

1. Introduction

- 1.1. This document summarises various technical considerations which are relevant to the future developments of the two Eco-tourism Nodes proposed in Tsim Bei Tsui (TBT) and Pak Nai (PN) within the Lau Fau Shan (LFS)/ TBT/ PN area (collectively known as LFS Area). The information provided is mainly based on the findings and results of the earlier “Land Use Review Study for Lau Fau Shan, Tsim Bei Tsui and Pak Nai Areas - Feasibility Study” jointly undertaken by the Civil Engineering and Development Department (CEDD) and the Planning Department (PlanD).
- 1.2. This document is intended to provide reference information for Interested Parties to prepare Expression of Interest (EOI) submissions for the development of Eco-tourism Nodes in TBT and PN.

2. Land Use Zonings

- 2.1.1. The LFS Area is currently covered by five Outline Zoning Plans (OZPs):
 - Approved Lau Fau Shan and Tsim Bei Tsui OZP No. S/YL-LFS/11
 - Approved Hung Shui Kiu and Ha Tsuen OZP No. S/HSK/2
 - Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12
 - Approved Sheung Pak Nai and Ha Pak Nai OZP No. S/YL-PN/9
 - Approved Tin Shui Wai OZP No. S/TSW/18
- 2.1.2. Most current land use zonings within the LFS Area reflect the existing rural character. The major statutory designations include “Green Belt”, “Village Type Development”, “Agriculture” and “Coastal Protection Area”. Furthermore, there are zones designated as “Recreation”, “Commercial/Residential”, various zonings related to residential uses, etc. A portion of the LFS Area falls within the Remaining Phase of Hung Shui Kiu/ Ha Tsuen New Development Area (HSK/HT NDA) and is primarily planned for residential developments. The area covers the zonings of “Residential (Group A)” and “Residential (Group B)”, with their respective sub-zones under the approved Hung Shui Kiu and Ha Tsuen OZP No. S/HSK/2.
- 2.1.3. Rezoning of the LFS Area based on the final recommendations of ongoing study “Development at Lau Fau Shan, Tsim Bei Tsui and Pak Nai Areas – Investigation” (Investigation Study) (also jointly commissioned by CEDD and PlanD) is anticipated to be undertaken between Q4 2026 to Q3 2027.

3. Geological Considerations

3.1. Topography

- 3.1.1. The existing ground levels within LFS Area range approximately from 0mPD to +120mPD, wherein majority of the areas having elevations between +5mPD to +50mPD. The northern portion of the Area near TBT features gently sloping ground interspersed with knolls, while the southern portion near PN is located at footslopes overlooked by northwest-facing natural terrain.

3.2. Superficial Geology

3.2.1. The area of TBT is underlain by deposits of Quaternary superficial deposits including alluvium (Qfa) of Fanling Formation and alluvium (Qca) of Chek Lap Kok Formation and minor extent of beach deposits (Qhb). Colluvium (Qcd) of Chek Lap Kok Formation and undifferentiated colluvium (Qd) are recorded concentrating near the locations of hilly terrain. On the other hand, the area of PN is characterised by extensive alluvium (Qfa) of Fanling Formation and alluvium (Qca) of Chek Lap Kok Formation. Additionally, beach deposits (Qhb), marine sand (Qhs) and backshore deposits (Qhbs) of Hang Hau Formation stretched along the coast of the PN Area.

3.3. Solid Geology

3.3.1. The solid geology in TBT consists of bedrock composed of fine-to medium-grained granite of Tsing Shan Granite (Jms_gfm), and fault bounded with Jurassic Tuen Mun Formation of Siu Hang Tsuen Mbr (Jus) to the south. Localised quartz veins trend along the regional fault system. In PN, the solid geology is similarly dominated by fine- to medium-grained granite from the Tsing Shan Granite (Jms_gfm).

3.4. Structural Geology

3.4.1. In terms of structural geology, the LFS Area is located within the Tuen Mun-Lo Wu Fault Zone, characterised by northeast-trending dislocations exhibiting both normal and reverse throws. These prominent, elongated, and curving faults are influenced by a smaller set of later structures that trend northwest. In TBT, two major faults (Deep Bay Fault and Yuen Tau Shan Fault) intersect, along with several northwest-trending faults, such as the Nam Sang Wai Fault. The Deep Bay Fault traverses the LFS Area along the offshore region of Deep Bay. The Deep Bay Fault intersects PN at the coast, while no major faults are recorded within PN.

4. Site Formation Consideration

4.1. Natural Terrain Hazards

4.1.1. Due to the hilly terrain and large elevation difference across the LFS Area, the natural terrains surrounding the proposed development sites in TBT and PN may present potential natural terrain hazards. Based on preliminary geotechnical and site formation assessment, no insurmountable technical issue is foreseen, with appropriate site formation design.

4.2. Existing Geotechnical Features

4.2.1. Existing geotechnical features (man-made or natural) may be impacted by the site formation works and/or natural terrain landslides (recent or relict). This could, in turn, influence the stability of the proposed site formation schemes. Therefore, it is essential to review the as-built records of these features.

4.3. Presence of Compressible Deposits

4.3.1. Pond deposits and estuarine deposits from ponds are expected to be present in certain local areas, as indicated by aerial photo interpretations dating back to 1963 and more recent aerial imagery. Particularly, pond deposits are locally recovered along existing nullah, west of Tin Shui Wai, which is near TBT, while

estuarine deposit can be found in both TBT and PN. The presence of compressible deposits may present a risk of long-term consolidation settlement if they are loaded during site formation activities. Total and differential settlement of the underlying materials could result in deformation or compromise the structural integrity of road pavements, utilities, retaining structures, and any low-rise buildings supported by shallow foundations. Additionally, negative skin friction will need to be considered for deep foundation designs, as this will reduce the foundation's capacity, necessitating an increase in the number of piles to compensate for this reduction. Furthermore, ground treatment options may be explored to mitigate the magnitude of settlement to the greatest extent possible.

5. Drainage Consideration

5.1. Drainage Catchment

- 5.1.1. The LFS Area falls into the catchment of “Yuen Long Extended Area” under the Review of Drainage Master Plans in Yuen Long and North District. There is no major drainage channel in the vicinity, but a number of smaller streams are scattered along the shoreline of Deep Bay and western water. The locations of streams in the vicinity are presented in below **Figure 1**.

Figure 1 Location of Streams in the Vicinity



(Source: Drainage Master Plans in Yuen Long and North District)

5.2. Flooding Risks

- 5.2.1. The initial results of the technical assessments indicate that the tidal effect is a dominating factor influencing the flood level.
- 5.2.2. In general, the existing drainage features in the vicinity should be retained as far as practicable. Subject to detailed assessment, upgrading works may be required. The proposed drainage system will be designed to capture and convey stormwater to nearby discharge points based on topography and the phasing plan. The discharge points are typically existing river channels and natural streams. The drainage routing will be developed to minimise any adverse impact to the existing drainage systems.

6. Sewerage Consideration

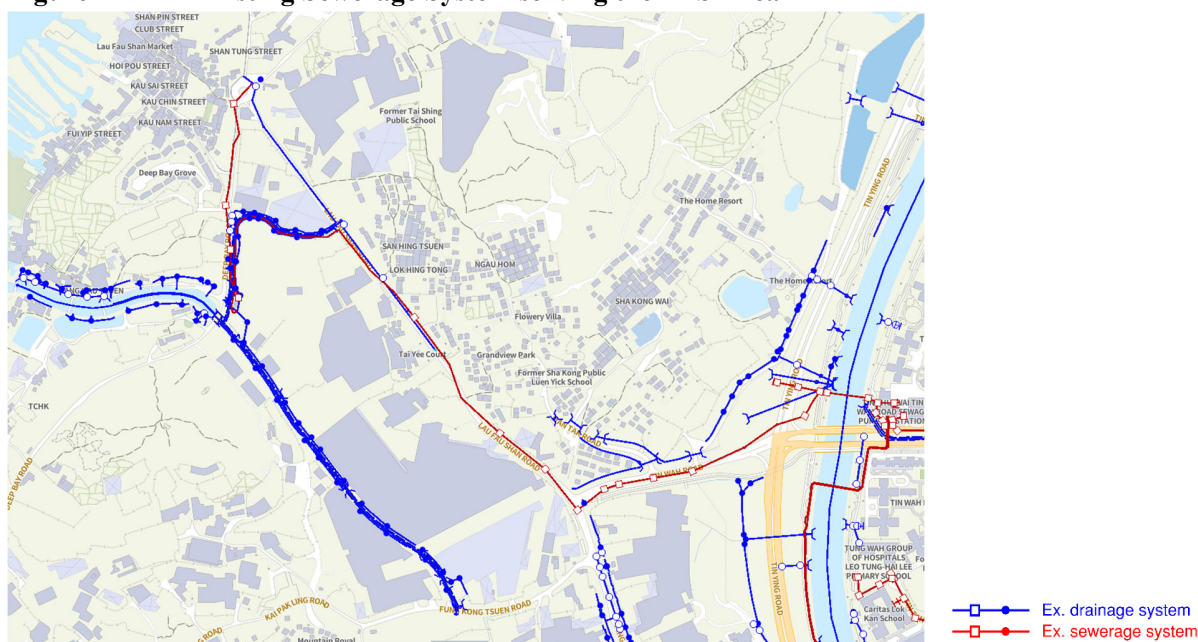
6.1. Existing and Planned Sewerage Treatment Works

- 6.1.1. The existing San Wai Sewage Treatment Works is located to the south of the LFS Area. The planned Hung Shui Kiu Effluent Polishing Plant is located in Hung Shui Kiu. Upon the completion of Hung Shui Kiu Effluent Polishing Plant, it will collect and treat the sewage generated from the population and development of HSK/HT NDA and other developments in the North West New Territories. The two combined will serve the anticipated demand generated by the TBT and PN Eco-tourism Nodes upon the anticipated completion of DBR in 2035.

6.2. Existing and Planned Sewerage System

- 6.2.1. The existing sewerage system serving the LFS Area starts off at Lau Fau Shan Road which continues to a sewage pumping station in Deep Bay Road and finally to San Wai Sewage Treatment Works in Hung Shui Kiu for treatment and disposal. Please see **Figure 2** below.

Figure 2 Existing Sewerage System serving the LFS Area



- 6.2.2. Subject to the assessment results and planning of LFS Area, a new sewerage system may be proposed for discharging sewage of the LFS Area to a new Effluent Polishing Plant.

7. Water Supply Consideration

7.1. Existing and Planned Water Supply Facilities

- 7.1.1. Fresh water for the LFS Area is currently being supplied by Tan Kwai Tsuen North Fresh Water Service Reservoir (FSWR), Wang Chau FWSR, Fung Kong Tsuen Fresh Water Tank (FWT) and Fung Kong Tsuen No.2 FWT. The proposed developments in the LFS Area would also be partly covered by the proposed Tan Kwai Tsuen East FWSR. The mentioned FWSRs and FWTs are being supplied by the Au Tau Water Treatment Works (WTW) and Ngau Tam Mei WTW.
- 7.1.2. There is currently no salt water supply to the LFS Area.
- 7.1.3. Subject to the assessment results and planning of the LFS Area, a fresh water and a flushing water service reservoir may be proposed to provide sufficient capacity for the developments of the LFS Area. Alternative water supply sources are also being reviewed to utilise the spare capacity of the existing and planned water infrastructures.

8. Traffic and Transport Considerations

8.1. General Road Network Proposed

- 8.1.1. Roads for the LFS Area have been planned, in accordance with principles of Transport Planning and Design Manual, in a hierarchy of Trunk Road (Kong Sham Western Highway), District Distributor Road (Deep Bay Road, Ting Ying Road, Tin Yuet Road, Lau Fau Shan Road, Ping Ha Road) and Local Distributor Road.

8.2. Local Road Network

Deep Bay Road

- 8.2.1. The planned upgrade of Deep Bay Road includes a development of a dual-2 lane carriageway at the busiest road section. At TBT, Deep Bay Road is proposed to be realigned to a ring road system. Road section leading to PN, including a northern section of Nim Wan Road, is designed to transition gradually to a single-4 lane carriageway in the southern direction.

- 8.2.2. A Green Transport Corridor between TBT and PN is being explored, with the vehicles therein assumed to run on share lanes or dedicated lanes.

Tin Yuet Road

- 8.2.3. Tin Yuet Road is proposed to be upgraded to a dual-2 lane carriageway, connecting with the internal access road at Sha Kong Wai North. The new connection would link up the LFS Area with Wetland Park Road, Tin Tsz Road, Long Tin Road, and ultimately to Yuen Long Highway.

Tin Wah Road

- 8.2.4. Tin Wah Road (section between Lau Fau Shan Road and Tin Ying Road) is proposed to be upgraded to a dual 2-lane carriageway.

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