

Ngau Tam Mei Water Treatment Works (English) Leaflet

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Ngau Tam Mei Water Treatment Works provides a treated water supply to Yuen Long, Tin Shui Wai, Ngau Tam Mei, San Tin and Mai Po areas. It was first commissioned in 2000 with a treated water output of 230,000 cubic metres per day with provision for future expansion to 450, 000 cubic metres per day.

Special Features

The water treatment works is a state-of-the-art treatment works in Hong Kong. It incorporates the most advanced treatment technologies including the first use in Hong Kong of Granular Activated Carbon (GAC) biological filters enhanced by ozonation in the treatment process. The project makes optimum use of the limited land available, incorporating specially designed landscaping features to blend with the natural environment. The treatment works only occupies 12 hectares, most of the units are closely located and triple-deck sedimentation tanks are adopted.

The plant gained the prestigious “Superior Achievement Award” from the American Academy of Environmental Engineers (AAEE) in 2001. The project scored the highest among all entrants in all six categories including design, planning, research, operations/management. It was also the first time that a design project outside the USA has won the top award from AAEE.

Water Treatment Process Diagram

(Words in the diagram)

Raw Water
Ozone
Preliminary Ozone Contact Tanks
Hydrated Lime
Carbon Contact Basins
Alum
Rapid Mix Tanks
Flocculation Basins
Triple-deck Sedimentation Tanks
Ozone
Intermediate Ozone Contact Tanks
First Stage Bio-filters
Second Stage Bio-filters
Fluoride

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

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1. Raw Water

The raw water treated by the Ngau Tam Mei Water Treatment Works comes from Dongjiang water of Guangdong.

2. Pre-ozonation and Mixing

The raw water is first ozonated in the pre-ozone contact tanks to partially oxidise the impurities, control algae growth and remove taste and odour. The pre-ozonated water is then dosed at the inlet basins and rapid mix tanks with the following chemicals:

Hydrated Lime:	to pre-condition the water pH prior to addition of alum
Alum:	to coagulate impurities

Facilities are also available to dose powdered activated carbon and polyelectrolyte for further control of taste and odour and for aiding the coagulation and flocculation of impurities respectively.

3. Flocculation and Sedimentation

After mixing, water is passed to the flocculation basins where coagulated impurities aggregate into large particles and settle as sludge in the triple-deck sedimentation basins. The sludge is collected and conveyed to sludge thickening tanks for further treatment.

4. Intermediate Ozonation and Biological Filtration

The settled water from the sedimentation basins flows to the intermediate ozone contact tanks for oxidation of remaining impurities, enrichment of dissolved oxygen

as well as for primary disinfection.

The intermediate ozonated water flows to the first stage bio-filters for removal of the more finely divided particles and for partial removal of ammonia and organic matter. Periodically the filter beds are cleaned by backwashing with compressed air and water.

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The filtered water is then passed through the second stage biological filters containing GAC for biological removal of ammonia and organic matter. Facilities are available to dose nutrient chemicals to maintain the biological activity in the filter beds.

5. Clear Water Tanks

Chlorine and hydrated lime are dosed into the biologically treated water in the contact tanks for disinfection and increasing the alkalinity of the treated water for corrosion control respectively. Fluoride is dosed for dental protection. The treated water is stored in the clear water tanks and then is pumped to the primary service reservoir for distribution to the consumers.

6. Pumping Facilities

The treated water pumping station in Ngau Tam Mei Water Treatment Works has four treated water pumps with a pumping capacity of 307,200 m³/day.

7. Environmental-friendly Facilities

Environmental protection measures are taken to reduce waste. The washwater equalization tanks collect the filter backwash water for recycling after combining with raw water. Sludge produced in the water treatment works is thickened in the sludge thickeners using polyelectrolyte as flocculant. Thickened sludge is pressed by filter membrane-type press into cakes for disposal at landfill sites.

Water Quality Control

The quality of water is closely monitored by means of chemical, bacteriological and biological examinations of water samples taken to ensure compliance with the Guidelines for Drinking Water Quality recommended by the World Health Organization, and to ensure a safe and wholesome potable supply.

Ngau Tam Mei Water Treatment Works Layout Plan

(Words in the layout plan)

Sedimentation Tanks

Filters

Treated Water Pumping Station

Washwater Equalization Tanks

China Light & Power Sub-station

Surge Tanks

Alum Saturation Tanks

Chemical Building

Administration Building

Liquid Oxygen Tanks

Ozone Building

Sludge Thickeners

Filter Media Storage House

Chlorine Building

Dewatering Building

Maintenance Storage Building

Raw Water Pumping Station

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