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Replacement Pages of the Sewerage Impact Assessment

commission stage. As the contributing population would reach 1,1131, and the peaking factor should be taken as 2.5 in accordance to GESF, the peak flow is estimated to be 7,513.6m<sup>3</sup>/day.

- 3.2.2 Because of the constrain of the existing public sewer system mentioned in **Section 2.1.1**, an on-site STP is proposed to handle the sewage from the Proposed Development. The STP is located at the B1/F of the shopping arcade of the proposed development. As the effluent will be discharged through the public drainage system, the treatment level of the proposed STP will be set to be tertiary treatment. The treatment process is tentatively proposed to be membrane bioreactor and ultrafiltration. The WPCO license standards for private tertiary sewage treatment plant (for discharge into Deep Bay) will be adopted as the effluent discharge standard for the proposed STP as shown in Table 3-2.

*Table 3-2: Discharge Standards of the Effluent from Proposed STP*

PARAMETER	UNIT	Tertiary Effluent Standards (Upper Limit)
BOD <sub>5</sub>	mg/L	10
TSS	mg/L	10
TN	mg/L	20
TP	mg/L	2
Ammonia-N	mg/L	5
<i>E.Coli</i>	Counts/100 ml	100

- 3.2.3 The tentative schematic diagram of the proposed STP is presented in **Figure 3-1**. The sewage generated from the residential buildings and shopping arcade will be collected in sewage storage tank. After the pre-treatment process in fine screen and grit separator, primary treatment process in dissolved air floatation system, secondary treatment process in membrane bioreactor and lastly tertiary treatment process in ultrafiltration system, the sewage will be treated into effluent that can satisfy the discharge standards mentioned above. Whenever it is necessary, the effluent will undergo chlorine dosage in the effluent tank as additional disinfection measure to suppress the bacteria count before discharging.
- 3.2.4 The design capacity of the proposed STP is 4,930m<sup>3</sup>/day, which is 64% higher than the ADWF. The treatment demand between the design capacity and the peak flow will be covered by the 752m<sup>3</sup> sewerage storage tank, which can sustain 6 hours of ADWF and provide sufficient retention for the surplus sewage flow during the peak hours. The 64% excessive partition of design capacity over the ADWF will enable the rapid evacuation of the sewage storage tank during the non-peak hours and provide buffer to sustain the capacity loss due to the potential equipment damage.
- 3.2.5 As mentioned in Section 2.2.2, two separated discharge system will be constructed to connected the proposed STP to the public sewer system and drainage channel respectively. The location of the proposed STP and the alignment of the discharge system is shown in **Figure 3-2**. During the normal operation, the treated effluent will be pumped through the effluent discharge system from the effluent tank of the proposed STP to the drainage channel SUP1001474 along Sha Tau Kok Road at the site boundary. If the STP experience equipment failure and malfunction, the sewage storage tank can provide a 6-hour retention time for emergency response. If emergency discharge is found necessary, the untreated raw sewage in the sewage storage tank will be pumped through the emergency discharge system to sewer manhole FMH1003633 on Sha Tau Kok Road, and discharge to the public sewerage system after agreeing with DSD about the discharge quantity and discharge flow rate. The remaining portion of sewage that could not be covered by the available capacity of public sewerage system will be collected by sewage suction truck.

- 3.2.6 Extensive effort will be expedited to avoid the occurrence for emergency discharge. In order to achieve this, the design of STP and associated pumping system will be cautiously reviewed to include additional provisions including as follows:
- Design capacity of proposed STP has been set to be 4,930m<sup>3</sup>/day, which is 64% over the ADWF to sustain capacity loss due to potential equipment failure.
  - Sewage Storage tank or equivalent facility with capacity of 752m<sup>3</sup> storage volume will be equipped to the proposed STP to provide sufficient retention time for the emergency response action.
  - Standby pumps and treatment facilities would be provided in case of unexpected breakdown of pumping and treatment facilities such that the standby pumps and treatment facilities could take over and function to replace the broken pumps and treatment facilities;
  - Uninterruptible power supply system will be installed to protect the proposed STP from power shutdown.
  - Flow meter for pumps, level sensors for tanks, and gate valves for pipes shall be installed and connected with alarm signaling system to keep monitoring on flow rate of each treatment system to avoid overflow.
- 3.2.7 To provide a mechanism to minimize the impact of emergency discharges and facilitate subsequent management of any emergency, Emergency Response Plan and Efficient Handling Management System will be formulated prior to commissioning of STP during the detailed design stage to set out the emergency response procedures and actions to be followed in case of equipment or sewage treatment failure or malfunction. The quantity percentage of sewage that will be discharged through the emergency discharge system should also be estimated and achieved consent with DSD before the commissioning of STP. The Developer will be responsible for the operation of the STP and the mitigation measures to be carried out inside the STP per the contingency plan to be prepared and agreed with EPD, DSD and relevant parties. Regular maintenances and inspections to all treatment system, mechanical works and dosing system are necessary to maintain a good operation condition.
- 3.2.8 Referring to the Outline Zoning Plan No. S/NE-LYT/19 Section 7, the on-site sewage treatment facilities should preferably be connected back to public sewerage network once completion of the full upgrade of Shek Wu Hui Sewerage Treatment Works and with sufficient capacity to accommodate the additional flow. Once the public sewerage system underneath Sha Tau Kok Road is updated and sufficient available capacity can be provided for the direct discharge from the proposed development, the project team can explore the opportunity of turning the emergency discharge system into a conventional sewerage connection system to convey the sewage from the proposed development to sewer manhole FMH1003633.
- 3.2.9 With the provision of the tertiary level on-site STP, the treated effluent from the STP will be treated to satisfy the WPCO license standards for private tertiary sewage treatment plant (for discharge into Deep Bay) before discharging into the stormwater drainage system while the emergency discharge is through the existing public sewerage system and sewage suction truck. No adverse sewerage impact from the Proposed Development is anticipated.

## 4 CONCLUSION

- 4.1.1 It is proposed to develop the Site at various lots in D.D. 83, and the adjoining government land, Lung Yeuk Tau, New Territories, into proposed flat, shop and services and eating place. The Site is currently zoned “Residential (Group C)” (“R(C)”) and “Agriculture” (“AGR”) under the Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/19. This Sewerage Impact Assessment is carried out in order to support the Section 12A planning application for the Proposed Development.
- 4.1.2 The total estimated Average Daily Dry Weather (ADWF) flow from the Proposed Development is about 3,005.4 m<sup>3</sup>/day. An on-site Sewage Treatment Plant (“STP”) with the capacity of 4,930m<sup>3</sup>/day is proposed to handle the sewage arising from the Site. The effluent from the STP will be discharged to nearby stormwater drainage system and eventually reach Ng Tung River after tertiary treatment. And one additional discharge system will be connected to the public sewerage system serving as optional route for emergency discharge.
- 4.1.3 Overall, the sewerage analysis indicates that no unacceptable sewerage impact is anticipated with the provision of on-site STP and the proposed discharge arrangement.