



**CENTRE FOR URBAN WATER
SRI LANKA**

CUrW Activities and Collaboration with IFI

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CUrW

Metro Colombo Urban Development Project

Ministry of Megapolis and Western Development

Visiting Professor: The University of Tokyo

The Center for Urban Water is being set up for flood control and water management in Metro Colombo, to become operational in 2018. Its primary function is the control of pumps and gates that are being installed under the Metro Colombo Urban Development Project.

<http://s/www.curwsl.org>



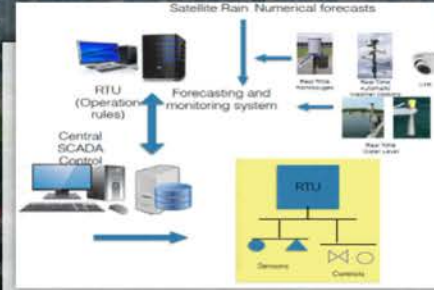
STATE OF WATER

A combination of hydrological and hydro-dynamic models are used to forecast the state of water in the Colombo System with rainfall inputs from numerical weather forecasts, satellite data and rain gauge observations. Current and future canal water levels, interaction with river and the lake water levels are forecast in 15 min time intervals at present.



RISK MANAGEMENT

The impact of urbanization on urban water as well as impacts of floods on population and properties are modeled. Pre-disaster loss estimations based on vulnerability functions for different building categories are carried out to clarify flood control investment needed. Various urban water management strategies including improving conveyance as well as retention, including green infrastructure are studied.



MONITORING AND CONTROL

A dense network of raingauges and water level sensors are planned to be installed in the basin. A scada control system will be employed to control 3 pumping stations and 3 gate structures. In addition future developments in retention storage units will also be monitored and control through the center.



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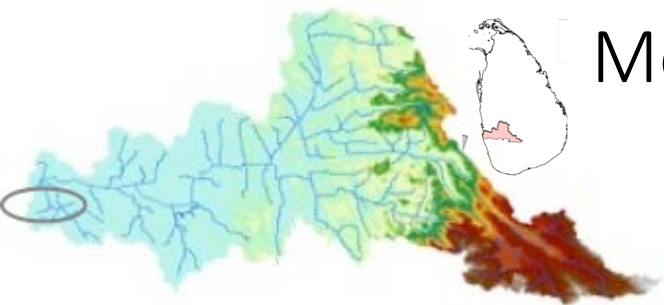
Six stories of a new building will house a state-of-the-art center for data integration, modelling, control and dissemination. The first two floors are planned for public outreach, the 3rd floor for data integration and flood control, 4th floor for environmental services, 5th floor for R&D and the 6th floor for administration.

Mission: Develop an integrated flood control and water management information system for flood risk reduction through optimal operational use of flood control facilities such as pumps, storages facilities, surface storages and flood early warning system for Metro Colombo.

Working with

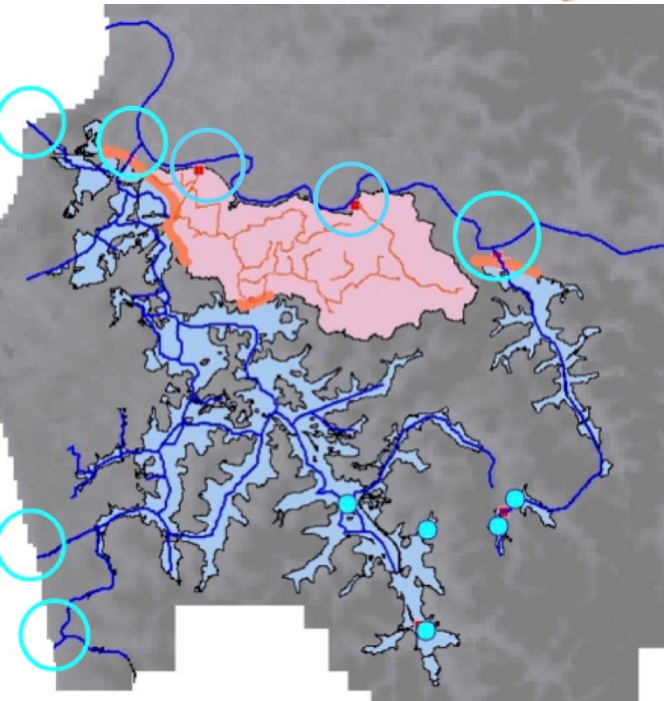


Metro Colombo flood control



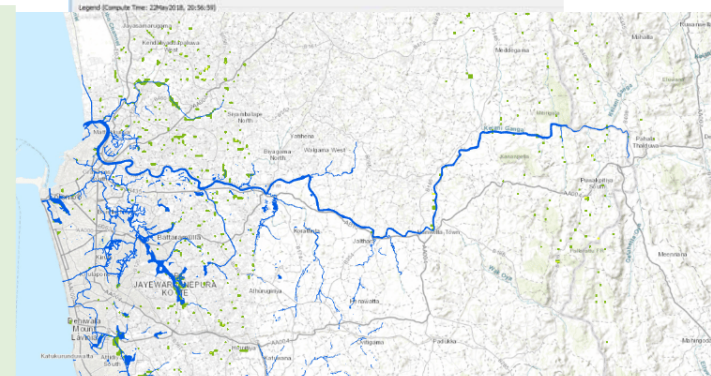
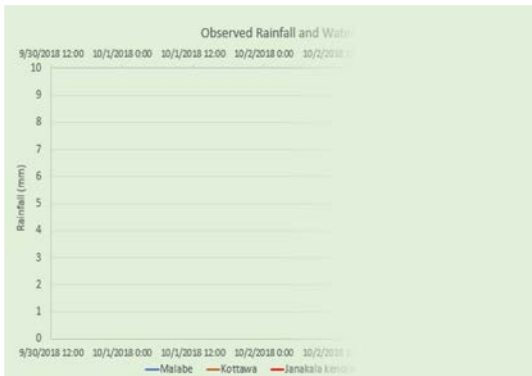
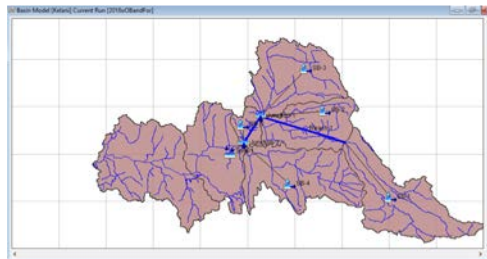
METRO COLOMBO URBAN DEVELOPMENT PROJECT

2012 WITH WB FUNDING USD 213M
FLOOD AND DRAINAGE MANAGEMENT 147M

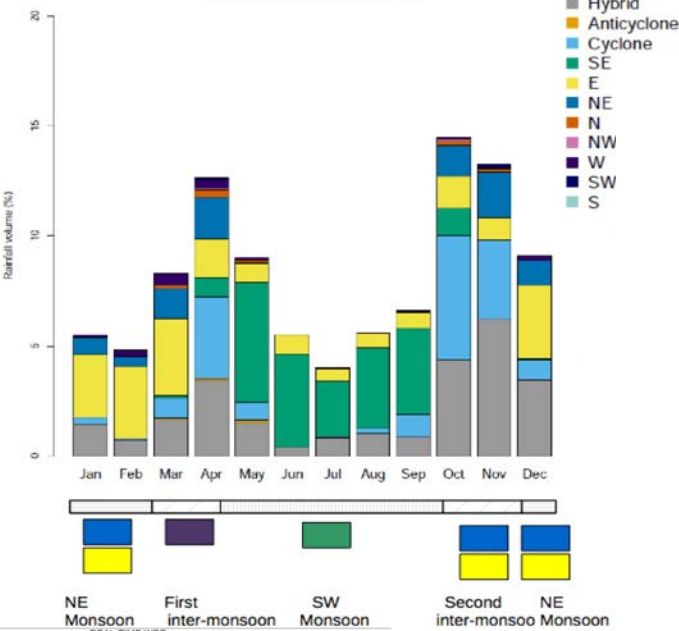


List of interventions

1. Improvements to Madiwela East Diversion Scheme
2. Madiwela South Scheme
3. St. Sebastian South Diversion
4. St. Sebastian North Lock widening & Pumping Station
5. Kolonnawa Canal diversion
6. New Mutwal Tunnel
7. Provide guide walls at Wellawatta Bridge
8. Torrington Tunnel



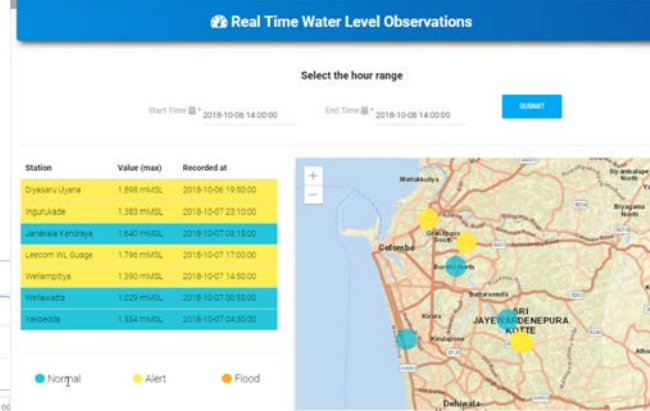
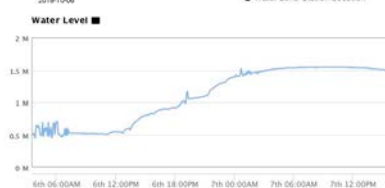
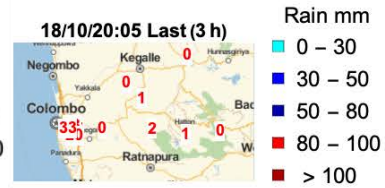
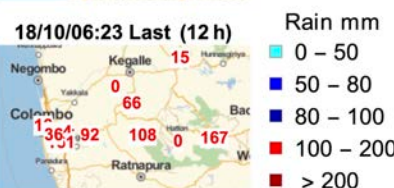
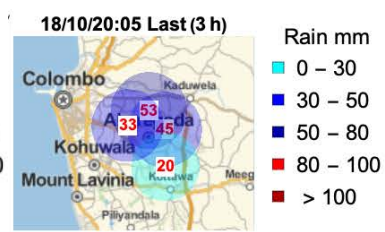
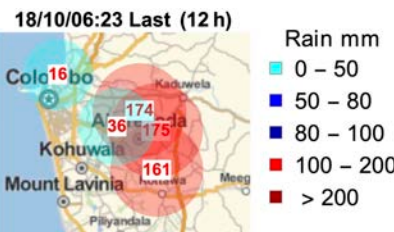
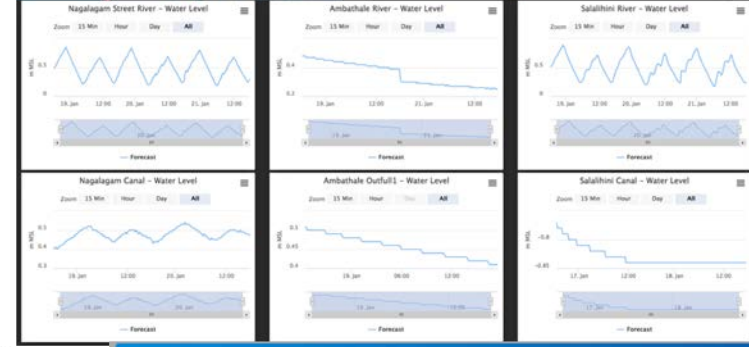
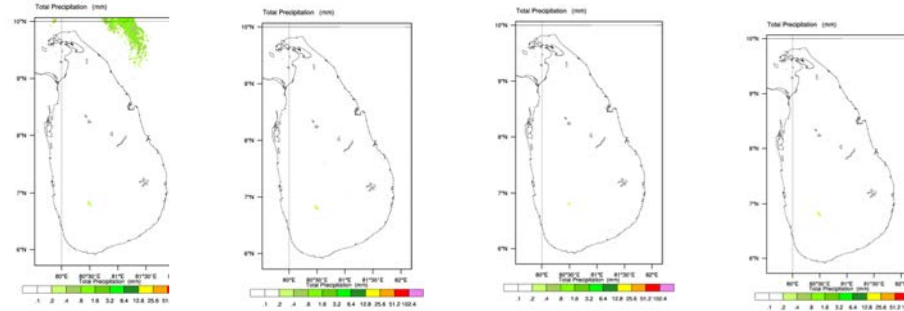
Rainfall distribution in Colombo



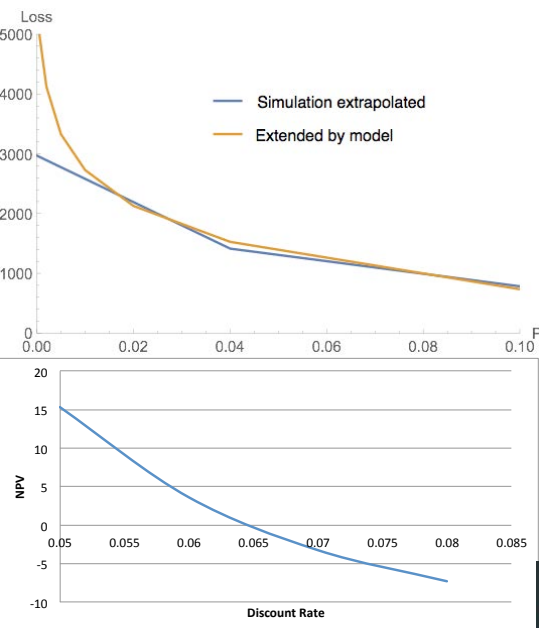
Forecasting & monitoring



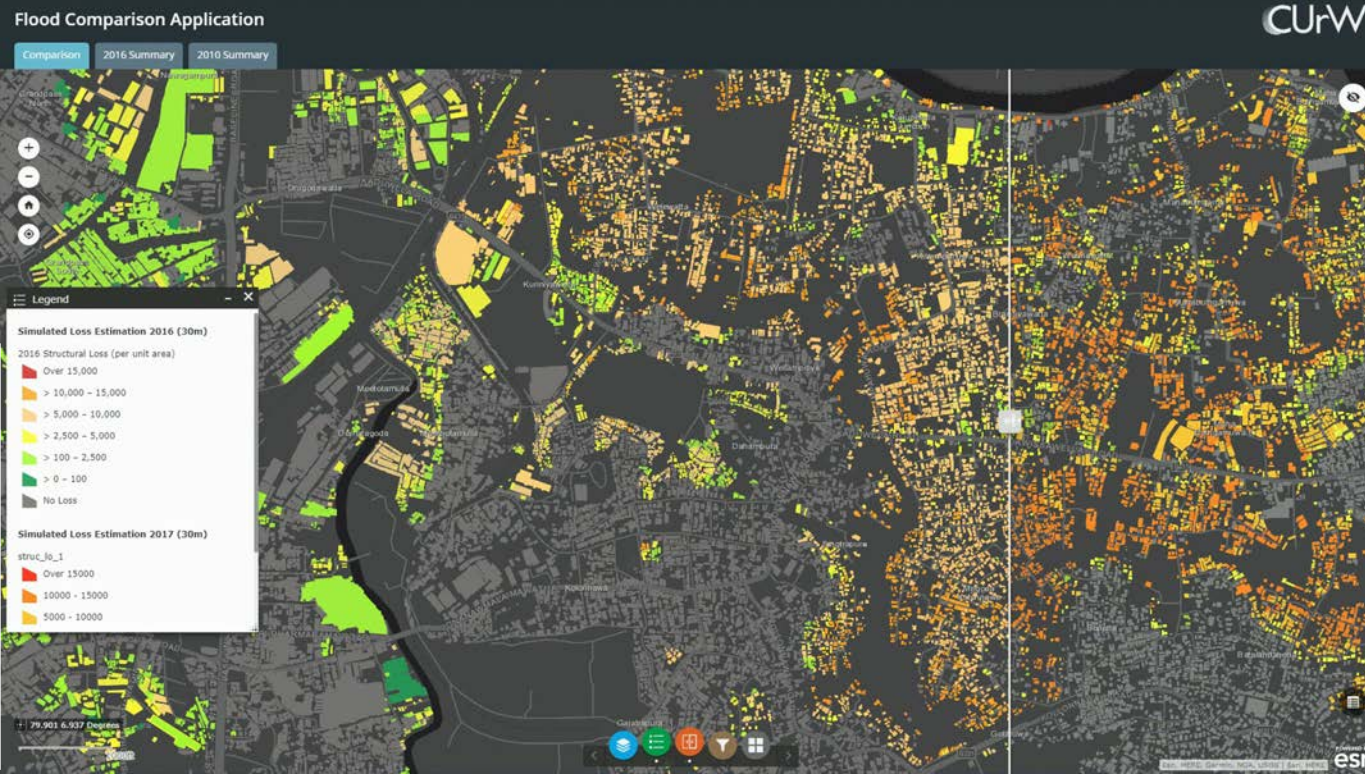
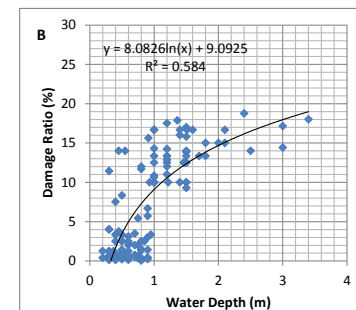
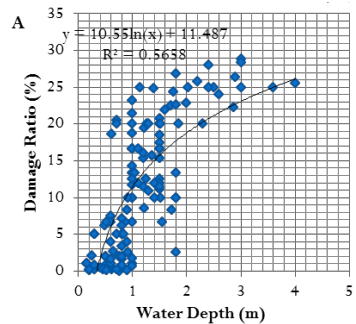
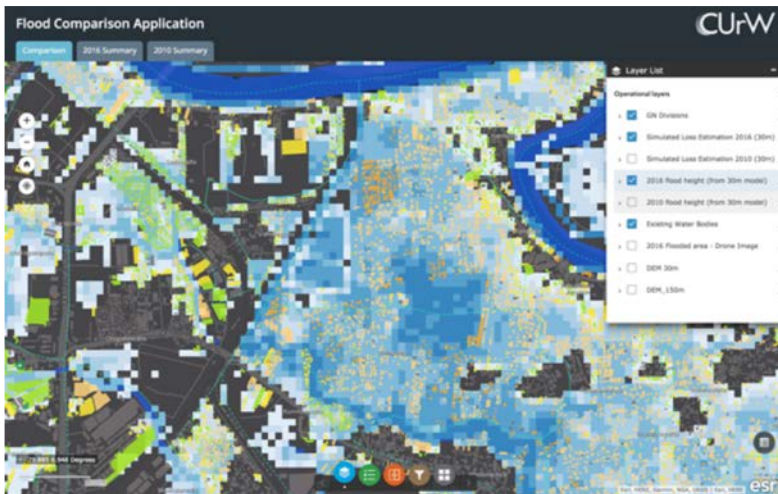
REAL-TIME WRF In: 2018-10-20, 5:30 Val: 2018-10-20, 6:00
 REAL-TIME WRF In: 2018-10-20, 5:30 Val: 2018-10-20, 5:30
 REAL-TIME WRF In: 2018-10-20, 8:30:00 Val: 2018-10-20, 8:30:00



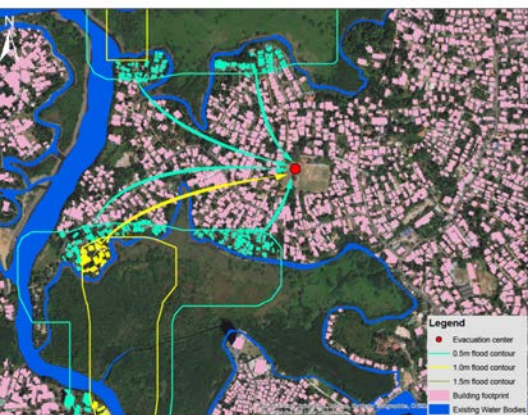
Risk Based Flood Management



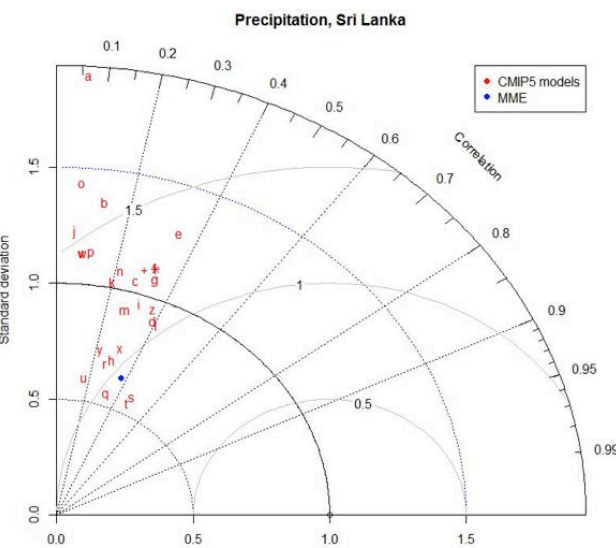
Expected Annual Damage
IRR



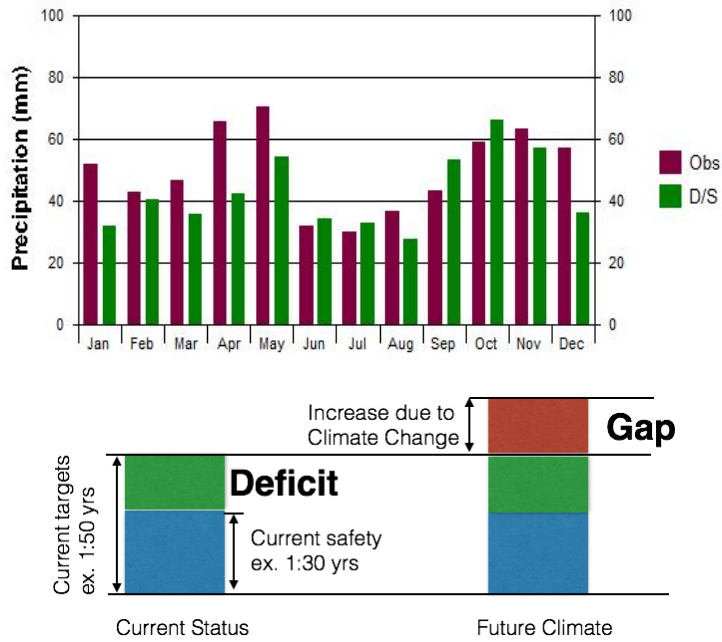
Manage flood control facilities to minimize societal and economic impacts



Climate Change



95 percentile precipitation (2006-2015)



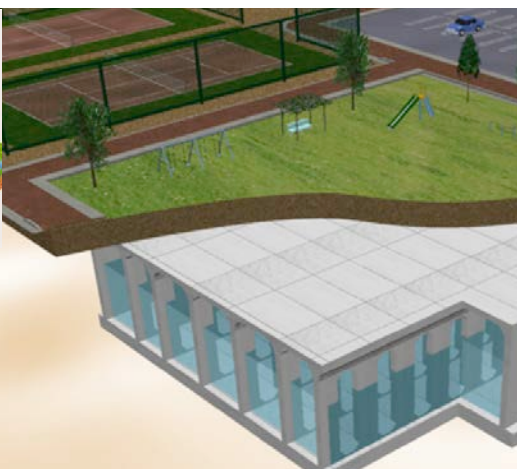
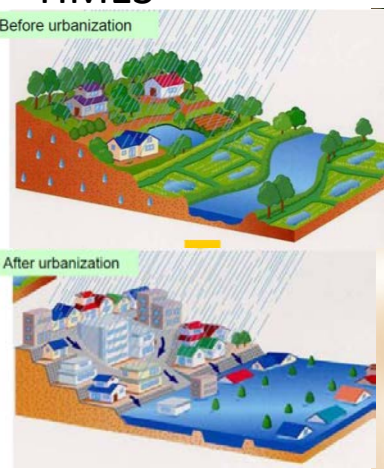
Mean (10%-23%),
 Maximum(2%-24%),
 peaks over the
 threshold of 50mm
 daily precipitation
 (30%-90%), 95
 percentile precipitation
 (8%-21%) For Colombo
 RCP4.5 and RCP8.5 for
 the 2075 to 2100
 period relative to 1981
 to 2005

URBANIZATION

INCREASE
 PEAKS BY 2-4
 TIMES

DECENTRALISED STORAGE AND
 INFILTRATION

USING WETLANDS FOR
 STORAGE MANAGEMENT



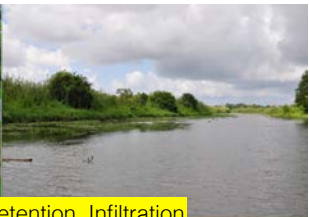
Problem:
 High Ground
 Water



Increasing Surface Retention, Infiltration



Natural Marshes / Flood retention areas

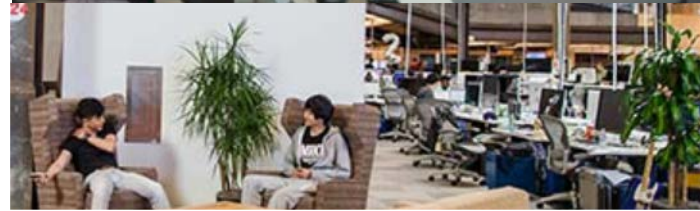
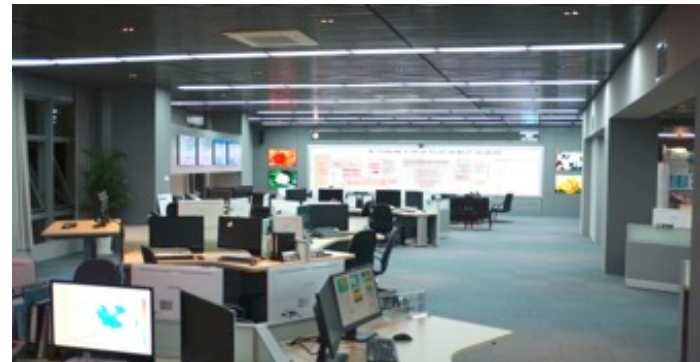


Contribution - CURW



CurW aims to help the local community and make an impact with available investments solving social issues using ICT. It aims to raise the levels of the graduate students to a global level through applied research and international collaboration. The Centre building will contribute to develop an ecosystem among government, academia and private sector fostering research, development and innovation.

- Ground Floor & 1st floor, Public outreach, education, equipment maintenance, information
- 2nd floor Information integration, forecasting and operation
- 3rd floor Environmental services
- 4th floor R&D:
- 5th floor Administration



Thank you!