石湖墟污水处理厂
Shek Wu Hui Sewage Treatment Works

石湖墟污水处理厂占地约九万四公顷，是一座二级污水处理厂，处理约一亿二千五百人所产生的污水（每日流量为1,700立方米）。于一九八四年，石湖墟污水处理厂第一期在该赛前处理厂落成及启用，为二十二万人（每日流量为60,000立方米）服务。第二期工程于二零零一年底完成，可处理三十万人所产

石湖墟污水处理厂于二零零九年完成扩建工程，其污水流量已提升至每日93,000立方米。

Shek Wu Hui Sewage Treatment Works (Shek Wu Hui STW) is a secondary sewage treatment works. It occupies 9.4 hectares of land and serves a population of 300,000 in Sheung Shui and Fanling Districts, which produces 81,000 m³ of sewage per day.

The Sheung Shui and Fanling areas are new towns being developed. A pilot secondary sewage treatment plant was built in Shek Wu Hui in 1974 to handle sewage from a population of 12,500 (a flow of 1,700 m³ per day). The Stage I of Shek Wu Hui STW serving a population of 220,000 (a flow of 60,000 m³ per day) was commissioned in 1984. The Stage II of the STW serving a population of 300,000 (a flow of 80,000 m³ per day including the treated effluent from the Sheung Shui Slaughter House) was completed in end 2001. To cater for the population growth and extension of sewerage network, Shek Wu Hui STW has been expanded to a design flow of 93,000 m³ per day in early 2009.

Key Parameters of Treated Effluent

重要参数 (Key Parameters)

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<thead>
<tr>
<th>参数</th>
<th>排放标准 (Discharge Standards)</th>
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<tr>
<td>设计流量 (Design Flow)</td>
<td>每日93,000立方米 (m³/day)</td>
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<tr>
<td>总悬浮固体 (Total Suspended Solids)</td>
<td>≤30毫克/升 (mg/L)</td>
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<td>五天生化需氧量 (5-day Biochemical Oxygen Demand)</td>
<td>≤20毫克/升 (mg/L)</td>
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<td>氨氮 (Ammonia-Nitrogen)</td>
<td>≤2毫克/升 (mg/L)</td>
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<td>硝酸氮+亚硝酸氮 (Nitrate + Nitrite-Nitrogen)</td>
<td>≤12毫克/升 (mg/L)</td>
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<tr>
<td>大肠杆菌 (E. Coli)</td>
<td>≤1500个/100毫升 (Count/100mL)</td>
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To provide world-class wastewater and stormwater drainage services enabling the sustainable development of Hong Kong.
Sewage Treatment Process

Screening and Degritting
Sewage arriving at the Inlet Works is preliminarily treated by mechanical bar screens to remove solids exceeding 10mm. After screening, the sewage is directed to aerated grit channels for grit removal.

Primary Sedimentation
In primary sedimentation tanks, about 50% of the suspended solids in the preliminarily treated sewage are settled out and removed as primary sludge by sludge scraping mechanisms.

Secondary (Biological) Treatment
In aeration tanks, compressed air is fed continuously to provide oxygen essential to sustain the growth of micro-organisms (activated sludge), which will assimilate pollutants in the sewage. The retention time is about 12 hours.

Finally Sedimentation
Treated sewage and activated sludge are separated in the final sedimentation tanks. A controlled portion of the activated sludge is fed back to the aeration tank to maintain the adequate micro-organism population for biological treatment. The remaining portion (Surplus Activated Sludge, SAS) is thickened to reduce volume before treatment in the sludge digesters.

Sludge Digestion
The primary sludge and thickened SAS are pumped into sludge digesters for anaerobic digestion. Biogas containing methane, which is a renewal energy, is produced during the digestion.

Sludge Dewatering
Digested sludge is dewatered to a minimum dryness of 30% by filter presses to reduce water content and volume before landfill disposal.

Disinfection
After final sedimentation, effluent is disinfected by ultraviolet light and discharged to River Indus.

Environmental Protection
The treated effluent is discharged via River Indus to Deep Bay. To support the development on effluent reuse, part of the treated effluent is further polished for reuse inside the plant for operation and cleansing.

Biogas, containing methane, is produced during the anaerobic digestion process. It is used as fuel for a 330kW combined heat and power generation system installed in the STW. The rating is equivalent to the power consumption of 13,200 numbers of 25W energy efficient lamp. The electricity generated is consumed to operate the sewage treatment facilities.

The recovered thermal energy is used for pre-heating the recirculation water, which supplies the required heat input to the sludge digestion process. To act proactively in an environmental manner and to provide a better service to nearby residents, an odour management system with deodourizing facilities has been put into operation.