

# Centre for Flood Control and Water Management in Western Province, Sri Lanka

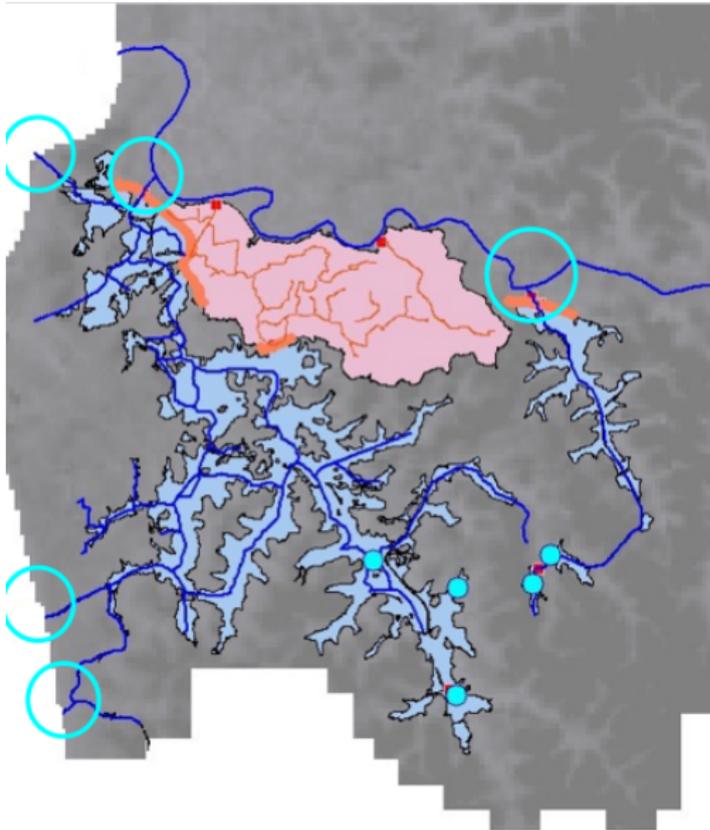
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# Metro Colombo Drainage System



- City protected by bunds and gates from Kelani River flood waters. However, overflow of canals at extreme local rainfall events cause severe flooding.
- Colombo is extremely flat and the very small slope makes drainage extremely difficult. Currently drained by 3 sea outfalls and two Kelani river outfalls.
- Lakes and marshy lands provides considerable storage for managing floods.

# Addressing Floor Risk

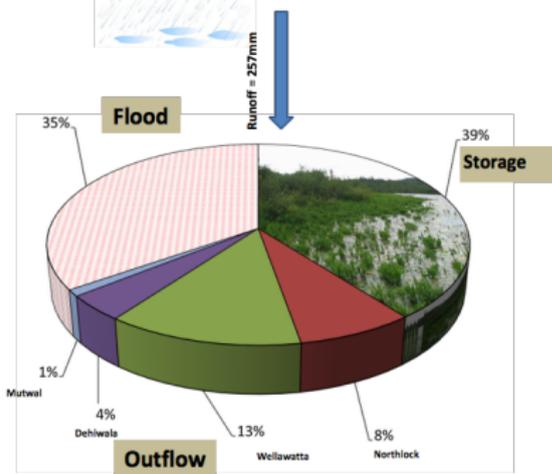
## Present Status

50 Year Design Rainfall (Low Kelani / Dry Soil)

Infiltrated = 219 mm

476mm Daily Rain

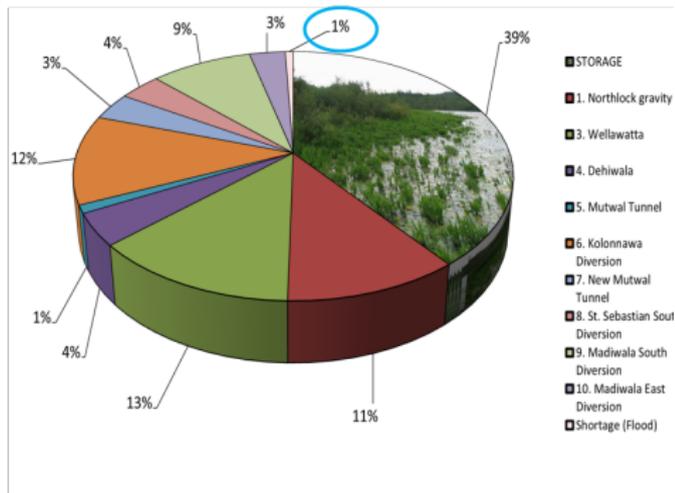
Runoff = 257mm



## After Intervention

50 Year Design Rainfall (Low Kelani / Dry Soil) with Proposals

Reduced flood from 35% to 1%

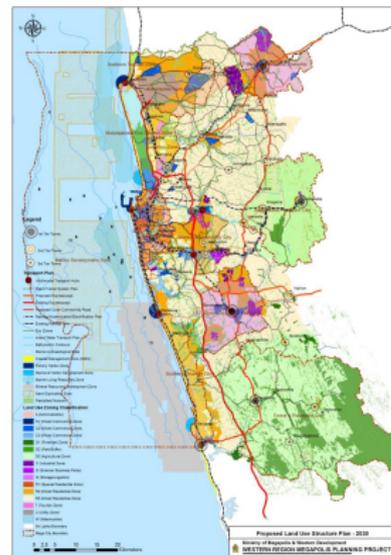
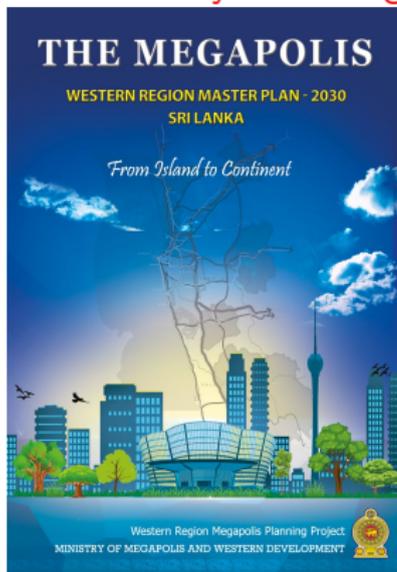


- Metro Colombo Urban Drainage Project with a World Bank Loan is improving city drainage capacity
- Canal Improvements, two tunnels and 3 pumping stations would increase outfall volume.

# Managing Future Risks

## New Development Programme: Megapolis Development Need to assess increasing flood vulnerability and design counter measures.

- Increase green infrastructure: Surface retention (wetlands) and Infiltration
- Risk assessment on major developments, Transport Hub, Port City, etc.
- Real Time Monitoring and Control



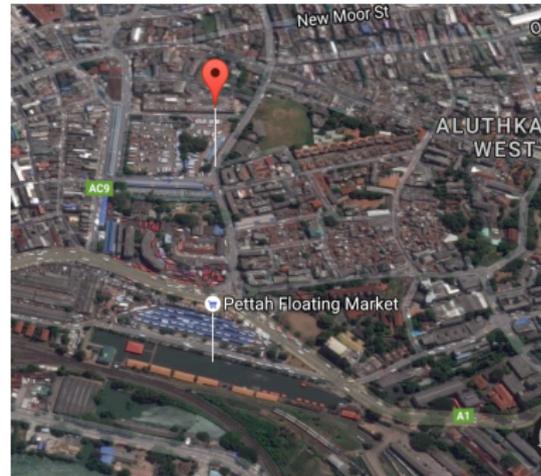


## Natural Marshes / Flood retention areas



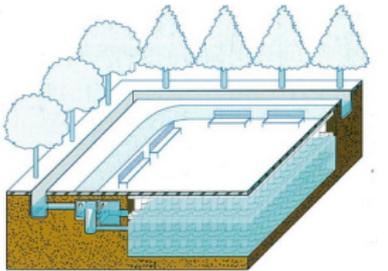
# Retention and reuse

- Need to increase flood control capacity considering future development
- Difficulty of drainage: Low gradient
- Difficulty in major constructions in congested capital



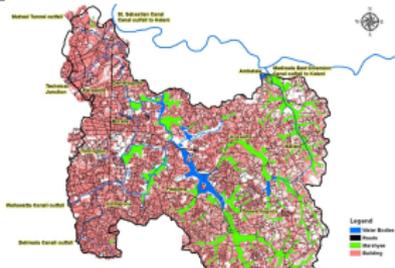
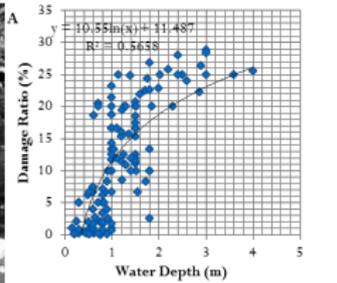
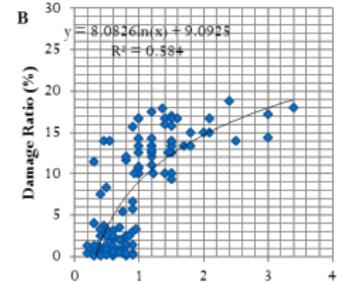
## From Storm Water Drainage to Water Cycle Management

Source: Association for Rainwater Storage and Infiltration Technology (ARSIT)



# Risk Assessment: Potential Loss and Response

- Adopting Standard Building Categories:  
**Wood**, All Steel Structures, **All Concrete Frames(3)**, **All Masonry (2)**, Adobe, Slab
- Critical Infrastructure Mapped
- Comprehensive Exposure map being prepared for Economic Risk Assessment and Risk based warning.



# Inter Agency Collaboration: Trigger: May 2016 Floods



Colombo Page 17th May



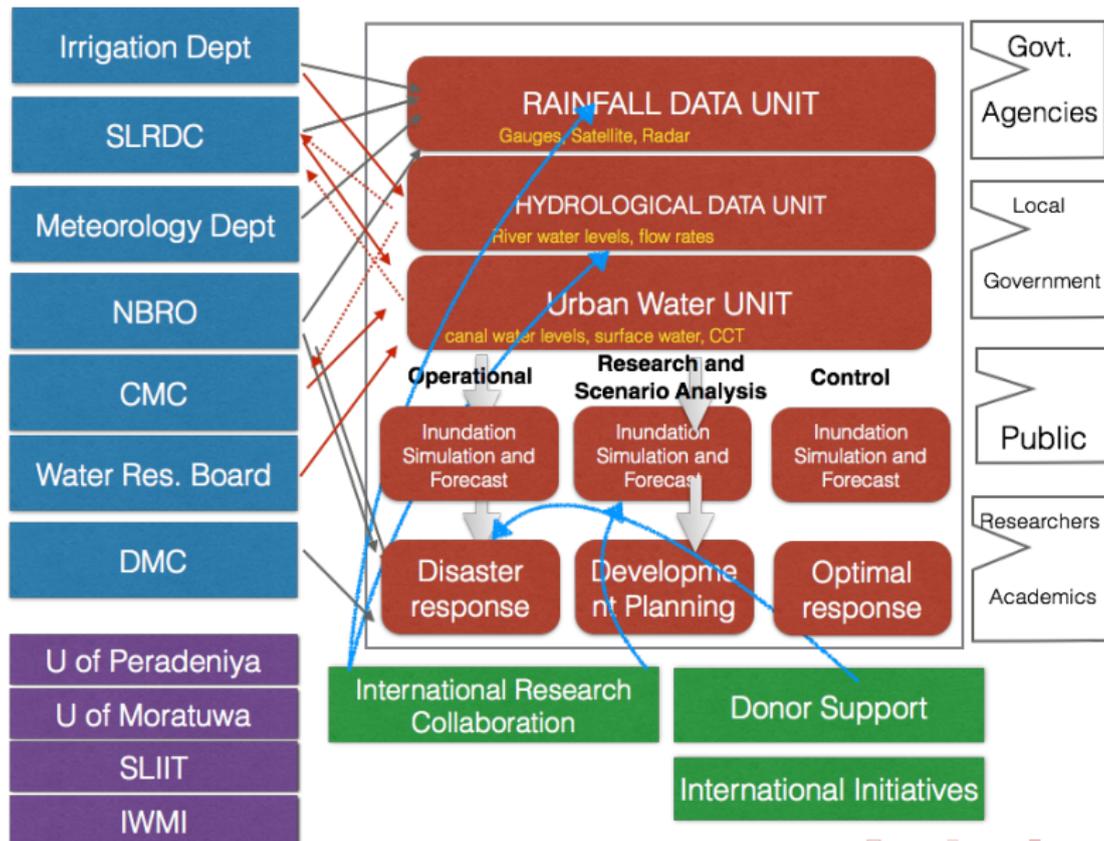
Colombo Telegraph 19th May



APPhoto 20th May

- 11 major floods in last 32 years. Biggest since 1989. (SW monsoon from May to September)
- Heavy rains in mid, upper and lower Kelani basin from 13th to 19th : catchment average 515 mm total.
- 280,444 people affected, 96 deaths, 4877 displaced.
- 722 houses completely destroyed. Over 5000 partially damaged.
- Discussions among major stakeholders in 2016 Aug - Oct
- Form an inter-agency platform for integrated information system
- A Steering committee senior management and a working group nominees from the stakeholder organizations formed.
- Cabinet approved the establishment of a state-of-the-art-center.

# CFCWM – RTC Implementation



# Summary: Metro Colombo Urban Flood Control

- Improving basic drainage infrastructure to cater to 1:50 yr rainfall, favourable boundary conditions, through canal improvements, tunnels and pumping stations
- Assessing Future Risk From Development, On Development (infrastructure)
- Detailed mapping for risk based warning (people, assets)
- Moving from quick storm water discharge to storing water in lakes, wet lands and underground
- Real Time Forecasting and Control with inter-agency collaboration

Thank You!