

### Cibinong and the Situ Front City Project

The city of Cibinong is the capital of the Kecamatan of Cibinong and Bogor Regency, covering an area of 57 Ha. The district incorporates a number of large lakes (situs) and a population of 357,000 people. Within Cibinong, there is a large development planned along the lake-front of the situ Cikaret and Bentenan by the Bogor Regency Planning Department called the "Situ Front City". This project is one of the main urban development areas in Bogor Regency. The Masterplan design is completed based upon the winning design from a competition, and construction is due to commence in 2020.

The SFC Masterplan included basic WSUD principles in the landscape design and public space design using Green Technology tools to offer a better environmental performance of the urban development. However, the SFC Masterplan did not base their recommendations on hydrological and hydraulic modelling, which are essential to provide a more refined implementation of Green Infrastructure and to understand the water systems of the area.

The Urban Water Cluster provided a set of recommendations for the adaptation of the SFC masterplan to be more water sensitive and support the transition of Cibinong to a Water Sensitive City.



POPULATION  
12,258



AREA  
209 Ha



POPULATION DENSITY  
58.6 / Ha



NUMBER OF DWELLINGS  
2,724

## ISSUES



### POLLUTED LAKES

Dwellings surrounding the lakes are discharging wastewater directly into the lake



### DISCONNECTION BETWEEN LAKES' WATER FRONTS AND THE SURROUNDING

Water fronts are not being actively used by the locals.



### LACK OF HYDROLOGICAL MODELLING IN THE MASTERPLANNING PROCESS

Major changes to the water bodies are proposed, and therefore, hydrological analysis of the area is essential.



### LACK OF WATER DISCHARGE CAPACITY STUDY

Major changes to the water bodies are proposed, and therefore, a water discharge capacity study is necessary.

## SPATIAL AND SOCIAL ANALYSIS TOOLS

1

### VISIONING FGD

- » Community Mapping,
- » Water Sensitive City Index
- » SWOT Analysis

2

### LAND USE MAPPING

- » GIS Mapping of Land Use

3

### LAND USE MAPPING POST-PROCESSING

- » GIS Files Preparation and Verification

4

### HYDROLOGY MODELLING

- » Water Balance Model
- » BIM Siting Tool for Green Infrastructure Allocation

5

### URBAN SCENARIOS FGD

- » Feedback on Scenarios for Public Space Allocations and Uses

6

### STAKEHOLDERS INTERVIEWS

- » Collecting Information on Government Processes for Water Management and Green Infrastructure Allocation

7

### URBAN DESIGN FGD / WSUD MASTERCLASS

- » Feedback on Proposals
- » Feedback on Development, Implementation and Maintenance

8

### LEAPFROGGING SHOWCASE

- » Showcase of Project Findings and Strategies
- » Display of Demonstration Site Designs

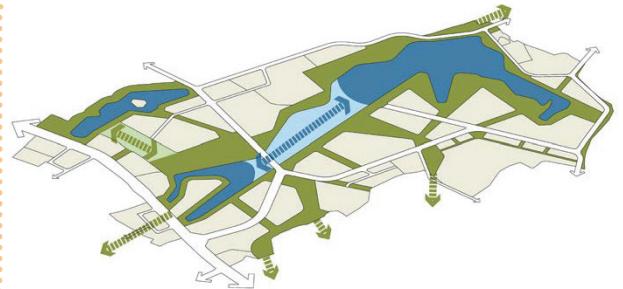


Social Analysis Tools



Spatial Analysis Tools

## URBAN DESIGN OVERVIEW



### CREATION OF LINKS BETWEEN BLUE AND GREEN ELEMENTS

Connections between water bodies and the surrounding greenery are established and strengthened.



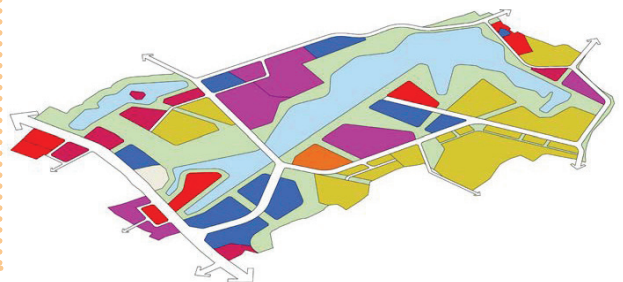
### PRESERVATION OF EXISTING BIODIVERSITY

The rich biodiversity of the project site is valued and preserved.



### INTENSIFICATION OF DEVELOPMENT

Vertical expansion is intensified to cope with the increasing population of the site.



### PROVISION OF DIVERSE LAND USE

A diverse range of programs is implemented within the site.



## GREEN TECHNOLOGY RECOMMENDATIONS

- ✓ Promote infiltration of stormwater where soil is suitable
- ✓ Harvest and reuse rainwater for suitable purposes
- ✓ Protect situs using constructed wetlands
- ✓ Greywater treatment and recycling
- ✓ Promote runoff onto pervious surfaces (such as garden beds and grassed areas)

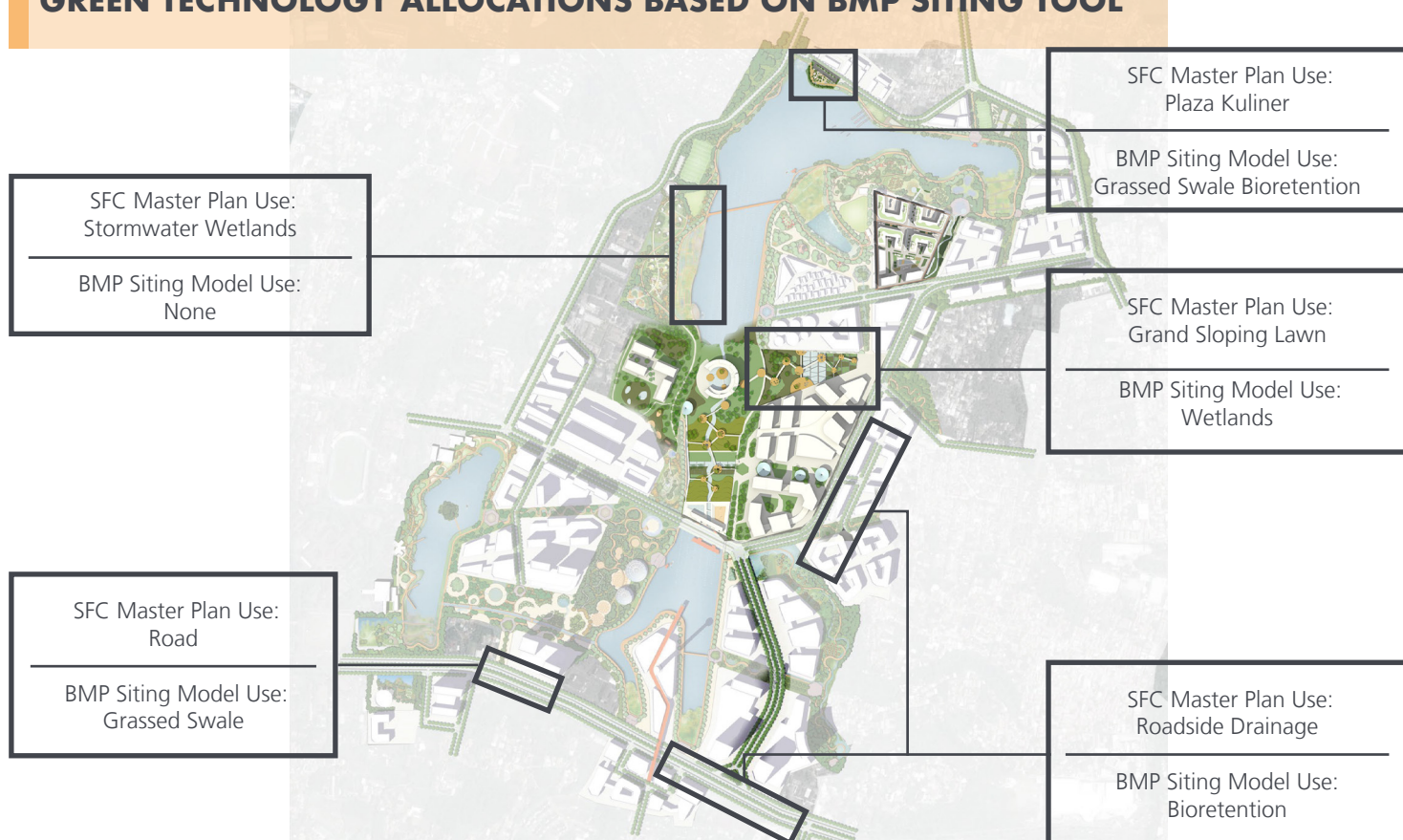
## PLANNING RECOMMENDATIONS

- » Governments need to regulate and control existing and future developments to ensure a sustainable relationship between the built and natural environments.
- » Ensure easy access to information necessary to take informed decisions related to urban planning and environmental care. Conduct studies and research where necessary to create spatial and socio-economic databases.
- » Collect and provide information at disaggregated geographical levels (such as Desa, RW and RT) to facilitate modelling analysis
- » Promote integrated Urban Planning initiatives to deal with the coordinated tasks that are essential to sustainable urbanisation.

## URBAN DESIGN RECOMMENDATIONS

- » Integrate Green Infrastructure designed based on hydrological and hydraulic modelling
- » Provide alternative plans to cope with challenges related to change in climate patterns that can affect the water balance of the developed area
- » Explore alternative water sources to reduce dependency on PDAM water for non-drinking purposes
- » Integrate the Water Sensitive Urban Design guidelines prescribed by the SFC masterplan in the existing planning regulations so that other similar projects can benefit from them
- » Monitor the performance of the Green Infrastructure implemented in the new urban developments to adjust or revise their functioning and environmental benefits

## GREEN TECHNOLOGY ALLOCATIONS BASED ON BMP SITING TOOL



## INTERVENTION SITES

The urban design team selected 5 intervention sites for pilot projects to showcase a range of possible applications of Green Infrastructure and Water Sensitive Urban Design strategies in the SFC Masterplan. The sites range from residential to commercial and mix use areas at different scales.

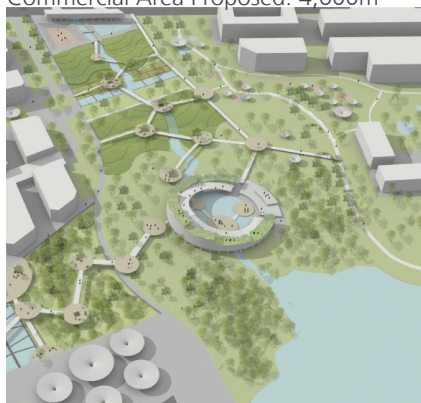


Location of Intervention Sites

## 1. FORMER LAKE AREA

This design intervention involves transformation of the former lake connection area into a series of connected public spaces, and addition of new commercial areas. Existing rice paddy fields are preserved in an attempt to retain local identity and promote local economy. A green buffer zone between the proposed commercial area and the existing hospital precinct is also added, and features therapeutic gardens and children's playgrounds.

Total Area: 100,000 m<sup>2</sup>  
Commercial Area Proposed: 4,600m<sup>2</sup>



Proposed Lake Area Design

## 2. SLOPING LAWN AREA

In this intervention, the site of Master Plan's proposed sloping lawn is replaced by a series of constructed wetlands and a vast rain garden, with a series of viewing decks and connecting paths above. While no additional commercial area is proposed, the site is surrounded by the commercial / retail zones proposed in the Master Plan, and is designed to maximise connection and accessibility with the surrounding urban fabric.

Total Area: 25,000 m<sup>2</sup>



Proposed Sloping Lawn Area Design

## 3. PLAZA KULINER

In this intervention, recommended green technologies are installed within the the existing Plaza Kuliner, an alfresco food court by the lake, while its local character is preserved and celebrated. A bio-retention pond is proposed, and is intended to support the integrated aquaponics system. Vegetables and fish produced on site are intended to be served fresh to the visitors of Plaza Kuliner.

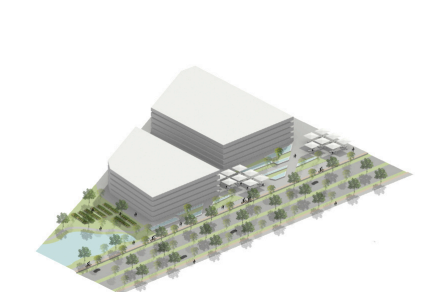
Total Area: 4,000 m<sup>2</sup>



Proposed Plaza Kuliner Design

## 4. ROADSIDE BIOSWALES

As recommended by our BMP Siting Tools Analysis, a series of roadside bioswales are proposed, while the Master Plan's eco-pond and community gardening proposals are integrated into the design.



Proposed Roadside Bioswales

## 5. HOUSING CLUSTER

A number of Green Infrastructure are incorporated into the proposed design of the housing cluster demo site, to maximise water sensitivity.

Total Area: 40,000 m<sup>2</sup>



Proposed Housing Cluster Design