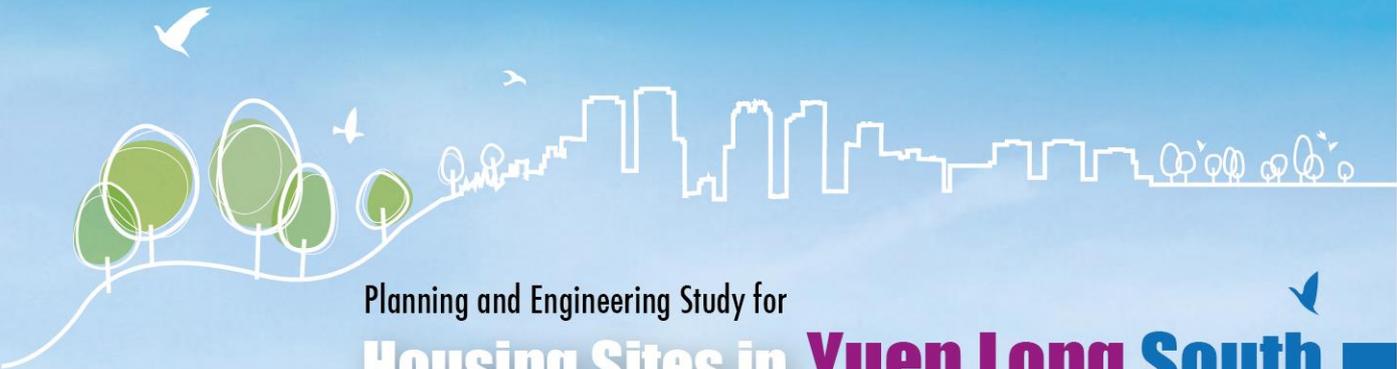




Agreement No. CE 35/2012(CE)



Planning and Engineering Study for  
**Housing Sites in Yuen Long South**

INVESTIGATION

**Executive Summary**

**May 2020 (Rev.)**



Planning Department & Civil  
Engineering and Development  
Department

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

Executive Summary

May 2020 (Rev.)

Revision	
1. Editorial typos revised in <b>Figure 2</b>	June 2020

This report takes into account the particular instructions and requirements of our client.

It was not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

If there is any inconsistency or ambiguity between the English version and the Chinese version, the English version shall prevail.

Job number 228228

## Nomenclature and Abbreviations

<b>Abbreviations</b>	<b>Description</b>
ASR	Air Sensitive Receiver
CAP	Contamination Assessment Plan
CE	Community Engagement
CNT	Conventional New Town
DA	Development Area
DC	District Council
“DO”	“District Open Space”
DP	Designated Project
EE	Expert Evaluation
EFTS	Environmentally Friendly Transport Services
EIA	Environmental Impact Assessment
EIAO	Environmental Impact Assessment Ordinance
EP	Environmental Permit
EPD	Environmental Protection Department
ER	Environmental Review
GI	Ground Investigation
GIC	Government, Institution or Community
ha	Hectare
HKPSG	Hong Kong Planning Standards and Guidelines
HSK/HT	Hung Shui Kiu/Ha Tsuen
LCA	Landscape Character Area
“LO”	“Local Open Space”
LOHAS	Lifestyle of Health and Sustainability
LR	Landscape Resource
MSB	Multi-storey Building
NDA	New Development Area
NSR	Noise Sensitive Receiver
NWNT	North-west New Territories
OVT	Old and Valuable Tree
PODP	Preliminary Outline Development Plan
PR	Plot Ratio
PTI	Public Transport Interchange
RC	Rural Committee
RODP	Recommended Outline Development Plan
SI	Site Investigation
SIA	Sewerage Impact Assessment
SPS	Sewage Pumping Station
The Study	Planning and Engineering Study for Housing Sites in YLS – Investigation, including the Planning and Engineering Review on the RODP
TKTSFWSR	Tan Kwai Tsuen South Fresh Water Service Reservoir
TSE	Treated Sewage Effluent
TSW	Tin Shui Wai
TYST	Tong Yan San Tsuen
V/C	Volume/Capacity
WR	West Rail
YLH	Yuen Long Highway
YLS	Yuen Long South
YLS STW	Yuen Long South Sewage Treatment Works

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# 1 Introduction

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## 1.1 Background of the Study

1.1.1 To meet housing land demand, the Chief Executive announced in the 2011-2012 Policy Address to explore the possibility of converting into housing land some 150 hectares (ha) of agricultural land in North District and Yuen Long currently used mainly for industrial purposes or temporary storage, or which is deserted. The area to the south of Yuen Long New Town was identified as one of these areas for review.

1.1.2 The Development Area (DA) of Yuen Long South (YLS) reviewed under the Planning and Engineering Study for Housing Sites in YLS – Investigation (the Study) is generally bounded by Yuen Long Highway (YLH), Kung Um Road and Tai Lam Country Park, mainly in Tong Yan San Tsuen (TYST) and Tai Tong areas. The DA is close to Yuen Long, Tuen Mun and Tin Shui Wai (TSW) new towns as well as the proposed Hung Shui Kiu/Ha Tsuen (HSK/HT) New Development Area (NDA). The DA could reach the main urban areas through strategic road links, such as Route 3 and YLH. The Study Area is shown in **Figure 1**.

1.1.3 YLS area is generally rural in character and has a mixture of land uses including yards for open storage, warehouses, workshops, industrial operations, residential settlements, agricultural land and fallow land. The proliferation of brownfield uses<sup>1</sup> has resulted in degradation of the rural environment. There is a need to better utilise the brownfield sites, to optimise YLS's development potential in meeting the territorial need on housing, and to improve the local living environment with new infrastructure.

## 1.2 Study Objectives and Study Process

1.2.1 In November 2012, the Planning Department and the Civil Engineering and Development Department of the Government jointly commissioned Ove Arup and Partners Hong Kong Limited to undertake the Study. The main objectives are to examine future land uses, optimise its development potential, and ascertain the feasibility and environmental acceptability of the proposed developments and the associated infrastructure works.

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<sup>1</sup> According to the “Study on Existing Profile and Operations of Brownfield Sites in the New Territories - Feasibility Study” conducted by the Planning Department in 2019, brownfield sites are defined as “primarily agricultural land in the New Territories which has been formed and occupied by industrial, storage, logistics and parking uses”.

- 1.2.2 Following three stages of Community Engagement (CE), the Recommended Outline Development Plan (RODP) for the YLS DA with a total planned population of about 88,000 and about 28,500 new planned flats was prepared and promulgated under the Study on 8 August 2017.
- 1.2.3 Subsequently, in response to wider public views and demand for more housing, particularly public housing and aspirations for more community facilities, the Government, in late 2018, decided to further explore the feasibility to suitably optimise the development intensity of the YLS DA so as to meet the keen demand on public housing and the supporting commercial and community facilities, etc.
- 1.2.4 Accordingly, a Planning and Engineering Review on the RODP has been undertaken in which a series of planning and technical assessments were conducted. The RODP has been revised (Revised RODP) for a total population of about 101,200, of which about 98,700 will be housed in about 32,850 new flats (constituting about 15% increase as compared with the RODP). Key changes include: to optimise the development intensity of some public housing sites and sites for accommodating brownfield operations under Stages 1 and 2 of the YLS DA; to increase the public housing component in the overall housing mix; and to provide more commercial and community facilities in the DA.
- 1.2.5 Specifically, the Study has:
- examined and identified the sites within the YLS DA for public and private housing developments, with supporting Government, Institution or Community (GIC) facilities, open space and/or amenities and other uses, and reviewed the boundaries of the DA;
  - recommended appropriate development parameters for the development sites;
  - ascertained the feasibility and acceptability of the development proposals in terms of traffic and other infrastructure capacities, urban design, air ventilation, etc.;
  - carried out an Environmental Impact Assessment (EIA) under the EIA Ordinance (EIAO) and an Environmental Review (ER) to establish the environmental acceptability of the RODP and Revised RODP respectively;
  - identified and proposed the engineering infrastructure works and mitigation measures that would be needed to support the development proposals; and

- conducted a three-stage CE Programme to solicit public views on the development proposals within the YLS DA.

The findings show that the proposed developments recommended under the Revised RODP are technically feasible and environmentally acceptable.

## **2 Existing Conditions and Key Issues**

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### **2.1 Existing Land Use**

- 2.1.1 The YLS DA includes the TYST area in the west and the Tai Tong area along Kung Um Road/Kiu Hing Road in the east. The whole area is predominantly occupied by open storage yards, vehicle parks, warehouses and industrial workshops covering about half of the DA, clustering mainly in the areas adjacent to Kung Um Road/Kiu Hing Road.
- 2.1.2 Intermingled with brownfield uses are some low-rise residential developments, religious institutions, agricultural land, livestock farms and vacant land. In the TYST area, the Yeung Hau Temple, which is currently a Grade 3 historic building, and two other religious institutions (Kam Lan Koon and Chuk Lam Ming Tong) are found, surrounded by the low-rise residential clusters and a rural settlement (Sha Tseng Tsuen). The livestock farms are found to the east of the YLS DA in the Tai Tong area, where a rural settlement (Tin Lung Tsuen) is found. Adjacent to the DA are some indigenous villages including Lam Hau Tsuen, Shan Ha, Tin Liu Tsuen, Muk Kiu Tau Tsuen and Pak Sha Tsuen.
- 2.1.3 Set next to Tai Lam Country Park and Ma Shan (Kung Um Shan), the YLS DA has several ecologically sensitive areas, with some active agricultural land scattered around. Natural streams and secondary woodland are found to the south of the TYST area; and an egretty with breeding egrets has also been identified in the Tai Tong area. Three water channels are found within the DA, including the Yuen Long Nullah, Tin Tsuen Channel and Yuen Long (West) Nullah.

### **2.2 Key Issues and Constraints**

- 2.2.1 The YLS DA consists of about 80% of private land. Resumption of private land is therefore inevitable for development. However, clearance of existing rural settlements and burial grounds should be avoided if possible to minimise social impacts. The well-established existing residential communities and the provision of new services and facilities for these existing communities should also be taken into account when formulating development proposals.
- 2.2.2 The proliferation of brownfield operations has degraded the environment and posed industrial/residential interface problems, such as pollution, localised flooding, traffic congestion and fire hazard. Upon clearance of the brownfield sites for the proposed developments,

improvements could be made to the overall environment. However, the interface between the retained structures and the proposed developments will create new potential issues which should be carefully addressed.

- 2.2.3 In terms of local traffic and connectivity, the general area is segregated by several nullahs with limited direct access to regional corridors. Kung Um Road is the only major road access running through the YLS DA in the Tai Tong area. However, this road is substandard and often used by large goods vehicles. Traffic capacities of existing local roads within the DA and connections to external roads are insufficient. Strengthening these roads/connections will be necessary so as to support the proposed developments in the DA, as well as to improve the existing local traffic conditions.
- 2.2.4 Both water supply and sewerage should be examined to ascertain if any upgrading works are needed. Existing overhead power lines might need to be realigned and laid underground. However, diversion of the high pressure trunk gas main should be avoided to reduce the development time frame. New infrastructure and GIC facilities could benefit existing neighbouring communities.

## 3 Community Engagement

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- 3.1.1 A three-stage CE was carried out under the Study to engage the community in the planning process. Their views were taken into account in the planning and design of the YLS DA:
- The Stage 1 CE was conducted from 16 April to 16 June 2013 to solicit public views on the constraints, opportunities, key issues and guiding principles for the proposed developments in the YLS DA.
  - The Stage 2 CE was conducted at the end of the Option Formulation Phase between 12 May and 14 July 2014 to collect views from the public on the Preliminary Outline Development Plan (PODP). Findings collected during the Stage 2 CE were taken into consideration in the Preferred Option Assessment Phase for the formulation of the Draft RODP. Planning and technical assessments had also been conducted to confirm the feasibility of the Draft RODP and associated infrastructure.
  - The Stage 3 CE was conducted between 19 January and 19 April 2016 to seek public views on the Draft RODP. Comments and suggestions on the Draft RODP were consolidated, paving way for the finalisation of RODP.
- 3.1.2 During the three-stage CE, a total of 56 briefing sessions/meetings were undertaken to solicit the views of the relevant statutory and advisory boards/committees and stakeholders. Another 15 focus group meetings were undertaken to invite groups with similar interests for a more focused and detailed discussion on specific topics. A community forum was held under each stage of CE and attended by participants with different backgrounds including but not limited to local residents, members of District Council (DC) and Rural Committees (RCs), brownfield operators, non-governmental organisations, concern groups and the general public. Roving exhibitions with display panels were staged at different locations of Yuen Long, including locations within the YLS DA during all stages of the engagements.
- 3.1.3 During the Study, over 2,500 written submissions were sent by post, fax, email or via the electronic comment form at the Study Webpage. The public comments/suggestions received and the relevant responses in each stage of the CE were set out in the CE Reports, which were uploaded on the Study Webpage (<http://www.yuenlongsouth.hk/>).
- 3.1.4 On 8 August 2017, the RODP was promulgated. Briefings to the Town Planning Board, Yuen Long DC, Ping Shan RC and Shap Pat Heung RC, Planning Sub-Committee of the Land and Development Advisory Committee, Panel on Development of Legislative Council, and with

other relevant stakeholders were carried out from September 2017 to February 2018.

- 3.1.5 During these briefings, members raised concerns particularly on the development intensity of the proposed housing sites, the provision of commercial and social welfare facilities, and the adequacy of space in Multi-storey Buildings (MSBs) for accommodating the displaced brownfield operations. Similar concerns expressed during previous CEs on transport capacity, implementation schedule of transport infrastructure, and potential impacts on existing brownfield operations have also been raised.
- 3.1.6 Taking into account the further comments received during the said briefings, further review on the promulgated RODP has been conducted, leading to the formulation of the Revised RODP.

## 4 Vision, Guiding Principles and Planning Considerations

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### 4.1 Vision

4.1.1 The YLS DA is intended to be developed as an extension of Yuen Long New Town with the vision to create a sustainable, green and liveable community providing enhanced infrastructure for the proposed developments and an improved environment.

### 4.2 Guiding Principles

4.2.1 Six guiding principles having regard to public aspirations have been formulated, including:

- Optimising the use of brownfield sites for housing and other land uses;
- Giving due consideration to existing communities and local characters;
- Creating a sustainable and liveable neighbourhood;
- Preserving active agricultural land as far as possible;
- Providing sufficient infrastructure to cope with the proposed developments and improving the existing rural environment; and
- Integrating with Yuen Long New Town and the surroundings.

### 4.3 Planning Concepts and Considerations

4.3.1 The above guiding principles have been further developed into planning concepts for the YLS DA, which are elaborated as follows:

#### **Positioning of the YLS DA**

4.3.2 As a proposed new town extension, the YLS Development would be one of the major land development projects in addressing the territory's housing needs in the medium to long term. The current brownfield sites would be optimised for housing and other uses, and the existing well-established residential communities would be retained as far as possible. Through the proposed transport infrastructure, more direct and convenient network connections would be made between the YLS DA and Yuen Long New Town and HSK/HT NDA.

## **Respecting the Natural Environment**

### Preservation of Existing Natural and Rural Resources

- 4.3.3 The YLS Development would respect the valuable natural assets in and surrounding the area. The country park, secondary woodland and watercourses of ecological value would all be retained with the provision of comprehensive green space.

### Retention of Active Farmland

- 4.3.4 Active farmland would be retained as much as possible. Some existing farmland would be integrated into the future open space to promote community farming.

### Protecting Pak Sha Tsuen Egretty

- 4.3.5 The Pak Sha Tsuen Egretty would be preserved. Non-building areas, low building areas and open space would be designated to preserve the major flight paths.

## **Regenerating the Environment**

- 4.3.6 Various natural landscape features and water bodies in the YLS DA would be consolidated in a blue-green network. The blue corridors would be formed by the revitalised nullahs, the new Hillside River Corridor and the preserved natural streams. The green space network would comprise the preserved active farmland, preserved secondary woodland as well as the proposed reedbed ancillary to the sewage treatment works, in addition to the open space and amenities.

### **Eco-Hydraulics Approach**

- 4.3.7 The revitalised Yuen Long Nullah and the other two existing water channels would adopt a green and eco-hydraulics approach. The existing 2.5km long concrete-lined drainage channel of Yuen Long Nullah would be upgraded as a “blue-green infrastructure”.

## **Bringing Nature to the People**

- 4.3.8 With respect to the existing rural and natural contexts, an urban form with gradation of development intensities and building heights from north to south and retention of low-rise development character in TYST is proposed.

- 4.3.9 Comprehensive cycle tracks and pedestrian walkways are also proposed to connect the YLS DA, the Yuen Long New Town and the surrounding

hillsides around TYST. The networks function complementarily with the green space network which could offer alternative choices for movements around the DA and its surroundings.

### **Building for Resilient and Liveable Communities**

- 4.3.10 The YLS Development would be a liveable green community, with the provision of local employment opportunities, open spaces and recreational facilities.

#### Built-in Resilience

- 4.3.11 Smart Green Resilient design and different styles of living are proposed for healthy living and well-being. The existing nullahs, being part of the heritage of YLS, would be improved through revitalisation works with hard and soft landscape treatments. Flood retention facilities and sustainable water management by effective usage and water recycling would be adopted.

#### Green and Sustainable Re-use of Reclaimed Water for Non-potable Water Supply

- 4.3.12 Green and sustainable re-use of Treated Sewage Effluent (TSE) from tertiary sewage treatment works as reclaimed water for non-potable water supply, including toilet flushing, would be proposed. Further polishing of small amount of TSE would be provided in the form of a reedbed before entering the revitalised Yuen Long Nullah for creation of water bodies. Please refer to Sections 7.7 and 7.8 for details.

## 5 Outline Development Plans

### 5.1 Introduction

5.1.1 Based on various considerations such as land use compatibility, accessibility and connectivity, provision and capacity of infrastructure, technical findings as well as public views received during the 3 stages of CE, the PODP, Draft RODP and RODP were formulated respectively.

5.1.2 During the evolution of these plans, adjustments that were made on plans include: the boundary of the YLS DA, land use redistribution, development intensities of sites, alignments of roads, and areas to be retained for the existing developments within the DA.

### 5.2 Recommended Outline Development Plan

5.2.1 After the Stage 3 CE, the RODP was promulgated in August 2017. The proposed planning parameters for the RODP are summarised in **Table 5.1**.

**Table 5.1 Major Planning Parameters of RODP**

Total Area	About 224 ha
Developable Area <sup>(Note)</sup>	About 185 ha
Total Population	About 88,000 (including the population of existing developments / planned development projects)
New Population	About 85,400
New Flats	About 28,500 (Public: 17,300; Private: 11,200)
Housing Mix (Housing Units)	Public 61% : Private 39%
New Employment	About 10,500 jobs
Commercial Floor Area	About 180,000 m <sup>2</sup>
Storage and Workshop Floor Area	About 375,200 m <sup>2</sup>
Open Storage Land Area	About 14,000 m <sup>2</sup>

Note: Excluding existing roads and river channels, “Agriculture” and “Green Belt” zones, and retained residential and institutional developments.

## 5.3 Revised Recommended Outline Development Plan

5.3.1 After further taking into account the public comments received on the RODP subsequent to its promulgation as mentioned in Paragraphs 3.1.4 – 3.1.6 above, the feasibility to suitably optimise the development intensity of the YLS DA has been explored, and the Revised RODP was formulated.

5.3.2 The proposed planning parameters for the Revised RODP are summarised in **Table 5.2**. The plan is shown in **Figure 2**.

**Table 5.2 Major Planning Parameters of Revised RODP**

Total Area	About 224 ha
Developable Area <sup>(Note)</sup>	About 185 ha
Total Population	About 101,200 (including population of existing developments / planned development projects)
New Population	About 98,700
New Flats	About 32,850 (Public: 22,320; Private: 10,530)
Housing Mix (Housing Units)	Public 68% : Private 32%
New Employment	About 13,630 jobs
Commercial Floor Area	About 229,930 m <sup>2</sup>
Storage and Workshop Floor Area	About 484,110 m <sup>2</sup>
Open Storage Land Area	About 12,800 m <sup>2</sup>

Note: Excluding existing roads and river channels, “Agriculture” and “Green Belt” zones, and retained residential and institutional developments.

5.3.3 Compared with the promulgated RODP (with a total population of 88,000), the total population of the Revised RODP has increased by 15% to about 101,200 (including the existing population of about 2,400 and about 100 from village re-site zones), limited by key traffic infrastructure capacities.

5.3.4 Under the Revised RODP, apart from the increase in overall residential units (+4,350) with an increase in public housing component (from about 60% to about 70%), the overall employment opportunities have also been increased by about 30% (+3,130).

## 6 Urban and Landscape Design

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### 6.1 Urban Design Framework

6.1.1 The urban design framework is to guide the urban design of the proposed developments and the design of the public realm within the YLS DA (**Figure 3**).

6.1.2 The overall urban design framework responds to the unique surroundings of YLS, which exists as an intersection between urban and natural, and new and old developments. Each community cluster would be designed to complement its urban or rural setting while knitting together to form one coherent YLS identity. The following eight key design principles are proposed:

- **An Urban to Rural Experience** - Through the tapering of development intensities and building heights, the YLS DA would integrate with its settings by providing high-density experience to the north near Yuen Long New Town, transitioning to low-to medium-density development in the south close to Tai Lam Country Park.
- **Green Zone** - By combining the existing secondary woodland and agricultural land in the TYST area, a Green Zone could reflect the agrarian history of the area and converge the residential communities to the green heart of the region.
- **Connectivity to Tai Lam Country Park** - The strategic backdrop of Tai Lam Country Park would be highlighted through tapering of building heights, creation of visual corridors and connectivity links. A number of connections to the Country Park (e.g. by trails) would be provided.
- **Focal Points** - Two focal points are included as a gateway to the YLS DA, connecting the area to Yuen Long New Town to the north, with commercial elements and social welfare facilities.
- **Key Activity Spine** - The north-south transition across the YLS DA is further enhanced by the provision of an activity corridor along Kung Um Road, linking the key focal points to commercial hubs and open spaces.
- **Watercourse/Water body** - The existing Yuen Long Nullah, Yuen Long (West) Nullah and Tin Tsuen Nullah are key assets to the YLS DA and would be revitalised as attractive public space, which could offer a rural and natural ambience in the urban context.
- **View Corridors** - The north-south viewing corridors between Yuen Long Park Aviary Pagoda and Tai Lam Country Park, and the enlivened Yuen Long Nullah are important elements of the

urban design framework, which could carry the view towards Tai Lam Country Park to the southern end.

- **Breezeways** - Primary roads are designed in south-to-north direction to align with the summer prevailing wind direction. Also, building heights across the YLS DA should decrease from north to south to avoid air stagnation.

## 6.2 Planning Areas

6.2.1 Based on the above urban design concepts, the YLS DA could be broadly defined into five Planning Areas, consisting of three distinct residential communities (i.e. “*Urban Living*”, “*LOHAS Living*” and “*Garden Community*”), a “*Green Zone*” and an “*Employment Belt*” (Figure 4).

### “*Urban Living*”

6.2.2 Located close to Yuen Long New Town, the “*Urban Living*” is characterised by a vibrant and lively community with retail and recreational uses provided within the lower floors of residential buildings and/or in standalone blocks. It covers the northern part of Kung Um Road in the YLS DA. The proposed development intensity would be the highest (with total plot ratios (PRs) ranging from 2.4 to 7) among all the Planning Areas, capitalising on the proximity to Yuen Long New Town and convenient transport services.

### “*LOHAS Living*”

6.2.3 Situated at the fringe of Tai Lam Country Park and surrounded by hillsides and rural village settlements, this neighbourhood aims to provide sub-urban experience with Lifestyle of Health and Sustainability (i.e. “*LOHAS*”). To take advantage of the natural assets, pedestrian links and a scenic cycle track would be provided running from the “*LOHAS Living*” along the hillslopes to the “*Green Zone*” in TYST. A lower development intensity with total PRs ranging from 2.4 to 4 has been adopted in respect of the rural setting.

### “*Garden Community*”

6.2.4 The area covers mainly the existing low-rise residential clusters at TYST with three to four storeys. The proposed developments have paid due respect to the existing low-rise residential estates and the rural settlements with total PRs ranging from 1 to 4. The ambience of “*Garden Community*” embraced in greenery would be enhanced through the adjoining preserved secondary woodland, natural streams and the active agricultural land. A district open space (“*DO*”) could provide experience of community farming for residents and visitors.

### ***“Green Zone”***

- 6.2.5 The *“Green Zone”* covers the active agricultural land and the preserved secondary woodland at the south of TYST that leads into the foothills of Tai Lam Country Park. It would optimise the rural character and create a major green node of YLS amid the *“Urban Living”*, *“LOHAS Living”* and *“Garden Community”*. This area enhances the overall landscape of YLS and provides leisure and recreational functions for public enjoyment. Pedestrian paths and scenic cycle track would be planned to facilitate access by visitors and residents.

### ***“Employment Belt”***

- 6.2.6 Located in the northern part of TYST along YLH, the *“Employment Belt”* enhances the capability to generate employment and provide opportunity to consolidate existing open storage and rural industrial uses within the YLS DA. The proximity to YLH allows quick access of freight traffic to the strategic highway network, thereby reducing the interface problem with residential communities.

## **6.3 Landscape Design Framework**

- 6.3.1 A set of interrelated landscape principles to enhance the local character, to facilitate the integration, connectivity, natural protection and enhancement are established, which could provide a resilient design and environmental improvement to the existing landscape in the five Planning Areas.
- 6.3.2 Set in the rural fringe and adjacent to Tai Lam Country Park, the YLS DA offers visual permeability towards natural hillsides which would be retained through a special gradating built form. The landscape framework would complement the land use planning by integrating “green/blue spines” and connecting the surrounding rural landscape with the urban heart of the DA. A hierarchy of district, local and community open spaces would be distributed according to the population density and spatial requirements. The landscape design would co-ordinate the proposed streetscapes, open spaces and other green spaces for better linkages across the DA and the surrounding areas of Yuen Long.
- 6.3.3 Existing high value woodland, agricultural land and heritage features would be protected and enhanced. The concept of an ‘Edible Garden Landscape’ would be introduced which utilises the existing high quality agricultural land as the recreational resource to serve the surrounding neighbourhoods with fresh produce.

## 7 Technical Assessments

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### 7.1 Introduction

7.1.1 The following Sections summarised the findings and recommendations of the technical assessments undertaken to ascertain the feasibility of the Revised RODP. For assessment purpose, the YLS DA is divided into three sub-areas - TYST in the western part of the DA (Area 1), the area along the north-eastern part of the DA (Area 2), and the area along the south-eastern part of the DA (Area 3). The DA, showing also the three sub-areas, is shown in **Figure 1**.

### 7.2 Land Requirement Study

7.2.1 The whole YLS DA is about 224 ha, among which, the developable area by excluding the existing roads and river channels, “Agriculture” and “Green Belt” zones, and retained residential and institutional developments, is about 185 ha. Out of the 185 ha of land, about 150 ha (81%) are private land and about 35 ha (19%) are Government land. Further details on the number of private lots to be affected would be ascertained in the detailed design stage.

7.2.2 There are about 15 ha of active agricultural land within the YLS DA, among which an area of about 5 ha would be affected.

### 7.3 Geotechnical Assessment

7.3.1 Ground investigation (GI) works comprising 31 vertical drillholes were carried out in the Study to reveal the general ground condition of the YLS DA. Desktop study, interpretation and analysis of available geotechnical information together with site specific GI information have been conducted for the Study to investigate the geological and groundwater condition of the DA.

7.3.2 Part of the YLS DA falls within Scheduled Area No. 2, where the geology comprises superficial deposits overlying metamorphosed sedimentary strata (siltstones, sandstones and marble) as well as igneous rocks. The planning, design and construction works, which involve GI works, excavation, foundation or groundwater pumping may encounter some difficulties as a result of these ground conditions. The proposed developments could be affected by natural terrain hazards and could affect or be affected by existing man-made slopes and retaining walls within or in the vicinity of the DA.

7.3.3 Preliminary study for geotechnical assessment of existing man-made features, natural terrain hazards, foundation constraints, feasible foundation options and design considerations were carried out. While these potential constraints or problems can be technically solved by engineering solutions, it is recommended that the following activities should be carried out in the detailed design stage to acquire sufficient geotechnical information for review of development layout and necessary detailed site formation, infrastructure and foundation design:

- More site-specific GI shall be carried out to verify the engineering rockhead, and to identify the more refined extent of geological features adverse to development, such as cavity within the marble stratum and deeply inclined rockhead, for foundation design once the building footprints are determined;
- More groundwater monitoring shall be carried out to acquire representative groundwater table for site formation and foundation design;
- Natural Terrain Hazard Study shall be carried out during the detailed design stage to devise mitigation measures for natural terrain hazard once the footprint and type of facilities/building were determined; and
- Detailed stability assessment of man-made features affecting/to be affected by site formation works and the corresponding design of slope stabilisation measures shall be carried out in the detailed design stage.

7.3.4 It is considered at this stage that the YLS Development is geotechnically feasible.

## **7.4 Site Formation Assessment**

7.4.1 The main consideration of the site formation philosophy is to minimise site formation works by keeping all the proposed developments and infrastructure as close to the existing ground profile as possible. In case extensive site formation works are deemed to be necessary, the formation levels are proposed to achieve an optimal cut and fill balance (the inert construction and demolition materials generated from the site formation works will be balanced off by reusing within the YLS DA).

7.4.2 Unsuitable materials such as soft clays/silts may be encountered during excavation works within the YLS DA. It is proposed to carry out appropriate soil mixing or cement mixing work to improve the physical properties of these materials such that they can be re-used on-site as general fill material.

- 7.4.3 Since majority of the potentially contaminated sites could not be accessed and permission could not be obtained from the site owners/operators to carry out the site investigation (SI) works, this land contamination assessment on the potentially contaminated sites was conducted based on desktop review, review of historical aerial photos and a number of peripheral site surveys. However, the contamination in the YLS DA (if any) is expected to be localised if the key types of goods/stocks stored within the sites are not potential sources of contamination. Please refer to Section 8.7 for details.

## 7.5 Traffic and Transport Impact Assessment

- 7.5.1 The assessment aims to ascertain the effects of the proposed developments on the traffic infrastructure and transport provision in and adjacent to the Study Area of the YLS Development, including the effects of the proposed future road network to/from the surrounding road network for the proposed developments and to recommend necessary enhancement and improvements to the local transport system. The key traffic and pedestrian linkages are shown in **Figure 5**.
- 7.5.2 To enhance the accessibility of the YLS Development, the following improvement schemes are necessary for provision of direct access between the YLS DA and the major highway network.

### **Proposed Road Improvement Works and Proposed New Roads**

#### TYST Interchange

- 7.5.3 TYST Interchange will be the main access interchange connecting the urban areas and the YLS DA via Route 3 (Country Park Section). The improved interchange will then be able to cater for all traffic movements to and from YLH, Long Tin Road and Long Hon Road. Meanwhile, a road section of Shan Ha Road between Lam Yu Road and TYST Interchange will be diverted to streamline the interchange operation. A new district distributor will be constructed running north-south through the DA connecting the TYST Interchange with Kung Um Road.

#### Kung Um Road, Kiu Hing Road and introduction of slip road for connection to Shap Pat Heung Interchange

- 7.5.4 The proposed improvement involves the upgrading of Kung Um Road and Kiu Hing Road which would form a pair of key district connectors to provide access between the YLS DA and adjacent developments including Yuen Long New Town. In addition, a new slip road running parallel to YLH from Kung Um Road eastward is proposed to provide

direct access to Shap Pat Heung Interchange. The proposed slip road will form an integral part of the secondary road system for a local distributor network to enhance connectivity of local areas on both sides of YLH and help alleviate the pressures on existing road junctions in the area, including the junction of Kung Um Road, Kiu Hing Road and Shap Pat Heung Road. Nevertheless, road improvement works are also proposed at the aforesaid junctions in commensurate with the local context.

#### TSW West Interchange

- 7.5.5 TSW West Interchange will be a secondary access to the YLS DA serving as a backup to avoid overloading of TYST Interchange. The proposed improvement involves construction of a new roundabout inside the DA and new slip roads to the interchange. A new single 2-lane carriageway will connect with the proposed developments in the vicinity of TYST such that the traffic could access through this interchange to TSW and HSK/HT NDA.

#### Other Internal Roads

- 7.5.6 While TYST Road, Shan Ha Road, Kung Um Road/Kiu Hing Road and Tai Tong Road will be preserved to serve as the local connection corridors between the northern and southern sides of YLH, most of the local roads within the YLS DA would be replaced by new local roads.

#### **Car Parking Space**

- 7.5.7 Private car, light goods van and motorcycle parking spaces and loading/unloading bays will be provided inside the YLS DA. The provision of parking spaces for different types of land uses within the DA is in accordance with the Hong Kong Planning Standards and Guidelines (HKPSG).

#### **Road-based Traffic Impact**

- 7.5.8 Major strategic highways including the proposed Route 11 are assumed in the traffic impact assessment. Road links and junction performances at peak hours were examined based on the Revised RODP in base year 2013 (with updated traffic surveys undertaken in 2019 taking into account the effect of road improvement works implemented by the Transport Department/the Highways Department at Pok Oi Interchange) and future years 2031, 2036 and 2038 with YLS Development scenario incorporating the introduction of the proposed road improvement schemes to determine the performance of the existing and new roads.

The base year results revealed that most assessed road links would operate at volume/capacity (V/C) ratio below 1.0 which is considered acceptable, while some would operate at V/C ratio between 1.0 and 1.2 indicating a manageable degree of congestion at peak hours.

7.5.9 Road and traffic improvement schemes proposed under the Study include those mentioned in Paragraphs 7.5.3 – 7.5.6, and the provision of feeder bus services and interchange facilities at West Rail (WR) Yuen Long Station. The results of the future years assessment on major road links are summarised in **Table 7.1**.

**Table 7.1 Major Road Links Performance at Peak Hours within Area of Influence in Years 2031, 2036 and 2038**

Key Corridor		Design Capacity (pcu / hr)	Traffic Flow (pcu/hr) (V/C Ratio)					
			2031 With YLS Development		2036 With YLS Development		2038 With YLS Development	
			AM	PM	AM	PM	AM	PM
Yuen Long Highway – Tin Shui Wai West Interchange & Tong Yan San Tsuen Interchange	EB	6,100	5,850 (0.96)	6,800 (1.12)	6,450 (1.05)	6,950 (1.14)	6,550 (1.07)	7,000 (1.15)
	WB		6,350 (1.04)	4,700 (0.77)	7,000 (1.15)	5,150 (0.85)	7,100 (1.17)	5,200 (0.85)
Yuen Long Highway – Tong Yan San Tsuen Interchange & Shap Pat Heung Interchange	EB	6,100	6,400 (1.05)	5,000 (0.82)	6,050 (0.99)	5,750 (0.94)	6,100 (1.00)	5,950 (0.98)
	WB		5,250 (0.86)	5,100 (0.83)	5,400 (0.88)	5,000 (0.82)	5,550 (0.91)	5,300 (0.86)
Yuen Long Highway – Shap Pat Heung Interchange & Pok Oi Interchange (Slip Road Section)	EB	4,000	2,150 (0.54)	1,700 (0.42)	2,000 (0.51)	1,800 (0.45)	2,250 (0.57)	2,000 (0.50)
	WB		1,450 (0.37)	1,550 (0.39)	1,900 (0.48)	1,850 (0.47)	2,050 (0.51)	2,100 (0.53)
Yuen Long Highway – Shap Pat Heung Interchange & Pok Oi Interchange (Viaduct Section)	EB	4,000	4,500 (1.12)	3,600 (0.90)	4,450 (1.11)	4,150 (1.04)	4,600 (1.15)	4,300 (1.08)
	WB		3,850 (0.96)	3,800 (0.95)	4,550 (1.13)	4,500 (1.12)	4,750 (1.19)	4,700 (1.17)
Yuen Long Highway – Pok Oi Interchange & Tsing Long Highway (Slip Road Section)	EB	4,000	3,300 (0.82)	1,600 (0.40)	3,000 (0.74)	2,250 (0.56)	3,100 (0.77)	2,350 (0.59)
	WB		1,950 (0.49)	1,900 (0.48)	2,250 (0.56)	1,700 (0.43)	2,300 (0.58)	1,950 (0.49)
Yuen Long Highway – Pok Oi Interchange & San Tin Highway (Slip Road Section)	EB	4,000	4,250 (1.07)	3,650 (0.92)	4,500 (1.12)	4,000 (1.00)	4,600 (1.15)	4,100 (1.03)
	WB		3,550 (0.89)	3,200 (0.80)	3,900 (0.98)	3,750 (0.93)	4,050 (1.02)	3,900 (0.97)
Long Tin Road (At-grade) – Castle Peak Road – Yuen Long & Yuen Long Highway	SB	5,600	3,150 (0.56)	1,850 (0.33)	3,400 (0.61)	3,100 (0.56)	3,600 (0.64)	3,300 (0.59)
	NB		1,850 (0.33)	2,750 (0.49)	2,050 (0.37)	3,200 (0.57)	2,200 (0.39)	3,300 (0.59)
Long Tin Road (Elevated) – Long Ping Road & Castle Peak Road	SB	3,600	2,250 (0.62)	1,500 (0.42)	2,750 (0.76)	2,500 (0.70)	2,850 (0.79)	2,650 (0.73)
	NB		1,250 (0.34)	2,350 (0.65)	1,450 (0.41)	2,450 (0.68)	1,500 (0.42)	2,500 (0.70)
Tai Lam Tunnel	SB	5,400	6,250 (1.15)	3,800 (0.71)	6,000 (1.11)	4,500 (0.83)	6,200 (1.15)	4,650 (0.86)
	NB		4,150 (0.77)	5,750 (1.07)	4,300 (0.80)	5,550 (1.03)	4,450 (0.82)	5,850 (1.08)

Key Corridor		Design Capacity (pcu / hr)	Traffic Flow (pcu/hr) (V/C Ratio)					
			2031 With YLS Development		2036 With YLS Development		2038 With YLS Development	
			AM	PM	AM	PM	AM	PM
Slip Road at Tai Kei Leng Road	EB	4,000	1,000 (0.26)	1,000 (0.25)	950 (0.23)	550 (0.13)	950 (0.24)	650 (0.16)
	WB		750 (0.19)	450 (0.11)	1,000 (0.24)	1,400 (0.35)	1,000 (0.25)	1,400 (0.35)
Yuen Ching Road	SB	1,000	50 (0.06)	50 (0.06)	100 (0.10)	100 (0.10)	100 (0.11)	100 (0.11)
	NB		50 (0.06)	50 (0.06)	100 (0.10)	100 (0.10)	100 (0.11)	100 (0.11)

Notes: EB: East Bound; WB: West Bound; SB: South Bound; NB: North Bound; pcu/hr: passenger car units per hour

7.5.10 The results revealed that with the introduction of the road improvement schemes proposed under the YLS Development, all assessed road links would operate at V/C ratio below 1.2 in future assessment years which would indicate a manageable degree of congestion at peak hours.

7.5.11 Junction improvement works/measures are proposed to alleviate the potential traffic problems at local junctions, including the junction of Kung Um Road/Kiu Hing Road/Shap Pat Heung Road and Ma Tin Road/Yuen Long Tai Yuk Road. With the proposed improvement works/measures, the traffic pressure in the area is expected to be alleviated.

7.5.12 The performance of the internal road network of the YLS DA has also been assessed, and the results indicated that all key internal road links and key junctions will operate at satisfactory level.

### West Rail Line

7.5.13 A preliminary assessment on the potential impact on the WR Line arising from the YLS Development has been conducted.

7.5.14 To alleviate the existing crowdedness of the WR Line, the number of train compartments of the WR Line has been fully increased from 7-car to 8-car in 2018. Upon full upgrading of the signalling system and platform facilities for Tuen Ma Line (comprising Tuen Ma Line Phase 1, Sha Tin to Central Link (Tai Wai to Hung Hom Section) and WR Line), the carrying capacity of Tuen Ma Line can reach an hourly frequency of 24 at each direction, with 8-car trains. On this basis, the carrying capacity of the WR Line will increase by 37% over the 7-car trains operating in 2015 at an hourly frequency of about 20. MTR Corporation Limited will monitor the passenger flow and consider further enhancing the carrying capacity of WR Line by increasing the hourly frequency and acquiring more trains to cope with the passenger demands.

7.5.15 According to the preliminary assessment on the potential impact on the WR Line arising from the YLS Development, the WR Line will be a bit congested during the morning peak hour at the busiest section (i.e. from Kam Sheung Road Station to Tsuen Wan West Station) taking into account the additional urban bound railway trips to be generated by the YLS Development.

7.5.16 In the long term, the Government will timely commence studies on improving the carrying capacity of the railways in the North-west New Territories (NWNT) beyond 2031, to cope with the passenger demands.

#### **Public Transport Provision**

7.5.17 A total of three Public Transport Interchanges (PTIs) are proposed within the YLS DA, with one in each residential community. The PTIs are expected to be in place in tandem with the population intake in each of the communities.

7.5.18 To enhance connection between the YLS DA and WR Yuen Long Station, another PTI is proposed at the site for the proposed Leisure and Cultural Services Department's complex at Yuen Ching Road, which can be easily accessed from the DA via the proposed slip road running parallel to YLH.

#### **Environmentally Friendly Transport Services**

7.5.19 As an Environmentally Friendly Transport Services (EFTS) is being explored in the HSK/HT NDA to promote a green, fast, safe, efficient and comfortable transport mode, an extension of the EFTS to the YLS DA will also be explored to provide better connection between HSK/HT and the DA, as well as an alternative feeder route to WR.

7.5.20 The EFTS is expected to boost public transport share for rail and EFTS, which could encourage more users to interchange with the rail system, enjoying shorter journey time and better connectivity with the heavy rail network; and to the residential areas, employment nodes, key community facilities and railway station of the HSK/HT NDA.

#### **Bicycle Friendly Environment**

7.5.21 Cycling is encouraged in the YLS DA as a supplementary transport mode that facilitate short-distance travel in an environmentally-friendly manner. Through the provision of cycle tracks along major roads in the DA, connectivity and accessibility are strengthened between individual plots, public transport facilities and various community facilities.

- 7.5.22 To promote seamless connection between the proposed and existing cycling networks, the proposed cycling network of the YLS DA will be connected to Fui Sha Wai South Road near TSW West Interchange and Long Tin Road along the proposed Long Bin Housing Site near TYST Interchange.
- 7.5.23 Cycle parking spaces will be provided in the residential areas in accordance with the HKPSG requirement. Cycle parking areas will also be provided at some open spaces and at the hillside river corridor with scenic cycle track.

### **Walkability**

- 7.5.24 To reduce the number of short motorised trips and the conflict between pedestrians and vehicles, continuous footpaths would be assured in the YLS DA and along the carriageway. An integrated pedestrian network including linkages to PTIs will be provided in the DA, so as to enhance the accessibility and connectivity.
- 7.5.25 A three-zone concept of “through zone”, “building frontage zone” and “street furniture and the greening zone” is proposed to be adopted in the detailed design of the footpath to enhance pedestrian experience.

### **Summary**

- 7.5.26 The proposed YLS Development will have manageable traffic impact on the local and nearby road links, junctions and transport facilities including the proposed pedestrian linkages and cycling network. The YLS Development is acceptable from the traffic impact perspective.

## **7.6 Drainage Impact Assessment**

- 7.6.1 The Drainage Impact Assessment has reviewed the changes to the existing drainage characteristics due to the YLS Development, which will result in higher peak surface runoff and water levels in the receiving drainage systems<sup>2</sup>, with necessary mitigation measures recommended. Due to the capacity constraints in the downstream of the existing Yuen Long Nullah and TSW drainage system, the drainage design will be further reviewed in the detailed design stage.
- 7.6.2 One storage tank and one retention lake with Hillside River Corridor are proposed to attenuate the increase in the 50-year peak runoff from the YLS Development. The discharges from these retention facilities

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<sup>2</sup> During the detailed design stage, further checking is required to check against the latest design standard.

would be controlled and limited to pre-development rates to ensure no adverse drainage impacts to the downstream existing drainage system.

- 7.6.3 The YLS Development would affect several existing drainage systems. Diversion, realignment, re-provision and modification of these existing drainage systems have been recommended.
- 7.6.4 Partial decking of the Yuen Long Nullah is required to meet the traffic demand. On the other hand, certain sections of the existing Yuen Long Nullah, Yuen Long (West) Nullah and Tin Tsuen Channel are proposed to be revitalised. Both the partial decking and channel revitalisation proposals would reduce the capacities of the channels and these need to be mitigated by means of providing new/additional drainage system, e.g. proposed box culverts along Kung Um Road and Kiu Hing Road to ensure the current flood protection standards of these affected channels are not compromised. With the proposed mitigation measures as highlighted above, the YLS Development will be acceptable from drainage impact point of view.

## 7.7 Sewerage Impact Assessment

- 7.7.1 The Sewerage Impact Assessment (SIA) has reviewed the existing and planned sewerage infrastructure within and in the vicinity of the Study Area. The assessment also collected information on sewage collection, treatment and disposal arrangements in sewerage catchments of the Yuen Long Sewage Treatment Works and San Wai Sewage Treatment Works.
- 7.7.2 The sewage flows and loads generation from the YLS DA were estimated and the proposed sewage treatment and disposal strategy were accordingly formulated, which involves discharging the YLS sewage flows by the proposed sewerage system to a proposed on-site Yuen Long South Sewage Treatment Works (YLS STW) (also known as Yuen Long South Effluent Polishing Plant) in the southern part of the DA for treatment, followed by the reuse of the reclaimed water for non-potable uses in the DA and adjacent developments.
- 7.7.3 A small amount of TSE from the YLS STW (upon offsetting by credit gained from the removal of the existing livestock farms) could be discharged to the Yuen Long Nullah adjacent to the YLS STW in strict compliance with the requirement for “No Net Increase in Pollution Loading” in the Deep Bay, while a reedbed adjacent to the YLS STW is aimed to provide further polishing of the 570m<sup>3</sup>/day TSE prior to discharging to the Yuen Long Nullah and Deep Bay.

- 7.7.4 It should also be noted that the YLS STW and the reclaimed water reuse facilities are separate Designated Projects (DPs) to be constructed by relevant project proponents and operated by the future operators. Separate EIA should be prepared and submitted to the Environmental Protection Department (EPD) for approval under the EIAO to apply for the Environmental Permit (EP).

## **7.8 Water Supply and Utilities Impact Assessment**

### **Water Supply**

- 7.8.1 The existing Tan Kwai Tsuen South Fresh Water Service Reservoir (TKTSFWSR), and the proposed Tan Kwai Tsuen Fresh Water Service Reservoir under Hung Shui Kiu New Development Area Planning and Engineering Study, upon expansion, will have sufficient capacity to supply fresh water to the YLS DA.
- 7.8.2 Fresh water primary distribution main at the east of YLH is proposed to be laid from TKTSFWSR to the YLS DA and a branch of distribution mains are proposed to be mainly laid along the proposed roads at the DA. The provision of a ring fresh water supply system is adopted to improve supply reliability.
- 7.8.3 A new water reclamation plant is proposed to further treat the TSE from the YLS STW to reclaimed water. After the construction of the water reclamation plant, a new reclaimed water pumping station together with the associated facilities is proposed to pump reclaimed water via pumping main to a new Reclaimed Water Service Reservoir. The location of the proposed Reclaimed Water Service Reservoir is subject to study and is tentatively proposed to be constructed to the southwest of the YLS DA with mains for distribution to the DA for flushing purpose. Similarly, the provision of a ring flushing water supply system is adopted to enhance supply reliability. The total daily demand for flushing water is around 7,900m<sup>3</sup>/day.

### **Other Utilities**

- 7.8.4 By consulting the utility undertakers, the requirements for distributing new services and upgrading existing services have been identified. The needs for new utility infrastructure within the YLS DA such as electricity substation have also been identified. Impact on the existing and tentative plans of utilities have been considered taking into account the as-built drawings provided by the utility undertakers.

## 7.9 Air Ventilation Assessment

- 7.9.1 As part of the Study, Site Wind Availability Study, Expert Evaluation (EE) and Air Ventilation Assessment Initial Study by wind tunnel tests were carried out for preparation of the PODP. Taking on-board recommendations of the EE for the Draft RODP to minimise the ventilation impact, the development plan was further refined with incorporation of wind enhancement features in the layout of land use and road. Detailed Study by Computational Fluid Dynamics was then carried out to assess and compare the ventilation performance of the RODP and Revised RODP.
- 7.9.2 The YLS DA was divided into three areas for assessment (Areas 1 to 3 as shown in **Figure 1**). The annual prevailing wind comes from the northeast quadrant, where all existing developments are located except those scattered village clusters between Area 1 and Area 2. The summer prevailing wind comes from the southwest quadrant such that the hill range and the proposed developments in the study area would affect the wind performance in the whole DA.
- 7.9.3 Under the annual and summer conditions, slight improvement in Area 2 and slightly calmer wind in Area 3 are found under the Revised RODP when compared to the layout of RODP, while Area 1 attains a similar result. The overall wind performance under the Revised RODP is similar to the RODP.
- 7.9.4 Relevant mitigation measures proposed under the RODP remain valid under the Revised RODP and have been maintained. These include air paths in the forms of open spaces, non-building areas and some planned roads running in parallel or up to 30-degrees to the prevailing winds in all three areas. These air paths are also connected where possible such as the connection of the two “DOs” between Shan Ha and Muk Kiu Tau Tsuen in Area 2. Also, building disposition and minimisation of the non-domestic podium coverage during the detailed design stage would also facilitate wind penetration. With the provision of these mitigation measures, no significant air ventilation impact is anticipated.

## 7.10 Socio-economic Impact Assessment

- 7.10.1 As the YLS Development would affect the existing local economic activities and agricultural activities, and various local cultural characteristics, assessments were conducted to estimate the impacts imposed.

- 7.10.2 Both positive and negative impacts are found. Positive impacts include the benefits brought by the YLS Development including new housing units, job opportunities, and various GIC, social and recreational facilities to the new and existing communities, improved living environment, better transport links and transport services, and preserving and enhancing the area through the preserved ecologically important features and active agricultural land. Negative impacts are those associated with the affected households and local economic activities such as displaced residents, local industries, livestock farm operators, farmers, and dissolved social network and local culture.
- 7.10.3 To facilitate the implementation of the YLS Development, mitigation measures such as compensation and rehousing arrangements for the affected and eligible residents, as well as assistance to local business operators, farmers, and livestock farm operators have been proposed to address the concerned negative impacts. If the socio-economic impacts could be managed properly, positive impacts could outweigh the negative impacts.

## **7.11 Green Initiatives Study and Carbon Appraisal**

- 7.11.1 Green initiatives with regard to the urban design and planning, transport, renewable energy, building energy efficiency, water conservation and recycling, waste management and sustainable materials have been formulated and recommended. A carbon appraisal has also been conducted to quantify emissions that are within the project boundary; five different areas of carbon emission sources including building energy, fresh water, waste water, municipal waste and transport have been considered.
- 7.11.2 Key green initiatives recommended for the YLS Development comprise:
- Environmental improvement of the YLS DA through the creation of comfortable and naturally ventilated areas;
  - River revitalisation of the Yuen Long Nullah, Tin Tsuen Channel and Yuen Long (West) Nullah; the proposed Hillside River Corridor with Scenic Cycle Track and Retention Lake;
  - Potential application of low-carbon vehicle technologies such as electrical vehicles and bio-diesel public transport;
  - Potential use of renewable energy such as solar hot water, photovoltaics and wind for carbon reduction;
  - Appropriate measures for energy efficient building design during construction and operation phase;

- Overall efficiency of water to be achieved through the re-use of the TSE as reclaimed water for flushing, as well as the use of water efficient appliances;
- Use of the rainwater harvesting from roof areas and stored in rainwater tanks (as an alternative if reclaimed water is not adopted);
- Incorporation of the sustainable urban drainage concept into landscape, road and building design;
- Reductions in the amount of municipal solid waste generated and disposals through an onsite waste management plan including onsite waste separation and collection of recyclables, non-recyclables and food waste; and
- Application of recycled and low embodied carbon construction materials.

## 7.12 Sustainability Assessment

7.12.1 The Computer Aided Sustainability Evaluation Tool was adopted for the sustainability assessment and key sustainability indicators/issues have been identified and highlighted.

7.12.2 On the negative side, there would be a small to very small deterioration of condition with respect to carbon dioxide emitted per year, construction waste, criteria air pollutants, eco-value habitats, landfill capacity, significant landscape features, toxic air pollutants, travel distance and travel speed due to the YLS Development. Moreover, these changes are considered negligible as compared with the Hong Kong territory-wide values.

7.12.3 On the positive side, the YLS Development is expected to transform YLS into a distinct community which could meet the social, economic and environmental needs of the community, particularly on the housing aspect. The YLS Development would bring about small to very small improvement on value added contribution to gross domestic product and job creation to the economy. The indicators of education, fixed capital, freight costs, and open space provision have shown improvements. The living conditions would also be improved as indicated by the housing waiting time, private rental, and leisure and cultural activities and facilities.

7.12.4 In general, the YLS Development is considered acceptable and no insurmountable issues are foreseen in terms of sustainability.

## **8 Environmental Impact Assessment and Review**

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### **8.1 Introduction**

- 8.1.1 The Study is a DP under Item 1 Schedule 3 of EIAO – 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. The EIA under the Study also identified a total of ten DPs under Schedule 2 of the EIAO including road works, tramways, sewage treatment facilities, drainage diversion works, etc. that require EPs prior to construction and operation of the proposed works.
- 8.1.2 The EIA report on the YLS Development based on the RODP proposal was approved with conditions and recommendations on 30 November 2017 by the Director of Environmental Protection. EPs for some of the DPs under Schedule 2 of the EIAO were obtained on 15 February 2018. EFTS, YLS STW and the Reclaimed Water Service Reservoir for reuse of reclaimed water are separate DPs to be constructed by relevant project proponents. Separate EIA reports for these DPs should be submitted to EPD for approval and to obtain EPs before their construction and operation in accordance with the EIAO.
- 8.1.3 There is no major change on the proposed supporting infrastructure under the Revised RODP of the YLS Development. An ER was carried out for the Revised RODP to identify and address possible environmental implications due to the proposed increase in development intensity.

### **8.2 Overall Environmental Issues**

- 8.2.1 The approved EIA and ER have ascertained that no insurmountable environmental impacts on air quality, noise, sewerage and sewage treatment implication, waste management, water quality, land contamination, ecology, fisheries, landscape and visual, and cultural heritage were identified during both the construction and operation phases. The following Sections summarised the findings and recommendations of the approved EIA and ER undertaken to establish the environmental acceptability of the RODP and Revised RODP respectively.

## 8.3 Air Quality

- 8.3.1 Environmental impacts of key activities like site clearance, site formation, soil excavation and backfilling during the construction phase could potentially result in dust emission. The construction methodology, construction works and plant inventory at each stage of the YLS Development remain unchanged as that adopted in the approved EIA report. While the construction programme would need to be slightly adjusted to reflect the latest implementation programme for different stages of the YLS Development, it is considered that the environmental impacts during the construction stage could be properly controlled and mitigated by proper site management and suitable mitigation measures.
- 8.3.2 Quantitative air quality assessment indicates the cumulative air quality impacts at all representative planned and existing Air Sensitive Receivers (ASRs) could comply with the Air Quality Objectives during operation phase. Air quality impact arising from (i) industrial emission, (ii) vehicular emission from open roads, and (iii) vehicular emission from portal of the proposed underpass and full enclosure were reviewed for the two selected assessment years (i.e. Year 2028 and Year 2043). Results show that there are no exceedances at all ASRs in both assessment years. As adverse cumulative air quality impact during operation phase of the YLS Development is not anticipated, no mitigation measures are required.
- 8.3.3 Potential odour impact from the planned YLS STW would be adequately addressed by its future EIA study which is to be carried out by the relevant project proponent. Furthermore, the two planned Sewage Pumping Stations (SPSs) would be equipped with at least 99.5% odour removal units with exhaust outlet to be located away from the nearby ASRs as far as practicable to ensure no adverse odour impact. With the implementation of appropriate mitigation measures, it is anticipated there would be no adverse odour impact from the proposed SPSs at nearby sensitive receivers.

## 8.4 Noise

- 8.4.1 The assessment years for the road traffic noise are taken at the expected operation years of Stage 1 in Year 2028, Stage 2 in Year 2033 and Year 2053 which is the year with maximum traffic projection within 15 years upon operation of road networks or full occupation of the planned noise sensitive receivers (NSRs) in Year 2038 for Stages 3 and 4 under the Revised RODP.

- 8.4.2 Construction noise impact assessment associated with the use of Powered Mechanical Equipment for different stages of construction has been conducted. 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, construction noise impacts at all of the neighbouring residential NSRs would be controlled to acceptable levels.
- 8.4.3 During the operation phase, the road traffic noise impact on existing and planned NSRs within and in the vicinity of the YLS Development have been assessed. To alleviate the adverse road traffic noise impact, the following at-source mitigation measures have been proposed:
- Absorptive vertical barriers and cantilevered noise barriers along some sections of the proposed roads and Kung Um Road;
  - Low Noise Road Surfacing on some road sections;
  - Semi-enclosures or full enclosures at primary distributor roads at TYST Interchange and at certain location of the widened Kung Um Road;
  - Nullah features/barriers along some sections of Yuen Long Nullah (Kiu Hing Road); and
  - Alternative building orientation for some planned schools.
- 8.4.4 In addition, the locations of proposed acoustic windows for the planned residential developments within the YLS DA have been reviewed to ensure compliance of relevant noise criteria. Road traffic noise impact from the YLS Development can be properly mitigated by implementing the proposed noise mitigation measures. Residual road traffic noise impact is not anticipated.
- 8.4.5 Regarding the planned locations of PTIs and Electricity Sub-station, results indicate that the fixed noise source impacts at representative NSRs also comply with the relevant noise criteria.
- 8.4.6 An EFTS is to be explored for operation within the YLS Development. For conservative noise assessment, the rail-based EFTS was assumed for rail noise impact assessment. Results indicate that the noise impacts on NSRs would comply with the statutory requirement after incorporating some track enhancement measures. With the proposed 10m buffer distance to NSRs, the operation of EFTS would not pose adverse noise impact on the nearby NSRs.

## 8.5 Sewerage and Sewage Treatment

- 8.5.1 An SIA has been conducted for the Revised RODP to review the existing and planned sewerage infrastructure within and in the vicinity of the Study Area. As discussed in Section 7.7, a small amount of TSE from YLS STW (upon offsetting by credit gained from the removal of existing livestock farms) could be discharged to Yuen Long Nullah adjacent to the YLS STW in strict compliance with the requirement for “No Net Increase in Pollution Loading” in the Deep Bay, while the reedbed adjacent to YLS STW is aimed to provide further polishing of the TSE prior to discharging to Yuen Long Nullah and Deep Bay.

## 8.6 Waste Management

- 8.6.1 During construction phase, the amount of Construction & Demolition waste generated is estimated at a total of approximately 269,200m<sup>3</sup>. Other types of waste to be generated during the construction phase includes general refuse, chemical waste, excavated sediments, etc. With mitigation measures such as adopting good site practices, waste reduction measures, proper storage, collection and transportation of waste, etc. as recommended in the approved EIA, no adverse waste management implications are anticipated.
- 8.6.2 During the operation phase, the main types of waste to be generated include municipal solid waste, chemical waste and waste from YLS STW in the form of screenings, grits and sewage sludge. A minimal amount of chemical waste could be generated, mainly from maintenance activities on the road networks and laboratories of educational institutions. The implications of screenings, grits and dewatered sludge for the planned YLS STW with a treatment capacity of about 27,000m<sup>3</sup>/day (average dry weather flow) shall be further addressed in its subsequent EIA study. With proper handling and collection of waste as recommended in the approved EIA study, no adverse waste management implications are anticipated for the YLS Development during the operation phase.

## 8.7 Land Contamination

- 8.7.1 Since majority of the potentially contaminated sites could not be accessed and permission could not be obtained from the site owners/operators to carry out the SI works, this land contamination assessment on the potentially contaminated sites was conducted based on desktop review, review of historical aerial photos and a number of peripheral site surveys.

- 8.7.2 Among the potentially contaminated sites identified, over 90% of these sites are currently used as open area storage, container storage and warehouse. However, the contamination (if any) is expected to be localised if the key types of goods/stocks stored within the sites are not potential sources of contamination.
- 8.7.3 Further site visits to these potentially contaminated sites are proposed once future development of these sites is confirmed. In addition, re-appraisal would be required for the surveyed sites, other remaining areas of the YLS DA and the works areas for the associated infrastructure to address any change in land use that may give rise to potential land contamination issues. Findings from the re-appraisal will be presented in a supplementary Contamination Assessment Plan (CAP). Upon approval of the supplementary CAP and completion of the environmental SI works, a Contamination Assessment Report, and where appropriate Remediation Action Plan and Remediation Report for contaminated sites identified, would be submitted to EPD for approval prior to commencement of any construction/development works.

## **8.8 Landscape and Visual Impacts**

- 8.8.1 The YLS Development will inevitably result in some landscape and visual impacts during construction and operation phases. Nevertheless, the overall residual landscape and visual impacts would be acceptable with mitigation measures during the construction and operation phases.
- 8.8.2 Within the assessment area, there are 8 Landscape Character Areas (LCAs) and 16 Landscape Resources (LRs) identified. The LCAs within the YLS DA have varying sensitivities. However, considering the design mitigation measures to be adopted during construction and operation phases, including tree protection, preservation and transplantation; compensatory planting, compensatory woodland planting, road greening and general good site practice, engineered slopes, protection of vegetation and replanting of slopes, etc. it is anticipated that the impact would reduce from slight to moderate levels at year 10 of operation phase when the landscape character has been changed into urban type development, and compensatory planting achieves its full potential.
- 8.8.3 In terms of landscape, 63% of trees in the assessment area would be potentially affected. There are 3 Old and Valuable Trees (OVTs) within the assessment area, but outside the YLS DA. There are 77 identified

Important Trees (including Potential OVT and rare/ protected species), 34 of which are in direct conflict with the proposed developments.

- 8.8.4 In order to avoid or to minimise the potential impacts, the urban design framework of the Revised RODP has introduced areas zoned “GB” and “Open Space” to retain and protect these trees as far as practical. In addition, these open areas together with greening along development lots can create opportunities for mitigation measures, such as tree transplanting and compensatory plantings in-situ if retained on site is not practical. A detailed tree survey will be carried out at the later detailed design stage of the YLS Development for the number of new trees to be planted and the Tree Removal Application process, where the respective number of trees to be retained/preserved, transplanted or fell would be proposed at the detailed design stage.
- 8.8.5 A total of 44 visually sensitive receivers have been identified under the assessment. It is considered that the most sensitive views are those which currently experience a direct and broad connection with the wider undeveloped landscape setting. Expected visual impacts brought by the proposed YLS Development may include visual obstruction, degradation of the quality of existing views and incompatibility with the surrounding landscape setting. Proposed mitigation measures including screen hoarding, light control, use of noise barriers and compensatory planting, etc. as listed in the approved EIA report remain valid. When used in combination with measures such as visually sensitive design of infrastructure, facade treatment and colour scheme, these measures would have the capacity to reduce the level of visual impacts in the early operation phase.
- 8.8.6 Additional impact on the LRs within and in the vicinity of the YLS DA caused by the Revised RODP are considered negligible, and the implementation of landscape mitigation measures as proposed in the approved EIA report would still be applicable. To conclude, the adverse visual impacts will not be substantial since the proposed developments would create certain degree of visual amenity enhancement to the local community. The overall change that is to occur as a result of the YLS Development will ultimately bring about positive change.

## **8.9 Ecology**

- 8.9.1 Ecologically speaking, the Revised RODP has preserved all woodland patches of significant sizes and minimised the loss of agricultural land within the YLS DA. Three lower sections with buffers of the natural

watercourses with records of the endemic crab *S. zanklon* will be retained.

- 8.9.2 The loss of sections of watercourse which have an ecological value and additional feeding opportunities for breeding ardeids could be mitigated and reprovided through the creation of the Hillside River Corridor and enhancement by the Retention Lake and Reedbed. Whilst there will be some minor adjustments to the departure direction of breeding ardeids from the egret, it is considered that there is sufficient space for birds to make minor adjustments at the start of the flightline. No unacceptable residual impact is expected.

## 8.10 Water Quality Impact

- 8.10.1 During the construction phase, general construction works and works within/near watercourses may lead to various potential water quality impacts. These anticipated sources mainly include site run-off from general site operations, accidental spillage of chemicals, sewage of workforce, etc. To minimise potential impacts, good site practices and mitigation measures as per Professional Persons Environmental Consultative Committee Practice Note 1/94 “Construction Site Drainage”, Environment, Transport and Works Bureau Technical Circular (Works) No. 5/2005 “Protection of natural streams/rivers from adverse impacts arising from construction works”, should be implemented where practicable. Chemicals shall be stored properly in designated areas and maintenance activities shall be located away from watercourses. Proper temporary sanitary facilities (e.g. portable chemical toilet) would be provided. With full implementation of the mitigation measures, no substantial impact is anticipated from surface runoff from construction site and sewage generated from construction workforce.
- 8.10.2 During the operation phase, the YLS DA would bring benefits by providing sewerage infrastructure to the existing unsewered areas within the DA. Also, a new STW with treatment capacity up to tertiary level standard producing TSE for re-use as reclaimed water is proposed as discussed in Section 7.7. Among the reclaimed water, most of it will be reused for non-potable uses such as toilet flushing in the DA and in adjacent developments. Only a small amount of TSE will be discharged to a reedbed adjoining to the proposed YLS STW for further polishing before entering Yuen Long Nullah.
- 8.10.3 As the proposed developments would not generate a net increase in pollution loading to the receiving water in the Deep Bay Water Control

Zone, the policy of “No Net Increase in Pollution Loading” in the Deep Bay would be complied with.

- 8.10.4 For other potential water pollution sources arising from the YLS Development, no significant water quality impact is anticipated with the implementation of mitigation measures during the operation phase, including: avoid emergency discharge from sewage treatment works and SPSs; install proper drainage systems with silt traps and oil interceptors; adopt good practice measures to handle maintenance flushing at the proposed Reclaimed Water Service Reservoir and wastewater from storage and workshop area.

## **8.11 Fisheries Impact**

- 8.11.1 A total of 51 ponds are identified within the assessment area in the approved EIA report, 9 of them are located within the YLS DA. Of these 9 ponds identified within the DA, an abandoned and dry pond will be preserved in the proposed “GB” zone and the remaining 8 will be lost due to the YLS Development. However, as these 8 ponds serve non-fisheries related purposes and are small in overall area (approximately 0.58 ha in total), the direct fisheries impacts on pond fisheries/aquaculture are considered to be negligible when taking into account the potential that these ponds could be all resumed as active fish ponds for commercial fisheries operation.
- 8.11.2 While the direct fisheries impact during the operation phase of the YLS DA would be negligible, the indirect impacts on fisheries resources could be impacted by surface runoff and sewage from the population within the DA. The sewage generated would be received by the proposed sewerage infrastructure under the approved EIA report. Adverse water quality impacts to fish ponds within and in the vicinity of the DA are not anticipated. Hence, no significant indirect impacts on fisheries resources due to the YLS Development are anticipated.

## **8.12 Cultural Heritage**

- 8.12.1 Regarding cultural heritage, there is a Grade 3 historic building, the Yeung Hau Temple, lies within the YLS DA at TYST and should be preserved. There are two declared monuments (Cheung Ancestral Hall at Shan Ha and Tang Ancestral Hall at Ha Tsuen) within the 100m assessment area, but falling outside the DA. Moreover, there are 15 graded and 1 nil graded historic buildings being identified within the 100m assessment area, but would not be impacted by works as they are falling outside the DA.

- 8.12.2 The conducted desktop survey revealed that no Sites of Archaeological Interests within the YLS DA boundary and works boundary outside the DA are found. As the discovery of Song and Qing pottery near the TSW West Interchange and Shan Ha is confined to a relatively small part in Area 1 of the DA, it is recommended that this area be subject to further archaeological survey conducted after land resumption prior to construction. Appropriate mitigation measures in prior agreement with the Antiquities and Monuments Office would be proposed if deemed necessary.

## **8.13 Summary**

- 8.13.1 Overall, the approved EIA and ER indicated that given the implementation of the appropriate avoidance/mitigation measures, the YLS Development would be environmentally acceptable with no insurmountable environmental problem on air quality, noise, sewerage and sewage treatment implication, waste management, land contamination, landscape and visual impacts, ecology, water quality, fisheries and cultural heritage, during both the construction and operation phases on the population and environmentally sensitive resources.

## **9 Implementation Strategy and Programme**

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### **9.1 Implementation Mechanism**

9.1.1 Implementation options ranging from full public or full private involvement to mixed involvement of both sectors have been considered.

9.1.2 In order to ensure timely and orderly development of the YLS DA, the Enhanced Conventional New Town (CNT) Approach is proposed to be adopted, making reference to the implementation mode adopted for the Kwu Tung North/Fanling North NDAs.

9.1.3 Under the Enhanced CNT approach, the CNT approach will be the basis for implementation with the Government to resume and clear the private land planned for public works projects, public housing and private developments, carry out site formation works, and provide infrastructure before allocating land for various purposes, including disposal of land planned for private developments in the market. Prior to the resumption and clearance of land, the Government may allow in-situ land exchange applications from land owners of sites planned for private developments, subject to their meeting the specified criteria and conditions to facilitate early development.

### **9.2 Statutory Procedures**

9.2.1 The implementation of the YLS Development requires a number of statutory procedures to comply with relevant Ordinances including:

- EIAO;
- Town Planning Ordinance;
- Lands Resumption Ordinance;
- Roads (Works, Use and Compensation) Ordinance;
- Water Pollution Control Ordinance;
- Land Acquisition (Possessory Title) Ordinance; and
- Public Health and Municipal Services Ordinance.

### **9.3 Public Consultation**

9.3.1 The Revised RODP would be made known to the RCs and Yuen Long DC members and the public prior to the gazettal procedures under the Town Planning Ordinance, Roads (Works, Use and Compensation) Ordinance, and Water Pollution Control (Sewerage) Regulation.

Consultation with RCs and Yuen Long DC will be conducted in accordance with the established procedures.

- 9.3.2 The gazettal of the relevant Outline Zoning Plans will also be arranged in accordance with the Town Planning Ordinance and the public can make representations within the 2-month exhibition period as stipulated under the Ordinance.

## 9.4 Implementation Programme

- 9.4.1 In view of existing infrastructural constraints in the YLS area, particularly on the capacity of the existing road network which is of longstanding concern to the local public, and the need to ensure a balanced and incremental development with orderly relocation of about 100 ha<sup>3</sup> of affected brownfield operations and the rehousing of qualified clearers, the YLS Development would be implemented progressively with sufficient infrastructure to support each phase of development.
- 9.4.2 The YLS Development, including the associated engineering infrastructure, is proposed to be implemented in stages. The implementation programme showing the target population intake of the YLS Development is shown on **Table 9.1** and the tentative staging plan is shown in **Figure 6**.
- 9.4.3 Compared to the implementation plan in the approved EIA, a continuous local open space (“LO”) and “DO” area along the southern edge of the MSBs has been advanced from Stage 4 to Stage 2 (i.e. the completion year changed from 2038 to 2033) under the current implementation programme. Such an advancement in the “LO”/“DO” strip could provide a buffer between the storage/workshop uses in the MSBs and residential use in TYST, and hence minimise the potential industrial/residential interface issues.

**Table 9.1 Proposed Implementation Programme**

Stage	Estimated First Population Intake Year
Stage 1	2028
Stage 2	2033
Stages 3 & 4	2038

Note: Subject to further review at the detailed design stage

<sup>3</sup> The number is based on the questionnaire survey conducted under the Study between February 2016 and June 2016. According to the “Study on Existing Profile and Operations of Brownfield Sites in the New Territories - Feasibility Study” conducted by the Planning Department in 2019, the YLS DA has about 93.9 ha brownfield sites, including 90.25 ha active brownfield sites and 3.65 ha inactive brownfield sites.

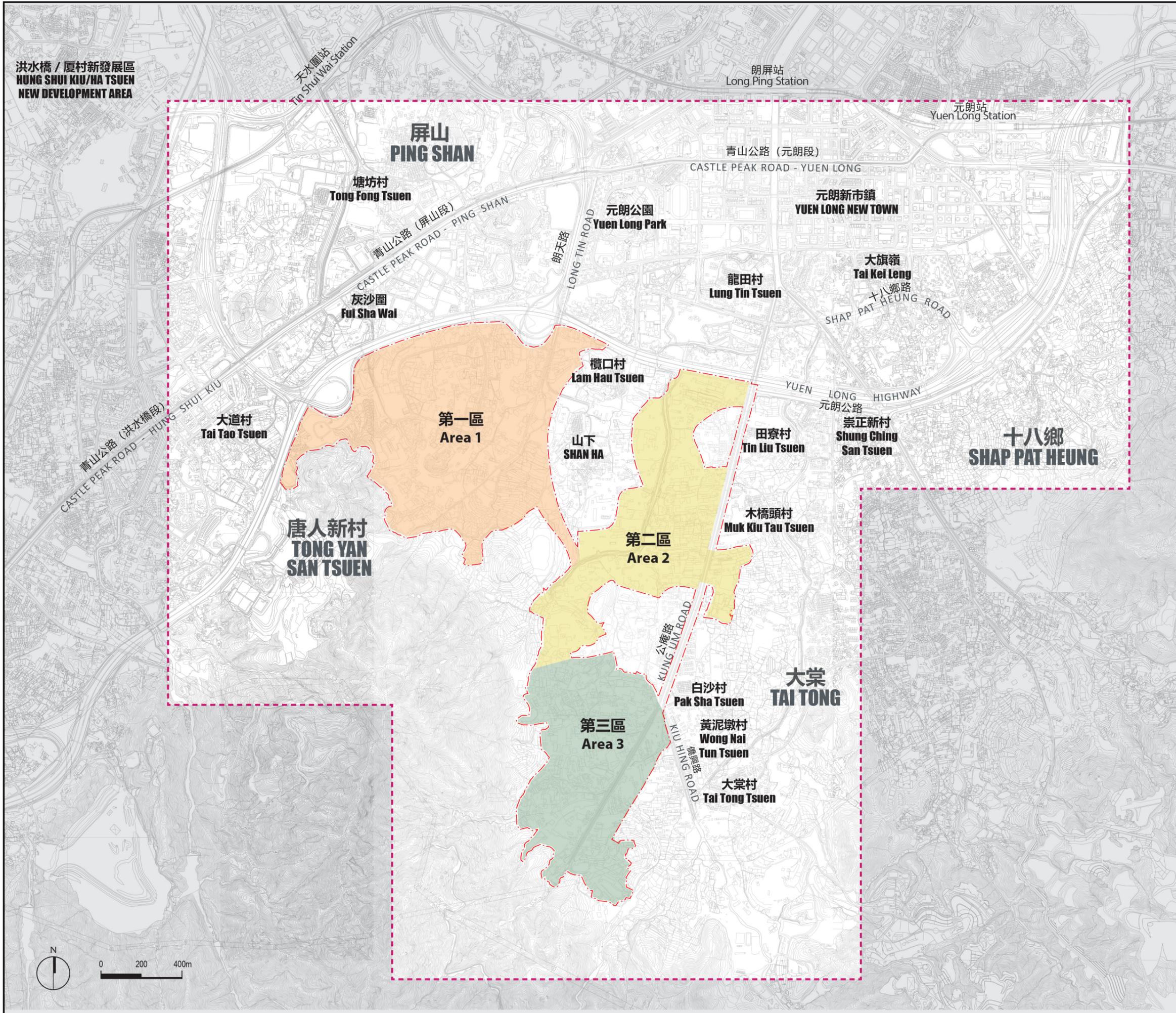
- 9.4.4 The planned provisions of basic GIC facilities, open spaces and other infrastructure are generally adequate to meet the demand of YLS Development.
- 9.4.5 The proposed implementation schedule has considered the acute demand for public housing and sites for displacement of brownfield operations. The public housing sites under the Revised RODP and associated supporting facilities at the northern section of Kung Um Road are proposed to be implemented first in response to the local sentiments over the shortage of housing supply.
- 9.4.6 At the same time, an area of about 11 ha between YLH and TYST is also proposed to be rezoned mainly for MSBs (with gross floor area of about 484,110m<sup>2</sup>) and open storage development (land area of about 1.28 ha) for consolidation of brownfield uses, including some of the affected operators. To complement the population intake in the first two stages, key essential supporting infrastructure, such as road improvement works including construction of new roads and improving local roads, STW and primary schools are also proposed for concurrent implementation.
- 9.4.7 The current proposals for YLS DA constitute an optimised scheme, having taken into account various planning considerations and development constraints. However, in view of the overall shortage of housing land, further increase of development potential in Stages 3 and 4 areas could be explored but this would mainly hinge on the capacities of external links, such as Route 11 strategically connecting NWNT with the urban areas. The link is still under study and its capacity and configuration are yet to be finalised. Further review of the development intensity of these areas could be considered subject to the study findings of Route 11.

## 10 Conclusion

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- 10.1.1 The YLS DA, which is currently located to the immediate south of the Yuen Long New Town, would be an extension of the New Town. The DA is predominantly occupied by brownfield operations including open storage yards, warehouses, rural industrial uses, intermingled with rural settlements, residential use, agricultural land and livestock farms.
- 10.1.2 The YLS Development aims to be a sustainable new town extension and focuses on optimal utilisation of the existing brownfield sites covering about 100 ha, which would provide around 32,850 new homes for about 98,700 residents and 13,630 employment opportunities. The total population of the DA will be about 101,200 if the existing population of about 2,400 and about 100 from village re-site zones are counted. Five well-designed planning areas are defined by a blue and green framework, comprising the “*Urban Living*”, “*LOHAS Living*”, “*Garden Community*”, “*Employment Belt*” and “*Green Zone*”.
- 10.1.3 Relevant technical assessments of the Study were completed for the formulation of the Revised RODP. A review of the approved EIA report has been conducted and assessments on the possible environmental implications due to the proposed optimisation in development intensity have been summarised in the ER, with appropriate mitigation measures recommended. The preliminary implementation programme for the YLS Development have also been formulated.
- 10.1.4 All results of the technical assessments demonstrate that the YLS Development is technically feasible in terms of land requirement, geotechnical, site formation, traffic and transport, drainage, sewerage, water supply and utilities, air ventilation, socio-economics, green initiatives and carbon appraisal, sustainability and environmental impacts.

## Figures



洪水橋 / 厦村新發展區  
HUNG SHUI KIU/HA TSUEN  
NEW DEVELOPMENT AREA

屏山  
PING SHAN

朗屏站  
Long Ping Station

元朗站  
Yuen Long Station

塘坊村  
Tong Fong Tsuen

元朗公園  
Yuen Long Park

元朗新市鎮  
YUEN LONG NEW TOWN

青山公路 (屏山段)  
CASTLE PEAK ROAD - PING SHAN

朗天路  
LONG TIN ROAD

灰沙圍  
Fui Sha Wai

龍田村  
Lung Tin Tsuen

大旗嶺  
Tai Kei Leng

十八鄉路  
SHAP PAT HEUNG ROAD

青山公路 (洪水橋段)  
CASTLE PEAK ROAD - HUNG SHUI KIU

大道村  
Tai Tao Tsuen

第一區  
Area 1

欖口村  
Lam Hau Tsuen

田寮村  
Tin Liu Tsuen

崇正新村  
Shung Ching San Tsuen

十八鄉  
SHAP PAT HEUNG

唐人新村  
TONG YAN SAN TSUEN

山下  
SHAN HA

第二區  
Area 2

木橋頭村  
Muk Kiu Tau Tsuen

公庵路  
KUNG LIM ROAD

白沙村  
Pak Sha Tsuen

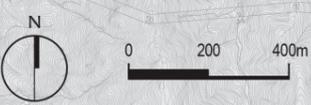
大棠  
TAI TONG

第三區  
Area 3

黃泥墩村  
Wong Nai Tun Tsuen

大棠村  
Tai Tong Tsuen

德輔路  
KUH HING ROAD



圖例 LEGEND

- 發展區  
Development Area
- 研究範圍  
Study Area
- 第一區  
Area 1
- 第二區  
Area 2
- 第三區  
Area 3

Consultant  
**ARUP**

Contract No. and Title  
合約編號 CE 35/2012 (CE)  
元朗南房屋用地規劃及工程研究 - 勘查研究  
Agreement No. CE 35/2012 (CE)  
Planning and Engineering Study for  
Housing Sites in Yuen Long South -  
Investigation

Drawing title  
  
元朗南研究範圍  
Yuen Long South Study Area

Drawing no. 圖 Figure 1		Rev.	
Drawn	Date 20/04/2020	Checked	Approved
Scale 1:17500 on A3	Status FINAL		

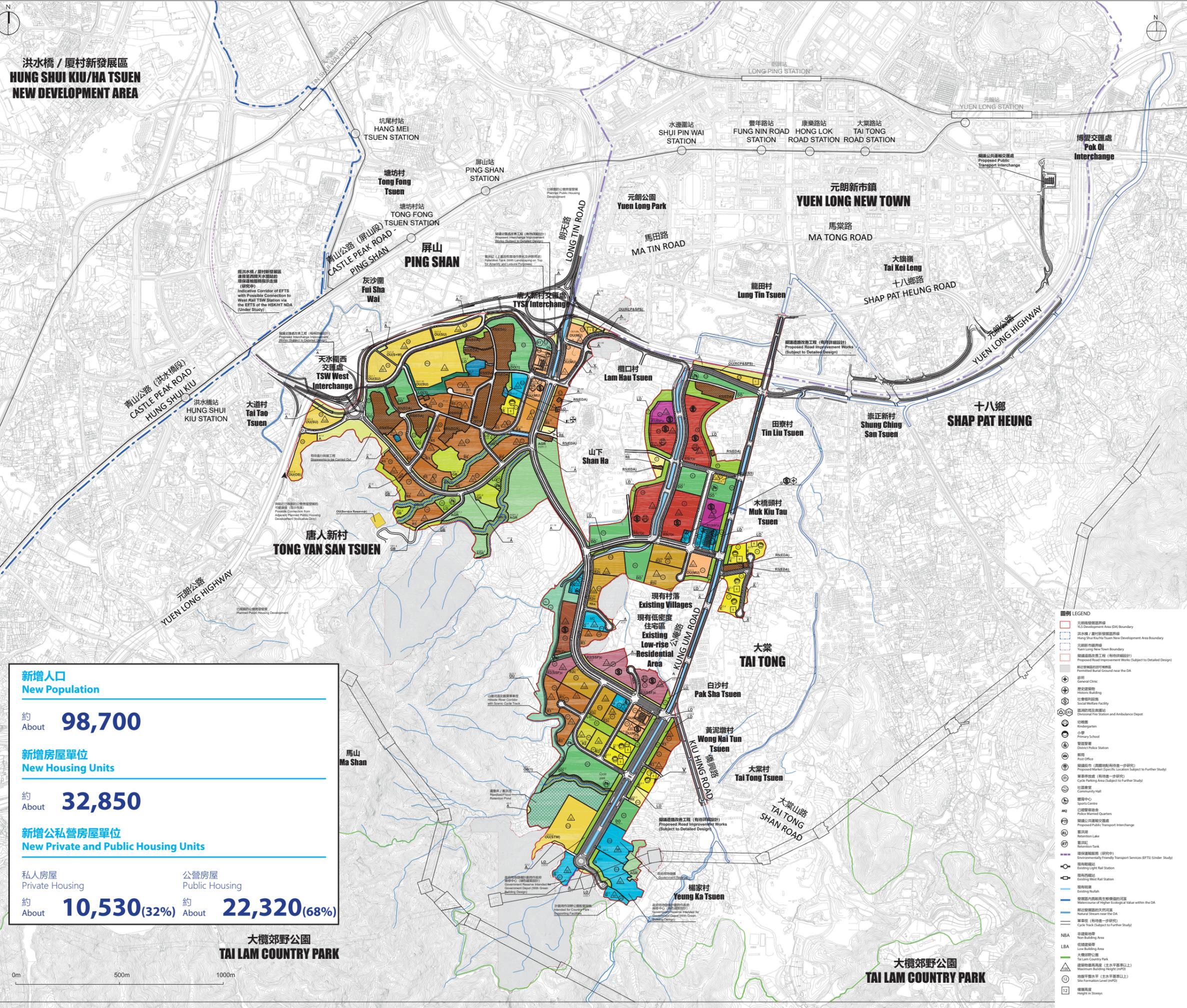
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土木工程拓展署  
Civil Engineering and  
Development Department



規劃署  
Planning  
Department



**新增人口**  
New Population

約 **98,700**  
About

**新增房屋單位**  
New Housing Units

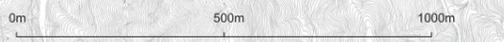
約 **32,850**  
About

**新增公私房屋單位**  
New Private and Public Housing Units

私人房屋  
Private Housing  
約 **10,530 (32%)**

公營房屋  
Public Housing  
約 **22,320 (68%)**

大欖郊野公園  
**TAI LAM COUNTRY PARK**



**土地用途及面積表 SCHEDULE OF USES AND AREAS**

用途 USES	面積及百分比 APP. AREA HECTARES	百分比 %
公共房屋 - 租住公屋第一區 (包括商業用途) Special Residential - Public Rental Housing (Zone 1) (with Commercial) (RS1C1)	10.6ha	4.7%
公共房屋 - 租住公屋第二區 (包括商業用途) Special Residential - Public Rental Housing (Zone 2) (with Commercial) (RS2C1)	1.6ha	0.7%
住宅發展第一區 (包括住宅發展及商業用途) Residential - Zone 1 (Subsided Sale Flats) (with Commercial) (R1(S)SF)	2.4ha	1.1%
住宅發展第二區 (包括住宅發展及商業用途) Residential - Zone 2 (Subsided Sale Flats) (with Commercial) (R2(S)SF)	5ha	2.2%
住宅發展第三區 (包括商業用途) Residential - Zone 3 (R3)	9.1ha	4.1%
住宅發展第四區 Residential - Zone 4 (R4)	1.5ha	0.7%
住宅發展第五區 Residential - Zone 5 (R5)	5.5ha	2.5%
住宅發展第六區 Residential - Zone 6 (R6)	1.1ha	0.5%
住宅發展第七區 Residential - Zone 7 (R7)	15.8ha	7.1%
住宅發展第八區 (包括發展區) Residential - Zone 8 (Existing Development Area) (R8(EDA))	12.8ha	5.7%
住宅發展第九區 Residential - Zone 9 (R9)	1.3ha	0.6%
鄉村發展 Village Type Development (V)	0.1ha	0%
其他指定用途 (貯物用途) Other Specified Uses (Storage Use) (OU(S))	8ha	
其他指定用途 (貯物及工場用途) Other Specified Uses (Storage and Workshop) (OU(S)-W)	1.7ha	
其他指定用途 (露天貯物) Other Specified Uses (Open Storage) (OU(OS))	1.3ha	
其他指定用途 (污水處理) Other Specified Uses (Sewage Treatment Works)	4ha	
其他指定用途 (混合用途) Other Specified Uses (Mixed Use) (OU(M))	5.9ha	14.4%
其他指定用途 (比較式住宅、污水處理及電力充站) Other Specified Uses (RCH, SPS & ES)	1.1ha	
其他指定用途 (蓄洪池) Other Specified Uses (Retention Tanks)	0.4ha	
其他指定用途 (山邊徑及單車徑) Other Specified Uses (Hillside River Corridor with Scenic Cycle Track)	9.8ha	
政府 Government (G)	9.6ha	4.3%
機構或社區 Institution or Community (IC)	0.7ha	0.3%
教育 Education (E)	5.7ha	2.5%
地區開放用途 District Open Space (DO)	13.2ha	5.9%
地區開放用途 (1) District Open Space (1) (DO(1))	2.3ha	1.0%
區內開放用途 Local Open Space (LO)	12.2ha	5.4%
區內開放用途 (1) Local Open Space (1) (LO(1))	1ha	0.4%
美化自然地區 Amenity (A)	6.6ha	2.9%
農業 Agriculture (AGR)	10.6ha	4.7%
綠化地帶 Green Belt	3.6ha	1.6%
綠化地帶 (1) Green Belt (1) (GB(1))	6ha	2.7%
河道、渠、橋、閘等 River Channels, Roads, Juncions, etc.	53.4ha	23.8%
<b>總土地用途面積</b> <b>TOTAL AREA FOR LAND USES</b>	<b>224ha</b>	<b>100%</b>

**圖例 LEGEND**

- 元朗發展區界線  
YLS Development Area (DA) Boundary
- 洪水橋 / 厦村新發展區界線  
Hung Shui Kiu/Ha Tsuen New Development Area Boundary
- 元朗新市鎮界線  
Yuen Long New Town Boundary
- 建議道路改善工程 (有待詳細設計)  
Proposed Road Improvement Works (Subject to Detailed Design)
- 鄰近發展區的公眾墳場  
Proposed Burial Ground near the DA
- 診所  
General Clinic
- 歷史建築  
Historic Building
- 社會福利設施  
Social Welfare Facility
- 區議會及康樂中心  
Divisional Fire Station and Ambulance Depot
- 幼稚園  
Kindergarten
- 小學  
Primary School
- 警署  
Police Station
- 警署  
Police Office
- 建議市場 (具體地點和用途進一步研究)  
Proposed Market (Specific Location Subject to Further Study)
- 康樂中心 (有待進一步研究)  
Civic Centre (Area Subject to Further Study)
- 社區會堂  
Community Hall
- 體育中心  
Sports Centre
- 已發展區  
Police Mortuary Quarters
- 建議公共運輸交匯處  
Proposed Public Transport Interchange
- 蓄洪池  
Retention Lake
- 環境友好型交通服務 (EFTS) (有待研究)  
Environmentally Friendly Transport Services (EFTS) (Under Study)
- 現有輕鐵站  
Existing Light Rail Station
- 現有車站  
Existing West Rail Station
- 現有村落  
Existing Village
- 發展區內具較高生態價值的河段  
Development Area with Higher Ecological Value within the DA
- 發展區內具較高自然價值的水流  
Development Area with Higher Natural Value within the DA
- 單車徑 (有待進一步研究)  
Cycle Path (Subject to Further Study)
- 非建築地帶  
Non Building Area
- 低建築地帶  
Low Building Area
- 大欖郊野公園  
Tai Lam Country Park
- 建議最高樓頂高度 (以海平面為基準)  
Maximum Building Height (mPD)
- 地勢平緩率 (以海平面為基準以上)  
Slope (Horizontal Level mPD)
- 樓頂高度  
Height in Storeys

Consultant  
**ARUP**  
奧雅納工程顧問  
Ove Arup & Partners  
Hong Kong Limited

Contract No. and Title  
合約編號 CE 35/2012 (CE)  
元朗南房屋用地規劃及工程研究 - 勘查研究  
Agreement No. CE 35/2012 (CE)  
Planning and Engineering Study for Housing Sites in  
Yuen Long South - Investigation

Drawing Title  
經修訂的建議發展大綱圖  
Revised Recommended Outline Development Plan

Drawing no.  
圖 Figure 2

Drawn	Date	Checked	Approved
	06/2020		

Scale  
1:2000 on A0

Status  
FINAL

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CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT

規劃署  
PLANNING  
DEPARTMENT



圖例 LEGEND

- 發展區 Development Area (DA)
- 研究範圍 Study Area
- 現有主要道路 Existing Key Road
- 現有輕鐵站 Existing Light Rail Station
- 現有西鐵站 Existing West Rail Station
- 活化後的明渠 Revitalised Channel
- 保留的天然河溪 Retained Natural Stream
- 擬議新水道及觀景單車徑 Proposed New Watercourse and Scenic Cycle Track
- 鄰近發展區的天然河溪 Natural Stream and Channel near the DA
- 沿河步行徑和單車徑 Riverside Walking Trail and Cycle Track
- 主要觀景廊 / 通風廊 Key View Corridor/Breezeway
- 次要觀景廊 / 通風廊 Secondary View Corridor/Breezeway
- 主要活動中心 Key Activity Node
- 臨街零售 (指示性質) Retail Frontage (Indicative Only)
- 山景 Mountain Backdrop
- 擬議行人徑 Proposed Footpaths
- 鄰近發展區的認可殯葬區 Permitted Burial Ground near the DA
- 鄰舍休憩用地 Local Open Space
- 鄰舍休憩用地(1) Local Open Space(1)
- 地區休憩用地 District Open Space
- 地區休憩用地(1) District 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)
- 其他指定用途 (蓄洪缸) Other Specified Uses (Retention Tank)
- 其他指定用途 (山邊河道及景觀單車徑) Other Specified Uses (Hillside River Corridor with Scenic Cycle Track)
- 蘆葦床/蓄洪池 Reedbed/Flood Retention Pond
- 元朗公園 Yuen Long Park
- 大欖郊野公園 Tai Lam Country Park

Consultant

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Contract No. and Title

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

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Drawing title

城市設計大綱  
Urban Design Framework

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Drawing no.		Rev.	
圖 Figure 3			
Drawn	Date	Checked	Approved
	20/04/2020		
Scale 1:17500 on A3		Status FINAL	

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洪水橋 / 厦村新發展區  
HUNG SHUI KIU/HA TSUEN  
NEW DEVELOPMENT AREA

**就業帶 Employment Belt**

露天貯物用地面積

**Open Storage Area**

約 About **12,800** 平方米 sqm

貯物及工場用地樓面面積

**Storage and Workshop Floor Area**

約 About **484,110** 平方米 sqm

**花園城區 Garden Community**

最高地積比率 Maximum Total Plot Ratio

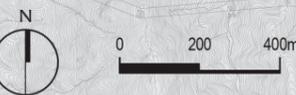
住宅地帶 Residential Zones **1-1.5** 混合用途 Mixed Use **4**

新增人口 New Population

約 About **8,100**

新增私營房屋單位 New Private Housing Units

私人房屋 Private Housing  
約 About **2,800**



**屏山 PING SHAN**

青山公路 (屏山段)  
CASTLE PEAK ROAD - PING SHAN

朗天路  
LONG TIN ROAD

唐人新村  
TONG YAN  
SAN TSUEN

就業帶  
Employment Belt

花園城區  
Garden Community

田園地帶  
Green Zone

都會生活區  
Urban Living

樂活生活區  
LOHAS Living

**大棠 TAI TONG**

公庵路  
KUNG UM ROAD

橋頭路  
KIU HING ROAD

朗屏站  
Long Ping Station

青山公路 (元朗段)  
CASTLE PEAK ROAD - YUEN LONG

元朗新市鎮  
YUEN LONG  
NEW TOWN

十八鄉路  
SHAP PAT HEUNG ROAD

元朗公路  
YUEN LONG HIGHWAY

**都會生活區 Urban Living**

最高地積比率 Maximum Total Plot Ratio

住宅地帶 Residential Zones **2.4-7** 混合用途 Mixed Use **4**

新增人口 New Population

約 About **66,500**

新增公私營房屋單位  
New Private and Public Housing Units

私人房屋 Private Housing  
約 About **3,450**  
公營房屋 Public Housing  
約 About **18,480**

**樂活生活區 LOHAS Living**

最高地積比率 Maximum Total Plot Ratio

住宅地帶 Residential Zones **2.4-4** 混合用途 Mixed Use **4**

新增人口 New Population

約 About **24,100**

新增公私營房屋單位  
New Private and Public Housing Units

私人房屋 Private Housing  
約 About **4,280**  
公營房屋 Public Housing  
約 About **3,840**

**十八鄉 SHAP PAT HEUNG**

圖例 LEGEND

- 發展區 Development Area
- 研究範圍 Study Area

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Contract No. and Title  
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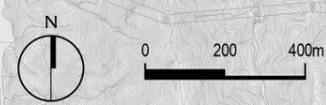
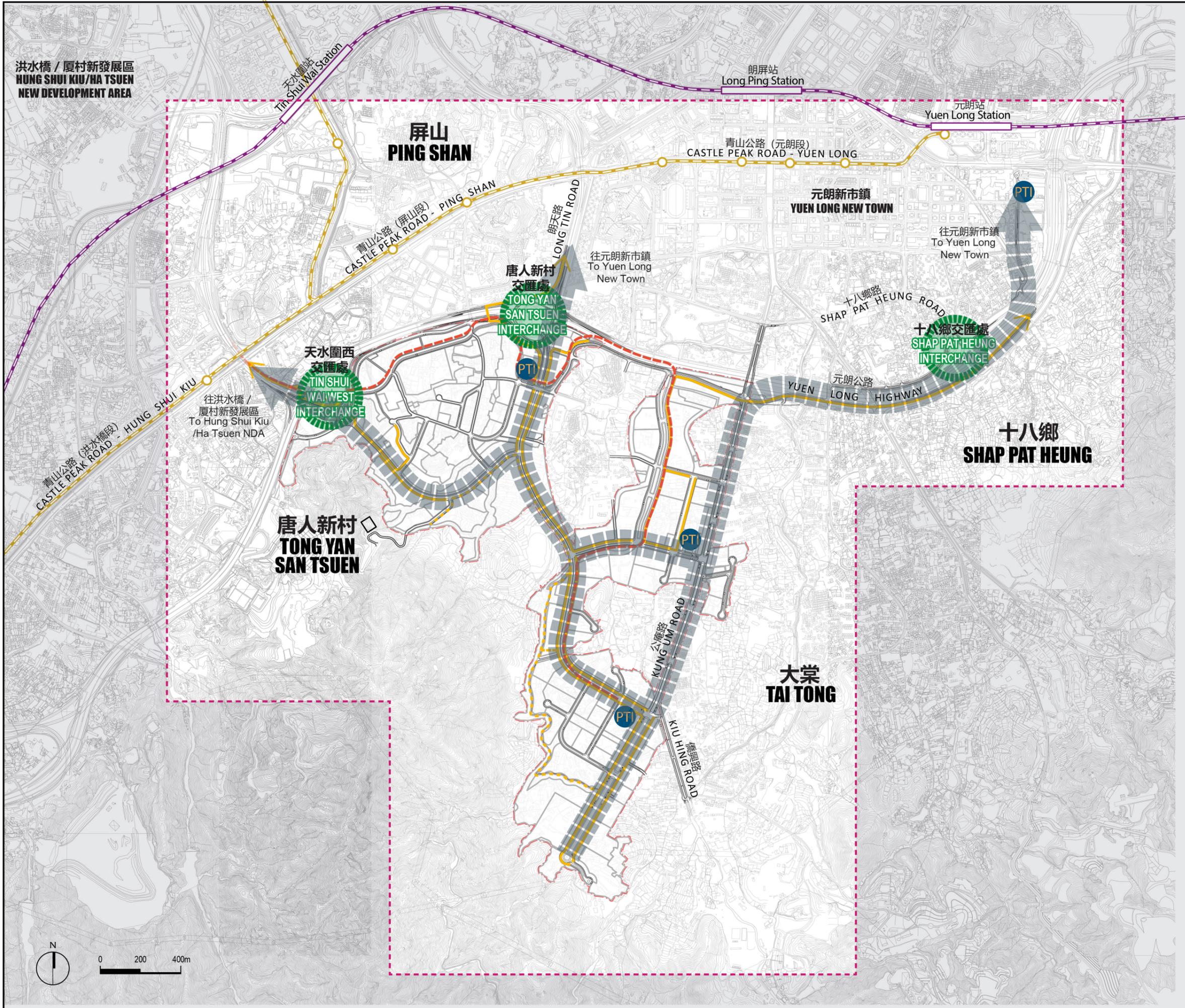
Drawing title

規劃區  
Planning Areas

Drawing no. 圖 Figure 4		Rev.	
Drawn	Date 20/04/2020	Checked	Approved
Scale 1:17500 on A3		Status FINAL	

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Drawing title 主要交通和行人連接 Key Traffic and Pedestrian Linkages			
Drawing no.	圖 Figure 5	Rev.	
Drawn	Date 20/04/2020	Checked	Approved
Scale 1:17500 on A3	Status		

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