

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

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