渠務署
Drainage Services Department

大嶼山及離島區的小型污水處理設施

Small Sewage Treatment Facilities on Lantau Island and Outlying Islands

市民於離島區所產生的污水會經處理後才排放出附近的水域。在南大嶼山及離島，政府建造及操作12間小型污水處理廠，為大約五萬市民提供污水處理服務。有了這些污水收集及處理設施，附近社區的環境及公眾泳灘的水質便得以保持。

Sewage produced in communities on Outlying Islands are treated before discharge into nearby receiving waters. In South Lantau Island and other Outlying Islands, we constructed and operate 12 small sewage treatment plants providing sewage treatment services to a total population of about 50,000. With these sewage collection and treatment facilities we provide a safe environment for the community and help maintain the quality of the public bathing beaches.

我們的抱負 Our Vision

提供世界級的污水和雨水處理排放服務，以促進香港的可持續發展。

To provide world-class wastewater and stormwater drainage services enabling the sustainable development of Hong Kong.

污水處理過程 Sewage Treatment Process

在南大嶼山較偏遠的地方及離島的小型污水處理廠，主要應用以下的污水處理程序:

- 迴旋氧化槽
- 生物轉盤
- 順序分批式反應器缸

The sewage treatment processes commonly adopted in small sewage treatment plants in remote areas of South Lantau Island and other Outlying Islands are listed below:

- Oxidation Ditch
- Rotating Biological Contactor
- Sequencing Batch Reactor

迴旋氧化槽

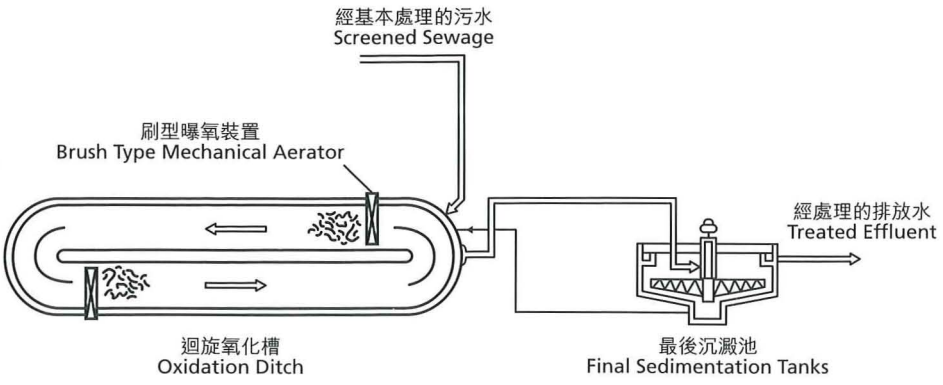
此污水處理程序主要應用於梅窩及喜靈洲污水處理廠。迴旋氧化槽是活性污泥法的一種，它是一種首尾相連的迴圈流曝氣溝渠，污水流入溝渠中得到淨化。迴旋氧化槽設置刷型的曝氣裝置提供氧氣及帶動水流前進，使微生物在污水中處於懸浮狀態、迴圈流動及充分混合，分解水中污染物。

Oxidation Ditch (OD)

This sewage treatment process is used in Mui Wo and Hei Ling Chau STW. The OD is a modified form of the activated sludge system. It is an elongated closed loop resembling a racetrack equipped with aeration equipment called a rotor. Sewage is treated in the loop. The rotating of the rotor entrains oxygen for the growth of micro-organisms and maintains the flow velocity. This fosters the mixing process and keeps the micro-organisms in suspension for assimilating the pollutants.

梅窩迴旋氧化槽廠
Overview of Mui Wo Oxidation Ditch

迴旋氧化槽廠示意圖
Schematic of the Oxidation Ditch



生物轉盤

此污水處理程序主要應用於麻埔坪、石壁及喜靈洲污水處理廠。生物轉盤屬於二級(生物)處理程序。轉盤包括一組圓形碟片和一個同它配合的半圓形水槽。碟片多採用塑膠材料製造，以供生物膜附着生長。生物轉盤會不停在水槽中轉動，當生物膜浸沒於污水時，便會對污水中的有機污染物進行分解，而當生物膜暴露在空氣時，生物膜便會從空氣中吸取氧氣，以供微生物生長。

Rotating Biological Contactor (RBC)

This sewage treatment process is used in Ma Po Ping, Shek Pik and Hei Ling Chau STW. A rotating biological contactor is a type of secondary (biological) treatment process. It consists of a series of closely spaced plastic discs as media for attached growth micro-organisms (biofilm). The discs are mounted on a rotating shaft which is supported just above the corresponding channel. Micro-organisms grow on the surface of the discs where biological degradation of the pollutants takes place. Aeration is provided by the rotating action, which exposes the biofilm to the air after contacting them with the sewage, facilitating the degradation of the pollutants.

麻埔坪生物轉盤廠
Overview of the Ma Po Ping RBC

生物轉盤廠
Overview of an RBC plant

生物轉盤示意圖
Schematic Diagram of RBC

順序分批式反應器缸

此污水處理過程主要應用於芝麻灣、芝新、麻埔坪、沙咀、喜靈洲及坪洲污水處理廠。此外，位於昂坪的首間備有污水循環再造設施的三級污水處理廠亦同樣採用順序分批式反應器缸。

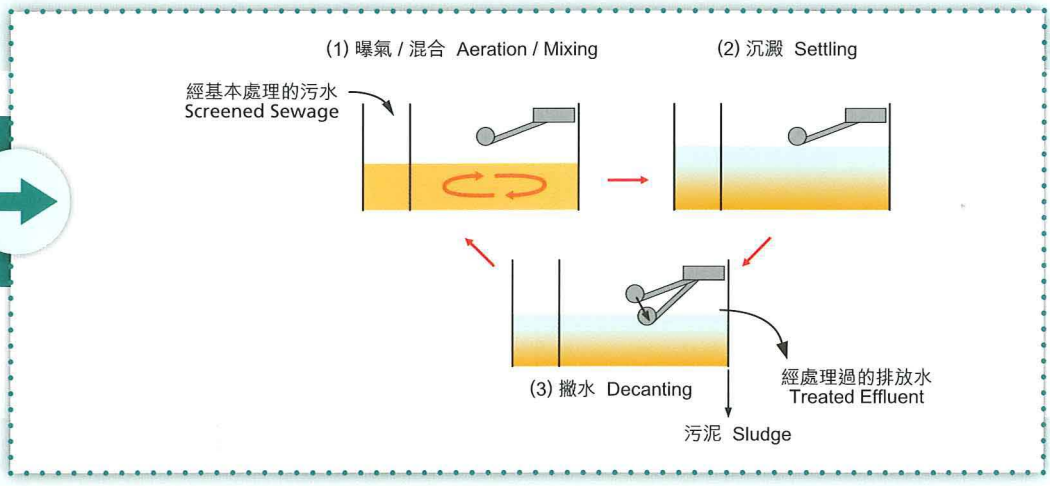
順序分批式反應器缸是一個融合注入和抽取過程的活性污泥處理系統，其運作模式分成曝氣 / 混合、沉澱及撇水三個時段。而系統內每一個儲水缸都會在獨立時段注入污水。當系統進入曝氣 / 混合時段時，缸內會進行混合和曝氣，保持污水中的溶解氧含量，以維持微生物的生長。隨後，污水及微生物便會在沉澱時段藉沉澱方法分開。處理後的排放水會抽離反應器缸。在沙咀及喜靈洲的新式順序分批式反應器缸，更可不斷處理流入的污水和流出排放水。

Sequencing Batch Reactor (SBR)

This sewage treatment process is used in Chi Ma Wan, Chi Sun, Ma Po Ping, Sha Tsui, Hei Ling Chau, and Peng Chau STP. It is also used in Ngong Ping Sewage Treatment Works, the first tertiary STW with reclaimed water facility.

The SBR is a fill-and-draw activated sludge treatment system. The operation of the SBR, consists of three distinct periods, AERATION/MIXING, SETTLING and DECANTING. Each tank in the SBR system is filled during a discrete period of time. During aeration/mixing period, mixing and aeration are carried out in the tank to maintain a certain level of dissolved oxygen for the growth of micro-organisms. Following the aeration/mixing period, the sewage together with the micro-organisms are allowed to separate by sedimentation. The treated effluent is subsequently drawn from the reactor by decanting. For the new SBRs at Sha Tsui and Hei Ling Chau, treatment of influent and discharge of treated effluent are continuous.

順序分批式反應器缸的運作
Operation of SBR



環境保護 Environmental Protection

污水含有多種與水傳人類腸臟疾病有關的微生物。經過二級污水處理後，排放水會被紫外光消毒，然後經海底管道排放。

有賴這些污水收集及處理設施，附近社區的生活環境才得以改善，而公眾泳灘的水質亦可維持在良好的水平。

Sewage contains many types of human enteric organisms associated with various water borne diseases. After secondary treatment, treated effluent is disinfected by ultraviolet light before discharge via submarine outfalls.

These sewage treatment facilities can improve living environment for the community and help maintain good water quality in nearby public bathing beaches.

公眾泳灘 Public Bathing Beaches

1 洪聖爺灣泳灘
Hung Shing Yeh Beach

2 蘆鬚城泳灘
Lo So Shing Beach

3 長洲東灣泳灘
Cheung Chau Tung Wan Beach

4 觀音灣泳灘
Kwun Yam Beach

5 愉景灣
Discovery Bay

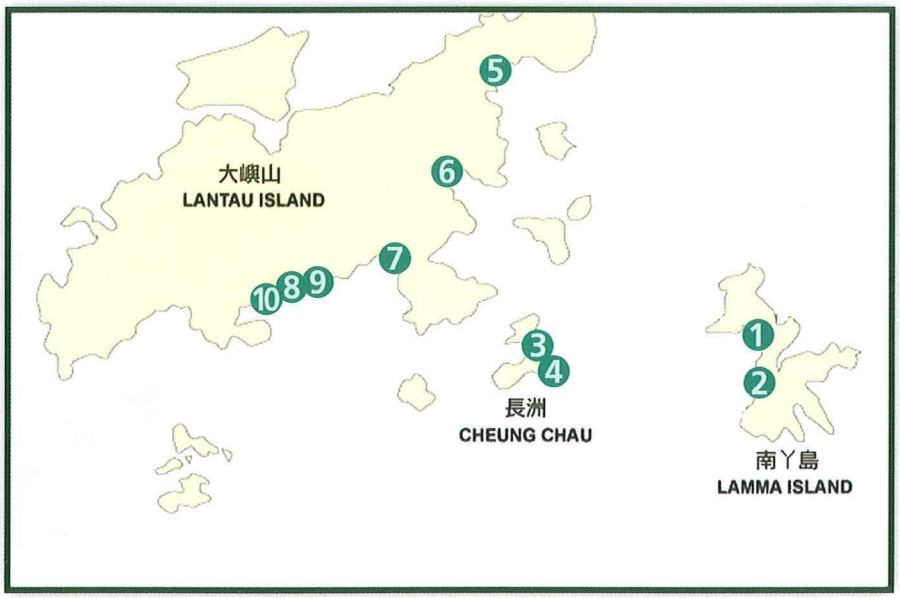
6 銀礦灣泳灘
Silver Mine Bay Beach

7 貝澳泳灘
Pui O Bay Beach

8 下長沙泳灘
Lower Cheung Sha Beach

9 上長沙泳灘
Upper Cheung Sha Beach

10 塘福泳灘
Tong Fuk Beach



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

To act proactively in an environmental manner and to provide a better service to nearby residents, odour management system with deodourizing facilities have been put into operation in these sewage treatment works.

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

污水處理廠 Sewage Treatment Plants	處理程序 Treatment Process (1)	排放標準 Discharge Standards		
		設計流量 (立方米/每日) Design Flow (m^3/day)	TSS(2) (mg/L)	BOD(3) (mg/L)
芝麻灣懲教所 Chi Ma Wan CI	SBR	350	≤30	≤20
芝新懲教所 Chi Sun CI	SBR	210	≤30	≤20
麻埔坪監獄 Ma Po Ping Prison	RBC / SBR	600	≤30	≤20
梅窩 Mui Wo	OD	1,190	≤30	≤20
沙咀 Sha Tsui	SBR	183	≤30	≤20
石壁監獄 Shek Pik Prison	RBC	790	≤30	≤20
喜靈洲戒毒所 Hei Ling Chau Annex	SBR	100	≤30	≤20
喜靈洲勵新懲教所 Hei Ling Chau LSCI	SBR	761	≤30	≤20
喜靈洲氧化槽廠 Hei Ling Chau OD	OD	900	≤30	≤20
喜靈洲生物轉盤廠 Hei Ling Chau RBC	RBC	177	≤30	≤20
洪聖爺灣石濾池 Hung Shing Ye Beach	TF	170	≤30	≤20
坪洲 Peng Chau	SBR	1,580	≤30	≤20

Notes:

(1) TF 滴濾池 Trickling Filter
RBC 生物轉盤 Rotating Biological Contactor
OD 迴旋氧化槽 Oxidation Ditch
SBR 順序分批式反應器缸 Sequencing Batch Reactor
(2) TSS 總懸浮固體量 Total Suspended Solids
(3) BOD 五天生化需氧量 5-day Biochemical Oxygen Demand

渠務署 Drainage Services Department

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