

The Regulation of Shenzhen River Stage IV - A New Sustainable and Ecological Approach

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Climate change, increasing urbanization and limited supplies of urban spaces are putting additional pressures on cities throughout the world to find new ways to alleviate flooding problems. Shenzhen River is the boundary river between the Hong Kong Special Administrative Region and the Shenzhen Special Economic Zone. To alleviate the flooding problem along the river, the Shenzhen River Regulation Office (SZRRO) of Shenzhen Municipal Government and Drainage Services Department (DSD) of the Government of HKSAR were keen to identify a sustainable alternative to simply just "enlarging the rivers at the flooding problem".

At the heart of this sustainable solution is a flood retardation pond system. The objective of the Flood Retardation Pond is to provide off-line flood retention at an upstream location of Shenzhen River to withstand a 1-in-50 year rainstorm event. Major components include an inlet overflow weir system, an outlet sluice, and an open storage pond of 80,000m³. It is designed to incorporate a new approach to flood alleviation, and also actively monitor and work alongside nature's forces. During heavy rainstorm events, the flood retardation pond will temporarily store part of the stormwater collected from the upstream river to attenuate peak flows in the existing downstream Shenzhen River. The ingenuity of the scheme comes from the wetlands design in the flood retardation area, which prevents soil erosion and supports ecology development. Provision of habitats for the plants and animals, and other greening elements, aims to enhance quality of the environment and to raise its aesthetic value.

An ecological river concept is adopted in the design of this river regulation project. The alignment of the proposed river follows the existing river as much as possible; cross-sections are mostly in trapezoidal shapes and in-situ natural river bed materials are used to form the new river bed. Ecological-friendly toe wall design is also adopted to enhance the connectivity between river bed and river bank. Environmental-friendly construction materials, such as gabion, cellular concrete block, environmental-friendly planting bags and geo-nets are utilized to tie in with the ecological design of the river banks.

