



Caring for  
our  
**harbour**



# What's HATS?



Harbour Area Treatment Scheme (HATS) is a major Government infrastructure project in Hong Kong. It is being implemented in stages to combat water pollution caused by urban development around Victoria Harbour. HATS Stage 1 was commissioned in December 2001 providing treatment to about 75% of sewage from urban areas around the harbour, significantly improving water quality to the eastern and central parts of our harbour. HATS Stage 2 will be implemented in two phases, Stage 2A and Stage 2B. Stage 2A will provide treatment to the remaining 25% of sewage from the northern and southwestern parts of Hong Kong Island. In addition, a disinfection facility will be installed to further improve the quality of the harbour waters, making it possible to re-open the Tsuen Wan beaches. Stage 2B will provide further biological treatment to the sewage. A review will be carried out in 2010/2011 to determine the time table of implementation of HATS Stage 2B. The full commissioning of HATS can ensure the long term sustainable development of the harbour area.

Stonecutters Island Sewage Treatment Works



# Government's commitment

Remarkable water quality improvements have been seen at the central and eastern areas of the harbour since the commissioning of HATS Stage 1. We are now ready to move forward. We will improve the water quality of the western harbour and prepare for future development and population growth.

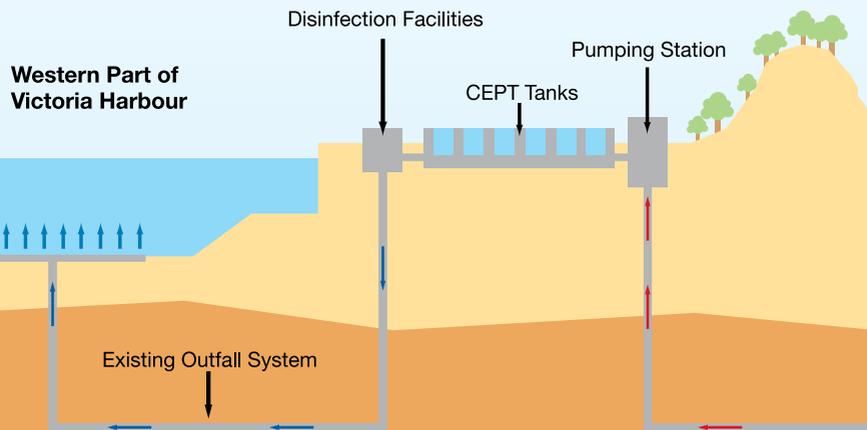


The Government is committed to improving the water quality and the environment of the harbour area. Our goal is to implement a fully integrated system that will collect and treat all of our wastewater from the harbour area in an efficient, effective and environmentally sustainable manner. This undertaking is of mega proportions but entirely appropriate to our aspirations for Hong Kong – "Asia's World City".

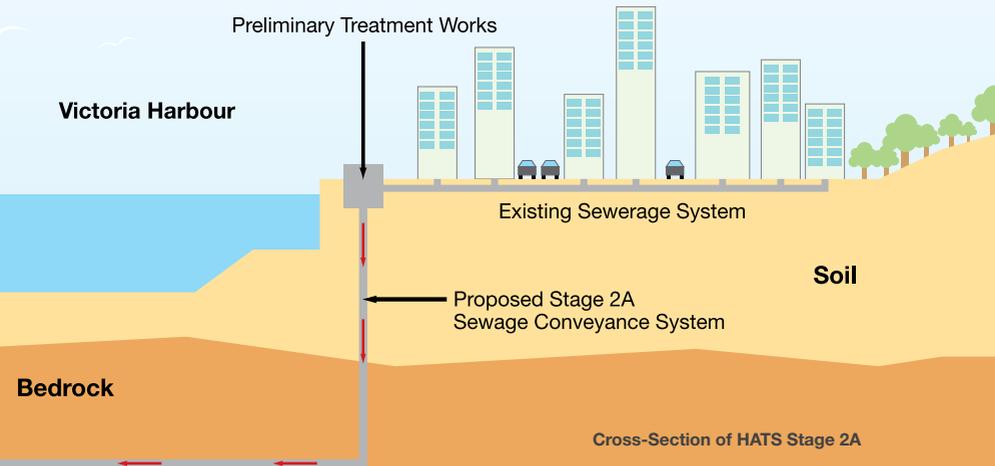


Overall Layout of HATS

## Stonecutters Island Sewage Treatment Works



## Hong Kong Island



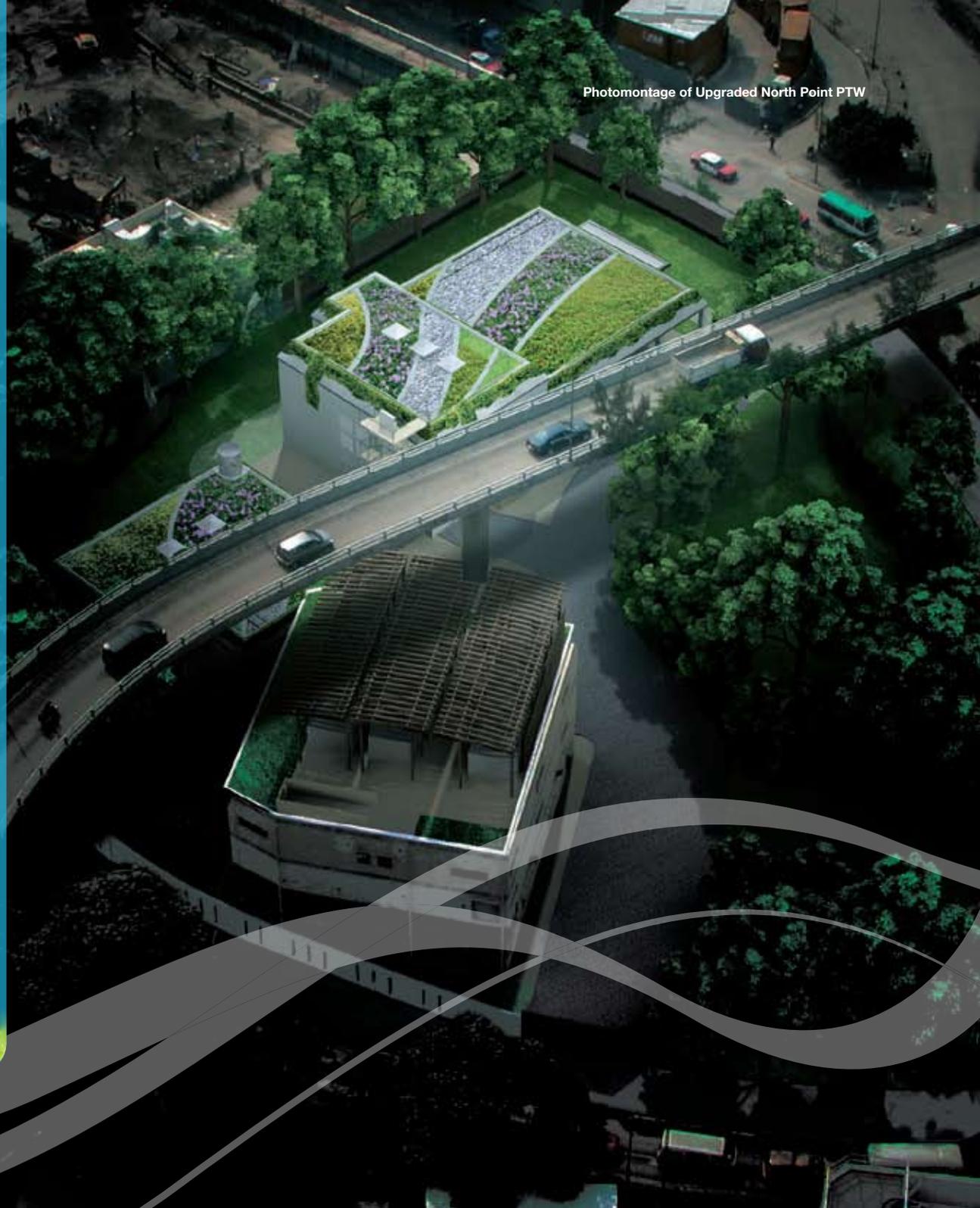
# What's next?

## Upgrading of existing preliminary treatment works

Sewage must be preliminarily treated to remove large solids and grit to avoid deposition in the deep tunnels and to protect downstream facilities from damage or blockage. The existing eight preliminary treatment works (PTW) at North Point, Wan Chai East, Central, Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau will be upgraded. As some of these PTWs have been in use for more than 20 years, their capacities and facilities need to be upgraded to cater for the technical requirements of HATS Stage 2A and population growth and development around the Island. In addition, professional architects and landscaping specialists will be engaged to improve the aesthetics of the PTW. Engineers will also be deployed to work out state of the art systems that will ensure an odour free environment. Both will bring lasting benefits to nearby residents.



Photomontage of Upgraded North Point PTW



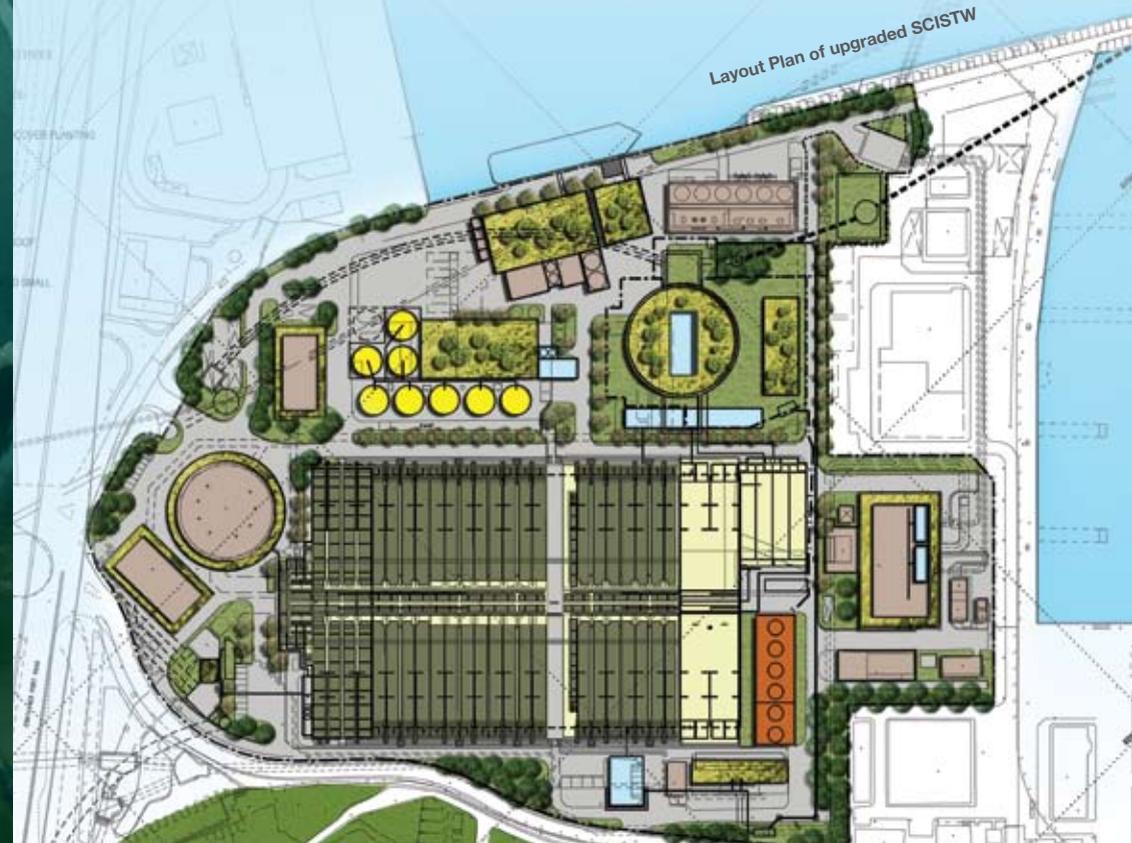
## Sewage Conveyance System

The HATS Stage 2A Sewage Conveyance System (SCS) will comprise a network of tunnels. Vertical shafts connected to the tunnels will collect sewage from the eight PTWs and convey it to Stonecutters Island Sewage Treatment Works. There will be 21km of deep tunnels ranging in diameter from 900mm to 3m. Tunnelling greatly reduces the disturbance to road traffic compared with open trench methods. To ensure that future land development above the tunnel is not significantly constrained, the tunnels are designed to have at least 30m of bedrock cover at depths of 70m to 160m below sea level. The deep tunnel concept was reviewed and endorsed by a panel of local and international experts in 2000.

Tunnel Construction

## Expansion of Stonecutters Island Sewage Treatment Works

In order to treat the additional sewage from Stage 2A, the existing Stonecutters Island Sewage Treatment Works (SCISTW) will be upgraded. The upgrading works include the expansion of treatment capacity of the existing sewage treatment works from 1.7 to 2.45 million cubic metres of waste water per day. The entire works will be equipped with an advanced odour control system. In addition, works are already underway to disinfect the treated sewage to bring about early improvements to the water quality of the western harbour and the beaches at Tsuen Wan.

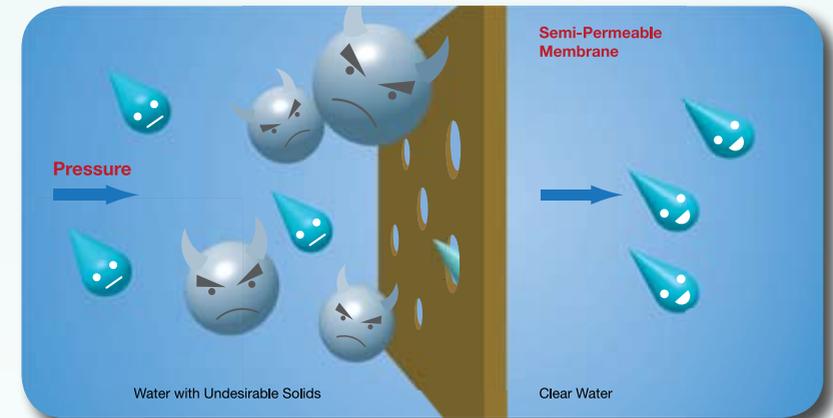


# Special features

## Energy-saving measures

The following energy-saving measures are being considered:

- (1) Use of variable speed drives to maximize working efficiency of sewage pumps;
- (2) Provide natural light using glass blocks and prismatic roof lights;
- (3) Adopt roof and elevation greening to improve the aesthetic value and insulation effect of the building;
- (4) Use PV (photo voltaic) panels to provide power for the lighting and other light duty electric appliances;
- (5) Provide shading features to buildings to reduce heat gain; and
- (6) Use intelligent computer controls to improve the efficiency of pumps



Principle of Reverse Osmosis

## Effluent reuse

In order to reduce the consumption of valuable drinking water at SCISTW, further treatment of the CEPT effluent for reuse are being considered. Effluent reuse applications include:

- (a) Process water used in the sewage treatment processes;
- (b) Toilet flushing water inside SCISTW and to other nearby users;
- (c) Cooling water for machinery; and
- (d) Wash water.

A compact treatment plant using membrane biological reactor (MBR) and/or reverse osmosis (RO) technology is under planning. Both RO and MBR would use latest membrane technologies to separate undesirable solids from water for reuse application.



## Green roofing

As many of the PTWs are in an urban setting, rooftop planting will provide visual improvements to the residents of nearby high-rise buildings.

Aside from the thermal and visual benefits, roof-top greening is a modern expression of urban sustainability.



Photomontage of Green Roof at Wan Chai East PTW



PV Panel



# Benefits

With the completion of HATS Stage 2A we can:

- Treat wastewater flowing to the harbour;
- Maintain a healthy marine environment whilst meeting future development needs;
- See more species of marine life;
- Re-open the Tsuen Wan beaches;
- Remove the sight of sewage plumes from the harbour;
- Conduct cross-harbour swimming races.

## HATS Stage 2A Project Fast Facts

	PTWs and Stonecutters Island STW	Sewage Conveyance System
Managing division	Harbour Area Treatment Scheme Division, Drainage Services Department, the Government of the Hong Kong Social Administration Region	
Consultants	Ove Arup & Partners Hong Kong Ltd	Metcalf & Eddy — Maunsell Joint Venture
Construction commencement date	2008	2009
Construction completion date	2014	2014





**Web site:**

[www.cleanharbour.gov.hk](http://www.cleanharbour.gov.hk)  
[www.dsd.gov.hk](http://www.dsd.gov.hk)

**Drainage Hotline:**

2300 1110

**Vision:**

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