

Appendix 1

Replacement pages of the
Sewerage Impact Assessment

- 3.1.5 The estimated daily flow and hourly flow from the proposed development will be 168.41m³/day and 42.10m³/hr, respectively. The calculations have been provided in [Appendix B](#) for reference.

3.2 Proposed Sewerage Treatment Plant

- 3.2.1 As the Site is not served by public sewer, it is required to provide their own sewerage treatment or disposal facilities to ensure sewerage can be discharged in a proper manner and hence to achieve the best protection to the public and the environment. The use of small Sewerage Treatment Plant (STP) with tertiary wastewater treatment technology is recommended to ensure the sewerage generated from the proposed development will be treated to acceptable level before discharge. The location of the proposed underground sewerage treatment plant is shown in [Figure 3.1](#) at level B2 of the proposed development. The detailed calculation of the size of STP is shown in [Appendix C](#).
- 3.2.2 The "Guidelines for the Design of Small Sewerage Treatment Plants" published by the EPD for the design, construction, operation, and maintenance of STP should be followed. The effluent quality should comply with the "Standards for effluents discharged into Group D inland waters" and the "Standards for effluents discharged into the coastal waters of Tolo and Port Shelter Water Control Zones" as specified in the "Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)". The discharge standards of the proposed STP shall adopt the higher standards of the above standards. The key parameters are summarised in Table 3.2.

Table 3.2 Key Parameters of Discharge Standards

Key Parameters	Standards for effluents discharged into Group D inland waters (for flow ≤ 200 m ³ /d)	Standards for effluents discharged into coastal waters of Tolo and Port Shelter Water Control Zones (for flow >10 and ≤ 200 m ³ /d)	Standards for effluents discharged into Group D inland waters (for flow >600 and ≤ 800 m ³ /d)	Standards for effluents discharged into coastal waters of Tolo and Port Shelter Water Control Zones (for flow >600 and ≤ 800 m ³ /d)	Discharge Standard for the Proposed Development
Biochemical Oxygen Demand BOD (mg/L)	20	20	20	20	20
Suspended Solids TSS (mg/L)	30	30	30	30	30
Ammonia Nitrogen NH ₃ -N (mg/L)	20	-	20	-	20
E.coli (count/100mL)	1000	1000	1000	1000	1000
Total Phosphorus TP (mg/L)	10	8	8	5	5
COD	80	80	80	80	80
Surfactants	15	15	15	15	15
Oil & grease	10	20	10	20	10
Total Nitrogen	-	20	-	15	15
Nitrate + Nitrite Nitrogen	50	-	30	-	30

Notes:

[i] All units in mg/L

[ii] All figures are upper limits

- 3.2.3 In order to fulfil the required discharge standards, the proposed STP will provide tertiary treatment and nitrogen, phosphorus removal treatment. The proposed STP will be equipped with biological treatment by Contact Aeration Process, Ultra Filtration System and Ultra Violet (UV) Sterilization. Furthermore, the treated sewerage from the Site will be discharged in accordance with the Water Pollution Control (General) Regulation. Therefore, no adverse water quality impact due to sewerage generation from the proposed development will be anticipated.
- 3.2.4 The treated sewerage and the drainage discharge from the site boundary will be discharged into the existing drainage system through DSD catchpit SCH1003542. Peak runoff is estimated to be 0.113m³/s, which exceeds the capacity of the drainage pipes, as shown in Appendix E. Upgrading works of the drainage system will be required to cater the treated sewerage and drainage discharge. **The lot owner shall effect the necessary modification/upgrading work of downstream drainage system.**
- 3.2.5 The treated sewage and drainage discharge from the site boundary will be directed into the existing drainage system via DSD catchpit SCH1003542, which connects to box culvert SBP1001645 and subsequently discharges into Tolo Harbour through box

culvert SBP100293. These two box culverts are linked by a channelized culvert passing through Villa Castell. No other beneficial uses of inland water were identified in the downstream receiving waters. The location of the downstream receiving water bodies is shown in [Figure 3.3](#).

3.3 Emergency Measures

- 3.3.1 Submersible pump, air blower, chemical dosing pump and submersible ejector will be provided with standby unit. An emergency generator will be provided in case electric power supply for whole system fails. As such, suspension of whole STP operation is rare under normal operation.
- 3.3.2 Regular preventive maintenance service will be provided to check operation condition of equipment and plan the repairing and replacement scheme for equipment and material of treatment system. An operation and maintenance manual will be prepared by the contractor and then the future operator should appoint competent technician(s) to operate the STP. The operator should be fully conversant with the recommended operating procedures as stipulated in the operation and maintenance manual.
- 3.3.3 In case of STP failure, raw sewerage will be temporarily stored in the equalization tank with volume to 2.19 hours retention time on peak flow, a 30.80m³ effective tank volume of equalization tank will be provided. The detailed design calculation as shown in [Appendix C](#). Real-time monitor will be provided to monitoring the sewerage flow. In the event of any emergency overflow, on-call crews will follow the overflow emergency response plan and proceed with the best response to correct the problem at once. For example, the alarm system will be activated once overflow occurs. The on-call crews will provide instant response by acknowledging the alarm, to investigate the cause of overflow and correct the problem. The alarm system will be repeated until it is acknowledged. In addition, the on-call crews will ensure the standby pump is switched on and contains the overflow sewage using temporary weirs or vacuum trucks, where applicable. Furthermore, tanker away service will be arranged immediately to draw away the sewerage from equalization tank to avoid flooding from treatment system.

3.4 Recommendation

- 3.4.1 Upon detailed design stage of the Project, the project proponent will appoint authorized Persons and consultant to design the STP. Detailed information of the proposed STP **and upgrading works of the public drainage system** will be prepared and submitted to EPD and DSD during the detailed design stage.



LEGEND

- Project Site
- Proposed Sewage Treatment Plant



Proposed Development of Hong Kong Sheng Kung Hui St. Christopher's Complex at the Remaining Portion of Taxlord Lot No. T77 In D.D.34. Tai Po

Location of the Proposed Sewage Treatment Plant

Figure 3.1

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