

# CIBINONG URBAN DESIGN WORKSHOP

*Situ Front City Masterplan Case Study:*

*Water Systems, Adaptability, Public Space Uses and Upscaling*



# Cibinong WFC Urban Design - FGD Agenda

- 9:00 Opening by Ibu Syarifah (Head BAPPEDA Litbang Cibinong).
- 9:15 am: Introduction and presentation of preliminary Water Balance modelling results
- 9:30: **Group Activity 1**: Revision of Situ Front City Masterplan: Adaptability, Water Management
- 10:15 **Group Activity 2**: Revision of Situ Front City concept: Public Space Use and Upscaling the strategy to other Situs
- 11:00 Groups Reporting back (30 mins each)
- 12:00 End of Activity and Future Steps
- 12:15 Lunch

# AIC Urban Water Cluster- SFC Case study

- Selection of Case Study based on the scope of the project, scale, location and relevance to our Leapfrogging Strategy
- August 2017: First Stage: Site analysis, water's system analysis, demographic. Future intervention profile
- November 2017: Visioning and Benchmarking FGDs
- April 2018: Second Stage: Stakeholders interviews with BAPPEDA, and other Cibinong Kabupaten government's offices related to the urban planning, design and water management
- May-June: Urban Design approach framework, Water Balance Model, SUSTAIN Model
- July 2018: SFC Urban Design workshop: Masterplan adaptation, public space design and replicability. Results of AquaCycle and SUSTAIN model integrated in designs.
- July-November 2018: Development of Urban Design strategy, Urban Design Visions and implementation.
- November 2018: Leapfrogging Report finalized for stakeholders

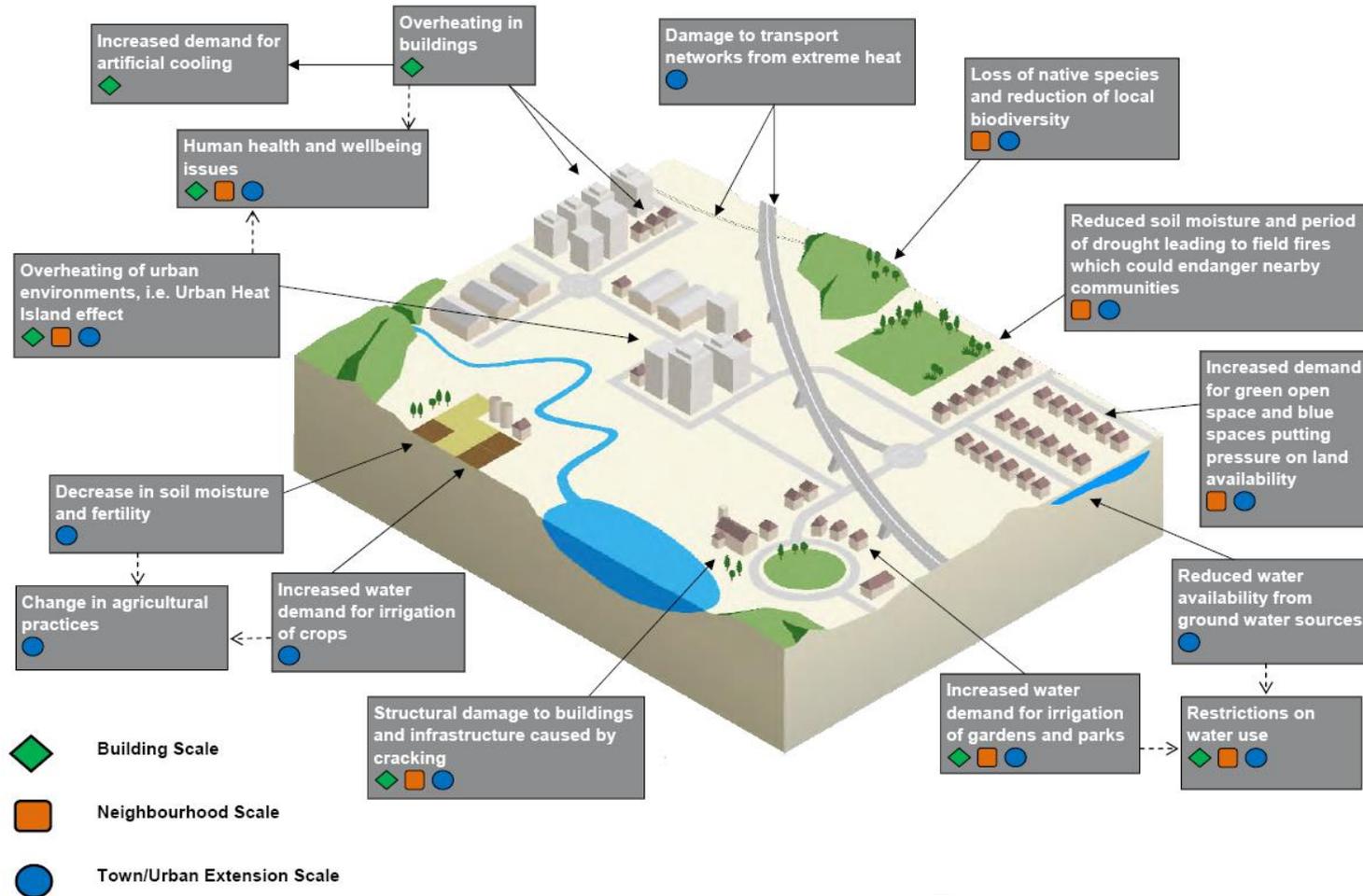
“First we shape our cities; then they shape us”  
Jan Gehl



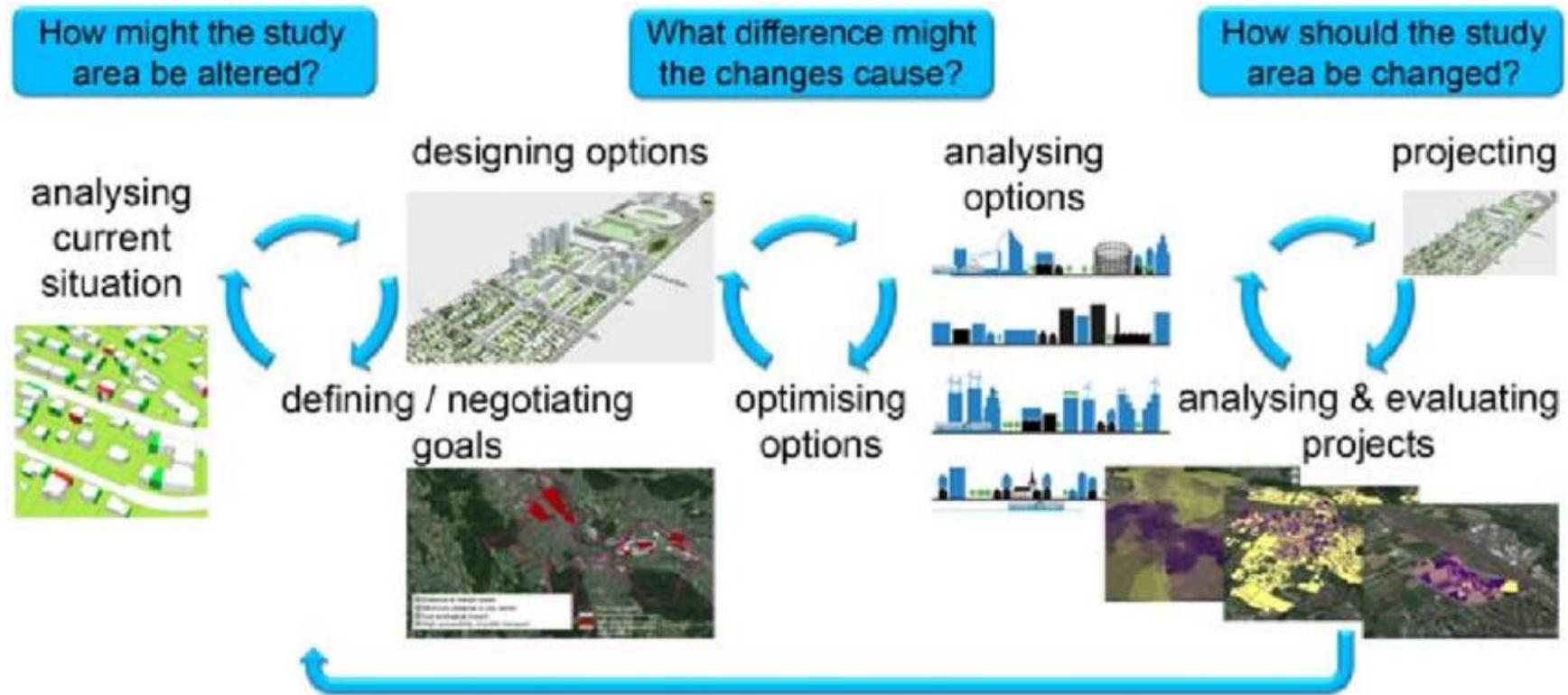
Glebang Situ Front City | Concept

# Climate Change and Urban Design

Risks to Hertfordshire associated with warmer, drier summers and extreme weather events



# Urban Planning adaptation Strategies



# Adaptation Solutions Matrix Example

**ADAPTATION SOLUTIONS**

**FILTERS**

**Adaptation target** ^

- Coastal and fluvial flooding
- Pluvial flooding X
- Groundwater flooding
- Heat
- Drought

Land use v

Dominant soil type v

Surface level and slope v

Scale v

Project type v

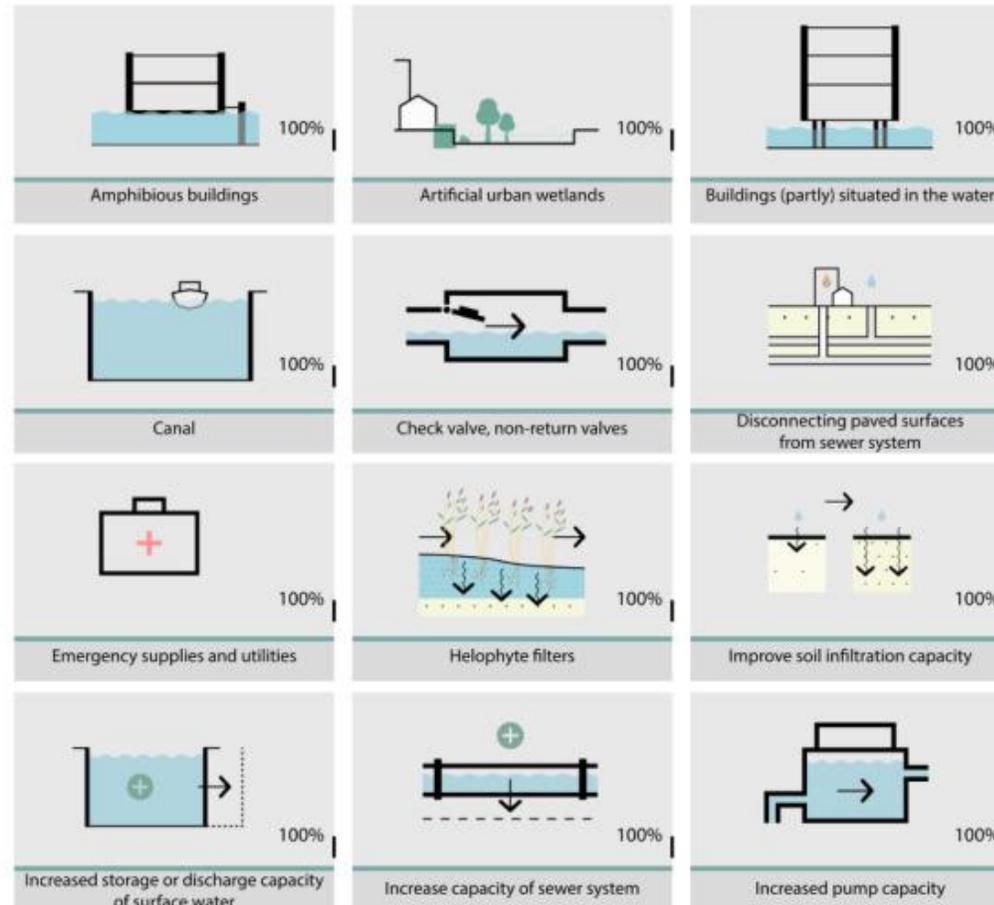
84 Adaptation solutions

Reset

**CLIMATE INFORMATION**

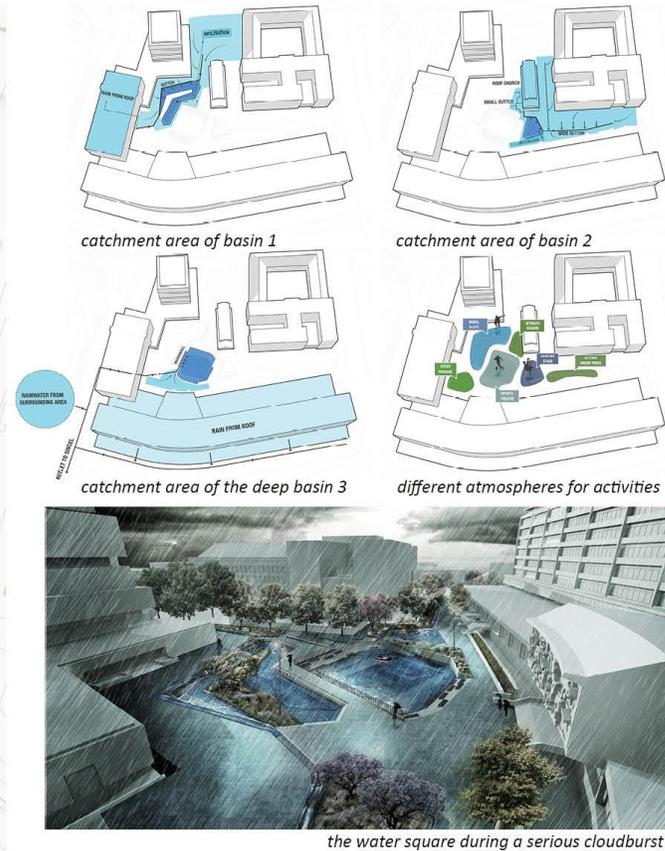
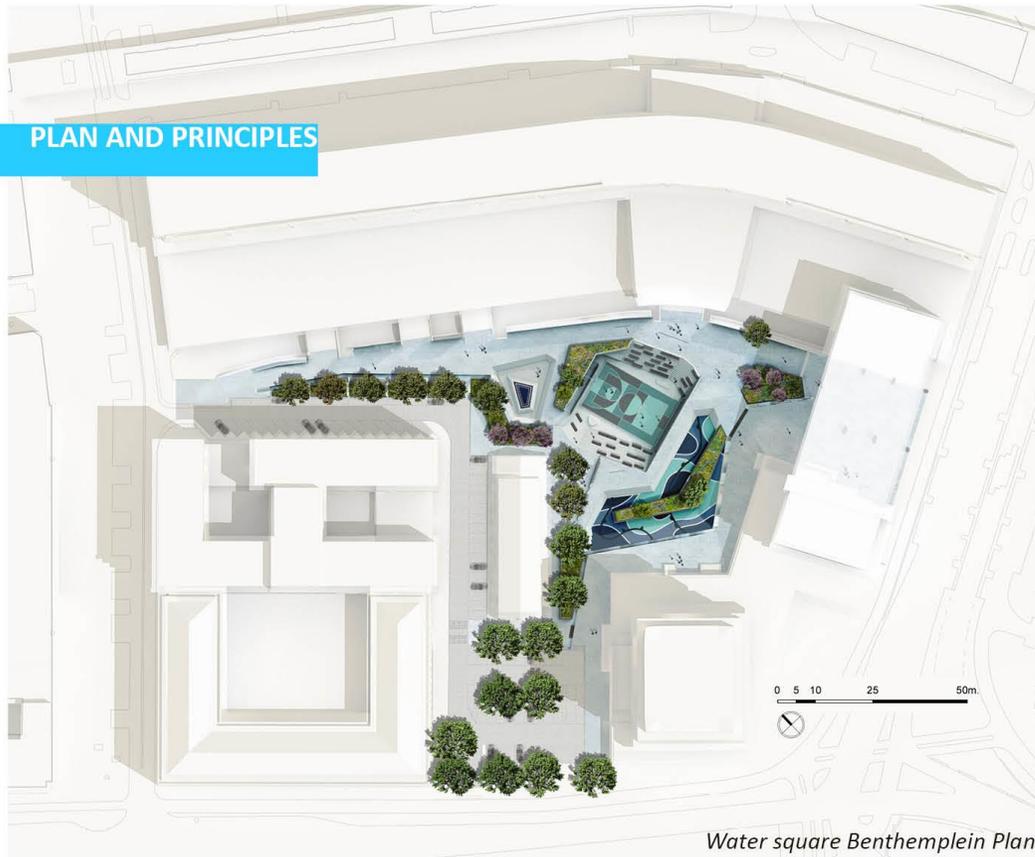
**ABOUT**

Bosch Slabbers  
Deltares  
Grontmij



<https://www.sciencedirect.com/science/article/pii/S146290111630315X>

## PLAN AND PRINCIPLES



# Integrating Water in the Urban Fabric: The Rotterdam Experience

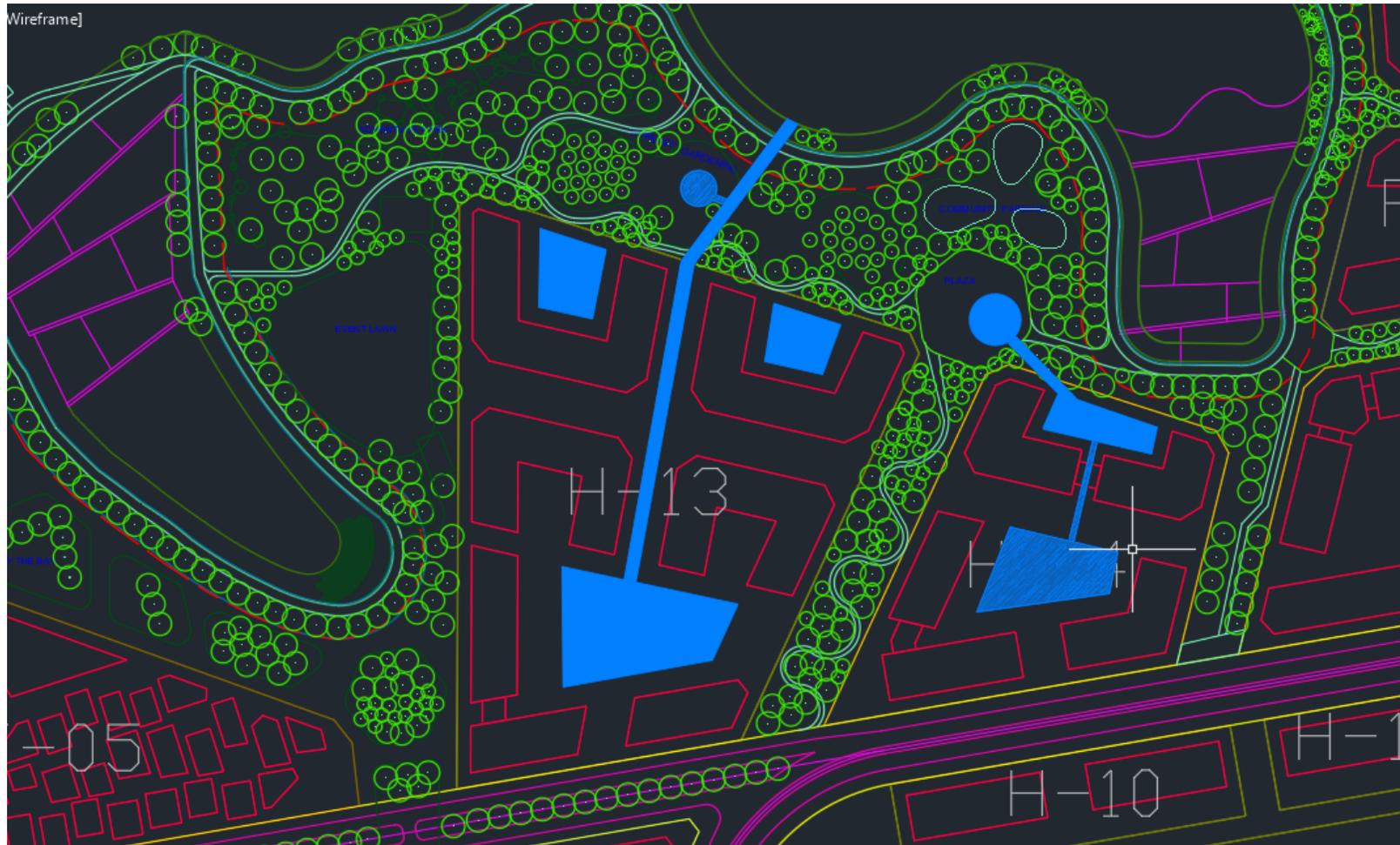
- Rainwater collection Ponds
- Alternative source of water
- Reduction of Stormwater Runoff
- Recreational activities for the community
- Irrigation Water for Urban Agriculture
- Adaptable according rainfall changes

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## Integrating Water in the Urban Fabric: The Rotterdam Experience

- Rainwater collection Ponds
- Alternative source of water
- Reduction of Stormwater Runoff
- Recreational activities for the community
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## Integrating Water in the SFC Urban Fabric: Water Squares

- Rainwater collection Ponds
- Alternative source of water
- Reduction of Stormwater Runoff
- Recreational activities for the community
- Irrigation Water for Urban Agriculture
- Adaptable according rainfall changes

# How is the SFC Masterplan addressing these challenges?

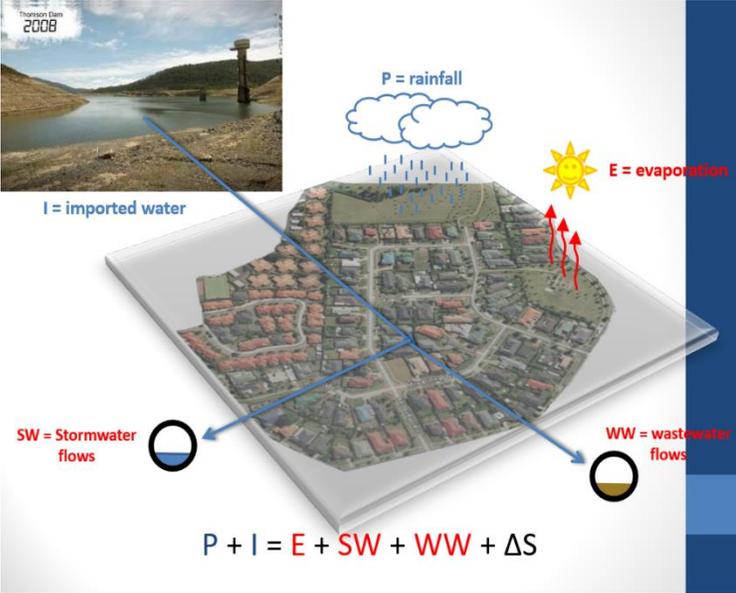


# WSUD in SFC Masterplan

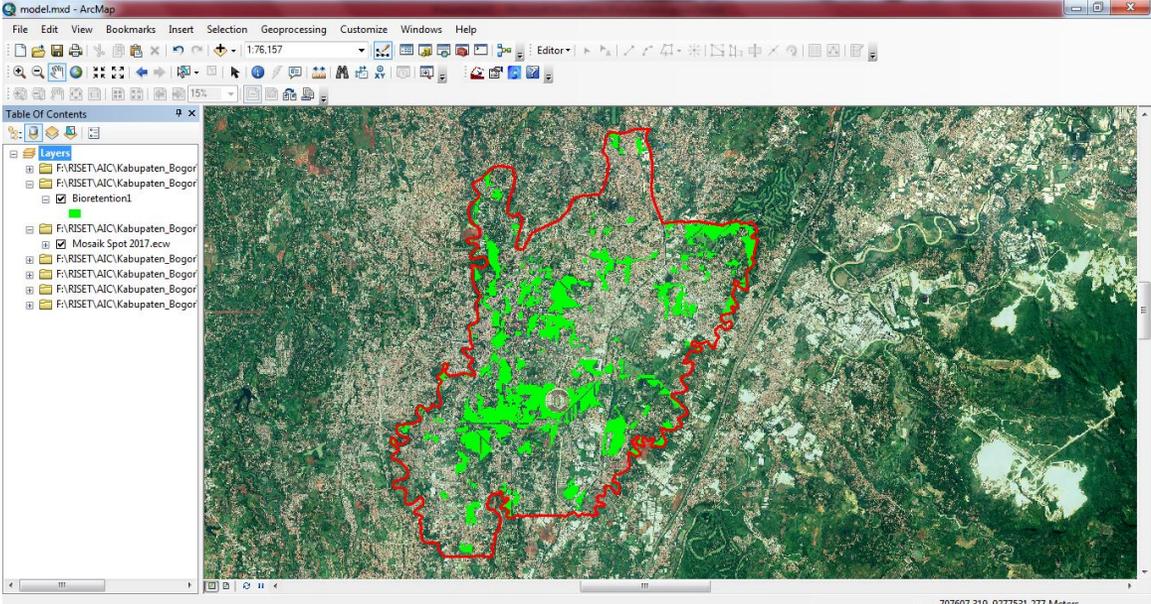


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# Taking the concept further: Modelling and evaluation tools



**AQUACYCLE: WATER BALANCE MODEL**

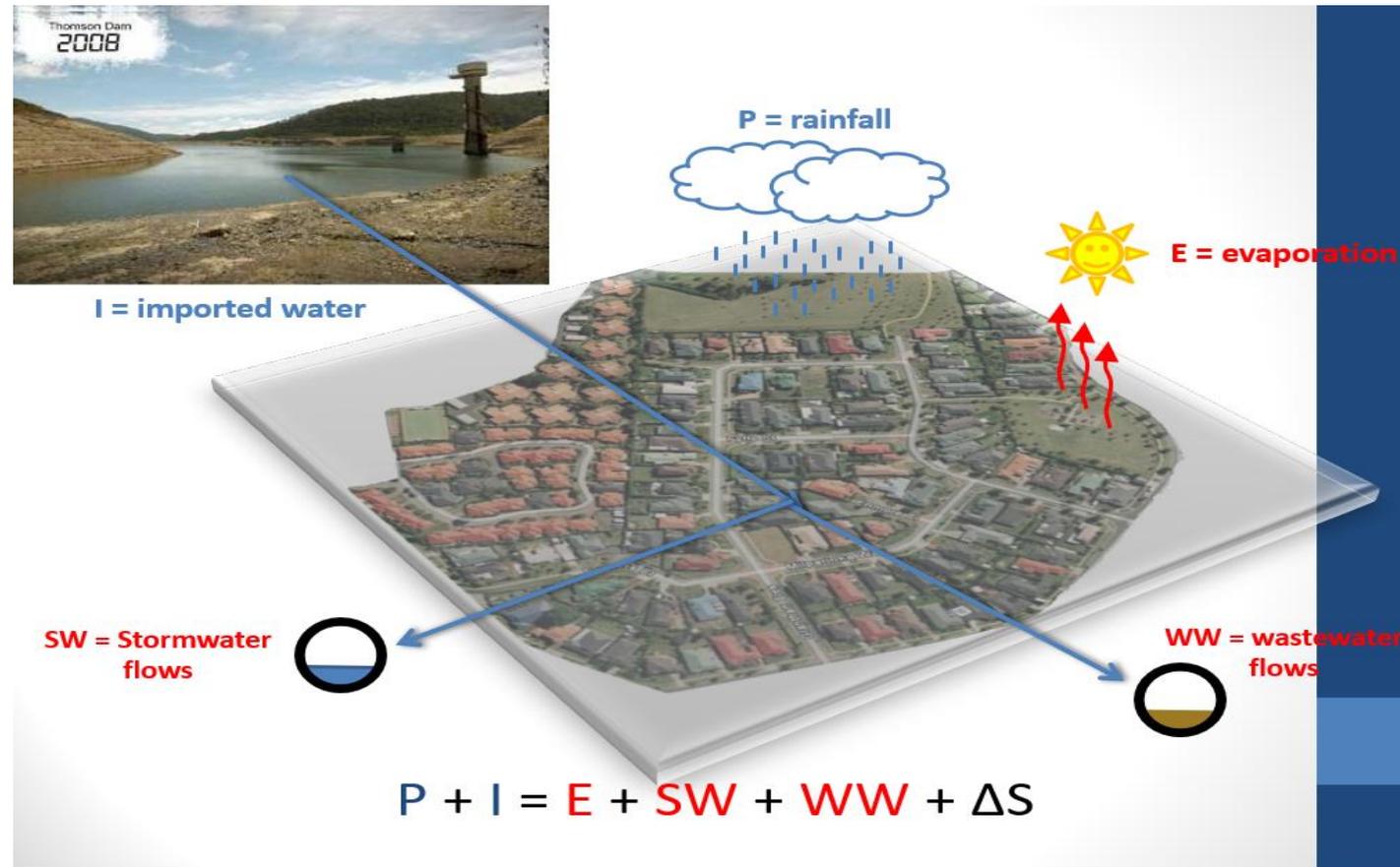


**SUSTAIN: BMP Siting Tool Data Modelling**

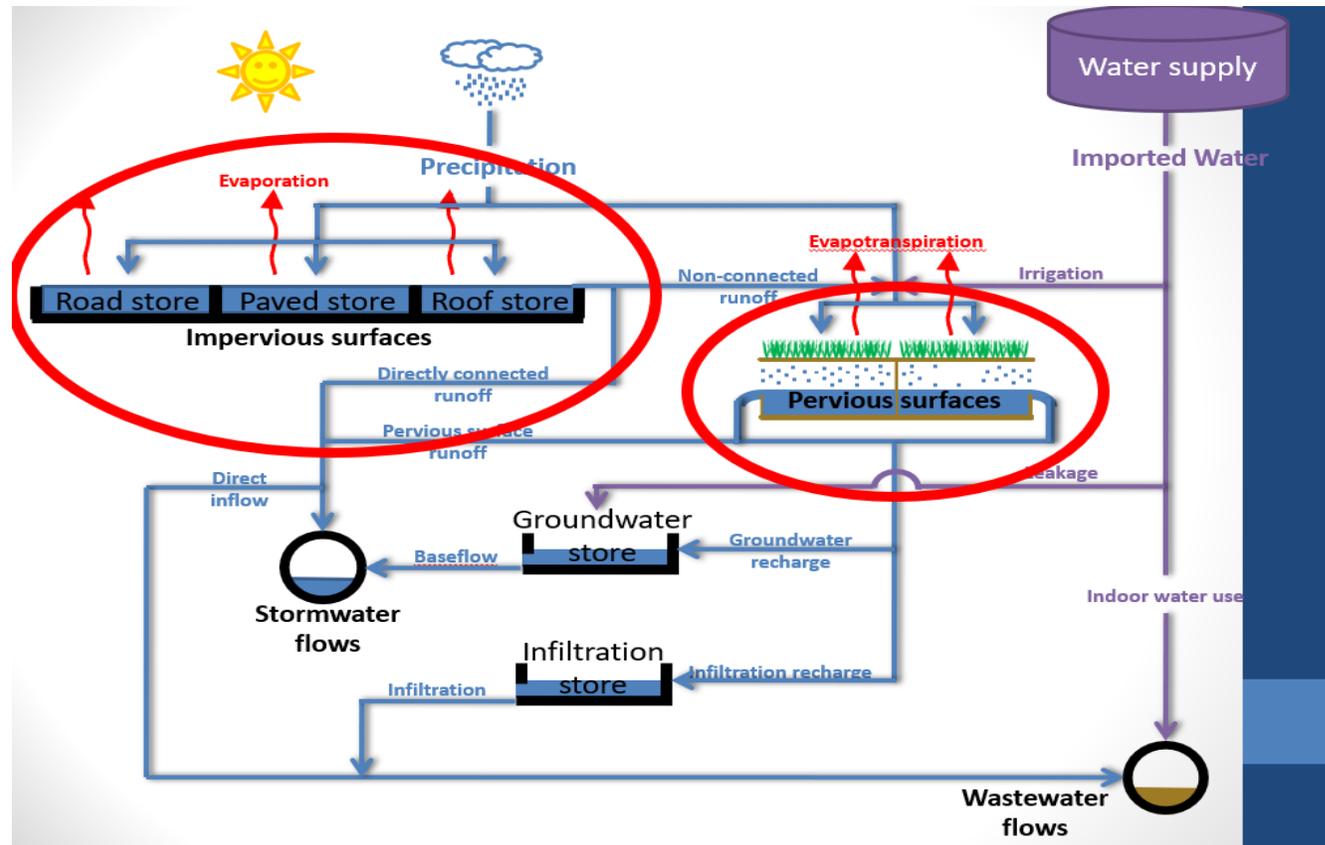
# Aqua Cycle Model Information

- **Aquacycle** is a daily urban water balance model which has been developed to simulate the total urban water cycle as an integrated whole and provide a tool for investigating the use of locally generated stormwater and wastewater as a substitute for imported water alongside water use efficiency.
- **Aquacycle** has the capability of modelling a single land block (referred to as a unit block) such as a residential property through to an entire urban catchment. A catchment may be dis-aggregated into up to 50 clusters (or sub areas).

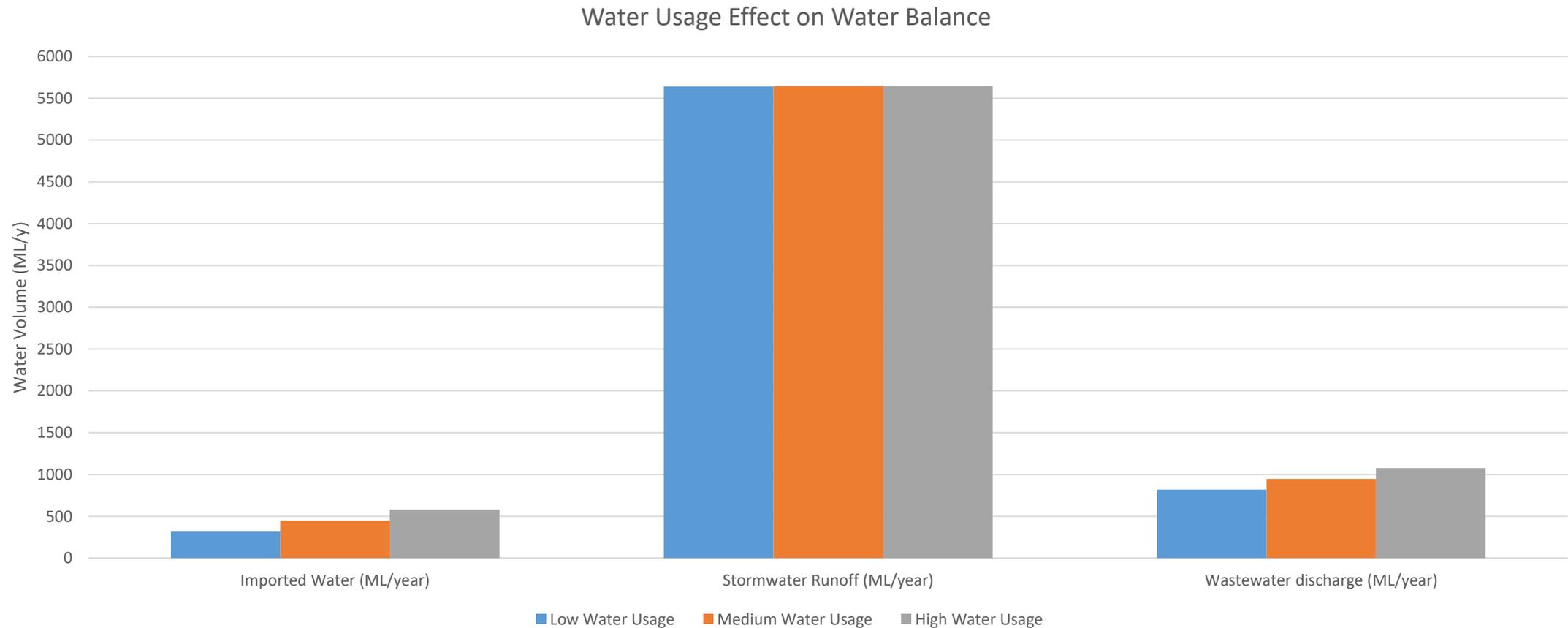
# Water Balance model Equation



# Aquacycle flow chart to incorporate various algorithms to calculate water flows throughout the water system.

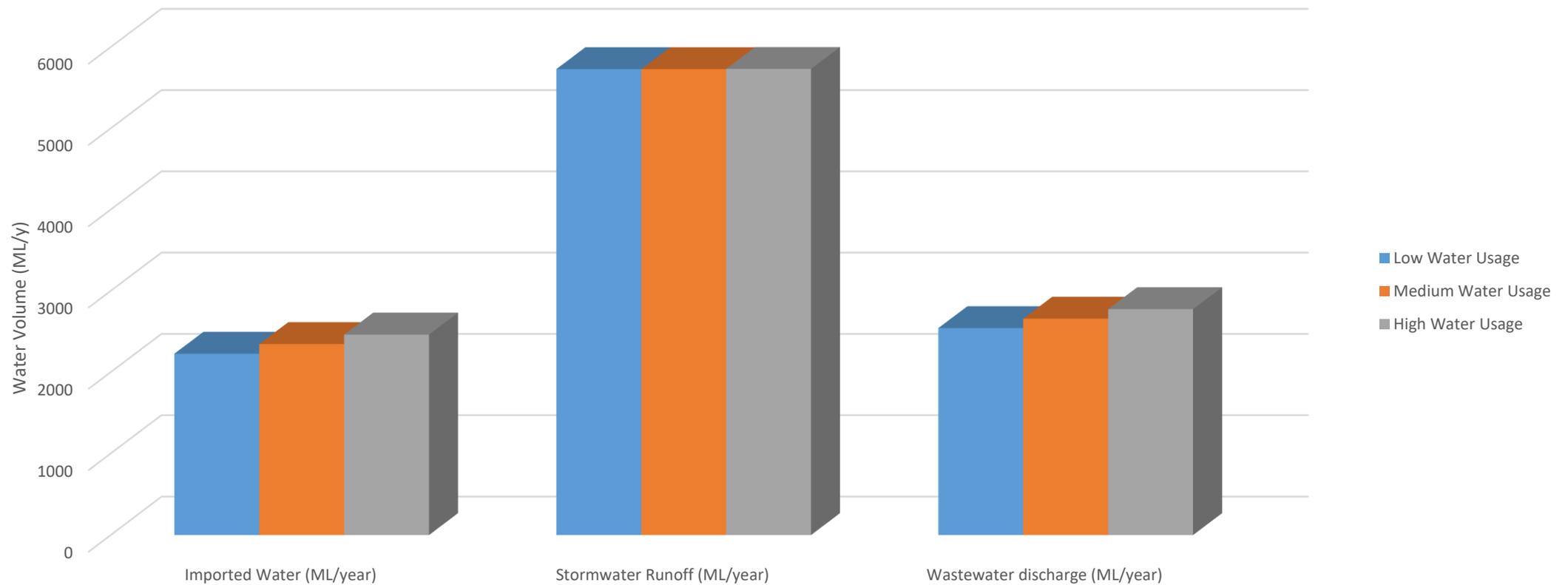


# Cibinong Water Balance (current 2018)

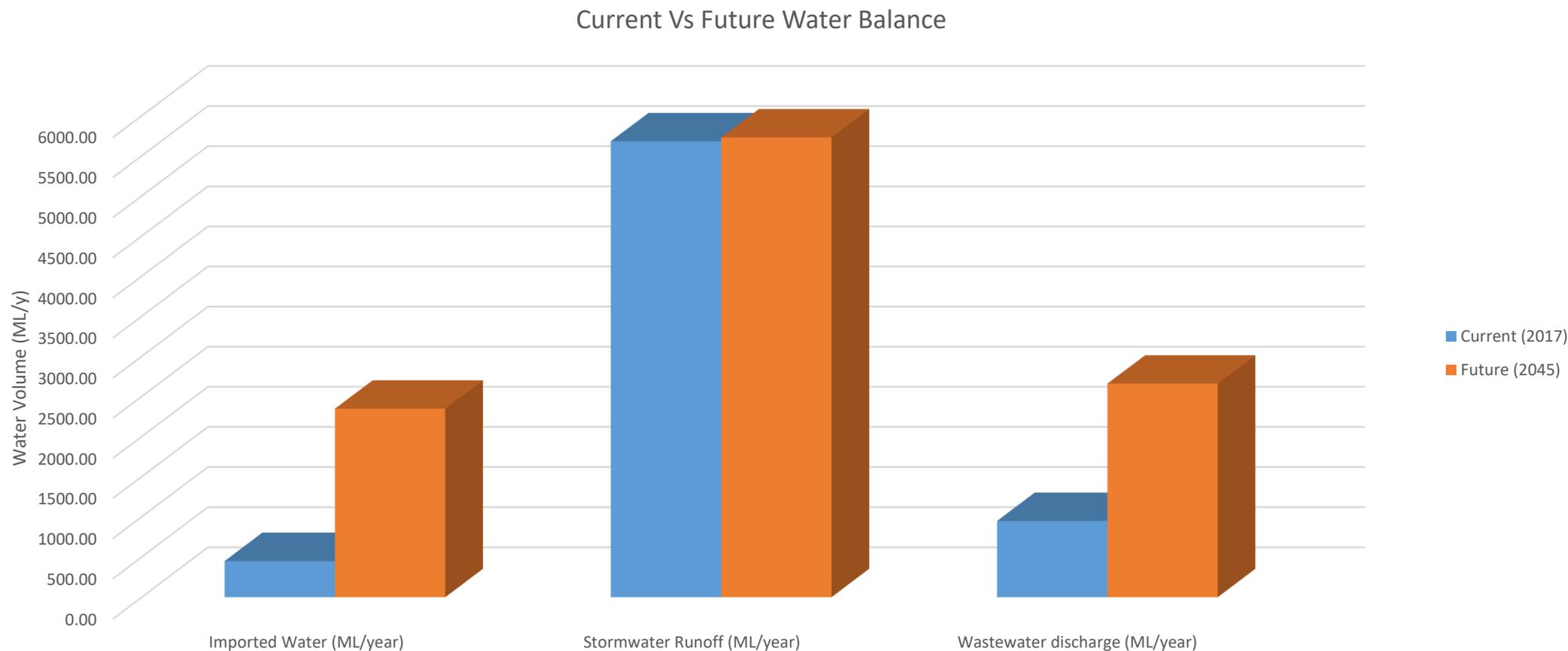


# Water Front City Masterplan Water Front Balance (2045)

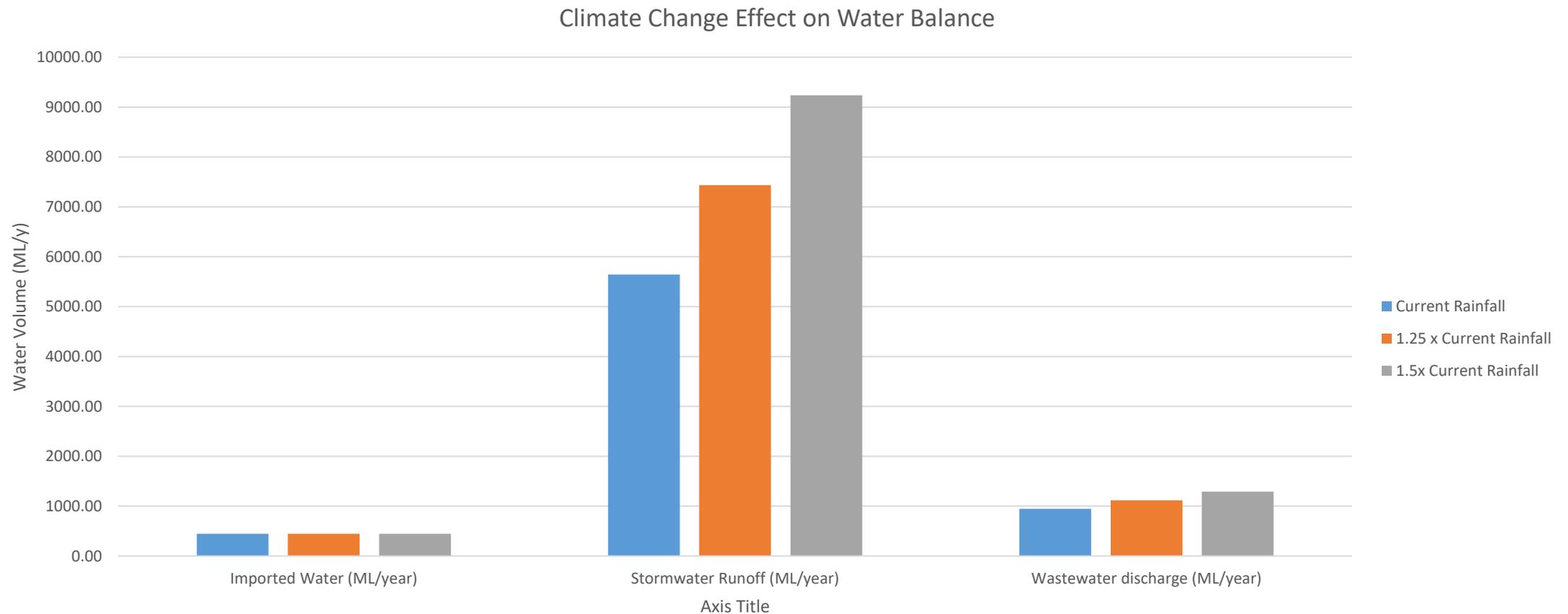
Water Usage Effect on Water Balance



# Current (2018) Vs Future (2045) Water Balance



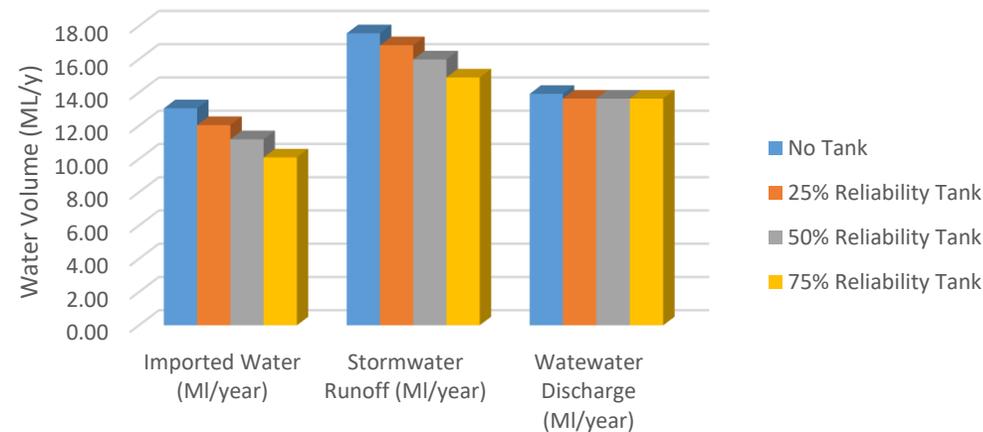
# Climate Change effect on Water Balance



# Sizing of Rainwater Tanks/Water Reservoirs

- Optimising the size of a storage:
- The optimisation criteria is ‘% rate of change in volumetric reliability’, which aims to find the point at which the further gain (or loss) in volumetric reliability does not justify the associated increasing (or decreasing) in storage size. Volumetric reliability measures the severity of failure to supply water demanded.

Cluster Scale Rain Tank for Toilet Flushing Effect on Water Balance



# Group Activity 1: Masterplan Water Systems

- **Questions for the Group: (fill in the Table Form 1)**
- Q1. How did the masterplan integrate the Water systems (inputs-outputs) into their design approach?
- Q2. Was there any modelling done to calculate the blue spaces areas and the water consumption and discharge? If not, explain the reasons.
- How is the SFC masterplan consider or have been influence by the Cibinong Drainage Masterplan? If/then
- Q3. What are the most important factors to consider to adapt the current Masterplan to be more feasible in term of Water Systems management (alternative provision of Water for domestic/commercial use, and alternative treatment of waste water)
- Q4. The project propose to join the 2 existing lakes (Cikaret and Kabantenan): What could happen if there is not enough water to have a stable level of the lake? (levels too high or low)
- Q5. Green Technologies can help reduce storm water-runoff and provide alternative water sources: What factors need to be consider for the location, maintenance and functionality of Green Technologies in the Masterplan?

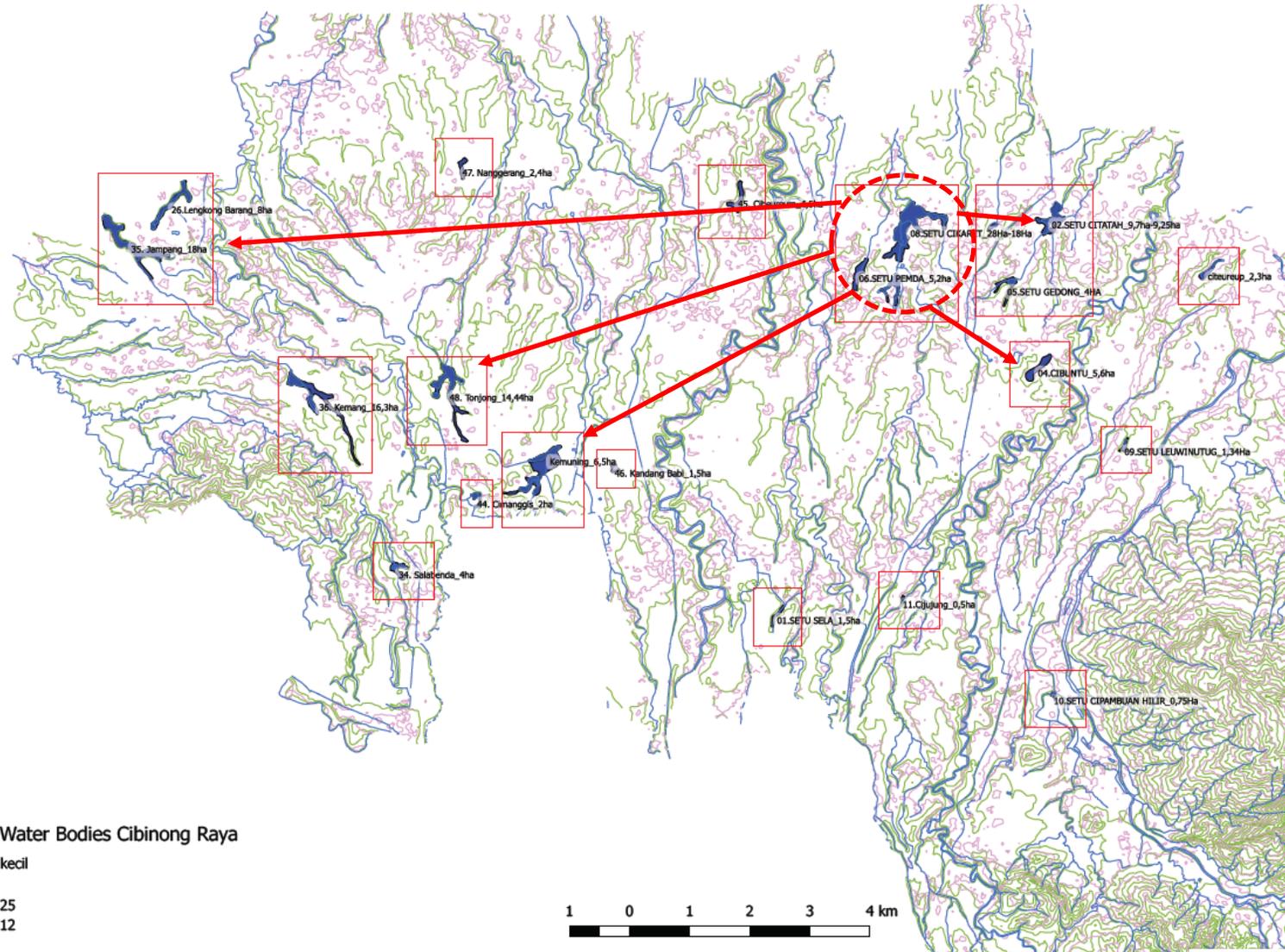
# Group Activity 1: Masterplan Adaptability

- **Questions for the Group: (fill in the Table Form 1)**
- Q1. Future conditions in the water system in Cibinong might change because of Climate Change. How is the current Masterplan responding to this challenge?
- Q2. What areas of the Masterplan could be more suitable to be adapted/change according to new conditions?
- Q3. If the lake doesn't have enough water during the dry season what areas can be turn into temporary dry areas? What uses could these areas have?
- Q4. Select in the current masterplan the areas that could have better possibilities for adaptability.

# Group Activity 2: Making the most of public space

- **Questions for the Group: (fill in the Table Form 2 and use the maps to discuss)**
- Q1. What are the main activities that the existing community in Cibinong have in public space? (Recreation, food, sports, meeting, celebrate, playing, other?)
- Q2. How can the new public spaces be adapted to be more multifunctional? What activities can function better together?
- Q3. Public spaces in the current masterplan are not flexible in use or adaptable: How could these spaces respond better to changing conditions?
- How can public spaces be more attractive to users? What elements are important to consider? (i.e. greenery, tree coverage, shading, amenities, etc)
- Q4. Water front in the current masterplan is only offered in the main lake: Could it be possible to have smaller public open spaces with water ponds? What are the pros and cons of this idea?
- Q5. Public spaces are configured by the built environment, and mix of activities offer best experiences for users: How can the current masterplan be changed to have more mix uses in their layout? (i.e. residential and commercial, commercial with recreation, institutional and recreational, etc). Use the maps to discuss.

# Group Activity 2: Scaling up the WFC Concept



# Group Activity 2: Scaling up the SFC Concept

- **Questions for the Group: (fill in the Table Form 2)**
- Q1. Cibinong Raya have more than 80 Situs: What are the possibilities to apply the same SFC framework to some of the existing Situs?
- Q2. What urban/social conditions need to be consider in the existing Situs to be able to be transformed with the SFC framework?
- Q3. Which Situs in Cibinong Raya could have some of these conditions and why? Select the Situs in the map 2
- Q4. What are the main functions of the existing Situs in Cibinong Raya (i.e. irrigation, water provision, amenities, fish production, other?)
- Q5. What combinations of uses can be a better mix for these new areas? (Residential, commercial, industrial, recreation, mixed?) Why?

# Australia-Indonesia Centre

The Australia-Indonesia Centre is an initiative of:



The Australia-Indonesia Centre is a collaboration between the following Participating Institutions



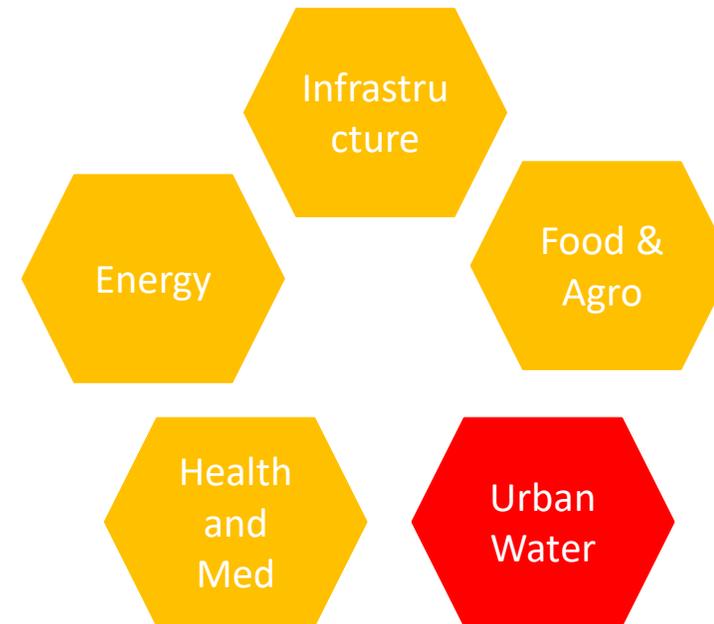
working in partnership with seven leading universities in Indonesia



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Research collaborations in:





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The AIC gratefully acknowledges the contribution of Bappeda Kabupaten Bogor in hosting today's FGD and sharing the details of the SFC Masterplan for the Urban Water Research Cluster.

Please contact us:

By Email:

[urbanwater@australiaindonesiacentre.org](mailto:urbanwater@australiaindonesiacentre.org)

[jane.holden@monash.edu](mailto:jane.holden@monash.edu); [Dwi.Yuliantoro@australiaindonesiacentre.org](mailto:Dwi.Yuliantoro@australiaindonesiacentre.org)

[www.urbanwater.australiaindonesiacentre.org](http://www.urbanwater.australiaindonesiacentre.org)

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