Siu Ho Wan Water Treatment Works (ENG) Leaflet

Treatment Process
in Siu Ho Wan Water Treatment Works

Raw Water
Raw Water Inlet Chamber
Carbon Contact Chambers
Rapid Mix Tanks
Flocculation Tanks
Bypass
Sedimentation Basins (multiple-tray tanks)
Filters
Washwater Recycle Flocculation

Washwater Recycle
Washwater Equalization Tanks
Final Stage Chlorine Contact Tanks and Clearwell
Treated Water Pumping Station
Primary Service Reservoir
To Distribution System
Sludge Cake Disposal
Filter Press
Sludge Thickeners

Siu Ho Wan
Water Treatment Works
1. Introduction

Siu Ho Wan Water Treatment Works is a key component of the permanent system to supply water to the Hong Kong International Airport, the residential developments at Tung Chung, Tai Ho and the Discovery Bay, the Hong Kong Disneyland Resort and the port developments in North Lantau. In view of its strategic importance, two raw water sources have been planned for the Siu Ho Wan Water Treatment Works. The primary source is Tai Lam Chung Reservoir. Raw water is delivered via 9km long 1800mm diameter submarine and land mains to the treatment works. There is also a
back-up source of supply from the Shek Pik Reservoir via a 7km long tunnel and a pumping station.

Construction of the treatment works commenced in December 1993 and was completed in November 1996. The treatment works was constructed to a capacity of 150,000 cubic metres per day. Allowance has however been made in the design for expansion to an ultimate capacity of 300,000 cubic metres per day. The construction cost is in the order of HK$500 million.

2. Chemical Facilities
The various chemical systems are designed for the Ultimate Stage capacity of 300,000 cubic metres. Alum, Chlorine and Lime systems have 90-day supply capacities. Separate polymer systems are provided for coagulation, filtration and sludge treatment purposes.

3. Sedimentation Process
The multiple-tray tanks are conventional horizontal-flow tanks but constructed in the form of a structure of three trays. These operate with the flow entering the lower level and flowing up to top level, with the outlet above the inlet. As area is such an important factor in settling, multiple-tray tanks are remarkably cost-effective. Sludge removal is performed with a chain mounted flight scraper as most of the deposits form at the inlet end of the first tray.

4. Sludge Treatment
Sludge Thickening is undertaken in circular gravity, thickeners prior to sludge conditioning and feed to plate presses. Each press is of the membrane multi-chamber plate type designed to dewater a 3-6% feed sludge to a 30% plus cake, using lime and polymer to aid the dewatering process. The press feeding, dewatering and cake discharging functions are fully automated under local operator control.

5. SCADA/Telemetry System
A SCADA/Telemetry system monitors and controls plant status through Local Control Panels and Outstations. The Central Control Room is equipped with consoles to monitor and control the Raw Water Pumping Station, Treated Water Pumping
Station and the treatment works. The Sludge Treatment Plant operates under Area Control.

6. Contact Tank and Clear Water Tank
The Contact Tank enables Chlorine, Lime and Fluoride to be added prior to distribution via the Clear Water Tank and Treated Water Pumping Station.

Siu Ho Wan
Water Treatment Works
Layout Plan

Chlorine House
Filter Gallery
Contact Tank and Clear Water Tank
Entrance Guard House
North Lantau Expressway
Cheung Tung Road
Chemical House
Dewatering Building
Sludge Thickeners
Washwater Equalization Tanks
Laboratory
Sedimentation Tank
Administration Building
Raw Water Pumping Station

Water Supplies Department
24-hour Telephone Enquiry Hotline: 2824 5000
Web Site Address: http://www.wsd.gov.hk
E-Mail: wsdinfo@wsd.gov.hk