

Agreement No. CE 35/2012(CE)



Planning and Engineering Study for
Housing Sites in Yuen Long South

INVESTIGATION

**Environmental
Impact Assessment
Report - Executive
Summary**

July 2017



Contents

1	INTRODUCTION	1
1.1	General	1
2	Project Description	4
2.1	Need of Project	4
2.2	Appreciation of Existing Environment	5
2.3	Opportunities and Constraints	8
2.4	Scope of the Project	10
2.5	Recommended Outline Development Plan	10
2.6	Designated Projects	15
2.7	Green Initiatives, Project Benefits and Environmental Initiatives	17
2.8	Development Programme of the Project	33
3	Summary of Key Findings in EIA Study	35
3.1	Approach to Environmental Impact Assessment	35
3.2	Air Quality	35
3.3	Noise Impact	38
3.4	Water Quality	41
3.5	Sewerage and Sewage Treatment Implications	43
3.6	Waste Management Implications	43
3.7	Land Contamination	44
3.8	Ecology	47
3.9	Fisheries	49
3.10	Landscape and Visual	50
3.11	Cultural Heritage	51
4	Summary of Environmental Outcomes	53

<u>Figure 2.1</u>	Location of Project
<u>Figure 2.2</u>	Recommended Outline Development Plan (RODP)
<u>Figure 2.3</u>	Location of Schedule 2 Designated Projects
<u>Figure 2.4</u>	Environmental Initiatives
<u>Figure 2.5</u>	Development Staging

1 INTRODUCTION

1.1 General

- 1.1.1.1** In order to address the demand for land for housing, the Policy Addresses (i.e. from Year 2012 to Year 2015) announced the review of agricultural land in the North District and Yuen Long, which is mainly deserted or being used for industrial and/or temporary storage purposes, as one of the land supply measures. Furthermore, the recent Policy Addresses in Year 2016 and Year 2017 also mentioned the Yuen Long South (YLS) development as a medium and long-term land supply measure.
- 1.1.1.2** To optimise the use of degraded brownfield sites so as to release their development potential in meeting the territory's medium to long-term housing needs, the Planning and Engineering Study for the Housing Sites in YLS – Investigation (the Study) commenced in November 2012 to examine the future land use, optimise the development potential of the degraded brownfield, improve existing degraded environment and ascertain the feasibility for public and private housing developments and other uses within the YLS Potential Development Area (PDA)¹ with supporting infrastructure and community facilities (The Project).
- 1.1.1.3** The YLS PDA is located to the south of Yuen Long New Town, and in the proximity of Tin Shui Wai New Town and the planned Hung Shui Kiu (HSK) New Development Area (NDA). The area is connected with the urban areas by strategic road links, including Route 3 and Yuen Long Highway (YLH).
- 1.1.1.4** The YLS PDA, which has an area of 223.5 hectares (ha), is surrounded by YLH at the north and Tai Lam Country Park at the south. The PDA includes a piece of land zoned “Undetermined” (“U”) on Tong Yan San Tsuen (TYST) Outline Zoning Plan (OZP) as well as two small pieces of land in the Tai Tong area which are zoned “Other Specified Uses” annotated “Rural Use” (“OU(RU)”) on Tai Tong OZP.
- 1.1.1.5** The YLS PDA is currently rural in character with a mixture of land uses. The predominant uses are brownfield operations including open storage yards, warehouses, industrial workshops etc. These brownfield operations are intermingled with rural settlements and residential developments, agricultural land, livestock farms and vacant land. Proliferation of such brownfield sites has resulted in degradation of the

¹ The “Potential Development Area” in this EIA Report is the same as the “Development Area” referred in the Recommended Outline Development Plan.

rural environment due to noise nuisances to surrounding residents, and discharge of industrial wastewater, i.e. from daily cleaning at the working area, wastewater from workshops after heavy rainfall, etc. Furthermore, any of these industrial premises which may not be properly connected to sewer system could result in discharge of untreated sewage into nearby water bodies and hence deteriorate water quality.

1.1.1.6 Under the Study, a three-stage Community Engagement (CE) exercise had been proactively conducted to collect views and opinions from stakeholders, green groups and local communities, etc. In parallel to the CE exercise, the preliminary planning and technical assessments of the Project have also been progressing and evolving to address various constraints and development needs as well as the public comments collected in CE exercise. The Stage 1 CE was carried out from April 2013 to June 2013 with 694 written submissions received. The key purposes of the Stage 1 CE were to present and seek public views on the development opportunities and constraints and key issues relating to the YLS PDA. All comments collected during Stage 1 CE had been duly considered and incorporated where appropriate into the Preliminary Outline Development Plan (PODP) which was put forward to consultation in Stage 2 CE from May 2014 to July 2014 with a total of 1,285 submissions received through various channels. The Stage 3 CE was conducted between January and April 2016 to solicit views from the public on the Draft Recommended Outline Development Plan (RODP) and a total of about 500 submissions had been received.

1.1.1.7 Extensive CE activities, including forums, roving exhibitions, focus group meetings and briefing sessions, had been carried out. The public and different stakeholders expressed their views on development need of YLS, ecology, environment and cultural heritage, traffic and connectivity, land use and urban design, creation of employment opportunities, etc. Key environmental concerns from the public included impact on watercourses of higher ecological value, impact on landscape resources, impact on egretty near Pak Sha Tsuen, conservation of agricultural land and woodland habitats; provision of drainage facilities, provision of sewage treatment facilities, and revitalisation of Yuen Long Nullah. All comments collected had been compiled and analysed, which had been taken into account for the preparation of the RODP.

1.1.1.8 With consideration of public views, and engineering and planning constraints, the RODP has been prepared on the basis of the following key planning and urban design principles: (1) accommodating diversity with land planned for housing and workshop and storage uses, and designation of Green Zone; (2) respecting existing urban and rural environments in the vicinity by adopting stepped building height profile; (3) maximising the opportunities for creation of a blue-green network and formulation of comprehensive sustainable water management measures; (4) creating open space and green network; (5) designation of view corridors and breezeways; (6) improving connectivity; and (7) revitalisation of nullahs. The RODP is adopted for this environmental impact assessment (EIA) Study under the EIA Ordinance.

2 Project Description

2.1 Need of Project

2.1.1.1 Housing has been one of the focuses in the Policy Addresses for last few years. The 2011-2012 Policy Address had identified that maintaining Public Rental Housing (PRH) production and increasing supply for subsidised sale flats and private residential housing would be the keys to tackle issues relating to housing shortage. The 2013 and 2014 Policy Addresses had addressed the land supply issues in short, medium and long term. In the 2015 Policy Address, the Chief Executive announced the development of brownfield sites in HSK, YLS and New Territories North as a long-term measure to increase land supply. In the 2016 Policy Address, the Government had taken forward projects relating to the development of NDAs and the extension of new towns including the YLS development as the medium and long-term land supply strategy. In the 2017 Policy Address, the Government has targeted to expedite and increase housing supply as the ultimate solution to various housing-related issues. The Government will implement a number of large-scale projects, including NDAs and new town extensions including YLS, to provide additional housing, community facilities, public space and land for economic use.

2.1.1.2 Through the YLS development, development potential of the degraded brownfield could be released to meet the territory's housing need. The YLS development, as one of the major sources of housing land supply, would provide about 28,500 new flats, accommodating a total population of about 88,000. Besides, proliferation of brownfield sites has resulted in degradation of the rural environment. Through consolidation of brownfield uses in proposed multi-storey buildings, the overall living environment of YLS and adjacent areas could also be improved. The Project also provides opportunities to enhance existing drainage facilities such as revitalisation of nullahs, provide new facilities for promotion of blue-green infrastructure, and to review and preserve existing natural and landscape features.

2.1.1.3 The YLS PDA covers approximately 223.5 ha and is divided into three areas: the area to the western side that includes TYST (Area 1), the northern part of the land that lies on both sides of Kung Um Road and Kiu Hing Road (Area 2), and the southern part of the land that lies on both sides of Kung Um Road and Pak Sha Shan Road (Area 3). With the PDA's close proximity to Yuen Long New Town, comprehensive planning and improving transport connectivity will enable YLS to become an extension of the Yuen Long New Town. The PDA's extent

and the infrastructure required to facilitate the Project are illustrated on **Figure 2.1**.

2.1.1.4 Moreover, Yuen Long New Town has been developed into a major regional centre with provisions of commercial and community facilities for serving the Northwest New Territories (NWNT), whereas Tin Shui Wai has been developed as another new town in the NWNT. For accessibility, the YLS development will improve transport connections to these new towns as well as connectivity to nearby strategic highway network including YLH and Route 3, and the mass transit system including Light Rail Transit network and the West Rail network, thus enabling travel convenience between YLS and the urban area.

2.2 Appreciation of Existing Environment

2.2.1.1 The PDA is located at south side of YLH and Yuen Long New Town. As discussed above, the PDA comprises of 3 areas (i.e. Area 1, Area 2 and Area 3). Other than the PDA, the Project also includes a number of associated infrastructure consisting of works for roads, water supplies and sewer pipes and a service reservoir outside the PDA. **Figure 2.1** shows the locations of the 3 Areas and associated infrastructure. The following sections provide an overview of the existing environment of these areas and infrastructure.

Area 1

2.2.1.2 Area 1 is located in TYST and connected to the YLH. Existing land uses are mixed with brownfield sites for various uses such as open storage and rural industrial workshop, etc. Two concrete batching plants are located in the northern part of Area 1 and some container storage sites are located in the south-western part, along Long Hon Road, of the area. The structures within these brownfield sites are mainly temporary structures of various forms.

2.2.1.3 Within Area 1, there are residential developments along Sha Tseng Road and TYST Road such as Recours La Serre, The Eldorado, Kisland Villa, etc. A non-indigenous village, Sha Tseng Tsuen, is also located in Area 1. These residential developments are located away from YLH and hence not badly affected by the highway's traffic noise and vehicular emission. All these residential developments in Area 1 are low density of about 1 to 4 storeys but some of them are located very close to existing brownfield sites and hence are affected by those brownfield operations to a certain extent. Other than brownfield sites and low density residential developments, there are also woodland and agricultural land with watercourses of different sizes and qualities

running in between these existing developments. Some woodland is close to the Tai Lam Country Park to the southwest and forms a continuous resource in terms of visual and ecology. There is also one graded historic building, i.e. Yeung Hau Temple in TYST, within Area 1, which is culturally related to the historical development of the indigenous villages.



Yeung Hau Temple



Active Agricultural Land

Area 2

- 2.2.1.4** Area 2 is located to the east of Area 1 along Kung Um Road and in the vicinity of Lam Tei East Road and Lam Tei West Road. There are a number of brownfield sites with rural industrial uses such as warehouses, open storage, vehicle maintenance, waste recycling, etc. A non-indigenous village, i.e. Tin Lung Tsuen, is located in the northern part of this area. The village is far away from YLH and thus not badly affected by the highway's traffic noise and vehicular emission. The separation distance between some brownfield sites and residential sites could be very close.
- 2.2.1.5** A number of village houses are built alongside Kung Um Road and Kiu Hing Road overlooking onto Yuen Long Nullah. Some of these houses are within a few metres from the existing road kerb line and adversely affected by the road traffic noise and vehicular emission.
- 2.2.1.6** There is an active egretty near Pak Sha Tsuen with small patches of secondary woodland located to the south of Area 2 outside the PDA boundary. There are also a few watercourses of different sizes and qualities present within the PDA. Yuen long Nullah is running from south to north between Kung Um Road and Kiu Hing Road in this area. No graded historic building is present within Area 2.
- 2.2.1.7** There are one chicken farm and one pig farm within Area 2. The nearest residential developments, Sun Mei Garden and Pak Sha Tsuen, are outside the PDA but located only about 50-100m away from these livestock farms. It is anticipated that these residential developments

would be affected by the odour from the operation of these livestock farms, especially during hot summer time with unfavourable weather conditions.



Area 3

- 2.2.1.8** Area 3 is located south of Area 2 along Kung Um Road, at the most southern part of the PDA. The area is densely built of temporary structures for brownfield operation uses. Residential developments include Pak Sha Tsuen, Golden Villa and Wong Nai Tun Tsuen, etc. are located near the PDA and are mainly typical village houses of up to 3 storeys high. Yuen Long Nullah runs generally from south to north conveying stormwater runoff from Tai Lam Country Park to the downstream receiving water bodies. Yuen Long Nullah is an important visual element for the community in the vicinity.
- 2.2.1.9** There are some individual houses scattered in Area 3. A large piece of secondary woodland is present to the western part of Area 3 and a few watercourses of different sizes and qualities are found within Area 3. Tai Lam Country Park is located to the south of the area. No graded historic building is present within Area 3.
- 2.2.1.10** There are currently two chicken farms and two pig farms within Area 3. The nearest residential developments are at Wong Nai Tun Tsuen, Tai Tong Tsuen and Pak Sha Tsuen at approximately 400m away from these livestock farms. Given these four livestock farms are in the vicinity of the villages, it is anticipated that these residential developments would be affected by the odour from those livestock

farms' operation, especially during hot summer time with unfavourable weather conditions.



Proliferation of Brownfield
Sites



Livestock Farm

Associated Infrastructure

2.2.1.11 There are supporting infrastructure / road improvement works outside the PDA boundaries to support the proposed housing development. New roads include slip roads for connection to Pok Oi Interchange and a new Public Transport Interchange (PTI) next to Yoho Midtown. The slip roads will divert PDA traffic away from the busiest section of YLH as well as allow connectivity to West Rail Yuen Long Station. Improvement to existing road outside the PDA include modification works to TYST Interchange and the Tin Shui Wai West (TSWW) Interchange for enhanced connection to YLH, as well as some local road widening works to improve road safety and pedestrian environment.

2.2.1.12 Besides road works, a new sewer would be required to convey some of the treated sewage effluent (TSE) from the proposed YLS Sewage Treatment Works (STW) to the existing inlet chamber of the NWNT effluent tunnel at San Wai for discharging to the Urmston Road submarine outfall. This new sewer would run along the planned roads within the YLS PDA and existing roads including Hung Tin Road, Ping Ha Road, Tin Ha Road and Ha Tsuen Road outside the PDA.

2.3 Opportunities and Constraints

2.3.1 Opportunities

2.3.1.1 Housing Land Supply – Being in close proximity to Yuen Long New Town, the HSK NDA and YLH, the PDA has potential for development to provide land for housing supply.

2.3.1.2 Improving Living Environment – A large part of the PDA is currently occupied by haphazard open storages, rural workshops and warehouses

(about 100 ha). Proliferation of these uses has degraded the environment and posed industrial/residential interface problems such as noise and air pollution, has created conflict between pedestrians and freight traffic, fire risk, localised flooding, etc. The development of YLS can improve the living environment through proper land use planning, urban design and provision of infrastructure and government, institution or community (G/IC) facilities.

2.3.1.3 Natural and Landscape Resources – There are secondary woodland, a large and contiguous piece of active farmland, streams, and the existing nullahs/ water channels in the PDA. These features (especially the nullahs/ water channels) provide opportunities for integration in the urban structure and landscape plan, enhance the overall environment of YLS and the surrounding area.

2.3.2 Constraints

2.3.2.1 Traffic – YLS is not served by railway and poorly connected to YLH. A number of sub-standard roads exist within the PDA (e.g. Kung Um Road and Kiu Hing Road) and widening these local roads for improving road safety and pedestrian environment is severely constrained by drainage channels and existing developments. Current poor connectivity between YLS and Yuen Long New Town and the proposed HSK NDA has to be addressed.

2.3.2.2 Sewerage and Drainage – Most areas in YLS are not served by public sewerage system. Sewage discharge from the YLS development to Deep Bay will have to meet the “No Net Increase in Pollution Loads to Deep Bay Requirement”. Moreover, the YLS development may also have some impact on the existing drainage system, which needs to be addressed.

2.3.2.3 Environment – Environmental impacts from YLH may pose constraints on the planning of the YLS development, for example land near YLH may not be suitable for domestic use. Development proposals have to comply with the new Hong Kong Air Quality Objectives (AQOs).

2.3.2.4 Existing Residential Communities and Agricultural Land – There are low-rise residential developments, indigenous and non-indigenous villages, graves as well as some agricultural land, in or around the PDA. The development proposals will need to take into account the well-established residential communities and active agricultural land that is

contiguous and sizeable and to minimise impacts on them as far as practicable.

2.3.2.5 Other Important Resources - There are cultural heritage, natural landscape resources and ecologically important features in the vicinity of the PDA, such as the stream in Yeung Ka Tsuen, egretty near Pak Sha Tsuen and Tai Lam Country Park. These features, as well as the characters of the surroundings, have been taken into consideration when formulating development proposals.

2.4 Scope of the Project

2.4.1.1 The YLS PDA covers approximately 223.5 ha and is located to the south of Yuen Long New Town and bounded by YLH to the north and Tai Lam Country Park to the south. The PDA is divided into three areas, i.e. Area 1, Area 2 and Area 3 as defined in **Section 2.1**. Other than development within the PDA, there are supporting infrastructure works outside the PDA boundaries, which include the following:

- New slip roads connecting the PDA to Pok Oi Interchange and a new PTI next to Yoho Midtown;
- New PTI next to Yoho Midtown;
- New TYST Reclaimed Water Service Reservoir and its associated works;
- Partial decking of Yuen Long Nullah along Kung Um Road and Kiu Hing Road;
- Modification works on the trunk roads connecting TSWW Interchange;
- Modification works on the primary distributor roads connecting TYST Interchange;
- Other new local roads connecting the PDA;
- Rising main for water supplies and sewage; and
- New sewer from YLS STW to the existing inlet chamber of the NWNT effluent tunnel at San Wai for discharging to the Urmston Road submarine outfall.

2.5 Recommended Outline Development Plan

2.5.1.1 The RODP adopted for this EIA Study is shown in **Figure 2.2**. The YLS development comprises three residential communities accommodating a total population of about 88,000, providing about 28,500 new flats. In Area 1, an Employment Belt is designated for workshop, storage and

open storage uses. The Employment Belt together with commercial and G/IC uses would generate about 10,500 employment opportunities.

2.5.1.2 The RODP strives to create a sustainable, green and liveable community and form an extension to Yuen Long New Town. The following sections present the key planning principles and planning elements of the RODP.

2.5.2 Key Planning and Urban Design Principles

2.5.2.1 The key planning and urban design principles as adopted for the RODP, are broadly described below.

Accommodating Diversity for Housing, Storage and Workshop, and Preservation of Natural and Landscape Resources

2.5.2.2 Within the PDA, 5 Planning Areas are proposed. Three residential communities are planned with different development intensities taking account of the existing and surrounding development characters. Each community is anchored with a key activity node comprising of a PTI, commercial and community uses. The Employment Belt is planned for storage, workshop and open storage uses, and is located at the northern part of TYST close to the highway for easy access to YLH. The freight traffic would not need to travel through the residential neighbourhood in the PDA. A Green Zone is designated at the southern part of TYST to preserve the existing largest contiguous piece of active farmland. Besides, watercourses of higher ecological value and secondary woodland would also be preserved as far as practicable.

Respecting Existing Urban and Rural Environment by Stepped Building Heights

2.5.2.3 Through the tapering of development intensities and building heights from north to south, YLS will integrate with its surrounding settings by high density developments in the north near Yuen Long New Town and transitioning to medium and low-density developments in the south to blend in with the rural setting and Tai Lam Country Park. Low-density developments are planned in the TYST area to complement and integrate with existing low-density and low-rise residential developments.

2.5.2.4 The urban to rural qualities are further enhanced with the provision of Scenic Cycling Track along the Hillside River Corridor and retaining active agricultural land within the PDA. Bicycle parking facilities are planned near the proposed PTIs, and a network of roadside cycle tracks

is widely available within the urban streetscape connecting the residential neighbourhoods.

Blue-green Network

2.5.2.5 The PDA is framed with a setting of natural and rural environment together with the presence of various natural landscape and watercourses. These resources form parts of the urban structures for creating a liveable, sustainable and green environment. These blue and green resources are combined to form the blue-green network (the “blue” composed of watercourses of higher ecological value, revitalised nullahs and the new Hillside River Corridor and the “green” comprised of the open space, the active agricultural land in the Green Zone, the secondary woodland and the amenity areas). These features are interwoven and integrated with the pedestrian and cycling track networks to enhance the enjoyment of walking / cycling by providing rural and natural landscape alongside. The blue-green network shapes and gives character of YLS.

2.5.2.6 The “blue” features provide opportunities for the formulation of sustainable water management measures including the STW with tertiary treatment level, reedbed/ retention pond and flood retention facilities.

Creating Open Space and Green Network

2.5.2.7 Open spaces of various sizes and functions are planned and the residential communities will be served with district open space. Together with the preserved active agricultural land, secondary woodland, watercourses, as well as revitalised nullahs and new water channels, all these will form a comprehensive green landscape network to meet leisure and recreational needs while creating identity and character for YLS. These features are integrated with each other in the overall landscape framework.

2.5.2.8 Open space is conveniently accessible not only for the future population but also existing residents and villagers in and near the PDA. Open space corridors (zoned “Local Open Space” (“LO”)) also function as buffer between the existing low-rise villages and planned high-rise public and private developments to address concerns of local villagers on the potential wall effect due to new high-rise developments. In addition, low building areas have also designated in the new residential areas next to existing villages.

2.5.2.9 A major Green Zone is designated in the centre of the PDA by combining secondary woodland and the largest piece of contiguous

active agricultural land. This zone reflects the rural characteristic of the area.

2.5.2.10 The backdrop of Tai Lam Country Park also forms part of the green network through the tapering of building heights, creation of visual corridors and linkages.

View Corridors and Breezeways

2.5.2.11 When formulating land use proposals, the view corridor at Yuen Long Park Aviary Pagoda to the north of PDA has been considered. The gradation of development intensity and building heights allow developments to optimise views to the mountainous backdrop of the Tai Lam Country Park. Another key view corridor is along the revitalised Yuen Long Nullah.

2.5.2.12 New roads within the PDA are proposed to mainly align with the prevailing wind direction as far as possible. Furthermore, stepping building height approach has been adopted to help wind deflection and avoid air stagnation. The gradation of building height profiles has been studied in relation to areas with different plot ratios tapering downwards in the southbound direction.

Improving Connectivity

2.5.2.13 The connectivity of YLS with Yuen Long New Town and HSK NDA will be fully enhanced through the planning of a new and comprehensive road, pedestrian and cycling networks. Reserve has been provided in the RODP for the potential extension of the environmentally friendly transport services (EFTS) from the HSK NDA for providing efficient and comfortable transport between the two developments.

Revitalisation of Nullahs

2.5.2.14 The existing nullahs are key assets of the PDA and will be revitalised as far as practicable to reach their full potential as an attractive asset of the PDA. The nullahs will provide a rural and natural sensation in the urban context and act as key north-south visual corridors.

2.5.2.15 In line with recent advocacy for integrated green infrastructure systems and aspiration to improve aesthetics and ecological value of the land, a green and eco-hydraulics approach will be applied. A key consideration is to improve aesthetic whilst maintain and compensate for the hydraulic performance of the channel. Some of the green and eco-hydraulics approaches which will be considered are:

- Using grasscreting and extensive vegetation embankment, e.g. nullahs in Jordan Valley and Tsui Ping;

- Using gabions and geo-fabric reinforced grass lining, e.g. Yuen Long Bypass Floodway;
- Using unlined channel beds such as rip-rap base and retaining meanders, e.g. Kam Tin River, Shan Pui River and Ng Tung River; and
- Creating shallow ponds, wetland habitats and reedbeds, e.g. Yuen Long Bypass Floodway and San Tin.

2.5.3 Major Development Parameters and Land Use Budget

2.5.3.1 The development proposals of the RODP comprise of residential use, storage and workshop uses, G/IC use, as well as uses for agriculture, open space, amenity and green belt. The land use budget of the RODP is summarised in the following table and the development parameters for the PDA are set out below:

Table 2.1 Proposed Development Parameters

Total Population	About 88,000 (including the population of about 2,400 of the existing/planned residential estates and non-indigenous villages that are proposed to be retained)
Population (new)	85,400 (Public: 53,100; Private: 32,300)
No. of Flat (new)	28,500 (Public: 17,300; Private: 11,200)
Housing Mix <ul style="list-style-type: none"> • Housing Units • Population • Housing Land 	Public 61% : Private 39% Public 62% : Private 38% Public 32% : Private 68%
Plot Ratios (PRs) for Residential <ul style="list-style-type: none"> • Public • Private 	4 and 5 1, 1.5, 2.4, 4 and 5

Table 2.2 Land Use Budget

Land Use	Proposed Zoning on RODP	Area (ha) (% of total)
(A) Residential		72.5(32.4%)
- Subsidised Housing	“RSc”, “R1(SSF)c”, “R2(SSF)c”	18.9
- Private Housing	“R1c”, “R2c”, “R2”, “R3”, “R4”, “R5”, “R5(EDA)”	46.3
- Village Resite	“R6”	1.3
- Other Specified Uses (Mixed Use)	“OU(MU)”	5.9
(B) Storage and Workshop		11.1 (5%)
- Other Specified Uses (Open Storage)	“OU(OS)”	1.4
- Other Specified Uses (Storage Use)	“OU(SU)1”, “OU(SU)2”	8
- Other Specified Uses (Storage and Workshop Uses)	“OU(S+W)”	1.7
(C) Government, Institution or Community		10.2 (4.5%)
- Government	“G”	9.2
- Institution or Community	“IC”	1
(D) Education	“E”	5.7 (2.6%)
(E) Public Utilities⁽¹⁾		15.3(6.8%)
Other Specified Uses (Sewage Treatment Works)	“OU(STW)”	4.0
Other Specified Uses	“OU”	1.1
Other Specified Uses (Hillside River Corridor with Scenic Cycle Track) ⁽⁴⁾	“OU(Hillside River Corridor with Scenic Cycle Track)”	10.4
(F) Road and River Channels		53.5(22.2%)
(G) Amenity	“A”	6.5(2.9%)
(H) Open Space		28.6(12.8%)
- District Open Space	“DO”, “DO(1)”	15.7
- Local Open Space	“LO”, “LO(1)”	12.9
(I) Agriculture⁽²⁾	“AGR”	10.5(4.7%)
(J) Green Belt⁽³⁾	“GB”, “GB(1)”	9.6 (4.3%)
(K) Village Type Development	“V”	0.1(0.04%)
Grand Total		223.5

Notes:

- (1) “OU(Service Reservoir)” (about 0.6ha) is outside the PDA boundary
- (2) “AGR” zones include the preserved active agricultural land and one existing chicken farm located at the southern end of Kung Um Road.
- (3) “GB” zones cover the preserved ecologically important areas including secondary woodland, watercourses of higher ecological value and buffer areas.
- (4) “OU (Hillside River Corridor) with Scenic Cycle Track” also includes reedbed/retention pond.

2.6 Designated Projects

2.6.1.1 The Project is a Designated Project (DP) under Item 1 Schedule 3 of the EIA Ordinance - 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. To implement the Project, there are various infrastructure items among some of which are classified as DPs under Schedule 2 of the EIA Ordinance. The list and details are shown in **Figure 2.3** and the table below.

Table 2.3 Summary of Schedule 2 DPs

DP Reference No.	Schedule 2 Designated Project		Work Component / Reference in RODP
DP1	Part I, 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	Construction of Trunk Roads (TSWW Interchange)
DP2	Part I, 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	Construction of new Primary Distributor Roads (TYST Interchange)
DP3	Part I, 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	Construction of two new Distributor Roads (Road D1 to Road D2)
DP4 ^[1] (By others)	Part I, A.3	A tramway and its associated stations	EFTS
DP5	Part I, A.8	A road or railway bridge more than 100 m in length between abutments	Construction of slip roads at the TYST Interchange
DP6	Part I, A.9	A road fully enclosed by decking above and by structure on the sides for more than 100 m	Construction of partly depressed road / underpass located at TSWW Interchange and full enclosures at TYST Interchange
DP7 ^[1] (by others)	Part I, F.2	Sewage treatment works with an installed capacity of more than 5,000 m ³ per day and located at less than 200 m from existing / planned receivers	Construction of YLS STW (Site OU3.3)
DP8	Part I, F.3(b)	A sewage pumping station with an installed capacity of more than 2,000 m ³ per day and located at less than 150 m from existing / planned receivers	Construction of two Sewage Pumping Stations (SPSs) (Sites OU1.12 and OU2.2)
DP9 ^[1] (by others)	Part I, F.4	An activity for the reuse of treated sewage effluent from a treatment plant	Construction of Reclaimed Water Service Reservoir for reuse of reclaimed water
DP10	Part I, I.1(b)(vii)	A drainage channel or river training and diversion works less than 300 m from the nearest boundary of an existing conservation area	Yuen Long Nullah revitalisation/decking along Kung Um Road and Kiu Hing Road

Notes:

[1] The project element is a separate DP to be constructed and operated by the future relevant project proponents. The future relevant project proponents shall conduct separate studies, including EIA for approval under the EIA Ordinance if necessary, to determine its feasibility and implementation programme. However, the site formation works for this DP will be covered in this EIA.

2.6.1.2 Apart from the above key project items, a number of non-DP associated infrastructure such as retention tank, reedbed/ retention pond, retention lake, Hillside River Corridor, gravity sewer/ rising main, drainage, fresh water supply, flushing water supply, and community facilities supporting the development such as cycle track network and bicycle parking areas are also included in the development.

2.7 Green Initiatives, Project Benefits and Environmental Initiatives

2.7.1 Green Initiatives

2.7.1.1 The vision of the Project is to create a sustainable, green and liveable community provided with supporting infrastructure to cater for future development needs.

2.7.1.2 With the increasing awareness on sustainable development, green building design, energy-efficient features and renewable energy technologies within the PDA have also been duly considered. The Project has adopted a sustainable strategy in the guiding principles, in respect of town planning, urban design, transportation and blue-green infrastructure for a creation of a sustainable community. Within the PDA, green mobility is promoted through the reservation of space for EFTS, and comprehensive pedestrian walkways and cycle track networks.

2.7.1.3 In addition to green transport management, a comprehensive water management system including sewerage, drainage and water resources infrastructure has been recommended. To promote sustainable use of water, opportunities for reuse of TSE as reclaimed water for non-potable uses such as toilet flushing within the PDA and adjacent developments have been considered. Blue-green infrastructure, such as the retention tank, reedbed/ retention pond, retention lake and Hillside River Corridor to collect runoffs from terrains, will be used for temporary storage of stormwater.

2.7.1.4 As part of the urban design initiative, sections of the existing Yuen Long (West) Nullah, Tin Tsuen Channel, and Yuen Long Nullah are proposed to be revitalised. After the revitalisation, these nullahs would provide an aesthetic environment for the local community. The nullahs will provide a rural, natural sensation in the urban community and act

as key north-to-south connectivity corridors together with provisions of pedestrian walkway and cycle track networks.

2.7.1.5 Subject to further review, the above green initiatives will be implemented for future developments.

2.7.1.6 The proposed green initiatives are summarised in **Table 2.4** under the following themes: Green Mobility, Comprehensive Water Management, Solid Waste Management, Sustainable Drainage System, and Green Energy Saving.

Table 2.4 Proposed Green Initiatives

Themes	Green Initiatives
Green Mobility	Create a compact and walkable urban development by concentrating population, key economic activities and major community facilities within walking distance of public transport nodes.
	Create local communities with easily accessible daily necessities to promote walking.
	Provide comprehensive, convenient and attractive cycle track and pedestrian walkway networks with supporting facilities such as bicycle parking areas and footbridges, crossing facilities and rest areas, etc. to promote walkability and cycle friendliness. The total length of new cycle tracks within the PDA is approximately 11 km.
	Provide Employment Belt to increase the local employment opportunities and hence reduce the need for commuting traffic and subsequently the generation of vehicular noise and air pollutant emissions.
Comprehensive Water Management	Incorporate dual process of tertiary and secondary plus treatment at the proposed YLS STW allowing TSE to be reused as reclaimed water as much as practicable.
	Reuse of TSE as reclaimed water for non-potable uses such as toilet flushing.
Solid Waste Management	Reductions in the amount of municipal solid waste generated and disposed of through an onsite waste management plan including local recycling of organic waste, local recycling of glass for building blocks production and source separation of recyclables.
	Explore the feasibility to adopt automatic refuse collection system to reduce fuel use, odour and noise of waste transport.

Themes	Green Initiatives
Sustainable Drainage System	Provide flood retention facilities as a regulating measure to overall drainage system and as a microclimate cooling mechanism through integrated design with the open space system for public enjoyment.
	Combine flood retention facility with Hillside River Corridor with Scenic Cycle Track, which formed part of the blue-green infrastructure of the area. The Scenic Cycle Track would complement the blue-green network to maximise opportunity for public enjoyment of the natural landscape scenery and for recreation activities.
	Collect rainwater for non-potable purposes for buildings.
	Revitalise northern section of Yuen Long Nullah within the PDA by partial decking and adopt comprehensive regeneration design along the whole drainage system. The ecological system and aesthetic value along southern section of Yuen Long Nullah, Yuen Long (West) Nullah and Tin Tsuen Channel will be enhanced with pedestrian walkways and cycle tracks introduced. The total length of nullahs revitalised is approximately 4.5 km.
	Regenerate sections of nullahs as the major green spines, breezeways and view corridors and enable better integration between different neighbourhoods.
Green Energy Saving	Encourage environmentally friendly building design and materials, and energy-saving installations such as solar hot water systems.
	Appropriate active and passive measure for energy efficient building design during construction and operation phases.
	Promote certification under BEAM Plus or other equivalent accreditations for all new buildings.
	Explore development of community gardens in open space and amenity areas to promote green living.

2.7.2 Benefits of the Project

2.7.2.1 The PDA contains many brownfield sites (including open storage yards, warehouses, industrial workshops, etc.) as well as villages, residential settlements, agricultural land and vacant land. The brownfield sites have created considerable environmental, traffic, visual, and other nuisance to the neighbouring communities. One of the overarching objectives of the Project is to transform these brownfield sites to more

optimal uses and better land utilisation for development and promote urban-rural symbiosis. The development of the Project could result in the following direct benefits:

- **Alleviate Scarcity of Housing Supply** – The Project will provide about 28,500 new flats, with a ratio of almost 6:4 between public housing (including public rental housing and subsidised sale flat) and private housing. This will provide a variety of housing types, responding to the needs of the community and improving the quality of life.
- **Create Local Job Opportunities** – Approximately 10,500 new job places would be generated upon full development of the Project, through a mix of the proposed industrial workshop and storage, commercial, community, and government land uses. To take advantage of the close connection with highway network and reduce environmental impacts on the residential neighbourhood, an Employment Belt is designated along YLH for storage and workshop uses. These planned uses will provide local employment opportunities as well as ease congestion at the commuting corridors between the NWNT and the urban areas. Both the existing and planned population will be benefited from these new job opportunities.
- **Commercial Provision to Meet Local Needs** – Commercial uses would be allowed on the lower floors within the residential zones, and in mixed commercial and residential developments. The mixed-use developments incorporated with PTI are planned at three locations to serve different parts of the PDA, i.e. one in each of the three Areas. These PTIs are all located near the existing villages. The commercial area would provide space for shops including street-front shops and restaurants. The commercial facilities in YLS could add vibrancy to the area and alleviate the commuting needs of YLS residents and the existing residents and villagers in the vicinity of YLS.
- **Provide Spaces for Storage and Workshop** – The Employment Belt in Area 1 provides a major local

employment cluster. About 11 ha of land are reserved for storage, workshop and open storage uses. This provides a designated area for the consolidation of brownfield activities within the PDA.

- **Provide G/IC Facilities** – The Project has proposed various G/IC facilities including clinic, community hall, police station, divisional fire station and ambulance depot, post office, sports centre and market, educational facilities, social welfare facilities, recreation facilities, etc. All these facilities will serve both existing rural communities and the planned population.

2.7.3 Environmental Initiatives

2.7.3.1 Environmental considerations have been key factors in the planning of the YLS PDA. Throughout the whole formulation process of the RODP, environmental impacts as well as benefits are both identified and critically considered. Through appropriate integration of proposed land uses into the plan, the Project offers potential environmental initiatives both to conserve existing environmental resources and, where opportunities exist, to enhance and upgrade the environment on various fronts. The environmental initiatives that the Project offers are summarised below and are illustrated in **Figure 2.4**:

- Minimise industrial / residential interface;
- Conservation of egret and other ecological resources;
- Reducing commuting traffic by providing local employment opportunities;
- Revitalisation of nullahs;
- Rezoning of degraded brownfield sites for development;
- Providing sewerage system within the PDA and STW;
- Reuse of reclaimed water;
- Providing sustainable drainage system within the PDA;
- Protection of watercourses of higher ecological value;
- Providing greening for the PDA;
- Preservation of agricultural land, secondary woodland and integration with natural greenery;

- Encouraging green commuting within and beyond the PDA;
- Clearance of existing odour sources; and
- Catering for the future e-buses and electric vehicles.

Minimise Industrial / Residential Interface

2.7.3.2 One of the objectives of developing the Project is to convert those brownfield sites within the PDA to more optimal uses and improve the overall environment of the area. The proposed multi-storey buildings in the Employment Belt near YLH would accommodate the brownfield operations. The Employment Belt next to the YLH will provide convenient access to the strategic highway network. Through consolidation of the brownfield operations in the Employment Belt, this will help to alleviate existing industrial/residential interface issues resulting from existing brownfield operations. Also, the freight traffic would not need to travel through the residential neighbourhood in the PDA. Also, these multi-storey buildings would serve as a physical barrier to reduce industrial noise from the existing industrial zone outside the PDA near Fui Sha Wai and the road traffic noise from YLH.

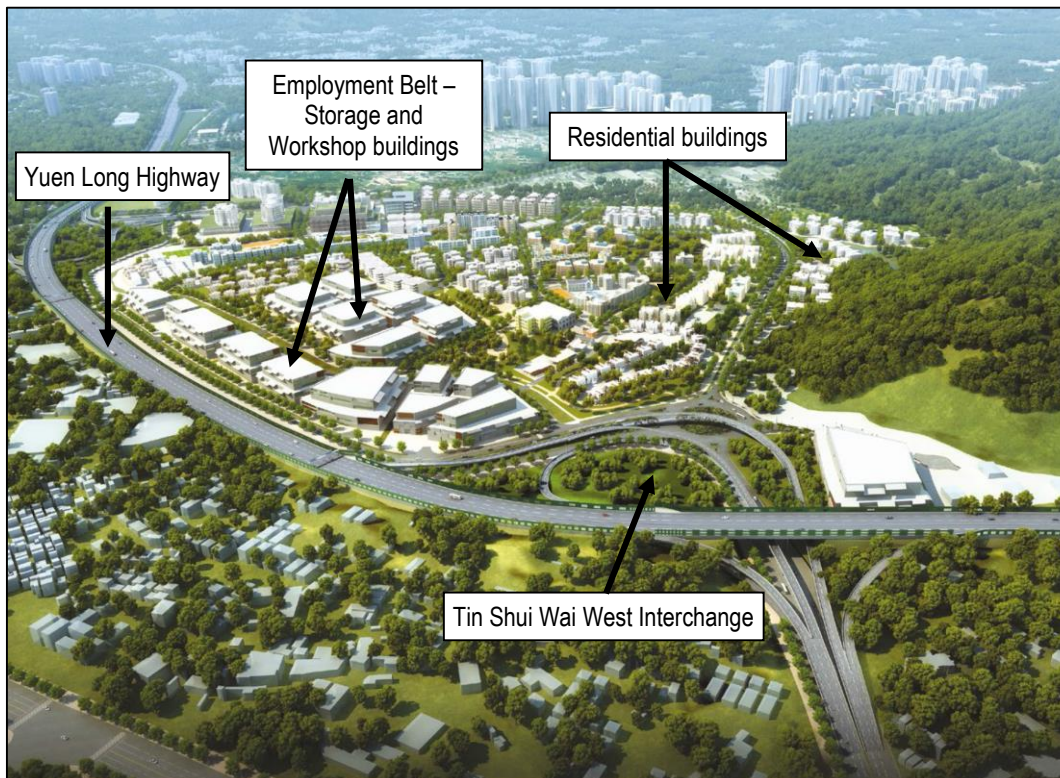
Conservation of Egrettry and other Ecological Resources

2.7.3.3 An active egrettry near Pak Sha Tsuen, woodland patches and a large piece of agricultural land near TYST, and few sections of watercourses of higher ecological value were found within and near the PDA, and the RODP has proposed to conserve them.

Reducing Commuting Traffic by Providing Local Employment Opportunities

2.7.3.4 It is anticipated that about 10,500 jobs will be created and these local job opportunities can help reduce commuting traffic from both existing and planned population and hence the associate air emissions and traffic

noise nuisance for the existing sensitive receivers along the commuting routes would be reduced.

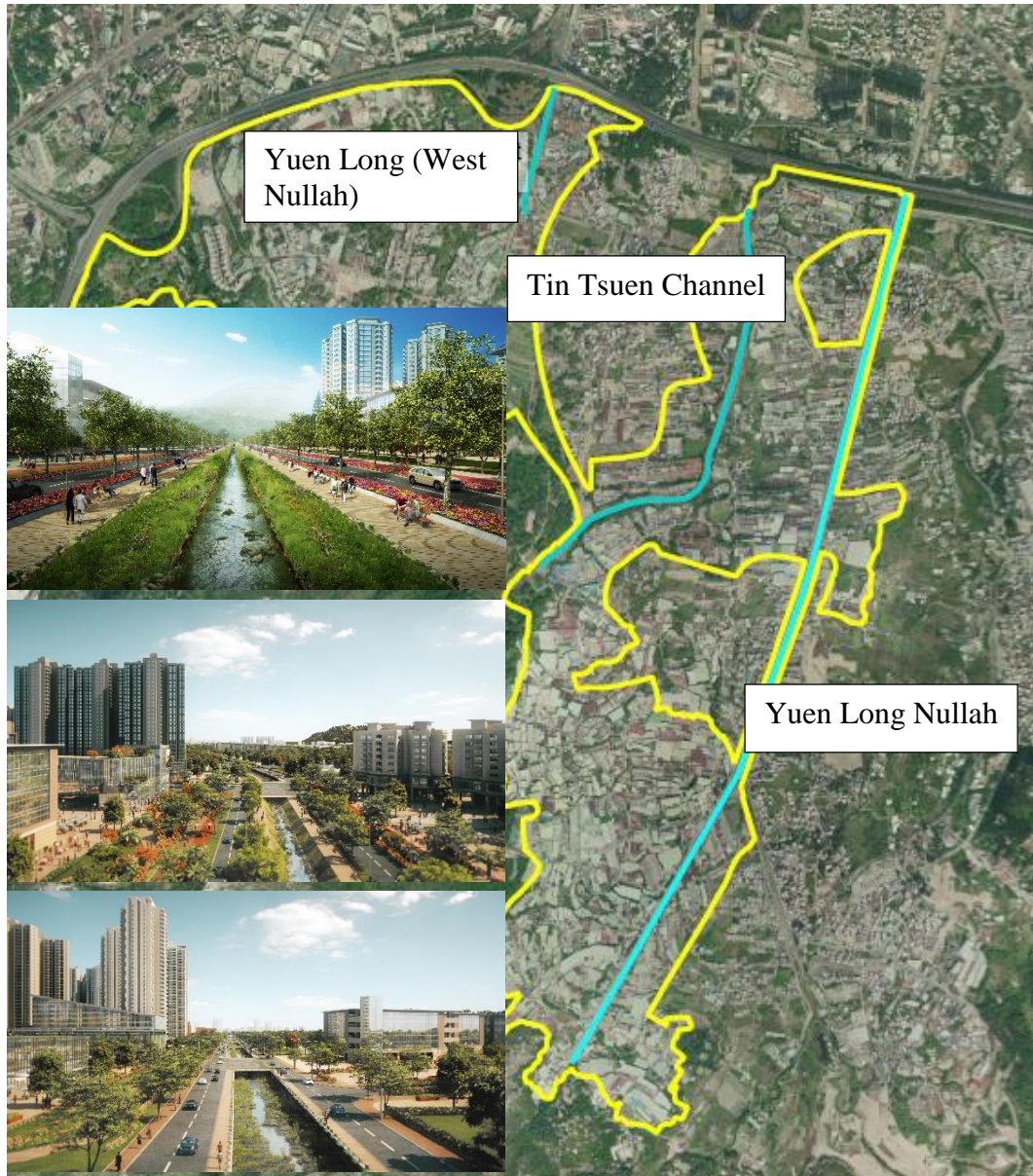


Conceptual Diagram of the Employment Belt

Revitalisation of Nullahs

- 2.7.3.5** As part of this Project, rehabilitation works without any decking are proposed for about 0.7 km of Yuen Long Nullah at its southern section. Along this section of the revitalised nullah, pedestrian walkway and cycle track, each with approximately 4m-wide, accompanied by amenity planting and landscaped open space have been proposed. The vegetation will introduce a green spine and improve the visual appeal of the watercourse. The revitalised nullah with soft and hard landscaping will be promoted as a place for leisure for both existing and future residents. The improvements will provide a major visual corridor for the community and help improve the micro-climate and contribute to alleviate certain urban heat island effect.
- 2.7.3.6** Partial decking with nullah revitalisation would be used to provide space for road safety and better pedestrian environment along the northern section of Yuen Long Nullah. Two other nullahs, i.e. Tin Tsuen Channel and Yuen Long (West) Nullah will also be revitalised.

The revitalised nullahs would also help increase the food resources for the egrets.



Conceptual Diagram of Revitalised River Channels (Overview)



Conceptual Diagram of Revitalised Yuen Long Nullah (Southern Section)

Rezoning of Degraded Brownfield Sites for Development

2.7.3.7 Currently, approximately 100 ha of originally agricultural land within the PDA have already been disturbed by brownfield operations. These degraded brownfield sites are being used for open storage and rural workshop purposes will be zoned for other uses including open space, residential, G/IC, etc.



Aerial Photo of Existing Brownfield Sites

Providing Sewer System within the PDA and STW

2.7.3.8 Majority part of the PDA is currently without any centralised sewage treatment facilities, and some of the watercourses may be subject to discharges from various sources such as livestock farms, unsewered village houses and industrial establishments. With the proposed YLS STW implemented under the Project, all the areas within the PDA boundary will be provided with sewers that convey the sewage to the new STW. Hence, all existing unsewered population within the PDA will be sewerred and the watercourses in the vicinity are anticipated to

have potential benefits from the improvement in water quality for the benefit of the wider community.



Existing village houses

Reuse of Reclaimed Water

2.7.3.9 Due to the scarce pollution credit in the Deep Bay Water Control Zone (WCZ), reuse of TSE as reclaimed water will be implemented for the PDA and adjacent developments for non-potable uses such as toilet flushing, while the surplus TSE will be discharged from YLS STW to the existing inlet chamber of the NWNT effluent tunnel at San Wai for discharging to the Urmston Road submarine outfall. A small amount of TSE will be separately discharged to the reedbed adjoining to the proposed YLS STW for further polishing before entering the revitalised Yuen Long Nullah for creation of water bodies. The TSE to be discharged to Yuen Long Nullah has been properly considered to ensure that there is no net increase in pollution loading in the Deep Bay WCZ.

Providing Sustainable Drainage System within the PDA

2.7.3.10 Flood retention facilities such as flood retention tank/ lake/ pond are proposed to cater for the additional runoff caused by the PDA. These storage devices retard residence time and alleviate peak flows. Instead of expelling flood water, these measures hold up water and therefore can maintain steady river flows during drier periods. These measures will also serve for amenity purposes and enhance the landscape and visual environment.

Retention Tank

2.7.3.11 A retention tank at Area 1 has been proposed to attenuate the peak flow, such that the peak outflow to the existing Yuen Long (West) Nullah would attain insignificant change in flow rate. The area and storage

volume of the retention tank in Area 1 are about 2,000 m² and 10,500 m³ respectively.



Sustainable drainage system

Hillside River Corridor and Retention Lake

2.7.3.12 A retention lake and Hillside River Corridor have also been proposed at the upstream of Tin Tsuen channel (along Lam Tai East/West Road) to temporarily store the 50 year peak runoff from the existing hillside catchment and catchments from proposed development in Areas 2 and 3. The area and storage volume of the retention lake are approximately 0.6 ha and 13,000 m³ respectively. The Hillside River Corridor runs along the PDA boundary and is about 575m and 0.37ha, with a storage volume of about 3,200m³.



Photomontage of the Hillside River Corridor and the Retention Lake

Reedbed/ Retention Pond

2.7.3.13 A reedbed/ retention pond of approximately 4 ha has been proposed at the south of Area 3. The reedbed can act as a sponge that traps and slowly releases surface water. Reeds can slow the speed of stormwater and distribute slowly over the area. In addition to the benefits of flood control, the permeability of reedbed allows infiltration of rain water that replenishes groundwater. This reedbed also serves as a visual element for the local community. The reedbed can provide ecological enhancement to the area providing foraging opportunities and shelter for a suite of aquatic fauna, and in particular, wetland dependent birds.

Protection of Watercourses of Higher Ecological Value

2.7.3.14 Three watercourses with endemic crab species (e.g. *S. zanklon*) have been identified within the PDA (see EIA Report **Chapter 8** for more details). However, under the current statutory plans, these watercourses presently lack appropriate protection.

2.7.3.15 In order to avoid direct impact on these watercourses, a conservation zoning of “GB(1)” covering 15 m buffer on both sides of the streams is proposed along the streams identified with endemic crab species. This

would cover two sections of watercourses with a total length of about 1.6 km in Area 1, and one section of about 310 m in Area 3 of the PDA.

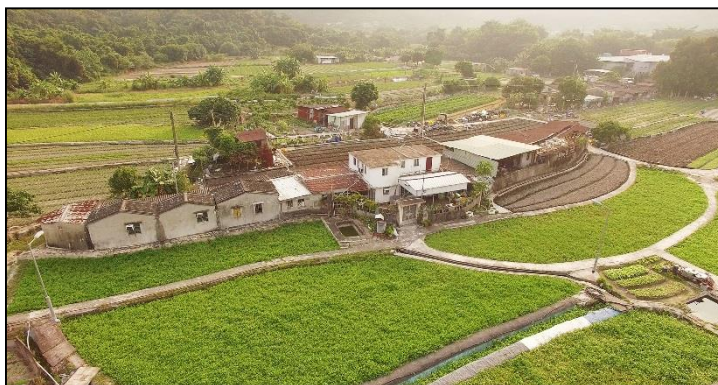
Providing Greening for the PDA

2.7.3.16 Greening is also another key consideration in formulating the RODP. According to the current proposal, a Green Zone of about 15 ha to preserve the existing agricultural land has been designated to enhance the local character, green landscape and linkage between urban and rural areas. In addition to the Green Zone, greening space/planting would be provided in the open space, amenity areas, along the Hillside River Corridor and reedbed/ retention pond.

Preservation of Agricultural Land, Secondary Woodland and Integration with Natural Greenery

2.7.3.17 YLS was thrived with agricultural activities in the 1960's, attributed to the open and fertile plain with easily accessible water for irrigation. Despite most of the agricultural land had been converted into other landuses or become abandoned over the decades, a cluster of mixed dry and wet agricultural land (about 11 ha in total) is being retained at the southeast portion of Area 1 (the Green Zone). Besides, two patches of secondary woodland in Area 1 and the strips of land along the southwestern boundary of Area 1 which are part of woodland of the hillslope are preserved and zoned "Green Belt" ("GB").

2.7.3.18 The proposed "AGR" zone presently borders a large piece of mature secondary woodland to the south (about 18 ha), and adjoins continuous shrubland/grassland to the west which further extends to the Tai Lam Country Park. Preservation of the agricultural land and secondary woodland would improve visual links to natural terrain and landscape features in the surrounding.



Preservation of Agricultural Lands and Provide Open space and Amenity Areas

Encouraging Green Commuting and Walking within and beyond the PDA

- 2.7.3.19** Comprehensive networks of pedestrian walkways and cycle tracks are planned within the PDA to promote green commuting. Key pedestrian corridors will be provided with amenity planting to enhance the walking environment for pedestrians. Besides, cycle tracks of about 11km will also be built across the PDA and be connected to other districts such as Ping Shan, Tin Shui Wai New Town and Yuen Long New Town. There are two connection points between the proposed cycling network of the PDA and the external existing / planned cycle tracks. One of the connection points is along Fui Sha Wai South Road near TSWW Interchange, and the other one is along west of Long Tin Road near TYST Interchange. Cycling track and pedestrian walkway networks are also proposed to connect the PDA with Tai Lam Country Park. All these measures are proposed to facilitate walking and cycling activities across the PDA and in the wider community.
- 2.7.3.20** During the formulation of the RODP, space has been reserved for a possible introduction of an EFTS within the PDA. In the event that a possible EFTS being considered for the HSK NDA is extended to YLS, the extension could run along the reserved space to serve the YLS PDA. If such a system is introduced, this would give the YLS community another green transport option and more enhanced transport connection to the HSK NDA.
- 2.7.3.21** Currently, there is a lack of commercial and community facilities within the PDA and residents have to travel to Yuen Long New Town for their daily necessities. The RODP has planned commercial space for retail facilities and has planned G/IC facilities such as educational uses, sports and recreational facilities, elderly homes, clinic and community hall, etc. These facilities can reduce travel distance/trips of both existing and future residents of the near community to Yuen Long New Town. These provisions can also relieve the stress on public transport systems and minimise the associated environmental issues. All these facilities would be shared by both the existing rural communities and the planned

populations and hence promotes the urban-rural symbiosis which could be further enhanced through improvement of village access to the PDA.



Environmentally-friendly Modes of Transport

Clearance of Existing Odour Sources

2.7.3.22 Currently, there are six livestock farms in the PDA, including three pig farms and three chicken farms. Three livestock farms (one pig farm and two chicken farms) that are located in the central locations of the PDA have inevitably to be cleared. The chicken farms could not be relocated due to statutory restriction. In order to strike a balance among public opinions, to minimise anticipated interface issue with existing and future residents and to minimise odour impact, only one chicken farm located at the most southern fringe of the PDA is retained. Sufficient buffer area has been reserved in the RODP to mitigate for odour impact due to the retained chicken farm.

2.7.3.23 For the two pig farms located at the southern end of Kung Um Road, taking into account the adverse odour impact and the opinions of the public, the two pig farms at the southern end of Kung Um Road could not be retained under the RODP. The areas are rezoned as “G” for government depot and serve as part of the buffer between the retained chicken farm and sensitive land uses.

Catering for the Future E-buses and Electric Vehicles

2.7.3.24 Although the feasibility and implementation issues of adopting e-buses in Hong Kong are yet to be demonstrated, it would be important to have a space provision for charging facilities within the new PTIs. According to the current landuse planning, there will be a total of 4 PTIs – 3 within the PDA and 1 outside the PDA near Yoho Midtown. These new PTIs will be designed with sufficient space to allow for the installation of charging facilities by the bus operators in a timely manner. Furthermore, the rapid technology development in this field has encouraged the

promotion of using electric vehicles (EVs) to combat roadside air pollution problems. Apart from the assignation of charging facilities for e-buses within the new PTIs, it is also suggested to include EV charging facilities in car parks of the new private and public residential developments. This provision in the new developments will serve as an environmental benefit to help reduce vehicular emission in the future.

2.8 Development Programme of the Project

2.8.1.1 In order to ensure a balanced and programmed development with orderly rehousing/relocation of qualified clearerees, the PDA including the associated engineering infrastructure is proposed to be divided into four main stages for implementation as illustrated in **Figure 2.5**. The target for first population intake of the development is Year 2027.

Key Developments in Stage 1

2.8.1.2 Stage 1 involves fast track delivery of an initial public housing site at the northern part of the PDA next to Kung Um Road to facilitate first intake of population in 2027. In addition, two Village Re-site Areas will be needed in Stage 1 for re-provisioning of private lots, which are subjected to Village Removal Terms (VRT), affected in the later Stage 2 development.

2.8.1.3 New road connection from the initial housing site to existing Tai Kei Leng Road and road improvement and partial nullah decking along Yuen Long Nullah to the northern most section Kung Um Road/Kiu Hing Road from YLH to Shap Pat Heung Road will also be carried out in Stage 1 to improve traffic connectivity for the initial development.

Key Developments in Stage 2

2.8.1.4 Stage 2 is mainly for developing the remaining developments in the northern part of the PDA next to Kung Um Road and the Employment Belt at TYST for multi-storey buildings and open storage site.

2.8.1.5 To support the main thrust of the YLS development, major infrastructure works including modification of TYST Interchange, construction of the slip roads and its PTI at Yuen Ching Road, STW, new sewer from YLS STW to the existing inlet chamber of the NWNT effluent tunnel at San Wai for discharging to the Urmston Road submarine outfall, SPSs, Reclaimed Water Service Reservoir, partial decking and revitalisation of Yuen Long Nullah to the south of YLH

and road improvement works at the southern Kiu Hing Road and Wong Nai Tun Tsuen Road will be carried out in the Stage 2 development.

- 2.8.1.6** For re-provisioning of private lots which are subjected to VRT and to be affected in Stage 3, another Village Resite Area in southern part of PDA along Kung Um Road will also be needed at this stage.

Key Developments in Stage 3

- 2.8.1.7** Stage 3 is mainly for developing the sites and the associated infrastructure in the southern part of the YLS PDA along Kung Um Road, including the Hillside River Corridor, reedbed/ retention pond, and retention lake.

Key Developments in Stage 4

- 2.8.1.8** The final Stage 4 is mainly for developing the sites in the PDA at TYST. Major works for modification of TSWW Interchange is programmed to be carried out this later Stage 4 to avoid substantial traffic impact and diversions of undertaking modification of TYST and TSWW Interchanges at the same time.

3 Summary of Key Findings in EIA Study

3.1 Approach to Environmental Impact Assessment

3.1.1.1 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 followed in parallel with the design process 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. Feedback and advice obtained from the various CE activities have been considered and incorporated into the EIA process where appropriate. Suitable measures have been proposed to avoid some potential environmental impacts, or to minimise or mitigate to acceptable levels. In addition, environmental initiatives have been incorporated into the Project as far as practicable.

3.2 Air Quality

3.2.1 Introduction

3.2.1.1 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 3.4.1 and Appendix B of the EIA Study Brief, as well as Section 1 of Annex 4 and Annex 12 of the Technical Memorandum on EIA Process issued under the EIA Ordinance (EIAO-TM).

3.2.1.2 Quantitative assessments using the relevant air models approved by EPD have been conducted for both the construction and operation phase impact assessments. Cumulative air quality impact has been determined.

3.2.2 Construction Phase

3.2.2.1 The key activities that could potentially result in dust emissions during construction phase of the Project have been identified. These activities include site clearance, soil excavation, backfilling, site formation and wind erosion of open sites. In addition, construction dust emissions from concurrent projects have also been identified and included in the cumulative air quality impact assessment where appropriate. The assessment has included representative Air Sensitive Receivers (ASRs) in the vicinity and considered the relevant air pollutants, including Total Suspended Particulates (TSP), Respirable Suspended Particulates (RSP) and Fine Suspended Particulates (FSP).

3.2.2.2 Assessment results indicate that, with the implementation of the mitigation measures as stipulated in the Air Pollution Control (Construction Dust) Regulation and dust control measures (i.e. watering once per hour on exposed worksites and haul road, good site practices and environmental monitoring and audit (EM&A) programme), the predicted concentrations of TSP, RSP and FSP at representative ASRs would comply with AQOs and EIAO-TM.

3.2.2.3 A summary of the predicted concentrations for key representative air pollutants after the implementation of mitigation measures is tabulated below:

Table 3.1 Summary of Construction Dust Impacts (after implementation of mitigation measures)

ASRs	TSP Conc. ($\mu\text{g}/\text{m}^3$)	RSP Conc. ($\mu\text{g}/\text{m}^3$)		FSP Conc. ($\mu\text{g}/\text{m}^3$)		AQOs / EIAO-TM Compliance
	Max. 1-hour	10 th highest 24-hour	Annual	10 th highest 24-hour	Annual	
	(500)	(100)	(50)	(75)	(35)	
Planned / Existing ASRs (outside PDA)	199-465	81-99	35-48	61-66	25-28	Yes
Existing ASRs (within PDA)	223-456	87-100	38-48	63-65	26-28	Yes
Planned ASRs	220-341	84-95	36-41	62-65	25-26	Yes

Note: Respective criteria of each pollutant are given in ().

3.2.2.4 The mostly affected receivers would be those in the immediate vicinity of construction sites during the period with heavy construction activities. However, no adverse residual air quality impact during construction phase is anticipated when all the proposed mitigation measures are implemented.

3.2.3 Operation Phase

3.2.3.1 Key existing and planned / committed air pollution sources in the vicinity of the Project during operation phase include the vehicular emission from neighbouring roads such as YLH, Castle Peak Road, etc., as well as various industrial emissions. The assessment has also considered other emission sources that would have certain influence on the background air quality level, including territory wide vehicular emission, power plants as well as regional emission from the Pearl River Delta. Key representative air pollutants include Nitrogen Dioxide (NO_2), RSP and FSP.

3.2.3.2 During the course of formulating the RODP, air quality impact on the newly introduced population in the YLS PDA is one of the key concerns given the close proximity to the heavily trafficked YLH. Sufficient buffer distance from YLH has been provided for the planned residential ASRs. For example, a separation distance of at least 100m between YLH and the residential buildings will be provided. Nevertheless, quantitative assessment has been conducted according to Appendix B of the EIA Study Brief. Assessment results indicate that the cumulative air quality impact during operation phase in Years 2027 and 2042 would comply with the AQOs. Hence, the operation of the Project will not result in adverse residual air quality impacts and mitigation measures are therefore not required. A summary of the predicted concentrations for key representative air pollutants is given below.

Table 3.2 Summary of Predicted Concentrations for Key Representative Air Pollutants

Area	NO ₂ Conc. (µg/m ³)		RSP Conc. (µg/m ³)		FSP Conc. (µg/m ³)		AQO Compliance
	19 th highest 1-hour	Annual	10 th highest 24-hour	Annual	10 th highest 24-hour	Annual	
	(200)	(40)	(100)	(50)	(75)	(35)	
Year 2027							
Planned / Existing ASRs (outside PDA)	90-135	18-38	81-90	35-40	61-64	25-27	Yes
Existing ASRs (within PDA)	99-118	22-29	81-83	35	61-62	25	Yes
Planned ASRs	107-115	22-28	82	35	61	25	Yes
Year 2042							
Planned / Existing ASRs (outside PDA)	92-125	17-33	81-90	35-40	61-64	25-27	Yes
Existing ASRs (within PDA)	98-109	23-28	81-83	35	61-62	25	Yes
Planned ASRs	91-116	20-29	81-85	35-36	61-64	25	Yes

Note: Respective criteria of each pollutant are given in ().

3.2.3.3 Higher pollutant concentrations (e.g. annual NO₂) are generally predicted at existing ASRs located adjacent to the major roads (including YLH, Long Tin Road, Hung Tin Road, Castle Peak Road,

etc.), such as Hung Fuk Estate, Uptown, Yoho Midtown, etc. For planned residential and educational ASRs in the PDA, with sufficient setback distance between YLH, the predicted pollutant concentrations are lower than the existing ASRs.

3.2.4 Odour Impact

3.2.4.1 Quantitative odour impact assessment has also been conducted, taking into account the proposed YLS STW and existing chicken farm at the southern fringe of the PDA to be retained under the RODP. It is concluded that the predicted cumulative odour concentrations on all planned ASRs would comply with the criteria during the operation phase of the Project.

3.2.4.2 For the cumulative odour impact on existing receivers, it should be noted that, without the Project in place, existing sensitive receivers are subject to odour impact from a total of 6 livestock farms in the YLS PDA. Based on the RODP, 5 existing livestock farms within the Project site will be removed under this Project and this will reduce the total odour emissions in the area and improve the odour conditions in future from existing situation. On the other hand, the proposed STW, which would be implemented with odour removal facilities, would only cause insignificant contribution. It is anticipated that, with implementation of this Project, there will likely be a net improvement in the odour condition on the existing ASRs in the area during operation phase of this Project.

3.2.4.3 For the odour exceedance expected at planned sites zoned “DO”, it is proposed that this area to be designed as non-air sensitive use. No exceedance of the EIAO-TM odour criterion would be expected. Besides, no adverse odour impact from the operation of the two planned SPSs and refuse collection points would be anticipated with the implementation of good site practices and/or proposed mitigation measures including enclosing the odourous facilities, provision of deodourising units for treatment of odour before discharging.

3.3 Noise Impact

3.3.1 Introduction

3.3.1.1 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 3.4.2 and Appendix C of the EIA Study Brief, as well as Annex 5 and Annex 13 of the EIAO-TM.

3.3.1.2 Impacts from construction noise, road traffic noise, fixed noise and rail noise have been quantitatively determined with relevant models and calculations.

3.3.1.3 On the RODP, the Employment Belt with multi-storey buildings is located between residential developments in Area 1 and adjoining YLH to provide noise screening. This has helped to avoid fixed noise from the existing industrial zone near Fui Sha Wai and traffic noise impacts from YLH as much as practicable at the outset.

3.3.2 Construction Phase

Construction Noise

3.3.2.1 Construction noise associated with the use of powered mechanical equipment (PME) for different stages of construction has been assessed. With the implementation of practical mitigation measures including good site management practices, use of movable noise barrier, full enclosure and retractable barrier, use of “quiet” plant and working method, the predicted construction noise impact would be 49-75 dB(A) and 57-63 dB(A) for existing residential and educational Noise Sensitive Receivers (NSRs) respectively, and 60-75 dB(A) and 57 dB(A) for planned residential and educational NSRs respectively. Hence, adverse construction noise impacts are not anticipated.

3.3.3 Operation Phase

Road Traffic Noise

3.3.3.1 The road traffic from both existing and planned roads would generate road traffic noise that would have impacts on the planned and existing NSRs. Existing roads that have been included in the assessment include YLH, Long Tin Road, Kung Um Road and planned roads under the Project including those internal roads inside PDA and Road D1 and D2, and new roads outside the PDA including TYST Interchange and TSWW Interchange, and slip road connecting to Shap Pat Heung Road. Kung Um Road and TYST Road will have road improvements to increase the carriageway width to standard width 6.75m but will remain same configuration.

3.3.3.2 Operation road traffic noise impact on existing and planned NSRs within the PDA have been predicted for the respective assessment years at Year 2027, 2033 and 2053. Results indicate that the noise impacts can be mitigated by a combination of noise mitigation measures including i) absorptive vertical barriers and cantilevered noise barriers along some sections of Project roads and Kung Um Road; ii) Low noise road surfacing (LNRS) on some road sections; iii) semi-enclosures/ full

enclosures at primary distributor roads at TYST Interchange and Kung Um Road; iv) nullah features / barriers along some sections of Yuen Long Nullah (Kiu Hing Road); v) provision of acoustic windows for some planned public and private housing; and vi) alternative building orientation for some planned schools are proposed to alleviate adverse traffic noise impact on the affected NSRs. These mitigation measures will also ensure that the noise levels caused by Project roads are within the respective noise criteria. With all the proposed mitigation measures in place, the façade noise levels at all the planned NSRs would comply with the respective noise criteria. A summary of the predicted road traffic noise impacts is given below.

Table 3.3 Summary of Predicted Road Traffic Noise Impacts

Uses	Predicted Overall L ₁₀ 1hr, dB(A)	Criterion, L ₁₀ 1hr dB(A)
Residential	47 – 70	70
Educational Institutions	53 – 65	65

3.3.3.3 The noise level from Project roads would comply with the respective noise criteria and the Project road contribution to overall noise level of existing residential and educational NSRs inside/ outside PDA would be negligible. Hence, traffic noise impact due to the Project roads is insignificant after implementing the proposed mitigation measures. In addition, existing roads include Kung Um Road, Sha Tseng Road and TYST Road, LNRS would be considered to address the existing noise impacts from existing roads.

Fixed Noise Sources

3.3.3.4 A number of facilities have been recommended to support operation of the Project. Some of these proposed facilities are fixed noise sources that would have potential noise impacts on NSRs. These planned noise sources include electricity substation, refuse collection points and SPSs, STW, divisional fire station and ambulance depot, PTIs, sports centre and market, district police station, sites for storage use, open storage as well as storage and workshop, retention tank and government reserve (intended for government depot). Other than these planned noise sources, existing fixed noise sources from industrial zone outside the PDA near Fui Sha Wai, livestock farm retained in the PDA and Lung Tin SPS would also contribute to noise environment.

3.3.3.5 Noise impact from planned fixed plant could be effectively mitigated by implementing noise control measure at source during the detailed design stage. With the adoption of the proposed maximum permissible sound power levels for the planned fixed plant, the impact noise levels at representative NSRs would comply with the relevant noise criteria.

Therefore, adverse fixed noise sources impact to the NSRs is not anticipated.

Rail Noise

3.3.3.6 An EFTS may be developed as one of the major modes of transportation within the PDA. The EFTS within the PDA will be an extension from the proposed HSK NDA.

3.3.3.7 The future EFTS may be in the form of rail-based or road-based mode of transport. For conservative assessment, the rail-based EFTS, which is the worst case scenario from the noise perspective, is assumed. Results indicate that the noise impacts on representative NSRs would comply with the noise criteria with the implementation of various track enhancement measures including the use of embedded rail and green track with vegetation.

3.3.3.8 As stated in **Section 2.6**, the EFTS and its associated railway system is a DP under Items A.2 or A.3 of Schedule 2 of EIAO-TM. A separate EIA study would therefore be conducted by the future relevant project proponent to fulfil all the statutory requirements and procedures under the EIA Ordinance.

3.4 Water Quality

3.4.1 Introduction

3.4.1.1 In accordance with the EIA Study Brief, the study area for the water quality impact assessment covers the 500 m assessment area from the Project boundary and the Deep Bay WCZ. Water sensitive receivers (WSRs) including watercourses and ponds within the PDA, and hydrologically linked areas that might be affected by the Project were identified. The potential impacts to the WSRs during construction and operation phases have been identified and evaluated. Appropriate mitigation measures have been recommended to prevent and reduce adverse water quality impact.

3.4.1.2 The criteria used for evaluating water quality impacts followed the EIAO-TM, Water Quality Objectives (WQOs) for the Deep Bay WCZ and Town Planning Board Guidelines for Application for Developments within Deep Bay Area, Under Section 16 of the Town Planning Ordinance (TPB PG-NO. 12C).

3.4.1.3 Assessments have been performed for both construction and operation phases of the Project. Concurrent projects for the construction and

operation phases were identified and incorporated into the assessment for cumulative impact where appropriate.

3.4.2 Construction Phase

3.4.2.1 During the construction phase, with full implementation of the mitigation measures, no substantial impact is anticipated from surface runoff from construction site and sewage generated from construction workforce.

3.4.2.2 For the decking over and revitalisation of existing channel, proper mitigation measures should be adopted, including installation of cofferdam and sheet piles to isolate the works area from the watercourses, locate any stockpiling area away from watercourses and provide with bund and tarpaulin. With implementation of mitigation measures, no substantial impact is anticipated.

3.4.3 Operation Phase

3.4.3.1 During the operation phase, all the sewage and wastewater generated will be treated in the proposed YLS STW. This STW will be designed to achieve a treatment capacity of 24,000m³/day in Average Dry Weather Flow. A tertiary level treatment standard would be adopted to enable for the reuse of reclaimed water while the rest of sewage is suggested to be treated by secondary plus treatment (with UV disinfection and 75% nitrogen removal) and discharge to the Urmston Road submarine outfall without exceeding the pollution loading limit stated in the approved EIA of “Upgrading and Expansion of San Wai Sewage Treatment Works and Expansion of Ha Tsuen Pumping Station” (AEIAR-072/2003). For the reclaimed water, it will be reused in the PDA and adjacent developments for non-potable uses such as toilet flushing; and only a small amount of TSE will be discharged to the reedbed adjoining to the proposed YLS STW for further polishing before entering Yuen Long Nullah. The Project would not generate a net increase in pollution loading to the receiving water in the Deep Bay WCZ with the pollution credit gained as presented in **Section 3.5.1.2** below. Hence, the policy “No Net Increase in Pollution Loads Requirement in Deep Bay” would be complied with. Also, the Project would also bring benefits by providing sewerage infrastructure to the existing unsewered areas within the PDA.

3.4.3.2 Nevertheless, contingency measures such as twin rising mains, standby pump and treatment facilities and dual electricity supply or backup power supply facilities would be adopted to prevent emergency situation as far as practicable. In the very unlikely case that all these measures fail, the discharge from the proposed YLS STW and two SPSs

will be delivered to the nearby proposed reedbed and the nearby channelised nullahs respectively. However, the water quality impact due to emergency discharge is anticipated to be short-term and thus insignificant. For other potential water pollution sources arising from the Project such as maintenance flushing of Reclaimed Water Service Reservoir, wastewater from industrial and commercial activities, etc., no significant water quality impact is anticipated with the implementation of mitigation measures.

3.4.3.3 No substantial residual impact is anticipated during both construction and operation phases of the Project.

3.5 Sewerage and Sewage Treatment Implications

3.5.1.1 The sewage flows and loads generation from the PDA are estimated and the proposed sewage treatment and disposal strategy for YLS are accordingly formulated, which involve discharging the YLS sewage flows by the proposed sewerage system to a new STW in the southern part of the PDA for treatment, followed by the reuse of TSE as reclaimed water for non-potable uses such as toilet flushing within the PDA and adjacent developments.

3.5.1.2 In compliance with the strict requirement of “No Net Increase in Pollution Loading” for the Deep Bay, a small amount of the TSE from YLS STW could be discharged to Yuen Long Nullah adjacent to the STW as the associated pollution loading has been offsetted by credit gained from the removal of the existing livestock farms. Further, a reedbed will be provided to further polish the TSE before it discharges to Yuen Long Nullah and Deep Bay. The remaining TSE can be conveyed to the existing inlet chamber of the NWNT effluent tunnel at San Wai for discharging to the Urmston Road submarine outfall at North Western WCZ.

3.6 Waste Management Implications

3.6.1 Introduction

3.6.1.1 The types of waste that would be generated during the construction and operation phases of the Project have been identified. The potential environmental impacts that may result from these waste materials have been assessed in accordance with Section 3.4.5 and Appendix F of the EIA Study Brief as well as the criteria and guidelines outlined in Annex 7 and Annex 15 respectively of the EIAO-TM.

3.6.2 Construction Phase

3.6.2.1 After considering the compatibility between the proposed site formation works and the levels of existing villages, potential waste management implications from the generation of waste during the construction phase have been evaluated. The main types of waste that would be generated include construction and demolition (C&D) materials, chemical waste, general refuse, excavated sediment and contaminated soil. It has been estimated that 263,200 m³ of non-inert C&D materials, 602,900 m³ of inert hard C&D materials, 160,000 m³ of rock, 1,460,000 m³ of inert soft C&D material, 80,000 m³ of top soil, a few hundred litres of chemical waste per month, as well as some excavated sediment and contaminated soil (if any) would be generated.

3.6.2.2 Strategic mitigation measures, including the opportunity for on-site sorting, reusing C&D materials, etc., are devised to minimise the surplus materials to be disposed of. Recommendations have been made for implementation by the contractor during the construction period to minimise waste generation and off-site disposal. Provided that the waste is handled, transported and disposed of properly, no adverse environmental impacts are anticipated.

3.6.3 Operation Phase

3.6.3.1 The main types of waste to be generated during the operation phase of the Project would consist of municipal solid waste (MSW) and chemical waste. It is expected that the total amount of MSW generated would be around 205,200 tonnes per day whilst a minimal amount of chemical waste would be generated, mainly from maintenance activities on the road networks within the YLS development and laboratories in educational facilities. The MSW generated would be diverted to refuse collection points before being transported to the existing WENT Landfill outside the PDA. Initiatives such as promoting recycling and providing a 4-bin recycling system would be employed in order to minimise the amount of MSW to be disposed of at landfill. Provided that the waste generated in the operation phase is handled, transported and disposed of properly, no adverse environmental impacts are anticipated.

3.7 Land Contamination

3.7.1 Introduction

3.7.1.1 The potential land contamination issues associated with the Project have been assessed by following the guidelines in Sections 3.1 and 3.2 of Annex 19 of the EIAO-TM as specified in Section 3.4.6 of

the EIA Study Brief. In accordance with the requirement set out in Appendix G of the EIA Study Brief, a Contamination Assessment Plan (CAP) was prepared for the Project and endorsed by EPD.

3.7.1.2 Desktop study and site reconnaissance surveys were conducted to determine the past and present land uses, including potentially contaminative uses, within or in the vicinity of the Project area. Other relevant information was also collected from various government departments.

3.7.2 Potential Impact

3.7.2.1 This land contamination assessment examined the potential contaminative land use within the PDA and the works areas for the associated infrastructure. The assessment involved desktop review, site surveys and the proposed environmental site investigation (SI) and their potential impacts to future land use.

3.7.2.2 Majority of the potentially contaminated sites could not be accessed to inspect the site conditions during site walkover at the time of preparing the EIA report and permission could not be obtained from the site owners/ operators to carry out the site investigation works. As such, this land contamination assessment on the potential land contamination was conducted based on desktop review, review of historical aerial photos and a number of peripheral site surveys.

3.7.2.3 A total of 697 potentially contaminated sites were identified, of which over 90% of the potentially contaminated sites are currently used as open area storage, container storage and warehouse sites. However, open area storage and container storage usually comprise a large portion of areas for goods/ container storage with relatively small portion of potentially contaminating activities such as maintenance of equipment and vehicles and fuel storage. Warehouse sites may not be contaminated if they are used to store general packed goods stocks. The contamination (if any) is therefore expected to be localised if the key types of goods/ stocks stored within the abovementioned landuses are not potential sources of contamination. In addition, the land uses of the remaining identified potentially contaminated sites (less than 10%) are only scattered vehicle maintenance workshops, metal workshops, waste recycling workshops, etc. which are not large scale polluting facilities. This further supports that the contamination (if any) would be localised.

3.7.2.4 The possible chemicals of concern (COCs) identified at the potentially contaminated sites include Volatile Organic Compounds (VOCs), Semi Volatile Organic Compounds (SVOCs), Metals, Petroleum Carbon Ranges (PCRs), Polychlorinated Biphenyls (PCBs), etc. These COCs

are readily treatable with proven remediation techniques in local remediation experience, e.g. decontamination works at the Cheoy Lee Shipyard. By implementing the recommended remediation works, any contaminated site (s) identified within the PDA could be cleaned up prior to construction / development.

- 3.7.2.5** The recommended remediation works would not only minimise the health risk to the future occupants arising from the exposure of the contaminated soil and/or groundwater, it would also provide the opportunity to reuse the contaminated materials into useful materials for backfilling, which results in minimising the amount of waste disposing into the depleting landfill in Hong Kong and achieving a more sustainable development.
- 3.7.2.6** Since the potentially contaminated sites are located in private land lots, SI is unlikely to be carried out at this stage. In addition, as the sites are still in operation, it is considered not suitable to carry out the SI at this stage as there may be change in land use prior to construction for both potentially contaminated sites and other surveyed sites. In view of this, further site visits to these potentially contaminated sites are proposed once future development of these sites is confirmed and that site access is available in order to identify the need for SI for any additional hot spots as a result of the on-going land contaminating activities. In addition, re-appraisal would be required for the other surveyed sites, other remaining areas of the PDA and the works areas for the associated infrastructure to address any change in land use that may give rise to potential land contamination issues.
- 3.7.2.7** Findings from the re-appraisal will be presented in a supplementary CAP. Upon approval of the supplementary CAP and completion of the SI works, a Contamination Assessment Report (CAR) would be prepared to present findings of the SI works. If contamination has been identified, a Remediation Action Plan (RAP) would be prepared to recommend specific remediation measures. Upon completion of the remediation works, if any, a Remediation Report (RR) would also be prepared to demonstrate that the clean-up works are adequate. The CAR, RAP and RR would be submitted to EPD for approval prior to commencement of any construction / development works.
- 3.7.2.8** Upon remediation of the contaminated land, if any, the Project will have converted previously potentially contaminated land into safe, usable land fit for development, thus bringing benefits to the community at

large and helping to address Hong Kong's long-term housing demand and other land use needs.

3.8 Ecology

- 3.8.1.1** A desktop literature review and an ecological survey of at least 9 months have been conducted to establish the baseline conditions, with field verification surveys conducted in 2013, 2014 and 2016. All these ecological resources identified have been mapped to form the habitat map.
- 3.8.1.2** The RODP has preserved all woodland patches of significant sizes in the PDA and avoided encroachment and fragmentation of the mature woodland behind Shan Ha Tsuen through locating the road junctions away from the preserved woodland. Fragmentation of agricultural land near Shan Ha Tsuen has been minimised as the integrity of the agricultural land and linkages with more natural, less disturbed habitats with higher ecological value to the west and south will still be retained in the RODP.
- 3.8.1.3** Based on the available information of the proposed works in the RODP, only the impacts resulting from loss of hillside secondary woodland (~2.42 ha in total), which are considered of moderate severity, will require appropriate ecological mitigation. Given the nature of a new town extension development, a compensatory woodland planting site (~12 ha) has been proposed to provide a compensation area ratio of at least 1:1 to adequately mitigate the impacts from woodland loss.
- 3.8.1.4** The RODP has also retained three lower sections of the watercourses which have records of the endemic crab *Somanniathelphusa zanklon* with 15m buffer on each side. The land use alongside these three watercourses has been zoned as "GB(1)" on the RODP. While *S. zanklon* were found in the 3 lower sections but not in other sections of watercourses, given the conservation status of this species, it is necessary to conduct additional survey prior to the commencement of the respective construction works for the watercourses. These three watercourses or the proposed Hillside River Corridor can act as receptor sites should *S. zanklon* require translocation from any of those sections of watercourses in the lowland to be lost. The RODP has also included the enhancement and revitalisation of Yuen Long Nullah, Tin Tsuen Channel and Yuen Long (West) Nullah, and integration with natural

greenery. All of these planning principles will help enhance the ecological resources in the PDA.

- 3.8.1.5** To mitigate for the cumulative loss of watercourses (~465m in total) which are generally isolated and the loss of these watercourses is considered to result in Low-moderate ecological impacts, it is proposed that a new watercourse be created along the hillside of the western boundary of PDA (Hillside River Corridor in the RODP). This will be approximately 575m long. By intercepting several hillside watercourses, this new watercourse will provide hydrological and ecological connectivity to downstream sections.
- 3.8.1.6** A retention lake, of approximately 0.6 ha, is proposed at the northern end of the hillside watercourse. Whilst the primary function of this is to prevent flooding further downstream, there will be vegetated, sloping banks and the lake is anticipated to always retain water. Through appropriate design, this enhancement measure could potentially provide additional foraging habitat for ardeids that breed in the egretty near Pak Sha Tsuen. Planting of bamboos and larger tree species could provide suitable nesting substrate for ardeids.
- 3.8.1.7** A reedbed/ retention pond with an area of about 4 ha is proposed to be built at the south of Area 3. A small amount of the TSE will be conveyed to the reedbed before being discharged into Yuen Long Nullah. This reedbed can provide ecological enhancement to the area providing foraging and shelter opportunities for a suite of aquatic fauna, and in particular, wetland dependent birds, especially with the inclusion of a freshwater marsh before the outfall.
- 3.8.1.8** The egretty near Pak Sha Tsuen is over 120 m away from the proposed site formation and/or construction works and as such indirect impacts are considered to be low. Impacts to the majority of flightlines have been avoided by provision of open space zoned “DO”, “LO” and non-building area (NBA) on the RODP. Within these areas, no buildings above 3-storeys high are permitted and the land will be used for open space. For flightlines to the northeast of the egretty, whilst there will be some minor adjustments to the departure direction of breeding ardeids from the egretty, it is considered that there is sufficient distance between the egretty and the buildings for birds to make minor adjustments at the start of the flightline and still continue to foraging grounds several kilometres to the northeast of the Assessment Area with minimal disturbance. Additional feeding opportunities for breeding ardeids may be provided through the creation of the retention lake, the reedbed/ retention pond and the Hillside River Corridor and through the

protection of the three retained watercourses with buffers zoned “GB(1)” and the revitalisation of nullahs.

3.8.1.9 Further ecological enhancement can be provided throughout the scheme by planting of suitable species to offer more resources to widespread species which commonly occur close to, or within, human activities. Planting of suitable trees and bamboos, can provide food, nesting and roosting resources for a wide range of species if carefully considered.

3.9 Fisheries

3.9.1.1 Fisheries baseline was established by literature review, and supplemented with field verification surveys conducted in 2013, 2014 and 2016.

3.9.1.2 A comprehensive review of the status of pond fish culture has been conducted through desktop study and field surveys to establish the fisheries baseline of the Assessment Area, with the assessment of fisheries conducted in accordance with the EIAO-TM requirements.

3.9.1.3 Of the total 51 ponds identified in the Assessment Area, only nine ponds were identified within the PDA or associated works footprints. These include five shallow farm ponds for irrigation near Sha Tseng Tsuen in Area 1, a small shallow pond appeared to be actively managed with uncertain use located to the east of Lam Tai East Road in Area 2, two abandoned and overgrown ponds located near the southern end of Kung Kum Road, and an abandoned and dry pond located near the southern end of Long Hon Road in Area 1 of the PDA. The original farmland adjacent to Sha Tseng Tsuen will be resumed and converted into “District Open Space” (“DO”) under the RODP. Therefore, there will be no demand for irrigation from the five shallow farm ponds after the development. Of these nine ponds identified in the PDA, the abandoned and dry pond in Area 1 will be preserved in the proposed “GB” zone in the RODP and the remaining eight ponds will be permanently lost due to the Project. As all the eight ponds to be lost within the PDA serving non-fisheries related purposes (of approximately 0.58 ha in total) are small in overall area, no significant direct fisheries impacts are anticipated from loss of the pond areas due to construction of the Project.

3.9.1.4 With the separation distance (~150m) from the nearest boundary of the PDA, no direct or indirect impacts on the two possibly active fishponds are anticipated during the construction and operation phases of the Project. As such, no fisheries mitigation measures are considered necessary. In addition, the Project will provide a STW and associated

sewerage facilities to serve the proposed development. It is expected that during the operation phase of the Project, sewage and domestic discharge within the PDA will be properly collected and treated as detailed in **Chapters 6 and 7** of the EIA Report. As such, no significant indirect impacts are anticipated during the operation phase of the Project.

3.9.1.5 With the full implementation of the good site practices to control sewage discharge and site runoff as detailed in **Chapter 6** of the EIA Report, no adverse induced water quality impacts on water sources for potential fish pond sites are anticipated.

3.10 Landscape and Visual

3.10.1.1 Given the rural nature of the Project area, the proposed development of the Project will inevitably result in some landscape and visual impacts during construction and operation phases. It is not possible to fully mitigate all landscape impacts on Landscape Resources (LRs) in relation to loss of active agricultural land, woodland with matured trees and watercourses during the construction period and early operation stage, mainly as long periods of time are required to sufficiently compensate for the associated impacts. A tree survey has been carried out, it is anticipated that 34 numbers of Important Trees (including Potentially Registerable Old and Valuable Trees (POVTs) and rare/protected species) are in direct conflict with the footprint of the Project development. A detailed Tree Felling Application process will be carried out at a later detailed design stage, to finalise tree treatment and allocate compensatory planting areas including open space, parks and streetscape. The landscape character of affected Landscape Character Areas (LCAs) will be changed by the Project, which introducing a more urbanised character into the rural context. Providing compensatory measures are applied, in combination with landscape enhancement proposed by the RODP such as open space and green network, revitalisation of nullahs and provision of reedbed/ retention pond, the residual impacts to most LR and LCAs can be reduced to slight level eventually.

3.10.1.2 The overall visual character in YLS area would be changed by the proposed development after the construction, the recommended mitigation measures are not be able to compensate the change in character adequately. However, the Project will bring applicable landscape and visual enhancement for the new development, and lead to positive change from the current brownfield sites to a contemporary, planned new town extension, which means the Project can improve the

visual amenity of the majority of Visual Sensitive Receivers (VSRs), the overall change would enhance the compatibility with the existing visual character of Yuen Long Town. Besides, the enhanced planting design and revitalised nullahs will help to improve aesthetics and create a green, quality and liveable community for housing supply and improving the existing brownfield environment.

3.10.1.3 Cumulative landscape and visual impacts during construction and operation phases have also been predicted to be not substantial, including those generated from concurrent projects.

3.11 Cultural Heritage

3.11.1 Introduction

3.11.1.1 A cultural heritage impact assessment has been conducted, including a built heritage impact assessment and an archaeological impact assessment, to evaluate the impacts on known or potential cultural heritage resources. The cultural heritage impact assessment followed the requirements of Annexes 10 and 19 of the EIAO-TM as well as those set out in Appendix K of the EIA Study Brief.

3.11.2 Terrestrial Archaeology

3.11.2.1 As part of the EIA Study, a terrestrial archaeological survey has been conducted on government land in the TYST area and it was concluded that surveyed areas were undisturbed until recently, and that the part of the area in the north has low archaeological potential. For the private land areas that have moderate archaeological potential within the PDA, they are constrained by accessibility issues and hence surveys cannot be conducted at this stage. Based on the Terrestrial Archaeological Survey Proposal and results of the archaeological survey conducted for this EIA within Area 1 at TYST, it was recommended that further archaeological survey will be conducted after land resumption on areas of moderate archaeological potential throughout the PDA. The southern part of Area 1 at TYST which was inaccessible during the 2015 survey will also be the subject of archaeological survey on land resumption. The scope and programme of the proposed archaeological work shall be agreed with AMO. Subject to the findings of the archaeological work, appropriate mitigation measures would be proposed by the project proponent in prior agreement with the AMO. For the areas with low-moderate archaeological potential, AMO should be informed immediately in case of discovery of antiquities or supposed antiquities in the course of the construction works. Agreement from AMO would be sought on the follow-up actions if required.

3.11.2.2 There is only one Site of Archaeological Interest (SAI) (i.e. Tseung Kong Wai SAI) and one Archaeological Potential Area (APA) (i.e. Hung Uk Tsuen (South) APA) situated within the 100m assessment area but outside PDA. Impact on these SAI and APA is not anticipated.

3.11.3 Built Heritage

3.11.3.1 A Grade 3 historic building, the Yeung Hau temple, lies within the PDA at TYST and has been preserved by designating an “IC” zone for the existing building. There are two declared monuments (Cheung Ancestral Hall at Shan Ha Tsuen and Tang Ancestral Hall at Ha Tsuen) within 100m assessment area but outside PDA. In addition, there are 14 graded historic buildings, 1 proposed graded historic building and 1 nil-graded historic buildings are located within 100m assessment area but outside PDA. Impacts on all these graded historic buildings are not anticipated.

3.11.3.2 In addition, the presence of the temple - Yeung Hau Temple (Grade 3 historic building), within the YLS PDA offers the opportunity for heritage promotion within the community.

4 Summary of Environmental Outcomes

4.1.1 General

4.1.1.1 The YLS PDA will become an extension of Yuen Long New Town for housing purpose and other uses with supporting infrastructure and community facilities, and to improve the existing environment. The Project aspires to transform the existing vast extent of brownfield sites consisting of open storage, port back-up, construction material/machinery storage, car repair workshops, recycling yards, and rural workshops, etc. which have created considerable environmental, traffic, visual, and other problems, into a new town extension with landscaping and greening proposed.

4.1.1.2 This EIA Study 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 assessments for the 7 Schedule 2 DPs.

4.1.1.3 The technical assessments conducted (see EIA Report **Chapter 4** to **Chapter 13**) have demonstrated that the following environmental impacts have complied with all the statutory requirements in EIA Study Brief (EIA SB No.: ESB-246/2012) and EIAO-TM.

- Air Quality Impact;
- Noise Impact;
- Water Quality Impact;
- Sewerage and Sewage Treatment Implications;
- Ecological Impact;
- Fisheries Impact;
- Landscape and Visual Impacts;
- Waste Management Implications;
- Land Contamination Impact; and
- Cultural Heritage Impact.

4.1.1.4 The findings of this EIA Study have determined the likely nature and extent of environmental impacts predicted to arise from the construction and operation of the Project. During the EIA process, environmental mitigation measures have been identified for incorporation into the planning and design of the Project, to achieve compliance with

environmental legislation and standards during both the construction and operation phases.

4.1.1.5 Avoidance of environmental impacts has been one of the key considerations throughout the entire EIA Study. The key environmental problems that have been avoided and any sensitive areas protected in the RODP are summarised below.

Protection of Sites of Conservation Importance

- All the recognised sites of conservation importance, including Tai Lam Country Park and the Conservation Area have been avoided and will not be encroached by any developments under the Project.

Protection of Watercourses of Higher Ecological Value

- In the RODP, three streams with endemic crab species including Stream Catchment 7 and Stream Catchment 6 in Area 1 and Stream Catchment 4 in Area 3 have records of the crab *S. zanklon*; these sections are proposed to be retained with 15 m buffer on both sides of the watercourses, in which one of the watercourses is proposed to be extended to connect with the revitalised Yuen Long Nullah.

Protection of Egretty near Pak Sha Tsuen

- The RODP has been adjusted to avoid impacts to major flightlines by introduction of the zonings of “DO” and “OU (Hillside River Corridor with Scenic Cycle Track)” and designation of Non-building Area.

Protection of Existing Villages

- Well-established existing residential clusters have been preserved on the RODP.

Protection of the Deep Bay Water Quality

- There will be no net increase in the pollution loading to the Deep Bay waters, as most of the TSE generated by the Project will be either reused as reclaimed water or properly disposed of at North Western WCZ and only a small amount of the TSE will be disposed of at Deep Bay WCZ with the pollution loading being offset by the pollution credit from the abatement of livestock farms. In addition, providing new sewerage network in the Project which will cover the existing unsewered areas within the PDA, and will reduce the pollution loading to Deep Bay.
- The provision of sustainable drainage system in YLS will also avoid direct release of surface runoff into Yuen Long Nullah.

Preservation of Built Heritage

- Graded historic buildings have been preserved within the RODP and the associated heritage resources are protected.

4.1.1.6 Other than measures to avoid environmental impacts, efforts have also been exercised to minimise and compensate any unavoidable impacts. The need for any environmental designs required to mitigate the associated impacts has been identified and will be implemented as appropriate.

Minimising Landscape and Visual Impact

- A comprehensive open space and green network is planned for the PDA which connects the residential communities of the PDA and links up existing villages with the proposed housing developments in the PDA, such as the belts of “LO” zones alongside the existing villages. The network will enhance the existing rural character through integration and preservation of natural and landscape resources (such as preserved farmland, secondary woodland) and provide places for recreation and leisure of both future residents of YLS and existing villagers. Additionally, a buffer is proposed between the existing low-rise villages and the new high-rise public and private developments to address grave concerns of the local villagers on the possible wall effect. This buffer consists of a 20 m in width green strip, zoned as “LO” and a 10 m in width low building area along the development sites.
- Some green approaches can be adopted to revitalise nullahs and to improve aesthetic whilst not affecting the hydraulic performance of Yuen Long Nullah (about 2.5 km) along Kung Um Road / Kiu Hing Road.
- The proposed building height and development intensity profile for the Project site gives due regard to the physical form and setting of the existing and retained uses. YLS will integrate with its surrounding settings by high density developments in the north near Yuen Long New Town and transitioning to medium and low-density developments to the south. This will allow better integration with the existing / retained areas and enhance the quality of the overall visual character of the Project area.

Minimising Air Quality Impacts

- The RODP has placed the population, key economic activities and major community facilities within walking distance of mass transit and public transport nodes. Community neighbourhoods will also

be created within easily accessible daily necessities to promote walking. For planned residential uses under this Project, sufficient setback distance of at least 100 m to YLH has already been considered in the RODP. Storage and workshop uses are planned in the area close to YLH. With the above planning, road traffic and associated vehicular emissions will be minimised.

- A total of five existing livestock farms within the PDA will be removed and only one chicken farm located at the southern fringe of the PDA could be retained with buffer area reserved under this Project which would reduce the total odour impact in the area and improve the air quality conditions in future.

Minimising Noise Impacts

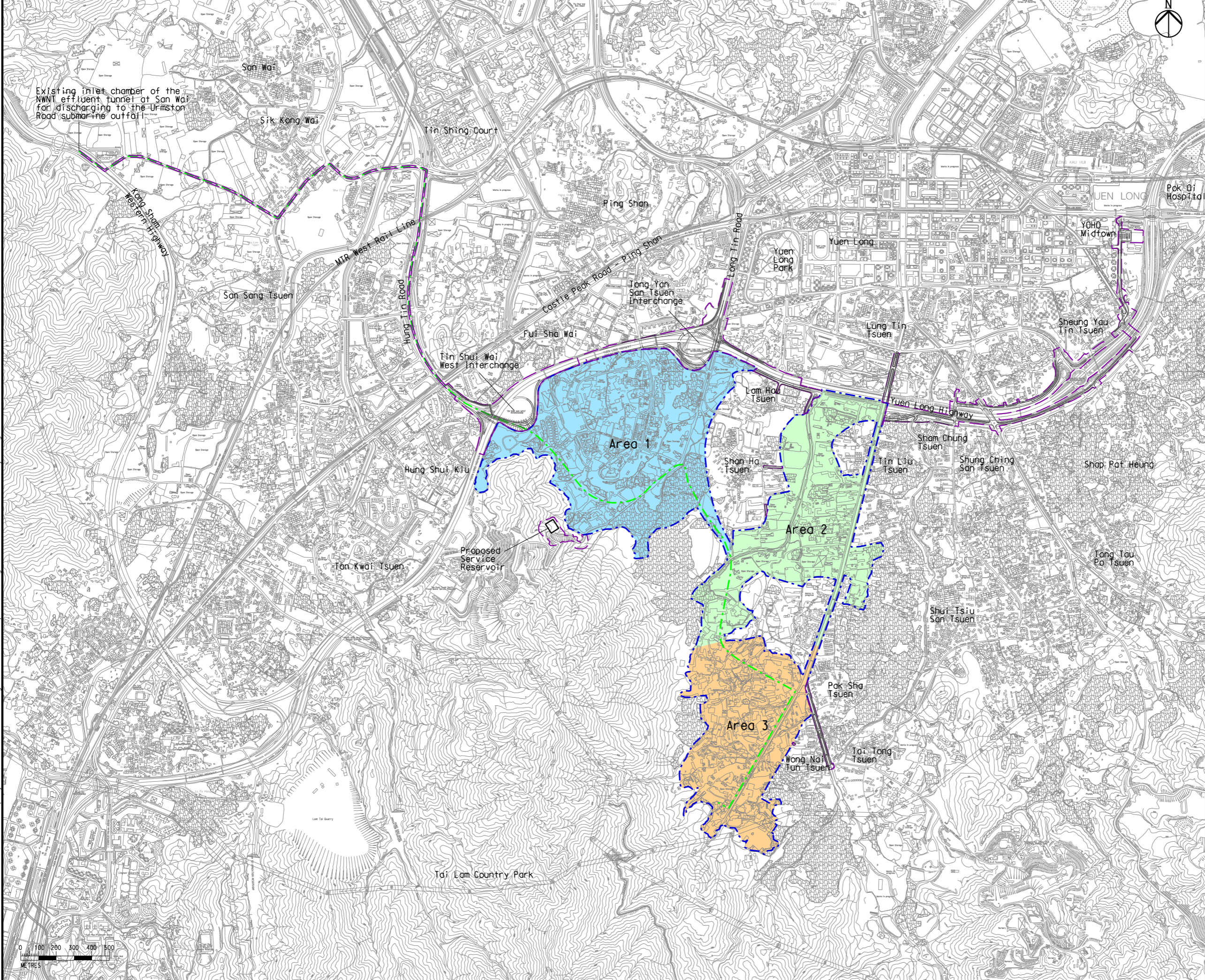
- Reducing commuting traffic by providing local employment opportunities. Taking advantage of the close connection with the highway network, an Employment Belt has been proactively proposed along YLH where the area is easily accessible to the highway and therefore freight traffic would not need to travel through the residential neighbourhood in the PDA. Moreover, it is anticipated that about 10,500 jobs will be created and these local job opportunities can help reducing need for commuting traffic and hence the associated traffic noise nuisance for the existing sensitive receivers along the commuting routes.
- Comprehensive networks of pedestrian walkways and cycle tracks are planned within the PDA to promote green commuting. This can also relieve the stress on public transport systems and the associated environmental issues.
- For the Employment Belt, the setback distance would be sufficient to abate road traffic noise impacts, the multi-storey buildings could also serve as a barrier to further reduce the impacts of road traffic noise from YLH on the residential areas in the southern part of Area 1.
- By adoption of covered PTIs, the operation fixed noise impacts from proposed PTIs to NSRs are avoided/minimised.
- All NSRs within the RODP would be protected through various mitigation measures to achieve the statutory traffic noise criteria.

4.1.1.7 Overall, the EIA Study has predicted that the Project, with the implementation of the avoidance/ mitigation measures, would be environmentally acceptable with no adverse residual impacts on the population and environmentally sensitive resources. A number of

enhancements (including open space and green network, revitalised nullahs, reedbed/ retention pond and retention lake, etc.) and environmental benefits (including providing multi-storey buildings for storage and workshop near YLH, rearrangement of the road network to reduce the existing traffic noise and minimise air pollutants generated from traffic, pollution loading to the Deep Bay waters will be reduced, as the existing unsewered areas within the PDA will be provided with new sewerage system) within the PDA are also likely to result from the Project.

Figures

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
ALL RIGHTS RESERVED.
© 2017 ARUP & PARTNERS HONG KONG LIMITED.



- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - Area 1
 - Area 2
 - Area 3

B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17
Rev	Description	By	Date

Consultant
ARUP

Contract No. and Title
Agreement No. CE 35/2012(CE)
Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation

Drawing title
Location of Project

Drawing no. Figure 2.1		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale 1:20000 @A3		Status PRELIMINARY	

COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and
Development Department



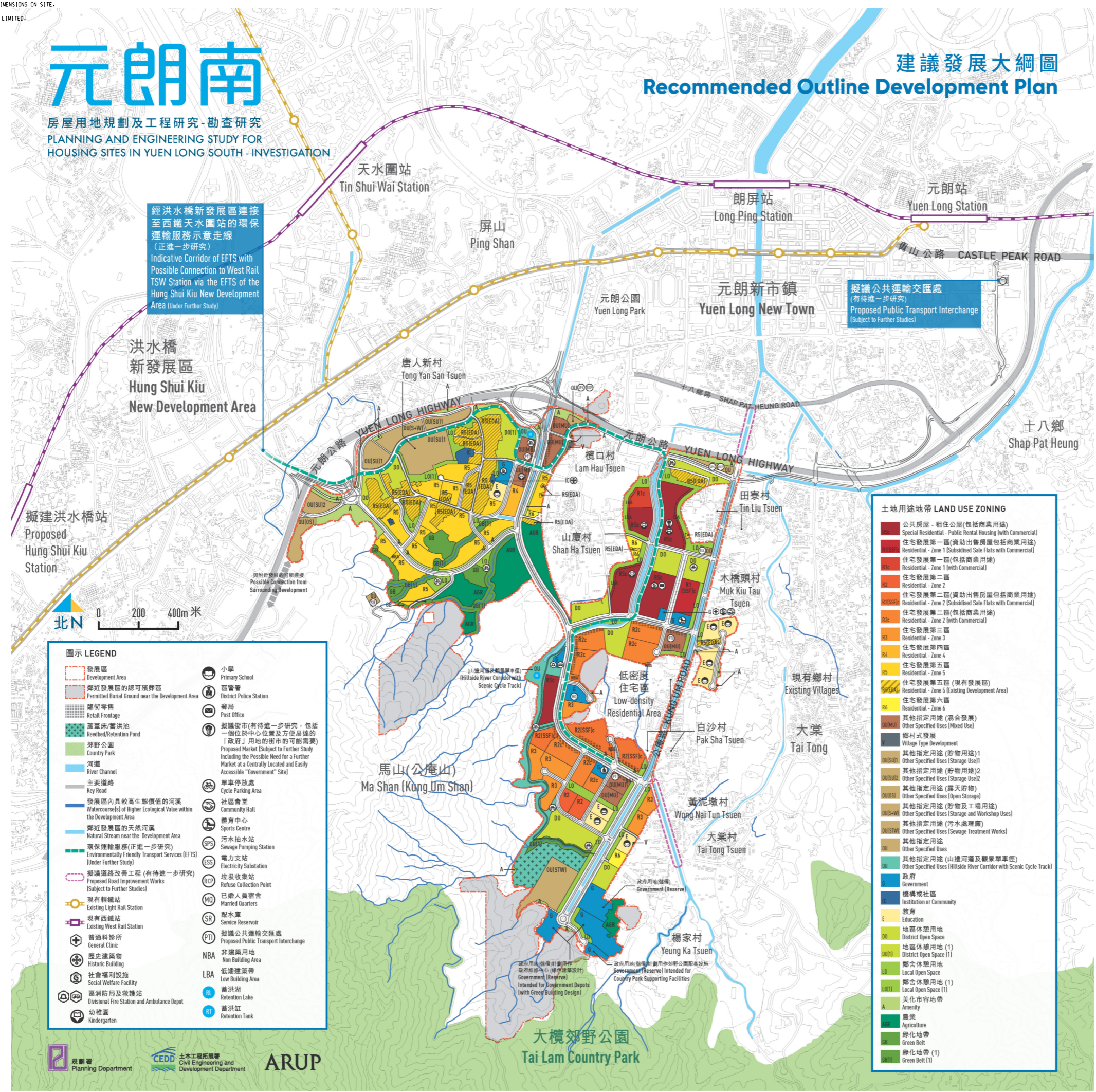
規劃署
Planning
Department

Printed by : 7/23/2017
Filename : \\HKGNTS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\ES\Figure 2.1 - Location of Project.dgn

元朗南

房屋用地規劃及工程研究- 調查研究
PLANNING AND ENGINEERING STUDY FOR
HOUSING SITES IN YUEN LONG SOUTH - INVESTIGATION

建議發展大綱圖 Recommended Outline Development Plan



經洪水橋新發展區連接至西鐵天水圍站的環保運輸服務示意走線 (正進一步研究)
Indicative Corridor of EFTS with Possible Connection to West Rail TSW Station via the EFTS of the Hung Shui Kiu New Development Area (Under Further Study)

擬議公共運輸交匯處 (有待進一步研究)
Proposed Public Transport Interchange (Subject to Further Studies)

洪水橋新發展區
Hung Shui Kiu New Development Area

擬建洪水橋站
Proposed Hung Shui Kiu Station



圖示 LEGEND

- 發展區 Development Area
- 鄰近發展區的認可墳葬區 Permitted Burial Ground near the Development Area
- 零售零售 Retail Frontage
- 蘆葦床/蓄洪池 Reedbed/Retention Pond
- 郊野公園 Country Park
- 河道 River Channel
- 主要道路 Key Road
- 發展區內具較高生態價值的河溪 Watersource(s) of Higher Ecological Value within the Development Area
- 鄰近發展區的自然河溪 Natural Stream near the Development Area
- 環保運輸服務(正進一步研究) Environmentally Friendly Transport Services (EFTS) (Under Further Study)
- 擬議道路改善工程(有待進一步研究) Proposed Road Improvement Works (Subject to Further Studies)
- 現有輕鐵站 Existing Light Rail Station
- 現有西鐵站 Existing West Rail Station
- 普通科診所 General Clinic
- 歷史建築物 Historic Building
- 社會福利設施 Social Welfare Facility
- 區消防局及救護站 Divisional Fire Station and Ambulance Depot
- 幼稚園 Kindergarten
- 小學 Primary School
- 區警署 District Police Station
- 郵局 Post Office
- 擬議街市(有待進一步研究, 包括一個位於中心位置及方便易達的「政府」用地的可能需求) Proposed Market (Subject to Further Study Including the Possible Need for a Further Market at a Centrally Located and Easily Accessible "Government" Site)
- 單車停放處 Cycle Parking Area
- 社區會堂 Community Hall
- 體育中心 Sports Centre
- 污水抽水站 Sewage Pumping Station
- 電力支站 Electricity Substation
- 垃圾收集站 Refuse Collection Point
- 已婚人士宿舍 Married Quarters
- 配水庫 Service Reservoir
- 擬議公共運輸交匯處 Proposed Public Transport Interchange
- NBA 非建築用地 Non Building Area
- LBA 低密度住宅區 Low Building Area
- 蓄洪湖 Retention Lake
- 蓄洪缸 Retention Tank

土地用途地帶 LAND USE ZONING

- 公共房屋 - 租住公屋(包括商業用途) Special Residential - Public Rental Housing (with Commercial)
- 住宅發展第一區(資助出售房屋包括商業用途) Residential - Zone 1 (Subsidised Sale Flats with Commercial)
- 住宅發展第一區(包括商業用途) Residential - Zone 1 (with Commercial)
- 住宅發展第二區 Residential - Zone 2
- 住宅發展第二區(資助出售房屋包括商業用途) Residential - Zone 2 (Subsidised Sale Flats with Commercial)
- 住宅發展第二區(包括商業用途) Residential - Zone 2 (with Commercial)
- 住宅發展第三區 Residential - Zone 3
- 住宅發展第四區 Residential - Zone 4
- 住宅發展第五區 Residential - Zone 5
- 住宅發展第五區(現有發展區) Residential - Zone 5 (Existing Development Area)
- 住宅發展第六區 Residential - Zone 6
- 其他指定用途(混合發展) Other Specified Uses (Mixed Use)
- 鄉村式發展 Village Type Development
- 其他指定用途(貯物用途)1 Other Specified Uses (Storage Use)1
- 其他指定用途(貯物用途)2 Other Specified Uses (Storage Use)2
- 其他指定用途(貯物用途) Other Specified Uses (Storage Use)
- 其他指定用途(露天貯物) Other Specified Uses (Open Storage)
- 其他指定用途(貯物及工場用途) Other Specified Uses (Storage and Workshop Uses)
- 其他指定用途(污水處理廠) Other Specified Uses (Sewage Treatment Works)
- 其他指定用途 Other Specified Uses
- 其他指定用途(山邊河濱及觀景單車徑) Other Specified Uses (Hillside River Corridor with Scenic Cycle Track)
- 政府 Government
- 機構或社區 Institution or Community
- 教育 Education
- 地區休憩用地 District Open Space
- 地區休憩用地(1) District Open Space (1)
- 地區休憩用地(1) District Open Space (1)
- 鄰舍休憩用地 Local Open Space
- 鄰舍休憩用地(1) Local Open Space (1)
- 美化市容地帶 Amenity
- 農業 Agriculture
- 綠化地帶 Green Belt
- 綠化地帶(1) Green Belt (1)
- 綠化地帶(1) Green Belt (1)

B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17
Rev	Description	By	Date

Consultant
ARUP

Contract No. and Title
Agreement No. CE 35/2012(CE)
Planning and Engineering Study for
Housing Sites in Yuen Long South
- Investigation

Drawing title
Recommended Outline
Development Plan (RODP)

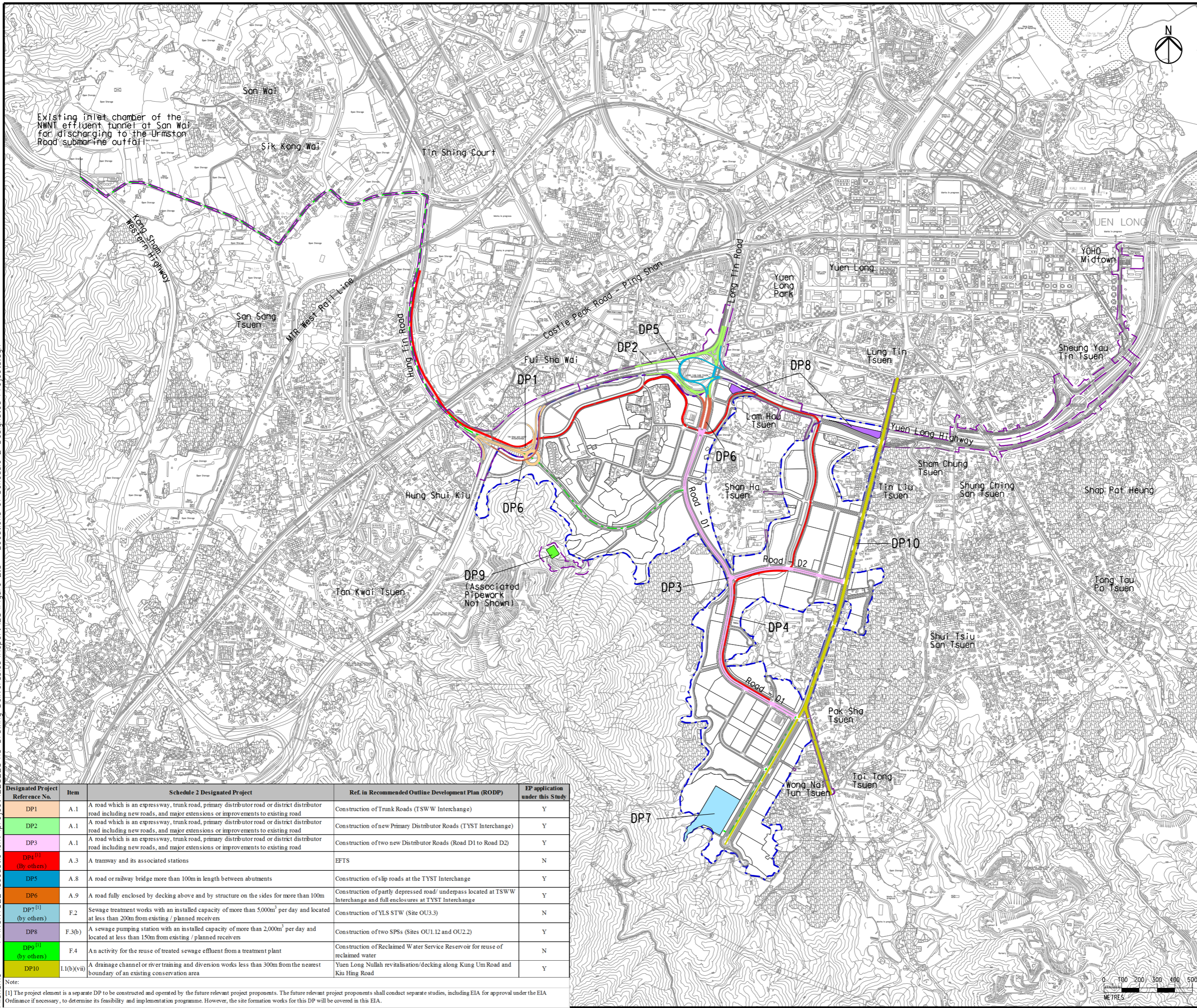
Drawing no. Figure 2.2		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale AS SHOWN		Status PRELIMINARY	

COPYRIGHT RESERVED

土木工程拓展署
Civil Engineering and
Development Department

規劃署
Planning and
Development Department

Printed by : 7/23/2017
 File name : \\HKGNTS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\ES\Figure 2.3 - Locations of Schedule 2 Designated Projects.dgn



- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA
 - · — · New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall

Designated Project Reference No.	Item	Schedule 2 Designated Project	Ref. in Recommended Outline Development Plan (RODP)	EP application under this Study
DP1	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	Construction of Trunk Roads (TSW W Interchange)	Y
DP2	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	Construction of new Primary Distributor Roads (TYST Interchange)	Y
DP3	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	Construction of two new Distributor Roads (Road D1 to Road D2)	Y
DP4 ⁽¹⁾ (By others)	A.3	A tramway and its associated stations	EFTS	N
DP5	A.8	A road or railway bridge more than 100m in length between abutments	Construction of slip roads at the TYST Interchange	Y
DP6	A.9	A road fully enclosed by decking above and by structure on the sides for more than 100m	Construction of partly depressed road/underpass located at TSWW Interchange and full enclosures at TYST Interchange	Y
DP7 ⁽¹⁾ (by others)	F.2	Sewage treatment works with an installed capacity of more than 5,000m ³ per day and located at less than 200m from existing / planned receivers	Construction of YLS STW (Site OU3.3)	N
DP8	F.3(b)	A sewage pumping station with an installed capacity of more than 2,000m ³ per day and located at less than 150m from existing / planned receivers	Construction of two SPs (Sites OU1.12 and OU2.2)	Y
DP9 ⁽¹⁾ (by others)	F.4	An activity for the reuse of treated sewage effluent from a treatment plant	Construction of Reclaimed Water Service Reservoir for reuse of reclaimed water	N
DP10	L1(b)(vii)	A drainage channel or river training and diversion works less than 300m from the nearest boundary of an existing conservation area	Yuen Long Nullah revitalisation/decking along Kung Um Road and Kiu Hing Road	Y

Note:
 (1) The project element is a separate DP to be constructed and operated by the future relevant project proponents. The future relevant project proponents shall conduct separate studies, including EIA for approval under the EIA Ordinance if necessary, to determine its feasibility and implementation programme. However, the site formation works for this DP will be covered in this EIA.

Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17


Consultant
ARUP

Contract No. and Title
 Agreement No. CE 35/2012(CE)
 Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation


Drawing title
 Locations of Schedule 2 Designated Projects

Drawing no. Figure 2.3		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale 1:20000 @A3		Status PRELIMINARY	

COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and Development Department



規劃署
Planning Department



Minimising Air Quality and Noise Impacts
 - The Employment Belt at TYST will provide local employment opportunities and hence reduce the need for commuting traffic to urban areas, and the freight traffic would not need to travel through the residential neighborhood in the PDA
 - Residential landuses within the PDA are provided with sufficient setback distance from YLH, and other roads within the PDA



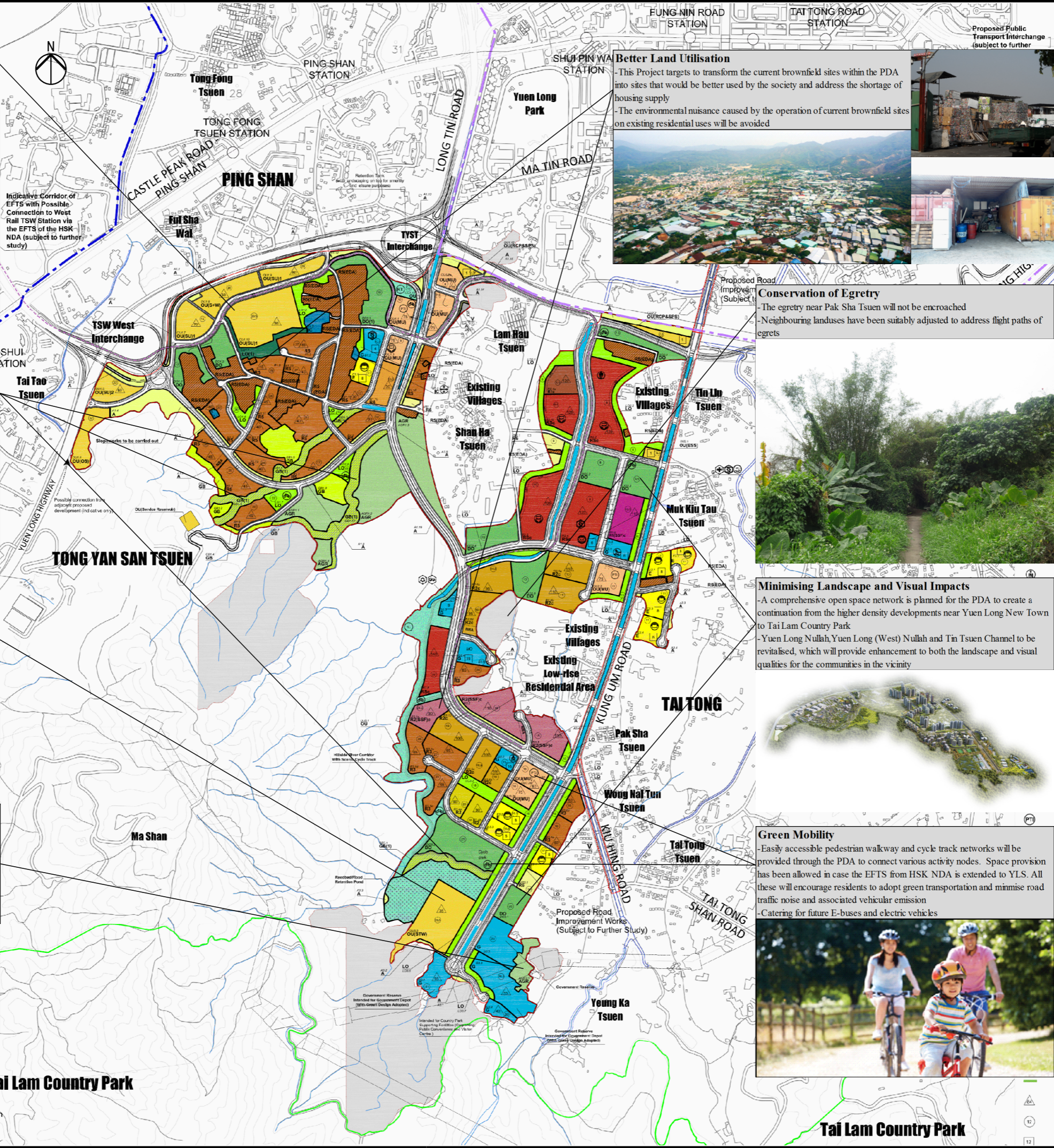
Protection of Watercourses of Higher Ecological Value
 - Endemic crab species have been identified at 3 lower sections of the watercourses within the PDA
 - These watercourses have been conserved and buffers of 15m on both sides of the watercourses have been zoned as "GB" to protect the habitat of endemic crab species



Protection of Deep Bay Water Quality & Conservation of Water Consumption
 - There will be no increase in pollution loading to the Deep Bay WCZ
 - Unsewered areas within PDA will be improved with sewer to collect the sewage to YLS STW
 - The Project targets to conserve water consumption as much as practicable.
 - Reclaimed water will be reused for non-potable uses such as toilet flushing for the PDA and adjacent developments. The surplus TSE will be conveyed and discharged at North Western WCZ.



Removing Existing Odour Sources
 - Existing livestock farms within the PDA (incl 3 pig farms and 3 chicken farms) are creating certain odour nuisance to neighbouring residential areas
 - Other than the chicken livestock farm at the south, all those remaining livestock farms will be removed. This will significantly improve the existing odour conditions
 - For the only chicken farm at the south that would be retained, the neighbouring landuses have been suitably adjusted to ensure cumulative impacts (eg from STW) would comply with the requirements



Better Land Utilisation
 - This Project targets to transform the current brownfield sites within the PDA into sites that would be better used by the society and address the shortage of housing supply
 - The environmental nuisance caused by the operation of current brownfield sites on existing residential uses will be avoided



Conservation of Egretty
 - The egretty near Pak Sha Tsuen will not be encroached
 - Neighbouring landuses have been suitably adjusted to address flight paths of egrets



Minimising Landscape and Visual Impacts
 - A comprehensive open space network is planned for the PDA to create a continuation from the higher density developments near Yuen Long New Town to Tai Lam Country Park
 - Yuen Long Nullah, Yuen Long (West) Nullah and Tin Tsuen Channel to be revitalised, which will provide enhancement to both the landscape and visual qualities for the communities in the vicinity



Green Mobility
 - Easily accessible pedestrian walkway and cycle track networks will be provided through the PDA to connect various activity nodes. Space provision has been allowed in case the EFTS from HSK NDA is extended to YLS. All these will encourage residents to adopt green transportation and minimise road traffic noise and associated vehicular emission
 - Catering for future E-buses and electric vehicles



Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17

Consultant
ARUP

Contract No. and Title
 Agreement No. CE 35/2012(CE)
 Planning and Engineering Study for Housing Sites in Yuen Long South - Investigation

Drawing title
Environmental Initiatives

Drawing no. Figure 2.4		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale AS SHOWN		Status PRELIMINARY	

COPYRIGHT RESERVED

土木工程拓展署
Civil Engineering and Development Department

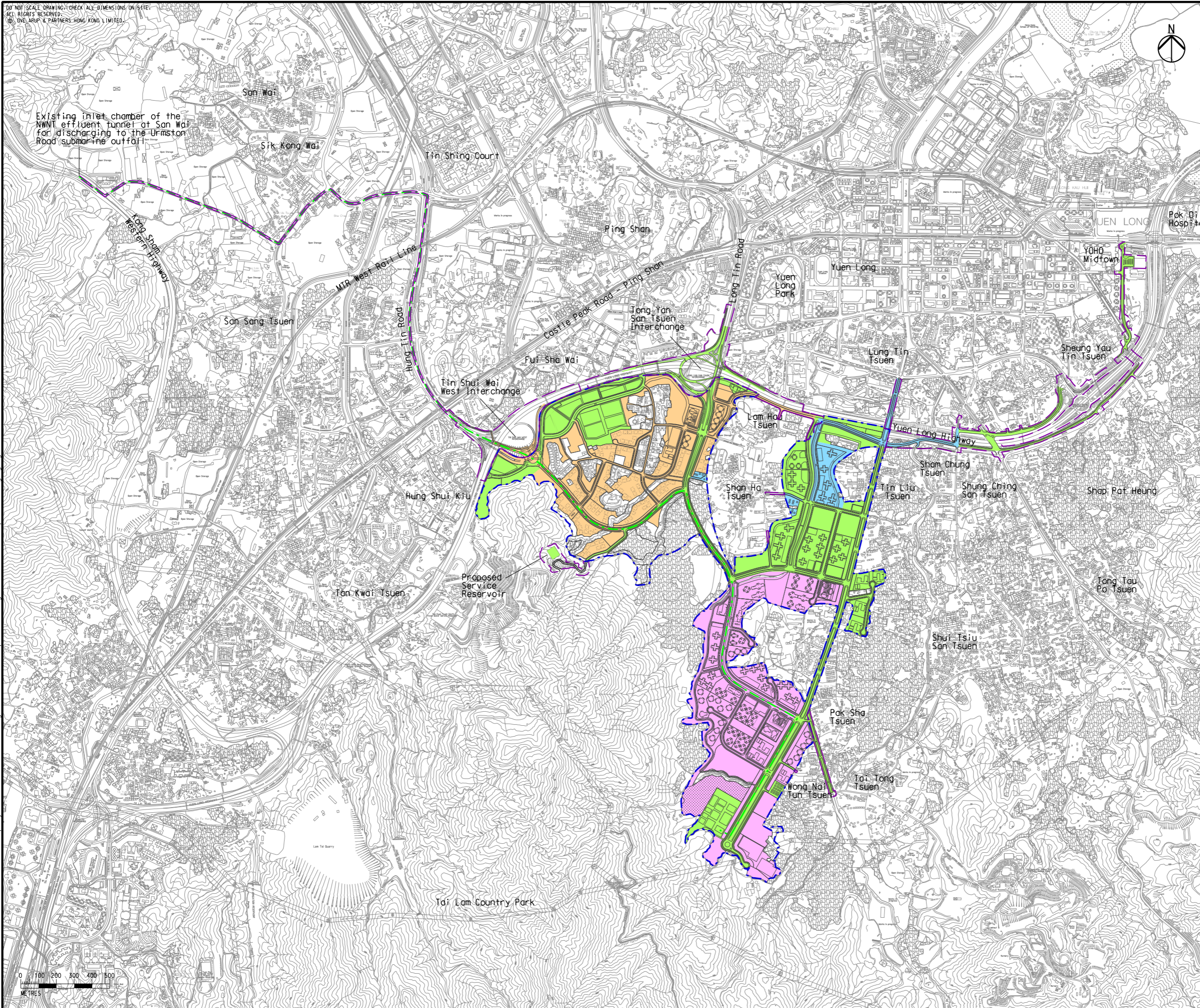
規劃署
Planning Department

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
ALL RIGHTS RESERVED.
© 2017 ARUP & PARTNERS HONG KONG LIMITED.

Existing inlet chamber of the
NWNT effluent tunnel at San Wai
for discharging to the Urmston
Road submarine outfall



- Legend**
- Potential Development Area (PDA)
 - Works Boundary Outside PDA (2020-2029)
 - New Sewer from YLS STW to the Existing Inlet Chamber of the NWNT Effluent Tunnel at San Wai for Discharging to the Urmston Road Submarine Outfall
 - Stage One (2020-2029)
 - Stage Two (2022-2033)
 - Stage Three (2031-2038)
 - Stage Four (2032-2038)



Rev	Description	By	Date
B	SECOND ISSUE	GL	07/17
A	FIRST ISSUE	GL	05/17


Consultant
ARUP

Contract No. and Title
Agreement No. CE 35/2012(CE)
Planning and Engineering Study for
Housing Sites in Yuen Long South
- Investigation


Drawing title
Development Staging

Drawing no. Figure 2.5		Rev. B	
Drawn GL	Date 07/17	Checked FC	Approved FC
Scale 1:20000 @A3		Status PRELIMINARY	

COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and
Development Department



規劃署
Planning
Department

Printed by : 7/24/2017
Filename : \\HKGNTS22\acoustic\env\project\228228\13 Drawing Deliverables\Report\ES\Figure 2.5 - Development Staging.dgn

