

# An assessment of Nansha Sponge City construction

Tackling urban flooding with a custom solution to control annual runoff rate

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**Validated the efficacy of the sponge city plan on pollutant reduction and runoff rate control**



**Detected increased flood risk in two industrial zones and proposed mitigation measures**



**Overall optimisation of the sponge city master plan**

## Challenge

In 2014, China initiated a nation-wide 'Sponge City' concept to tackle urban water challenges. The idea was to design cities such that they could absorb, capture and repurpose rainwater to improve flooding situations in the cities. We were commissioned by one of the largest engineering survey and design corporations in China to evaluate the construction planning and assess the flood risks of Dagang, a town in Nansha District, Guangzhou.

Dagang is vulnerable to flood disasters because of its low elevation and combined influence of heavy rainfall, offshore tide level and typhoon. In order to reduce potential impact of flood events, it was decided that the sponge city initiative – which would help decrease runoff rate and alleviate losses caused by floods – should be implemented in this area.

## Solution

Our client needed a waterlogging assessment and an evaluation of the sponge city construction plans. We used MIKE Powered by DHI software to build two different models to address these objectives.

### Solution highlights

- **Evaluation of sponge city construction plans**  
We used the Sponge City Aided Design (SCAD) software to analyse and evaluate whether designed low impact development (LID) infrastructures could reduce the runoff volume and improve water quality of rivers efficiently.
- **Flood risk assessment**  
With client's data as input, including DEM, rainfall data, underlying data, external water level and so on, we constructed a hydraulic model using MIKE 21 Hydrodynamics (HD) Flow Model.



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*'We were able to validate the effectiveness of our construction plans and assess potential flood risk in the city thanks to DHI's expertise in water modelling. The work was delivered on time and with precision - we would recommend DHI anytime.'*

Lihua Chen,  
Project Manager, China Railway Eryuan Engineering Group Co. Ltd



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