



Stormwater Systems and Urban Design Natural, Sustainable Stormwater Treatment and Storage



Client

Public Utilities Board

Location

Singapore

Project Status

April 2006 to Present

CH2M Role

Prime Contractor for Master Planning and Design

We want to bring everyone close to water so that we can all be inspired and motivated to take care of our precious water resource by using it wisely and keeping it clean. Water is a shared resource and as the national water agency, PUB hopes all of us will realize we are all owners of it.

Mr. Tan Nguan Sen,
Director of Catchment and
Waterways, Public Utilities Board

The ABC Waters Programme

Stewarding Singapore for a Sustainable Future

In the 1970s, Singapore experienced heavy flooding and property damage its canals overflowed following severe rains. In response, the island republic engineered and built a system of reservoirs and canals. As the island republic thrived, its leaders envisioned going beyond the engineering function of stormwater management with their reservoirs, canals, and rivers—they wanted to create something dynamic and vibrant as well as ensure the sustainability of their water supply. Singapore decided it needed a master plan, and a consulting team daring enough to push the limits by bringing the best of engineering together with water sensitive urban design, recreation, the arts, heritage, and culture.

The Public Utilities Board (PUB), Singapore's national water agency, selected the partnership of CH2M HILL and Atelier Dreiseitl, to create a master plan for Singapore's Central Catchment, consisting of five reservoirs and 12 major rivers, as well as thousands of kilometers of canals and drains.

The ABC (Active, Beautiful, and Clean) Waters Programme was launched in April 2006 to help ensure a healthier, greener, and more sustainable future for Singapore. The program will transform the island's waterways into lively community spaces, increase economic growth, attract tourists and businesses, and bring Singapore's 4.5 million citizens closer to the beneficial aspects of nature and water.



"A" is for Active, so that Singaporeans can enjoy a wide range of water-based activities, from canoeing and sailing to dragon-boat racing.

"B" is for Beautiful, because Singapore wants to transform their waterways into beautiful streams, rivers and lakes that enhance the living environment.

"C" is for Clean, so that whatever Singapore does with its water bodies, they will continue to be kept litter- and pollution-free.

Over the next two years, the CH2M HILL/Atelier Dreiseitl team will roll out at least three signature projects in the Central Catchment, working with associate firms, Designinc and Phrase Communications. The popular Kallang River, the longest in Singapore at 10 km, will get a facelift in areas where the public are likely to use if for recreation. The rejuvenation will include adding boardwalks, floating decks, interactive water features, and waterfront housing projects. The Alexandra Canal, one of the main canals flowing into the Singapore River, will be decked over to create new premium space and a park—all part of reconnecting the city to the river and its recreational personality.

Two new reservoirs will also be created in this earlier phase of the project. A floating wetland, about half the size of a football field, will be created on the new Punggol Reservoir and will form a natural habitat for fishes and birds. The public will be able to get closer to nature by walking over from either bank, which will be linked by a floating boardwalk on one side and on the other a suspended bridge will offer an aerial view of the reservoir and kayakers rowing beneath it. Along the Serangoon Reservoir, the Lorong



Halu Wetland will cover a former land fill the size of 18 football fields and bring together a range of plants such as cat tails and common reeds that filter surface run-off, allowing for natural purification to be part of the water treatment process.

The ABC Programme projects will also store more water for residents and better treat stormwater from the large tropical storms Singapore experiences. When it rains, large volumes of untreated stormwater flow rapidly into the island's canal network—carrying dirt and debris with it. Future stormwater management resulting from the ABC Programme will decentralize stormwater collection, reducing peak flows. Despite the high rainfall of 2,400 mm annually, Singapore imports 40 percent of its water needs from a river in neighboring Malaysia. The ABC Waters project will increase Singapore's storage capacity with the development of new reservoirs. It will also ease pressure on the river and canal systems by slowing rainwater hydraulically as it is naturally treated in wetlands before it is delivered to the river.

Ultimately, the Active, Beautiful, Clean (ABC) Waters programme will bring people closer to water through improved waterfronts and recreation areas as well as foster education about this precious resource—and transform Singapore into a city of water and gardens.
