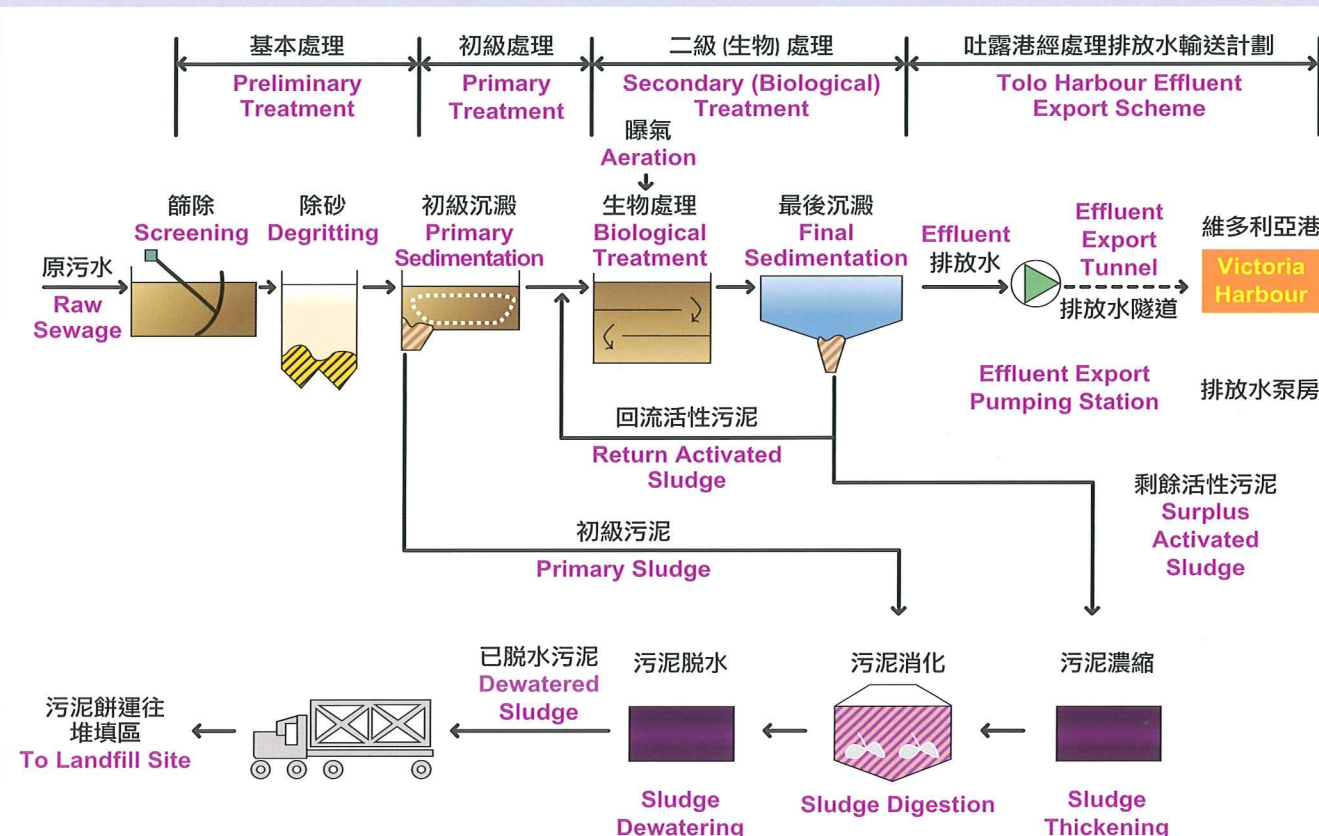


污水處理流程圖 Sewage Treatment Process Flowchart



經處理的排放水重要參數 Key Parameters of Treated Effluent

重要參數 (Key Parameters)	排放標準 (Discharge Standards)
設計流量 (Design Flow)	每日340,000立方米 (m ³ /day)
總懸浮固體 (Total Suspended Solids)	≤30毫克/升 (mg/L)
五天生化需氧量 (5-day Biochemical Oxygen Demand)	≤20毫克/升 (mg/L)
氨氮 (Ammonia-Nitrogen)	≤5毫克/升 (mg/L)
總氮 (Total Nitrogen)	≤20毫克/升 (mg/L)

沙田污水處理廠 Shatin Sewage Treatment Works

沙田污水處理廠佔地二十八公頃，是全港最大的二級污水處理廠，為沙田及馬鞍山區六十萬市民提供污水處理服務。現時每日的處理量達250 000立方米。

沙田污水處理廠於一九八二年落成啟用，當時的處理能力為每日100 000立方米，其後於一九八六年提升至每日200 000立方米，為了減少排放養份到吐露港，沙田污水處理廠於一九九一年在曝氣池內加建清除養份的設備，經改建後的處理能力因而減至每日150 000立方米。為應付沙田及馬鞍山一帶的人口持續增長，廠房第三期的擴建工程於二零零一年展開，部份已於二零零五年落成啟用。當餘下工程完成後，沙田污水處理廠每日可處理340 000立方米的污水。為了進一步改善排放水的水質，沙田污水處理廠會加裝紫外光消毒系統，預計在二零一零年完成啟用。

為增進市民對污水處理的認識，本廠內設有資訊中心，供學校團體、本地及海外專業人士及公眾參觀。

Shatin Sewage Treatment Works (Shatin STW) is the largest secondary sewage treatment works in Hong Kong. It occupies 28 hectares of land and serves a population of 600,000 in Shatin and Ma On Shan Districts, which produces 250,000 m³ of sewage per day.

Shatin STW was commissioned in 1982. The treatment capacity was 100,000 m³ per day and was later increased to 200,000 m³ per day in 1986. To reduce the discharge of nutrient into the Tolo Harbour, nutrient removal facilities were installed in the aeration tanks in 1991, which as a result reduced the treatment capacity to 150,000 m³ per day. To meet the continuous population growth in Shatin and Ma On Shan, the STW commenced the Stage III Extension in 2001 and part of the works were commissioned in 2005. The treatment capacity of the STW will be increased to 340,000 m³ per day after completion of the remaining works. In order to further improve the effluent quality, an ultraviolet disinfection system will be added in the STW in 2010.

The STW has an information centre which serves to enhance the communication with the public, students and professionals from both local and overseas institutions on sewage treatment in Hong Kong.



污水處理過程 Sewage Treatment Process

篩除及除砂

污水經污水輸送管道送到進水口，開始其基本污水處理程序。超過6毫米的固體廢物會首先被機械式的隔篩清除，而砂礫則在曝氣式沉砂槽沉澱。

Screening and Degritting

Sewage arriving at the Inlet Works is preliminarily treated by mechanical bar screens to remove solids exceeding 6 mm. After screening, the sewage is directed to aerated grit channels for grit removal.



初級沉澱

經基本處理後的污水進入初級沉澱池，大約百分之五十的懸浮固體會沉澱成為初級污泥，並由池底的刮板收集及帶走。

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.



二級(生物)處理

壓縮空氣不斷地輸送到曝氣池，為微生物(活性污泥)提供所需的氧氣，這些微生物會分解污水中的污染物。污水在曝氣池逗留大約九小時。

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 9 hours.



最後沉澱

經處理後的污水和活性污泥會在最後沉澱池內分隔出來。部分的活性污泥會回流到曝氣池以維持所需的微生物數量，剩餘的活性污泥則經濃縮後進入污泥消化缸作進一步的處理。

Final 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 adequate micro-organism population for biological treatment. The remaining portion (named as Surplus Activated Sludge, SAS) is thickened to reduce volume before treatment in the sludge digesters.



污泥消化

初級污泥連同濃縮後的過剩活性污泥會被泵至污泥消化缸進行厭氧消化程序。在厭氧消化的過程中會產生含有甲烷的生物氣體，此氣體是可再生能源。

Sludge Digestion

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



污泥脫水

消化後的污泥先以離心式脫水機來減低水分及體積才運往堆填區棄置，脫水後污泥的含固體量最少達百分之三十。

Sludge Dewatering

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



環境保護 Environmental Protection

吐露港經處理排放水輸送計劃是將大埔及沙田污水處理廠經二級處理後的排放水經直徑3.2米，長7.4公里的輸水隧道及啟德明渠輸送到維多利亞港排放，以協助解決八十年代吐露港的紅潮問題。自一九九八年計劃全面實施後，吐露港的水質有令人鼓舞的改善。

在厭氧消化過程中所產生的沼氣，用作燃料來發動兩部雙燃料發電機，產生電力和熱能供廠內使用。每部發電機可產生1 100千瓦電力，相等於四萬四千個25瓦特燈膽的耗電量。

為改善附近居民的生活環境及提供更優質的服務，本廠安裝了一系列辟味設施，以配合已實施的氣味管理系統。

隨著第三期擴建工程的進行，廠內亦提供了更多的綠化環境。

Tolo Harbour Effluent Export Scheme (THEES) helps to solve the red-tide problem in Tolo Harbour in the 80's by conveying the treated effluent from Tai Po and Shatin STW to Victoria Harbour via a 3.2 m diameter, 7.4 km long tunnel and Kai Tak Nullah. The water quality in Tolo Harbour has shown encouraging signs of improvement since the full implementation of the scheme in 1998.

Biogas, containing methane, is produced during the anaerobic digestion. It is used in the two dual fuel generators to produce electricity and heat for plant operation. Each generator has a capacity of 1,100 kW, which is equivalent to the power consumption of 44,000 numbers of 25W lamp.

To act proactively in an environmental manner and to provide a better service to the nearby residents, an odour management system with deodourizing facilities has been put into operation.

With the Stage III Extension, more planting has been provided in the STW.