

Chemical  
Building

Dewatering  
Building

Sludge  
Thickening  
Tanks

Laboratory

To Ma On Shan

Sedimentation  
Basins

Filters

Raw Water  
Inlet

Pumping  
Station

Administration  
Building

Washwater  
Tanks

# Ma On Shan

Water Treatment Works



Ma On Shan Water Treatment Works provides a treated water supply to Sha Tin and Ma On Shan areas. It was first commissioned in March 1997 with a treated water output of 227,000 cubic meters per day. Ma On Shan Water Treatment works is a **state-of-the-art water treatment works in Hong Kong**. The entire treatment works makes optimum use of the limited land available, incorporating specially designed landscaping features to blend with the natural environment. Most of the units are closely located and three-layered sedimentation basins are adopted. To enhance efficiency, a sophisticated "Supervisory Control and Data Acquisition" (SCADA) system is provided for automatic plant operation, monitoring and control.



# 1 Raw Water

The raw water treated by the Ma On Shan Water Treatment Works comes from Plover Cove Reservoir and High Island Reservoir.



# 2 Mixing

Incoming raw water is dosed at the Carbon Contact Chambers and Rapid Mix Tanks with the following chemicals as needed:

- Hydrated Lime — to adjust the the alkalinity of the raw material
- Chlorine — to suppress the proliferation of algae
- Alum — to coagulate impurities
- Powered Activated Carbon (PAC) — to remove tastes and odours
- Polyelectrolyte — to assist the coagulation and flocculation of impurities
- Potassium Permanganate — to remove manganese in water



# 3 Flocculation and Sedimentation

After mixing, water is passed to the flocculation tanks where coagulation and flocculation of the impurities in the water occur. With the aid of dissolved alum, the impurities coagulate into large particles which settle as sludge in the sedimentation basins. The sludge is collected and conveyed to sludge thickening tanks for further treatment before disposal.



# 4 Rapid Gravity Filtration

Water from the sedimentation basins flows to the constant rate rapid gravity dual media (sand/ anthracite) filters for removal of the more finely divided suspensions (floc particles). Periodically the filter beds are cleaned by backwashing with compressed air and then water.



# 5 Clear Water Tanks

Chlorine and lime are dosed into the contact tanks to disinfect and control the alkalinity of the treated water. Fluoride is dosed for dental protection. The treated water is stored in the clear water tank, then it is pumped to service reservoirs for distribution to the consumers.



# 6 Pumping Facilities

The pumping station in Ma On Shan Water Treatment Works has 5 pumps with a pumping capacity of 285,000 cubic meters per day.

# 7 Environmental-friendly Facilities

The washwater equalisation tanks collect the filter backwash water for recycling after combining with raw water. Sludge produced in the treatment works is thickened by two circular gravity thickeners using polyelectrolyte as coagulant in the sludge thickening tanks. Thickened sludge is pressed by filter press into cakes for disposal at landfill sites.



# 8 Water Quality Control

The quality of water is closely monitored by means of chemical, bacteriological and biological examinations of water samples taken from treatment works and throughout the supply system to ensure its compliance with the Guidelines for Drinking-water Quality recommended by the World Health Organization.



## The Water Treatment Process

