacity of the proposed STW is 35,000m³/day in average dry weather flow (ADWF) at this stage. The proposed STW will fall into category of Item F.1 of Schedule 2 of EIAO. Depending on its confirmed location, it might also fall into the category of Item F.2 of Schedule 2 of EIAO:

- F.1: Sewage treatment works with an installed capacity of more than 15,000m³ per day.
- F.2: Sewage treatment works---
 - (a) With an installed capacity of more than 5,000m³ per day; and
 - (b) A boundary of which is less than 200m from the nearest boundary of an existing or planned---
 - (i) Residential area;
 - (ii) Place of worship;
 - (iii) Educational institution;

- (iv) Health care institution;
- (v) Site of special scientific interest;
- (vi) Site of cultural heritage;
- (vii) Bathing beach;
- (viii) Marine park or marine reserve;
- (ix) Fish culture zone; or
- (x) Seawater intake point.

1.5.1.5 Four sewage pumping stations (SPSs) are proposed within the Project Site in which some would be located within 150m from proposed residential areas. Depending on their installed capacities, they might fall into the category of Item F.3 of Schedule 2 of the EIAO:

- F.3: A sewage pumping station---
 - (a) With an installed capacity of more than 300,000m³ per day; and
 - (b) With an installed capacity of more than 2,000m³ per day and a boundary of which is less than 150m from an existing or planned---
 - (i) Residential area;
 - (ii) Place of worship;
 - (iii) Educational institution;
 - (iv) Health care institution;
 - (v) Site of special scientific interest;
 - (vi) Site of cultural heritage;
 - (vii) Bathing beach;
 - (viii) Marine park or marine reserve;
 - (ix) Fish culture zone; or
 - (x) Seawater intake point.

1.5.1.6 The proposed STW within the Project Site would provide tertiary sewage treatment to produce treated sewage effluent (TSE) of high quality for reuse within the Project Site for non-potable uses such as toilet flushing, controlled irrigation and external cleaning use. Any reuse of treated sewage effluent will fall into the category of Item F.4 of Schedule 2 of the EIAO:

- F.4: An activity for the reuse of treated sewage effluent from a treatment plant.

Resource Recovery and Transfer Station

1.5.1.7 A resource recovery and transfer station (RRTS) is proposed within the Project Site, and probably within the potential cavern site. Part of the RRTS will act as a refuse transfer station and therefore the proposed RRTS will fall into the category of Item G.2 of Schedule 2 of the EIAO:

- G.2: A refuse transfer station.

Substation

1.5.1.8 There is an existing electricity substation (i.e. Mai Po Substation) within the Project Site. No new substation is proposed within the Project Site at this stage. In case a new substation is required, depending on its transient voltage of the substation, it might fall into the category of Item H.1 of Schedule 2 of the EIAO:

- H.1: A 400kV electricity substation and transmission line.

Retention Lake

1.5.1.9 Six retention lakes are proposed within the Project Site. Depending on their sizes, they might fall into the category of Item I.2 of Schedule 2 of the EIAO:

- I.2: A flood storage pond more than 10 ha in size.

Miscellaneous

1.5.1.10 As part of the Project Site slightly encroaches in the most southern part of the Mai Po Village Site of Special Scientific Interest (SSSI), it will fall into the category of Item Q.1 of Schedule 2 of the EIAO:

- Q.1: All projects including new access roads, railways, sewers, sewage treatment facilities, earthworks, dredging works and other building works partly or wholly in an existing or gazetted proposed country park or special area, a conservation area, an existing or gazetted proposed marine park or marine reserve, a site of cultural heritage, and a site of special scientific interest, except for the following---
 - (a) Minor maintenance works to roads, drainage, slopes and utilities;
 - (b) Minor public utility works including the installation of telecommunications wires, joint boxes, power lines with a voltage level of not more than 66 kV, and gas pipelines with a diameter of 120 mm or less;
 - (c) Education and recreational facilities not otherwise designated projects listed in Parts A to P and approved by the Country and Marine Parks Authority;
 - (d) All earthworks relating to forestry, agriculture, fisheries and the management of vegetation;
 - (e) New Territories exempted houses;
 - (f) Footpaths and facilities relating to sitting out areas;
 - (g) Minor facilities relating to the management and protection of marine parks, marine reserves, country parks and special areas;
 - (h) All works not otherwise designated projects listed in Parts A to P undertaken by the Country and Marine Parks Authority under section 4 of the Country Parks Ordinance (Cap. 208) or section 4 of the Marine Parks Ordinance (Cap. 476) for development and managing country parks and special areas, marine parks and marine reserves;
 - (i) Maintenance of existing waterworks installations; or
 - (j) Minor works including---
 - (i) Improvements to catchwaters;
 - (ii) The provision of---
 - (A) Water pipes and valves of diameter 450mm or less;

- (B) Water tanks;
- (C) Hydrological stations and associated structures; and
- (D) Village supply schemes.

1.5.1.11 The potential cavern development to north of the Ngau Tam Mei Water Treatment Works within the Project Site will fall into the category of Item Q.2 of Schedule 2 of the EIAO:

- Q2. Underground rock caverns.

1.6 Name and Telephone Number of Contact Person

1.6.1.1 All queries regarding the Project can be addressed to:

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2 Outline of Planning and Implementation Programme

2.1 Project Implementation

- 2.1.1.1 Preliminary planning, engineering and environmental studies have been conducted to formulate development and infrastructure proposal for the Project, and Preliminary Outline Development Plan (PODP) has been developed based on the findings. An Environmental Impact Assessment (EIA) will be carried out for the PODP and any subsequent design developments.
- 2.1.1.2 Specialist environmental consultants will be employed by Project Proponent for undertaking the EIA study according to the Study Brief to be issued by the Director of Environmental Protection and to respond on behalf of the Project Proponent on issues related to the EIA.
- 2.1.1.3 The Project Proponent or other parties will be responsible for implementing the proposed works, together with all the environmental mitigation measures, the environmental monitoring and audit requirements as recommended in the EIA study of this Project.
- 2.1.1.4 Subject to the findings of the EIA study, the construction works of the proposed development and infrastructure for the Project may be carried out in phases by contractors to be appointed by the Government under various works contracts.

2.2 Project Time Table

- 2.2.1.1 The development of the STLMC DN will tie in with the implementation programme on commissioning of the planned Northern Link (NOL), the proposed San Tin Station expected in Year 2034 as well as other intermediate stations and associated railway facilities.

2.3 Interactions with Other Projects

- 2.3.1.1 The Project may have interactions with the following projects:
- Housing Sites in Yuen Long South;
 - Hung Shui Kiu/Ha Tsuen New Development Area;
 - Kwu Tung North New Development Area;
 - Development of Lok Ma Chau Loop; and
 - Northern Link.
- 2.3.1.2 The above project list will be updated during the course of the EIA Study to ensure that all the latest projects available from the respective stakeholders are incorporated. Any interfacing issues and cumulative impacts from these concurrent projects during both construction and operational phases of the Project will be identified and addressed as appropriate.

3 Possible Impacts on the Environment

3.1 General

- 3.1.1.1 The works for the Project will include site clearance, site formation, building works and the associated infrastructure works, such as the necessary slope works, road works, sewerage works, utility works, etc. It is anticipated that the surrounding sensitive receivers may be affected during the construction and operational stages of the Project.
- 3.1.1.2 Potential environmental impacts associated with the construction and operation of the Project have been identified based on the PODP and are described below.

3.2 Air Quality

Construction Phase

- 3.2.1.1 Construction works include site clearance, site formation, building works and infrastructure works as well as drilling and blasting for the potential cavern development, etc. During construction, dust is the potential air quality impact which would be generated from construction activities such as material handling, excavation, vehicular movements and erosion of unpaved areas and stockpiles. Potential air quality impacts associated with these pollution sources during construction phase would be addressed in the EIA study.

Operational Phase

- 3.2.1.2 The major air pollution sources will be the vehicular emission from traffic on existing major roads (e.g. San Tin Highway/Fanling Highway, Castle Peak Road, San Sham Road) and proposed roads as well as industrial emission from potential chimneys (e.g. chimneys at the planned San Tin Columbarium and the potential cavern development to the north of the NTMWTW). In addition, odour from existing livestock farms (pig farms and chicken farms), existing sewage treatment works at San Tin Barracks, proposed on-site sewage treatment works of the Project and proposed resource recovery and transfer station are other potential sources of air pollution. Potential air quality impacts associated with these pollution sources during operational phase would be addressed in the EIA study.

3.3 Noise

Construction Phase

- 3.3.1.1 The noise generated from construction activities, such as piling works, operation of construction plant and equipment as well as construction traffic along site access roads will have the potential to pose adverse noise impacts on the surrounding sensitive receivers. Potential noise impacts associated with these pollution sources during construction phase would be addressed in the EIA study.

Operational Phase

- 3.3.1.2 The major operational noise sources will be the traffic on existing roads (e.g. San Tin Highway/Fanling Highway, Castle Peak Road, San Sham Road) and proposed roads, existing fixed noise sources (e.g. Mai Po Ventilation Building, Chau Tau Ventilation Building, Mai Po Substation, firing ranges near San Tin Barracks and Tam Mei Barracks as well as rural industries which are scattered along the Project

Site Boundary), fixed noise sources from the proposed developments (e.g. sewage pumping stations, sewage treatment works, fire station cum ambulance depot, sports centre, enterprise and technology park, public transport interchanges, district cooling system, eco-hub, logistics, storage and workshop) as well as existing railway (i.e. East Rail Line (ERL), Express Rail Link (XRL)) and planned railway (i.e. Northern Link (NOL)) within and in the vicinity of the Project. Potential noise impacts associated with these pollution sources during operational phase would be addressed in the EIA study.

3.4 Water Quality

Construction Phase

- 3.4.1.1 The Project will involve various construction activities undertaken at various time durations. The activities which may have impact on water quality include site formation, bore piling, construction of buildings, construction of road network as well as sewage effluent from the workforce. Water quality impacts during construction phase may include construction site runoff, sewage from workforce, accidental spillage of chemicals, contaminated groundwater and wastewater as well as runoff from removal and filling of ponds. Potential water quality impacts associated with these pollution sources during construction phase would be addressed in the EIA study.
- 3.4.1.2 Potential water quality issues during construction phase to be considered and addressed in the EIA study include but not limited to:
- Polluted surface runoff, sewage from workforce, accidental spillage of chemicals from proposed roadworks;
 - Groundwater drawdown due to excavation works; and
 - Discharge of high nutrient load water from pond dewatering.

Operational Phase

- 3.4.1.3 Water quality impacts during operational phase will result in increase of surface runoff, domestic and non-domestic (e.g. commercial, retail, dining and entertainment, G/IC, toilets in open space) sewage, wastewater from industries (e.g. advanced manufacturing, eco-hub, logistics, storage and workshop) and cooling water discharge. Potential water quality impacts associated with these pollution sources during operational phase would be addressed in the EIA study.
- 3.4.1.4 Potential water quality issues during operational phase to be considered and addressed in the EIA study include but not limited to:
- Identification and quantification of non-point water pollution sources;
 - Polluted surface runoff from operation of the proposed roads;
 - Temporary discharge of raw sewage;
 - Reuse quality standard and the fallback when the reuse facility is out of service; and
 - Polluted surface runoff and the sewage treatment within the proposed RRTS.

3.5 Waste Management

Construction Phase

- 3.5.1.1 Solid wastes will mainly be generated from a wide range of construction activities such as site formation, construction of roads, proposed housing developments, infrastructure and potential cavern development. Wastes which may arise from the Project during construction phase include construction & demolition (C&D) materials, general refuse, chemical waste, fishpond sediment/ mud and contaminated soil. The quantities of wastes to be generated during construction phase will largely depend on the extent of the proposed new developments and infrastructures of the Project. The waste management implication during construction phase would be addressed in the EIA study.

Operational Phase

- 3.5.1.2 Wastes which may arise from the Project during operational phase include municipal solid waste from domestic uses (e.g. village and residential developments) and non-domestic uses (e.g. retail, dining and entertainment, commercial, agriculture, enterprise and technology park, logistics, storage and workshop, G/IC, open space) as well as screening, grits and dewatered sludge from sewage treatment works and pumping stations. The storage, handling and disposal of the waste, if not carried out properly, may have the potential to cause adverse environmental impact. The waste management implication during operational phase would be addressed in the EIA study.

3.6 Land Contamination

- 3.6.1.1 While there are no extensive areas of contaminated land such as landfills in the Project Site, there is potential for the presence of residues from brownfield land uses such as vehicle maintenance, warehouse, construction material storage, container storage, waste recycling and metal workshop to create an adverse impact that will need to be cleaned up during the site formation phase.
- 3.6.1.2 The contaminated land impacts are likely to be related to the following: health risks to site workers, disposal of contaminated soils, where encountered, and potential health risks to future users of the sites. The land contamination issue and its impact within the Project Site would be identified and assessed in the EIA study.

3.7 Hazard to Life

Construction Phase

- 3.7.1.1 Hazard-to-life impact during construction phase may be arisen from the following activities:

Drill-and-Blast for the Potential Cavern Development

- Construction activities;
- Increase number of persons (i.e. construction workers) within the consultation zone (CZ) of the NTMWTW;
- Transport of explosive; and
- Use of explosive (blasting).

NTMWTW

- Drum failure;
- Liquid pipework and fittings failure;
- Gaseous chlorine release; and
- Effectiveness of contain and absorb system.

3.7.1.2 A quantitative risk assessment (QRA) would be conducted in the EIA study to assess the hazard-to-life impact during construction phase.

Operational Phase

3.7.1.3 Hazard-to-life impact during operational phase may be arisen from the operation of the NTMWTW. Activities are the same as those stated in construction phase.

3.7.1.4 A QRA would be conducted in the EIA study to assess the hazard-to-life impact during operational phase.

3.7.1.5 In addition, hazard-to-life impact may arise from the storage and usage of dangerous goods at the proposed sewage treatment works. Those hazard-to-life impact would also be assessed in the EIA study if necessary.

3.8 Landfill Gas Hazard

3.8.1.1 The closed Ngau Tam Mei Landfill (NTML) is located to the southwest of the Project Site. Part of the Project Site falls within the 250m CZ. Potential risk of landfill gas hazard during both construction and operational phases would be addressed in the EIA study.

3.9 Ecology

3.9.1.1 Based on the preliminary ecology review which only involves desktop review, several habitats have been identified within the 500m Assessment Area. These habitats include channelised watercourse, semi-natural watercourse, pond, mitigation wetland, agricultural land, orchard, grassland, grassland/shrubland, shrubland, plantation, woodland, waste ground and developed area.

3.9.1.2 The PODP has already preserved the agricultural land, ponds, watercourses and woodland within the DN as far as practicable, especially those which are evaluated as of higher ecological value among other types of habitats identified.

3.9.1.3 Based on the preliminary desktop review, recognised sites of conservation importance within and in the vicinity of the 500m Assessment Area include:

- Wetland Conservation Area (WCA);
- Wetland Buffer Area (WBA);
- Mai Po Nature Reserve;
- Mai Po Inner Deep Bay Ramsar Site;
- Mai Po Village Site of Special Scientific Interest (SSSI);
- Mai Po Marshes SSSI;
- Lam Tsuen Country Park;
- Mai Po Village Egret; and

- Mai Po Lung Village Egrettry.

3.9.1.4 Based on the preliminary desktop review, species of conservation importance recorded within and in the vicinity of the Assessment Area include:

- Flora (e.g. *Aquilaria sinensis*, *Gnetum luofuense*);
- Mammals (e.g. Short-nosed Fruit Bat);
- Avifauna (e.g. Little Egret, Chinese Pond Heron);
- Amphibians (e.g. Chinese Bullfrog, Two-striped Grass Frog);
- Reptiles (e.g. Banded Stream Snake);
- Butterflies (e.g. Hainan Palm Dart, Grass Demon, Swallowtail, Oriental Straight Swift, Metallic Cerulean, Peacock Royal, Small Three-ring,);
- Dragonflies (e.g. Scarlet Basker, Emerald Cascader);
- Freshwater Fish (e.g. Rose Bitterling, Small Snakehead); and
- Aquatic Invertebrates (e.g. *Cryptopotamon anacoluthon*, *Somanniathelphusa zanklon*).

3.9.1.5 The potential direct ecological impact arising from the Project would be the loss of habitats. The potential indirect ecological impact arising from the Project may be associated with:

Construction Phase:

- (i) Disturbance to habitats and wildlife due to artificial light, construction noise, vibration, dust, and other forms of human disturbances, etc. Attention should be paid to the potential disturbance to the Mai Po Lung Village Egrettry due to the close proximity between the proposed Shek Wu Wai Interchange and the egrettry, and the potential disturbance to the Lam Tsuen Country Park during the construction of the potential cavern development; and
- (ii) Impacts to water quality, hydrology and/or aquatic fauna from surface run-off with dust and exposed earth or accidental spillage of chemicals, lubricants and pollutants from the construction site.

Operational Phase:

- (i) Disturbance to habitats and wildlife due to the increased level of traffic and human disturbance, primarily in the forms of additional noise and artificial light, etc. Attention should be paid to the potential disturbance to the Mai Po Lung Village Egrettry due to the close proximity between the proposed Shek Wu Wai Interchange and the egrettry, and the potential disturbance to the Lam Tsuen Country Park during the operation of the potential cavern development;
- (ii) Disturbance to wintering wetland-dependent birds in an area encroaching into the WBA and bordering the WCA; and
- (iii) Potential obstruction of avifauna flight paths by proposed developments at the proposed Enterprise and Technology Park, and at the area to be released at LMCCP.

3.10 Agriculture and Fisheries

3.10.1.1 Potential impacts from the Project may arise from the following:

Construction Phase

- (i) Temporary or permanent loss of agricultural land / fish ponds or areas for farming / fisheries operation;
- (ii) Impacts on pond bund stability, hydrology (e.g. water seepage, impact on supply of irrigation water);
- (iii) Blockage of access to farmland or fish ponds; and
- (iv) Deterioration of water quality or degradation of the environmental conditions of the farmland or fish ponds.

Operational Phase

- (i) Blockage of access, and
- (ii) Degradation/ deterioration of environmental conditions of farmland and fish ponds due to induced-water quality impacts from sewage and runoff from the Project.

3.11 Cultural Heritage

3.11.1.1 Potential impact from the Project may arise from the following:

Construction Phase

- (i) Archaeological resources, if any, are expected to be directly impacted by the site formation and construction work associated with the proposed development.
- (ii) Depending on the design and construction method use, vibration and access may be cause impacts on the built heritage resources during the construction phase.

Operational Phase

3.11.1.2 There are no expected further impacts to archaeology or built heritage during the operational phase, subject to further review under the EIA study.

3.12 Landscape and Visual

3.12.1.1 The potential landscape impacts, if any, arising from the Project may be as follows:

Construction Phase

- (i) Loss of agricultural land;
- (ii) Loss of mixed shrubland and grassland;
- (iii) Loss of woodland;
- (iv) Loss of existing tree plantings;
- (v) Loss of ponds;
- (vi) Loss of natural streams; and
- (vii) Demolition of existing structures/ features within the construction footprint.

Operational Phase

- (i) Residual impacts of the loss of agricultural land;
- (ii) Residual impacts of the loss of shrubland and grassland;
- (iii) Residual impacts of the loss of woodland;
- (iv) Residual impacts of the loss of existing tree plantings;
- (v) Residual impacts of the loss of ponds;
- (vi) Residual impacts of the loss of natural streams; and
- (vii) Irreversible change of existing landscape character.

3.12.1.2 The potential visual impacts, if any, arising from the Project may be as follows:

Construction Phase

- (i) Visual intrusion as a result of construction, such as open works/ excavation, stockpiling/ storage of materials, temporary works and temporary site accommodation;
- (ii) Loss of visual amenity due to clearance of vegetation or tree planting; and
- (iii) Visual intrusion as a result of removing existing screen planting or structures.

Operational Phase

- (i) Visual quality as a result of loss of vegetation cover or tree planting;
- (ii) Visual quality as a result of additional traffic movements; and
- (iii) Visual quality as a result of the appearance of new structures, widened and more extensive road corridor, hard surfaces and road furniture (signs, lighting columns).

3.12.1.3 Landscape and visual impact of the Project on Landscape Resources (LRs) and Landscape Character Areas (LCAs) as well as associated residual impact will be addressed in the EIA study. Mitigation measures for prevention and alleviation of impact on all LRs and LCAs will also be addressed in the EIA study.

4 Major Elements of the Surrounding Environment

4.1 Surrounding Environment including Existing and Planned Sensitive Receivers

- 4.1.1.1 Existing sensitive receivers and sensitive parts of the surrounding environment which might be affected by the Project include the following:
- a) Villages (e.g. Mai Po San Tsuen, Tsing Lung Tsuen, Shek Wu Wai, Pun Uk Tsuen, Chau Tau, Tung Chun Wai, Pak Shek Au, Ngau Tam Mei East);
 - b) Residential developments (e.g. Scenic Heights, Rolling Hills, Eden Villa, The Vineyard);
 - c) Barracks (e.g. San Tin Barracks, Tam Mei Barracks);
 - d) Educational institutions (e.g. Tun Yu School);
 - e) Recreational parks (e.g. Man Tin Cheung Park);
 - f) Places of worship (e.g. Tung Shan Temple);
 - g) Government, institution and community (G/IC) facilities (e.g. NTMWTW Chemical Building and Administration Building);
 - h) Watercourses (e.g. watercourses between Shek Wu Wai and Pang Loon Tei, San Tin Eastern Main Drainage Channel);
 - i) Fish ponds;
 - j) Water catchment areas (e.g. Deep Bay Catchment Area);
 - k) Areas of conservation value (e.g. WCA, WBA, Mai Po Nature Reserve, Mai Po Inner Deep Bay Ramsar Site, Mai Po Village SSSI, Mai Po Marshes SSSI, Lam Tsuen Country Park, Mai Po Village Egrettry, Mai Po Lung Village Egrettry);
 - l) Places of visual value (e.g. ridgeline from Ngau Tam Shan to the south and Ki Lun Shan to the east); and
 - m) Heritage sites (e.g. Graded Historical Building (i.e. Tung Shan Temple and Entrance Gate, Enclosure Walls and Shrine of Yan Shau Wai), New Item proposed to be graded (i.e. N186, Gatehouse, Watchtowers, Enclosing Walls of Yan Shau Wai), Nil-Grade Historic Building (Entrance Gate, Shek Wu Wai), Mai Po SAI, historical villages (i.e. Shek Wu Wai, San Tin Tsuen, Mai Po Tsuen, Pun Uk Tsuen and Chau Tau).
- 4.1.1.2 According to the proposed land uses in the PODP, the sensitive receivers include proposed private and public housing development, school, general clinic, GIC complex, enterprise and technology park, retail, dining and entertainment, etc.
- 4.1.1.3 Existing and future sensitive receivers and sensitive parts of the natural environment would be identified under the EIA study.

4.2 Air Quality

- 4.2.1.1 The Project Site are mainly flat land. Existing air sensitive receivers (ASRs) include villages (e.g. Mai Po San Tsuen, Tsing Lung Tsuen, Shek Wu Wai, Pun Uk Tsuen, Chau Tau, Tung Chun Wai, Pak Shek Au, Ngau Tam Mei East, etc.), residential developments (e.g. Scenic Heights, Rolling Hills, Eden Villa, The Vineyard, etc.), barracks (e.g. San Tin Barracks, Tam Mei Barracks, etc.), educational institutions (e.g. Tun Yu School, etc.), recreational parks (e.g. Man Tin Cheung Park, etc.) and GIC (e.g. NTMWTW Chemical Building and Administration Building, etc.). The ASRs include proposed private and public housing development, school, general clinic, GIC complex, enterprise and technology park, retail, dining and entertainment, etc. of the Project. The EIA study would assess the air quality impact on the sensitive receivers.

4.3 Noise

- 4.3.1.1 The Project Site are mainly flat land. Existing noise sensitive receivers (NSRs) include villages (e.g. Mai Po San Tsuen, Tsing Lung Tsuen, Shek Wu Wai, Pun Uk Tsuen, Chau Tau, Tung Chun Wai, Pak Shek Au, Ngau Tam Mei East, etc.), residential developments (e.g. Scenic Heights, Rolling Hills, Eden Villa, The Vineyard, etc.), barracks (e.g. San Tin Barracks, Tam Mei Barracks, etc.), educational institutions (e.g. Tun Yu School, etc.) and places of worship (e.g. Tung Shan Temple, etc.). The NSRs include proposed private and public housing development, school, general clinic, GIC complex, etc. of the Project. The EIA study would assess the noise impact on the sensitive receivers.

4.4 Water Quality

- 4.4.1.1 The Project Site is located in the east of San Tin Wetland, the surface runoff in the vicinity is collected by the channelized nullahs such as channel at south of Lung Hau Road, rivers near LMC / San Tin Highway Connection, tributary rivers of Shenzhen River near Shek Wu Wai, rivers near Shek Wu Wai Road and San Tin Highway, and rivers near Castle Peak Road (Mai Po) before discharging into Deep Bay. Existing water sensitive receivers (WSRs) include WCA, WBA, fish ponds, watercourses and SSSI within and in the vicinity of the Project. The WSRs include the proposed retention lakes of the Project. The EIA study would assess the water quality impact on the sensitive receivers.

4.5 Waste Management

- 4.5.1.1 The existing solid waste arising from the area within the Project Site includes domestic waste from village houses, agricultural waste, commercial/ industrial waste generated from open storage and informal industrial uses, and chemical waste from vehicle dismantle and repair operations. The EIA study would assess the waste management implication.

4.6 Land Contamination

- 4.6.1.1 The existing environment in the Project Site includes rural land uses such as agriculture and villages as well as brownfield land uses such as vehicle maintenance, warehouse, construction material storage, container storage, waste recycling and metal workshop. The main expected contaminants from the land uses in the Project Site are from by-products from the brownfield land uses, which

include the use and/or storage of chemicals and metals. Land contamination assessment will be carried out under the EIA study to formulate appropriate contamination assessment plans and remediation action plans, if necessary.

4.7 Hazard to Life

- 4.7.1.1 The NTMWTW is located immediately to the south of the potential cavern development, which is within the 1km CZ and 250m safety buffer zone (SBZ) of NTMWTW. The EIA study would assess the hazard to life implication.

4.8 Landfill Gas Hazard

- 4.8.1.1 Two closed landfills, namely Ma Tso Lung Landfill (MTLL) and NTML, are located in vicinity of the Project Site.
- 4.8.1.2 MTLL and its 250m CZ are located to the northeast of the Project Site at approximately 570m and 320m away from the Project Boundary respectively.
- 4.8.1.3 NTML is located to the southwest of the Project Site at approximately 240m away from the Project Boundary. Part of the Project Site falls within the 250m CZ.

4.9 Ecology

- 4.9.1.1 The boundary of the WCA is located to the northwest of the STLMC DN. The WCA covers all existing contiguous and adjoining active/abandoned fishponds in the landward part of the Ramsar Site and its adjacent area. The DN does not encroach into the WCA.
- 4.9.1.2 An approximately 500m wide strip of land along the landward side of the WCA is designated as the WBA to protect the ecological integrity of the fishponds and wetlands within the WCA and to prevent developments that would have a negative off-site impact on the ecological value of fish ponds. Near the north of San Tin Interchange, a small part of the DN falls within the WBA. A substantial part of the area currently constitutes degraded habitat and urbanised elements.
- 4.9.1.3 The Mai Po Village Egrettry is located at the junction of Tam Kon Chau Road and Castle Peak Road, which is outside the DN boundary at the west. The Mai Po Lung Village Egrettry is located at near Mai Po Lung across the San Tin Highway, which is also outside of the DN boundary.
- 4.9.1.4 An area of approximately 256ha to the east, southeast and south of the DN is zoned as Conservation Area. This swathe of hillside area stretches from Ki Lun Shan to the foot of Kai Kung Leng, abutting Lam Tsuen Country Park. This zoning is intended to protect and retain the existing natural landscape, ecological or topographical features of the area for conservation, educational and research purposes and to separate sensitive natural environment such as Lam Tsuen Country Park from the adverse effects of development.
- 4.9.1.5 The Mai Po Village SSSI, together with the fish pond area to the northwest of the DN, falls within the Priority Site for Enhanced Conservation of Mai Po and Inner Deep Bay Ramsar Site under the New Nature Conservation Policy since 2004. A small part of the DN falls within the Mai Po Village SSSI.

- 4.9.1.6 The Mai Po and Inner Deep Bay area was designated as a Ramsar Site on 4 September 1995 under the Ramsar Convention, and covers approximately 1500 ha of wetland. The area is located outside the DN boundary at the west.
- 4.9.1.7 A small area of Lam Tsuen Country Park, which is the northern foot of Kai Kung Leng, is covered in the 500m Assessment Area to the southeast of the Ngau Tam Mei Water Treatment Works.
- 4.9.1.8 Other recognised sites of conservation importance in the wider area include Mai Po Nature Reserve, although it is located more than 500m away from the STLMLC DN.
- 4.9.1.9 Ecological impact assessment will be carried out in EIA to address the possible ecological impacts on the environment due to the implementation of the Project.

4.10 Agriculture and Fisheries

- 4.10.1.1 Within the DN, a mosaic active and abandoned agricultural land was present to the northeast of Shek Wu Wai San Tsuen. Common crops such as *Oryza sativa*, *Zingiber officinale*, *Brassica chinensis*, *Lactuca sativa* and *Ipomoea aquatica*, and fruit trees *Musa x paradisiaca* and *Psidium guajava* were planted in this habitat.
- 4.10.1.2 No capture fisheries activities were identified within the DN. Thus, capture fisheries impact assessment for this Project is regarded not necessary. Ponds within the DN are mostly abandoned and overgrown with herbs such as *Bidens alba*, *Colocasia esculenta*, *Commelina diffusa*, *Ipomoea cairica* and *Mikania micrantha*. No active pond fisheries within the DN were identified.

4.11 Cultural Heritage

- 4.11.1.1 An assessment area comprising 200m from the Project Boundary will be adopted. There is two Grade 3 Historic Buildings (Tung Shan Temple (located at ~145m away from the DN) as well as Entrance Gate, Enclosing Walls and Shrine of Yan Shau Wai (located at ~160m away from the DN) and one Nil-Grade Historic Building (Entrance Gate, Shek Wu Wai (located within the DN)) identified within the 200m assessment area. All these historic buildings are located outside the DN except for the Nil-Grade Historic Building (Entrance Gate, Shek Wu Wai) which is in Shek Wu Wai within the DN. Besides, Shrine, 8, 9-12 Shek Wu Wai also fall within the DN.
- 4.11.1.2 Mai Po Site of Archaeological Interest (SAI) is the only SAI identified within the 200m assessment area, and it partially falls within the Project Boundary.
- 4.11.1.3 The assessment area contains various historical villages, of which only Shek Wu Wai is situated within the Project Boundary. Tsing Lung Tsuen, Tung Chan Wai, Yan Shau Wai, On Lung Tsuen, Wing Ping Tsuen, Fan Tin Tsuen, San Lung Tsuen (collectively know as San Tin Tsuen), Mai Po San Tsuen, Mai Po Tsuen, Pun Uk Tsuen, and Chau Tau also lie within the assessment area, and Ngau Tam Mei lies in close proximity to the consultation zone.
- 4.11.1.4 Cultural heritage resources within the assessment area and proposed development area for the Project will be identified in a Cultural Heritage Impact Assessment to be conducted under the EIA study.

4.12 Landscape and Visual

- 4.12.1.1 The composition of LRs within the study area consists of urban/ rural land uses, which include agricultural land, pond, marsh/reedbed, natural stream, channelised watercourse, grassland, shrubland, woodland, plantation, orchard, village type, urbanised development, open storage, waste ground/temporary used area, graves, etc.
- 4.12.1.2 No registered Old and Valuable Tree (OVT) are identified within the study area. Nevertheless, there might be potential sensitive LRs such as potential OVT, rare, precious, endangered and protected plants of Hong Kong and large size trees (i.e. diameter at breast height (DBH)>1000mm).
- 4.12.1.3 The composition of LCAs within the study area consists of settled valley landscape, upland and hillside landscape, rural coastal plain landscape, rural inland plain landscape, urban peripheral village landscape, miscellaneous rural fringe landscape, comprehensive residential development, institutional landscape, transportation corridor landscape, miscellaneous urban fringe landscape, etc.
- 4.12.1.4 The visual envelope of the Project is mainly formed by the adjacent ridgelines from Ngau Tam Shan to the south and Ki Lun Shan to the east. A series of receiver group areas can be identified within the visual envelope based on existing land use and physical conditions. Subject to landscape and visual assessment, the following areas are covered by the visual envelope:
- (i) Maple Gardens;
 - (ii) Mai Po San Tsuen;
 - (iii) San Tin Highway;
 - (iv) Tsing Lung Tsuen;
 - (v) Luk Mei Tsuen;
 - (vi) Palm Springs and Fairview Park;
 - (vii) San Tin;
 - (viii) Mai Po;
 - (ix) Kai Kung Leng Hiking Trail;
 - (x) Chau Tau;
 - (xi) MTR Lok Ma Chau Station;
 - (xii) Ki Lun Shan;
 - (xiii) Ngau Tam Shan; and
 - (xiv) Lam Tsuen Country Park.
- 4.12.1.5 Visual sensitive receivers (VSRs) can be located within the above receiver group areas and they may be classified into residential buildings, non-residential buildings, and public in external areas, including travellers on transport routes.
- 4.12.1.6 Appropriate Vantage Points (VPs) will be identified and used as points from which to mark-up photomontages to help illustrate the visual impact of the Project.
- 4.12.1.7 Landscape and visual impact of the Project will be addressed in the EIA study.

5 Environmental Protection Measures to be Incorporated in the Design and Any Further Environmental Implications

5.1 General

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

5.2 Air Quality

Construction Phase

5.2.1.1 In order to prevent adverse impacts on air quality, the control measures stipulated in the Air Pollution Control (Construction Dust) Regulations should be implemented, wherever applicable, to limit the dust emissions from the Project Site. Mitigation measures, including but not limited to the following, will be put in place:

- In the process of material handling, any material which has the potential to create dust should be treated with water or sprayed with a wetting agent where practicable;
- A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones;
- Any vehicle with an open load compartment used for transferring dusty materials offsite should be properly fitted with side and tail boards and cover;
- Stockpiles of sand and aggregate should be enclosed on three sides and water sprays should be used to dampen stored materials;
- When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;
- Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;
- Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;
- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to

enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;

- Motorised vehicles on site shall be confined to designated haul routes which should be paved or surfaced with hardcore; and
- Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.

Operational phase

5.2.1.2 In order to mitigate adverse air quality and odour impacts, the following general mitigation measures will be put in place where appropriate:

- (i) Vehicle Emissions from Existing and Proposed Open Roads
 - Provide adequate buffer distance, tree planting and dense shrub plantation, where appropriate, to separate the pedestrians and heavily trafficked roads.
- (ii) Industrial Emissions from Potential Chimneys
 - Joss paper burner at the planned San Tin Columbarium is suggested to adopt Best Available Technology (BAT) accordingly to “Guidelines on Air Pollution Control for Joss Paper Burning” to minimize the potential nuisance; and
 - Provide adequate buffer distance between chimney and ASRs.
- (iii) Odour Impact from Existing Livestock Farms (Pig Farms and Chicken Farms)
 - Use of active carbon filter at fresh air intake and locate the fresh air intake at a higher level, e.g. rooftop; and
 - Remove farms if necessary.
- (iv) Odour Impact from Proposed Sewage Pumping Station/ Sewage Treatment Works
 - Design should be in accordance with DSD’s Standard Design on Sewage Pumping Station, with all pumps located underground and enclosed within a structure/building, where appropriate;
 - Locate the sewage pumping stations/ sewage treatment works as far as possible from ASRs; and
 - Deodorization system should be installed and good housekeeping practice should be adopted.
- (v) Odour Impact from Proposed Resource Recovery and Transfer Station
 - Provide odour removal system for the Refuse Collection Points (RCPs) to reduce odour nuisance in the vicinity; and
 - Enhancement of air scrubbing devices, installation of air curtains, provision of vehicle washing facilities to ensure cleanliness of refuse

collection vehicles leaving the station and installation of additional mobile deodourisers.

5.3 Noise

Construction Phase

5.3.1.1 In order to mitigate adverse construction noise impacts, the following general mitigation measures will be put in place where appropriate:

- Good site management practices should be implemented as effective noise mitigation measures. These should include, but not limited to, locating noisy equipment and activities as far from NSRs as practical, scheduling noisy activities to minimise exposure of nearby NSRs to high levels of construction noise, proper maintenance of construction plant and devising methods of working to minimise noise impacts on the surrounding environment;
- Quiet alternative construction method should be considered to minimise noise impacts on the surrounding environment;
- Quality Powered Mechanical Equipment should be used to reduce noise generated;
- Movable noise barrier and full enclosure for relatively fixed plant should be provided, if necessary, to screen NSRs from particular items of plant or noisy operations; and
- Noise screening structures or purpose-built noise barriers should be provided, if necessary, along the site boundary to provide additional protection to NSRs nearby.

Operational Phase

5.3.1.2 In order to mitigate adverse operational noise impacts, the following general mitigation measures will be put in place where appropriate:

(i) Road Traffic Noise

- Optimise building design in the proposed building scheme, including the use of central air conditioning system as possible to avoid open window ventilation for proposed mixed use;
- Adopt alternative building orientation for some proposed schools;
- Install barrier or enclosure along proposed roads or boundary wall along residential building boundary to provide effective screening to the affected units;
- Adopt special building design (e.g. architectural fin, building orientation, noise tolerant building, podium, etc.) and other at-receiver mitigation measures (e.g. acoustic window, acoustic balcony, etc.) could be considered for some residential premises after consideration of at-source mitigation measures; and
- Use Low Noise Road Surface (LNRS) on proposed roads when the material is suitable for the specific road condition.

(ii) Fixed Noise

- Enclose all the pumps and noisy plants inside a building structure, including proposed sewage pumping stations, sewage treatment works as well as public transport interchanges;
- Proper selection of quiet plants aiming to reduce the tonality at NSRs; and
- Install silencers/ acoustic enclosure/ acoustic louvres at the intakes/exhausts to further minimise the noise impact.

(iii) Railway Noise

- Optimise building design in the proposed building scheme, including the use of central air conditioning system as possible to avoid open window ventilation for proposed mixed use;
- Adopt alternative building orientation for some proposed schools;
- Adopt special building design (e.g. architectural fin, building orientation, noise tolerant building, podium, etc.) and other at-receiver mitigation measures (e.g. acoustic window, acoustic balcony, etc.) could be considered for some residential premises after consideration of at-source mitigation measures; and
- The ground-borne noise impact from the planned NOL will be assessed in separate EIA study for the NOL to ensure meeting the relevant criteria.

5.4 Water Quality

Construction Phase

5.4.1.1 In order to mitigate adverse construction water quality impacts, the following general mitigation measures will be put in place where appropriate:

(i) General

- Removal of waterbodies such as watercourse and ponds should be avoided. If work is unavoidable, adequate impact assessment with appropriate mitigation measures following ETWB TCW No. 5/2005, especially on watercourses and ponds with moderate ecological value, should be conducted.

(ii) Construction Site Runoff

- Appropriate precautionary measures shall be adopted to prevent site runoff to the watercourses retained within and in the vicinity (e.g. watercourses between Shek Wu Wai and Pang Loon Tei, San Tin Eastern Main Drainage Channel) of the Project Site.

(iii) Sewage from Workforce

- Adequate portable chemical toilets should be provided to ensure all sewage is properly collected.

- (iv) Accidental Spillage of Chemicals
 - Best practices of chemical storage practices such as storage under covered area, provision of secondary containment and material safety data sheets are should be applied. Spill kits should be provided to handle spillage and the staff should be trained for handling spillage.
- (v) Contaminated Groundwater and Wastewater
 - If excavations take place below the groundwater table, there may be a need to dewater the pits for safety and construction purposes; and
 - All the contaminated water should be collected, treated and disposed in a manner in accordance with ProPECC Note PN1/94 and relevant guidelines.
- (vi) Runoff from Removal/Filling Ponds
 - Proper management of the drained water and sediment shall be implemented to prevent release to existing watercourses.
- (vii) Pond Dewatering
 - Water in existing pond shall be sampled and pre-treated if required before discharge.

Operational Phase

5.4.1.2 In order to mitigate adverse operational water quality impacts, the following general mitigation measures will be put in place where appropriate:

- (i) Stormwater Runoff
 - Proper drainage systems with gullies, silt traps and manholes installed will be provided for the proposed development sites and roads, such that runoff will be intercepted and common site debris, refuse and fallen leaves etc. can be captured before allowing the runoff to drain into the nearby watercourse.
- (ii) Domestic and Non-Domestic (e.g. commercial, retail, dining and entertainment, G/IC, toilets in open space) Sewage
 - Reuse of the treated sewage effluent generated from the proposed sewage treatment works within the Project Site for non-potable uses such as toilet flushing, controlled irrigation and external cleaning use.
- (iii) Wastewater from Industries (e.g. advanced manufacturing, eco-hub, logistics, storage and workshop)
 - For individual industrial tenants, discharge license under WPCO will be required individually and the discharge standards according to TM-DSS to government foul sewers will be applied; and
 - Pre-treatment may be considered subject to the effluent characteristics.
- (iv) Cooling Water Discharge
 - Impact from the discharge on sensitive receivers should comply with the criteria agreed with EPD and a discharge license would be applied before its operation. Once the discharge is confirmed to Deep Bay, the actual

discharge flow and load would also comply with the requirement for “No Net Increase in Pollution Loading” into Deep Bay.

- (v) Resource Recovery and Transfer Station
- Contaminated surface runoff and the sewage treatment within the proposed RRTS should be controlled.

5.5 Waste Management

Construction Phase

5.5.1.1 Recommended good site practices, waste reduction measures as well as the waste transportation, storage and collection are described in the following:

- (i) Good Site Practice
- Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;
 - Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;
 - Provision of sufficient waste disposal points and regular collection for disposal;
 - Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
 - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and
 - A waste management plan (WMP) should be prepared by the contractor in accordance with ETWB TCW No. 19/2005 and submitted to the Engineer for approval.
- (ii) C&D Material and Waste
- Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;
 - Carry out on-site sorting;
 - Surplus artificial hard materials should be delivered to Tuen Mun Area 38 recycling plant or its successor for recycling into subsequent useful products;
 - Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;
 - Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and
 - Implement an enhanced Waste Management Plan similar to ETWB TC(W) No. 19/2005 – “Environmental Management on Construction

Sites” to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.

(iii) General Refuse

- A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.

(iv) Chemical Waste

- The chemical waste should be collected by licensed chemical waste collectors for subsequent disposal at licensed chemical waste disposal facilities; and
- Proper storage, collection, handling, transport and disposal of chemical waste will be managed in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste.

(v) Fishpond Sediment/Mud

- On-site cement stabilisation/solidification of the fishpond sediment/mud and on-site reuse would be proposed if necessary.

(vi) Contaminated Soil

- Implementation of good site practices during the construction phase, especially the procedures in handling the contaminated materials in case they are encountered.

Operational Phase

5.5.1.2 The following measures should be implemented on the Project to minimise the amount of waste to be disposed of at landfill to maximize the recovery of material from the water stream:

(i) Municipal Solid Waste

- General refuse from residential and commercial buildings should be collected with lidded bins and delivered to a central collection point and stored in enclosed containers to prevent windblown, vermin, water pollution and visual impact. At least daily collection should be arranged by the waste collector.

(ii) Screenings, Grits and Dewatered Sludge

- The screenings, grits and dewatered sludge shall be delivered by land transport in watertight containers or skips to avoid odour emission during transportation. The solid waste unloading process shall be operated in the enclosed designated room inside the sewage treatment works and served by negative pressure by extracting odorous gas to deodorising unit.

5.6 Land Contamination

5.6.1.1 Subject to the identification of any contaminated land, mitigation measures will be determined with reference to EPD’s documents such as “Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land

Management”, “Guidance Note for Contaminated Land Assessment and Remediation”, and “Practice Guide for Investigation and Remediation of Contaminated Land” during the EIA study.

5.7 Hazard to Life

Construction Phase

5.7.1.1 The following control measures are proposed during construction phase to reduce the potential risk:

- Good practice measures;
- Design measures of cavern entry;
- Adoption of site-sensitised bulk emulsion explosives for blasting;
- In demand transportation of explosives;
- Provision of closed-circuit television (CCTV) recording of the blasting;
- Provision of full-time supervision and blast checking by Blast Competent Supervisors (BCS);
- Use of hanging mesh and rubber mat for any blasting works;
- Provision of blast door for cavern;
- Establishment of no-blast zones for areas of high sensitivity/risk and within the SBZ;
- Limitation of blast charge weight based on the allowable peak particle velocity (PPV) for the controlling sensitive receivers surrounding the site;
- Monitoring of vibration levels at controlling sensitive receivers to ensure PPV levels remain within the allowable range for every blast conducted;
- Reinforcement of the structural stability of the slopes or retaining walls where necessary such that their stability meets current geotechnical standards for PPV levels imposed under the maximum blast loading conditions;
- Only underground development within the SBZ of NTMWTW;
- Prohibit construction activities during the transportation of chlorine;
- Limitation of working hours and number of construction workers; and
- Provision of emergency plan for efficient evacuation including good practice (i.e. adequate training and drills for construction workers)

Operational Phase

5.7.1.2 The following control measures are proposed during operational phase to reduce the potential risk:

- Only underground operation within the SBZ of NTMWTW;
- Fresh air intake (FAI) or entry located away from the SBZ and CZ;
- Limitation of working hours and number of cavern staff;

- Provision of emergency plan for efficient evacuation including good practice (i.e. adequate training and drills for construction workers/ cavern staff); and
- Provision of ventilation system with design measures.

5.8 Landfill Gas Hazard

Construction Phase

- 5.8.1.1 During construction phase, safety procedures should be implemented to minimize the risks of fire and explosions, asphyxiation of workers, and toxicity effects. Trenching, excavation and working at below ground or confined spaces should be conducted with precautions and workers should be equipped with gas detection equipment and appropriate breathing apparatus.

Operational Phase

- 5.8.1.2 It is understood that there are established landfill gas facilities and management procedures for the closed NTML. Nevertheless, building protection design measures should be implemented based on the risks level assessed in the EIA with reference to EPD's "Landfill Gas Hazard Assessment Guidance Note" (Report No. EPD/TR8/97). Mechanical ventilation system, methane gas detection system, routine gas monitoring, gas vents, gas resistance membranes and clear void under structure of at least 500mm would be considered and implemented where appropriate.

5.9 Ecology

- 5.9.1.1 Ecological impact assessment will be carried out under the EIA study. Avoidance and minimization of any direct impacts/ disturbance to habitats and associated wildlife would be taken into account in the ecological impact assessment before proposing the mitigation measures.
- 5.9.1.2 To mitigate for the loss of woodland habitat, provision of compensatory woodland should be considered. Certain areas located at the southwest and northeast portions of the DN are zoned as Green Belt or Open Space under the PODP, and are currently covered by developed area or grassland/shrubland. These areas could potentially be used for woodland compensation. A detailed woodland compensation strategy should be provided under the EIA study.
- 5.9.1.3 In order to avoid impacts of run-off causing pollution or sedimentation in the habitats adjacent to the Project Site, it will be necessary to implement standard construction site practices in these sites that limit run-off into adjacent water bodies. Generally, indirect water impact to any aquatic fauna during the construction phase should be avoided by implementing water control measures (ETWB TCW No. 5/2005) to avoid direct or indirect impacts any watercourses and good site practices.
- 5.9.1.4 Appropriate mitigation measures including avoidance of the Lam Tsuen Country Park should be proposed to minimize potential disturbance to habitats and wildlife.
- 5.9.1.5 The local bird movement pattern and potential impacts from the Project should be studied in detail under the EIA study, whilst the height and layout of the buildings at the proposed Enterprise and Technology Park, including the area to be released at LMCCP, should be reviewed under the EIA study to minimize the potential impacts.

5.10 Agriculture and Fisheries

- 5.10.1.1 Good site practices for the control of construction site runoff shall be fully implemented to minimise impacts on water sources for farmland and ponds in the DN or its vicinity.

5.11 Cultural Heritage

(i) Archaeology

- 5.11.1.1 Subject to the findings of Archaeological Impact Assessment as part of the Cultural Heritage Impact Assessment under the EIA study, archaeological survey, if needed, should be carried out during the EIA study prior to development work to provide further information for detailed assessment and possible mitigation recommendations.

(ii) Built Heritage

- 5.11.1.2 Recommended preliminary mitigation measures include Built Heritage Survey during the EIA stage to update the list and condition of built heritage resources within the historic villages. Appropriate mitigations should be provided based on the survey results and actual designs; possible mitigations may include condition survey, vibration, settlement or tilting monitoring, screening and safe public access.

5.12 Landscape and Visual

Mitigation Measures to be Incorporated in the Development Layout Plan

- 5.12.1.1 The following measures are to be considered to minimize the landscape and visual impacts during the design stage:
- Incorporating retention ponds into new open space;
 - Implementation of blue-green infrastructure;
 - Revitalising agriculture land for community farming; and
 - Revitalisation of natural watercourses/ channelised watercourses.

Construction Phase

- 5.12.1.2 The following general mitigation measures are to be considered to alleviate the impacts during the construction phase:
- Minimising the extent for temporary storage and development;
 - Preserving existing trees;
 - Transplanting affected existing trees;
 - Protecting natural streams;
 - Providing site hoarding;
 - Managing facilities on work sites; and
 - Controlling light.

Operational Phase

5.12.1.3 The following general mitigation measures are to be considered to alleviate the impacts during the operational phase:

- Compensation tree planting;
- Landscape re-instatement and establishment of new vegetation;
- Agricultural land compensation;
- Pond replacement;
- Aesthetic design of built development (e.g. implement with lighter colour tone/ natural materials on façade design);
- Maximise the greening provision in future infrastructure/ transport design; and
- Landscape integration of built development (e.g. green roof and screen planting).

6 Use of Previously Approved EIA Reports

6.1.1.1 Reference may be made to the following previously approved EIA reports:

- Yuen Long Effluent Polishing Plant (AEIAR-220/2019)
- Housing Sites in Yuen Long South (AEIAR-215/2017)
- Hung Shui Kiu New Development Area (AEIAR-203/2016)

Figures