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# PATHWAYS TO WATER RESILIENT SOUTH AFRICAN CITIES – MAPPING URBAN WATER MANAGEMENT GOVERNANCE PROCESSES

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FUTURE WATER

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DANIDA | INTERNATIONAL DEVELOPMENT COOPERATION

# Outline of presentation



1. Background / context
2. Overview of PaWS project; selection of cases
3. Mapping / survey process
4. CT policy review
5. Jhb – Stormwater manual / by-law process
6. Way forward

# Background / context

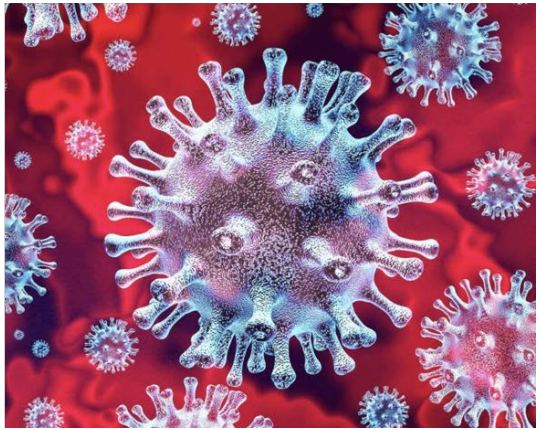


*2017 & 2018 drought* → *a wake up call* → *2019 water quality* → *2020 COVID-19*

***System resilience & climate change***

***citizen action***

***health and economy***



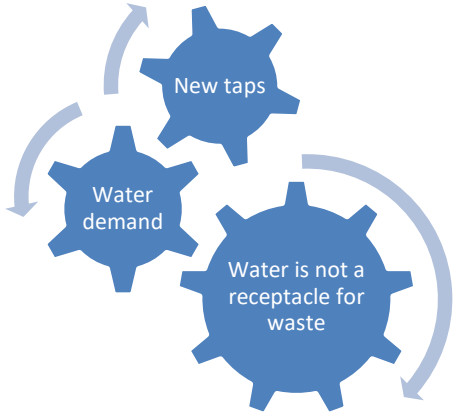
*Building resilience to respond to shocks - Cape Town example (Source: M. Webster, CoCT)*

# A resilience approach for SA

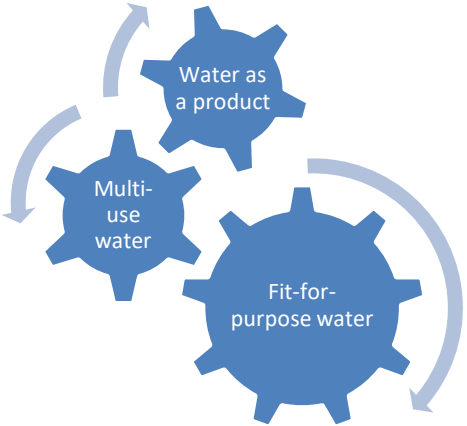


- Integration across water sectors in response to multiple risks (breaking silos)
- Emphasising links between drought, flood and other water-related challenges
- Harnessing nature as a buffer to hazards (blue-green infrastructure / waterscapes)
- Demonstrating how WSD could improve water quality, water quantity, biodiversity and amenity – i.e. liveability
- Rethinking governance in terms of scale and actors

***Water Sensitive Cities***




New sources




New thinking

# Key project elements



## *Alleviating water stress sustainably*

- Nature-based approaches that link storm runoff and wastewater to water supply
- Water sensitive urban design elements and landscape based solutions
- Integration of built water infrastructure with green infrastructure in a decentralised manner
- Physical and institutional integration

# WPs and research questions



**Work Package 1**

Physical experimentation with and evaluation of WSUD options at different urban scales and options for their integration into the urban water system

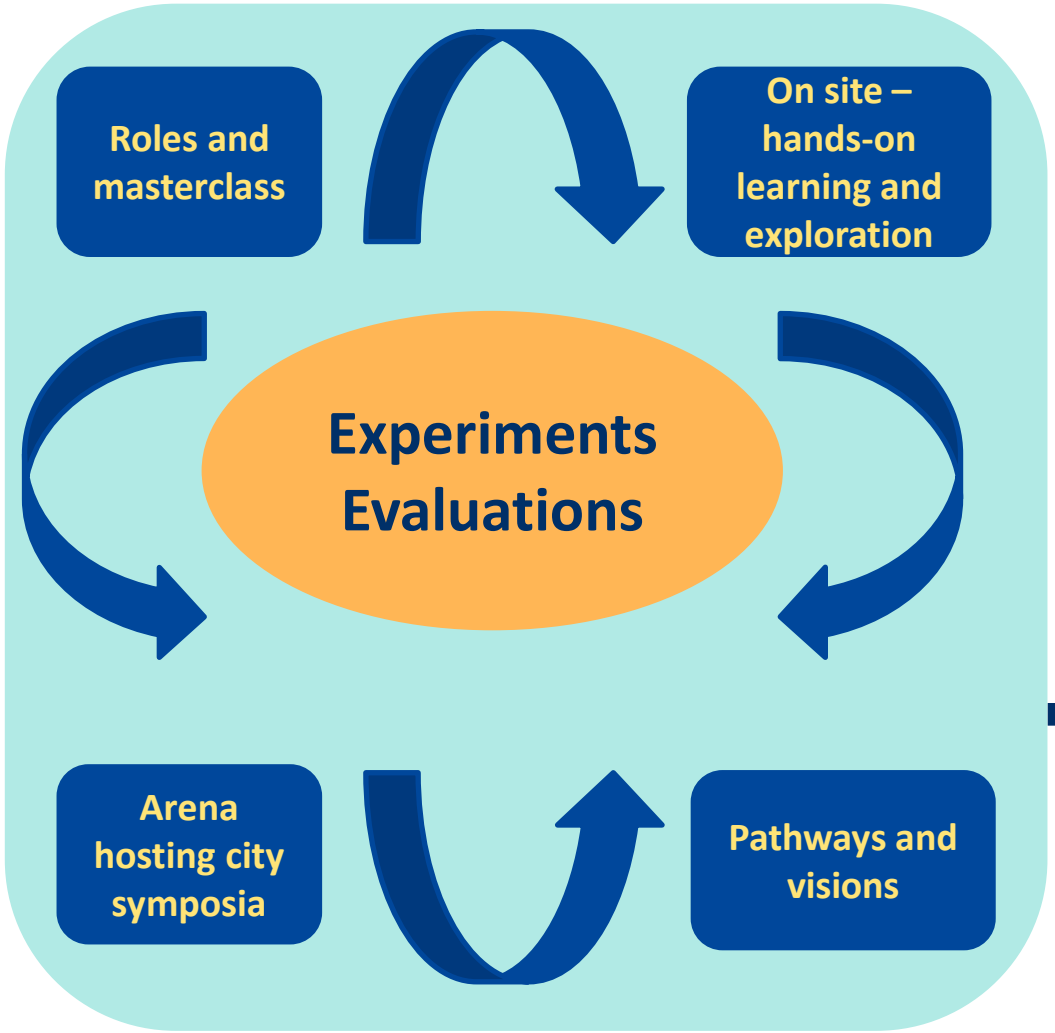
**Work Package 2**

Exploring governance processes for integration of WSUD options in urban water governance and enabling the emergent transitions

**Work Package 3**

Management and dissemination

- Can stormwater ponds be repurposed to allow for harvesting / treatment of surface runoff?
- How effective are WSUD elements being implemented in JHB in response to the Stormwater by-law?
- What are the roles and responsibilities of different actors in the implementation and management of WSUD?
- What does an enabling governance environment for increased water resilience entail and how can it be supported?
- What are pathways for physical and institutional integration of WSUD into the urban water cycle?

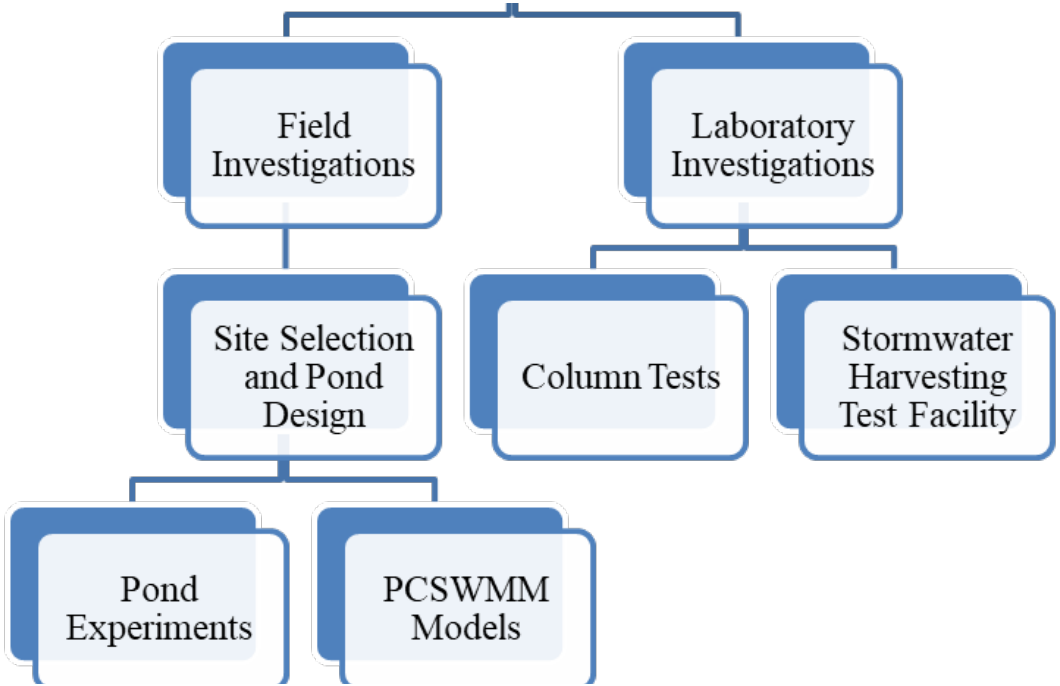



**Who gets involved, how and to what extent is the solution managed or integrated with the existing urban water regime?**

**Pathways for integration?**

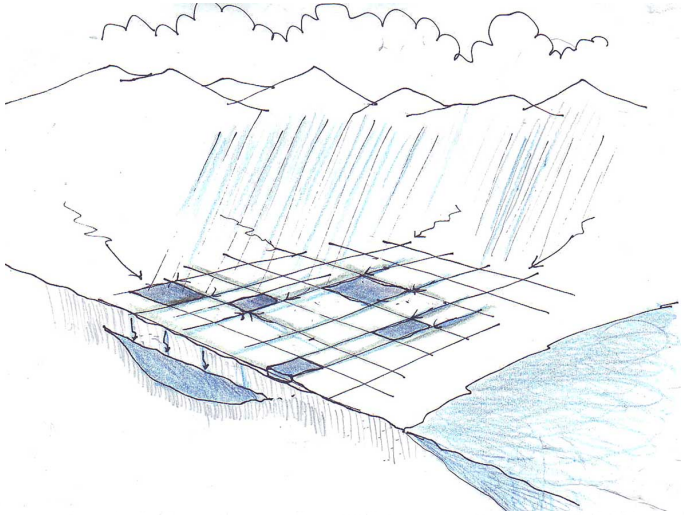
# Physical experimentation in CT



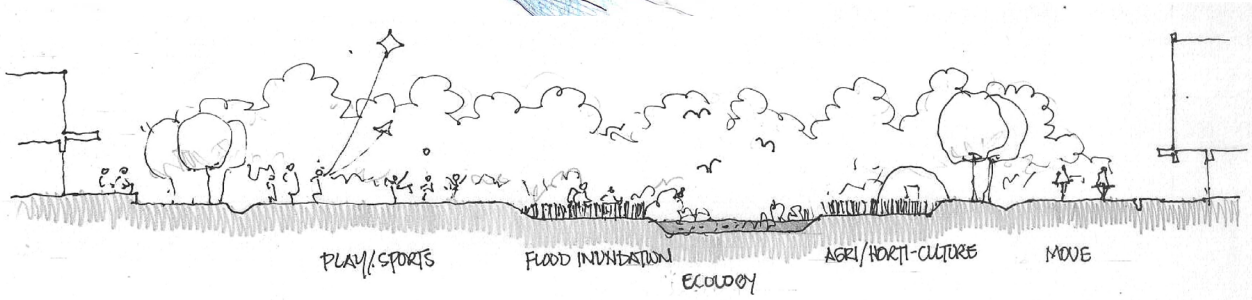



# Multifunctional design





Ponds as part of urban landscape, activating ‘vacant’ land; e.g. blue-green infrastructure as productive landscape spaces



# Case study selection, Jhb



Westlake Eco-Estate

The Reid

Noordgesig Detention Pond

Booysens Detention Pond

Riverside View

The New Lion Park

Observatory Golf Course

SuDS in Sjwetla

# Case study selection (2)




## The Reid

- Lifestyle Residential Estate
- Privately owned and managed
- SuDS (swales, litter trap and retention ponds)

## Observatory Golf Course

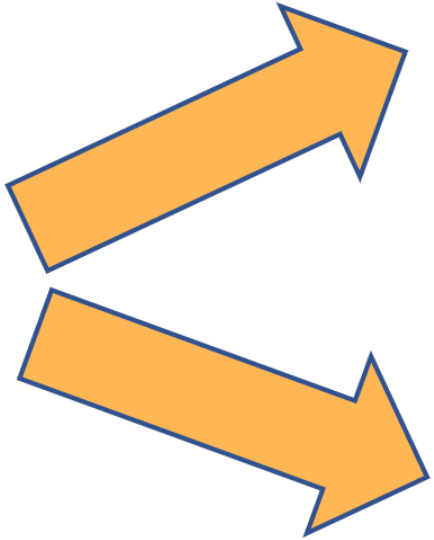
- Golf Course
- Privately owned and publicly managed
- Green Infrastructure

# Case study analysis



The Reid

Observatory Golf Course



WP1: Stormwater modelling and analysis of the functioning of the systems from a SuDS and WSD perspective

WP2: Governance and Institutional analysis

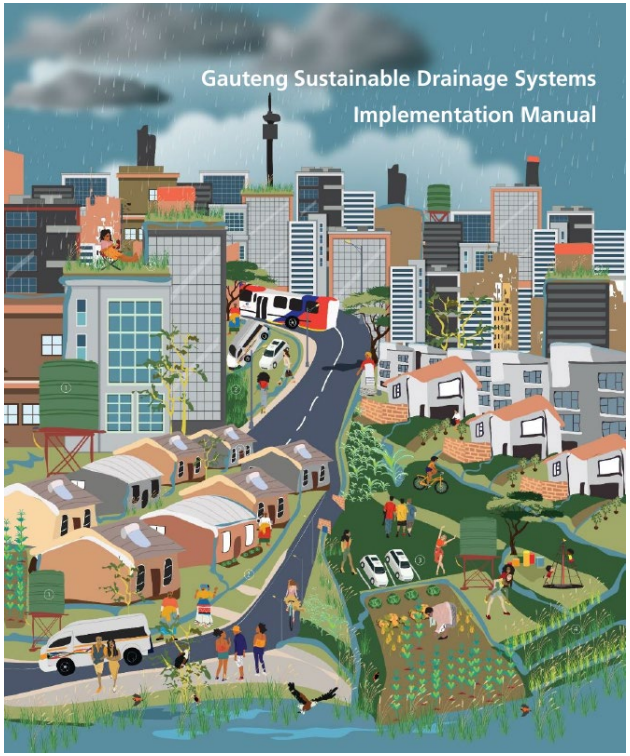
# Stakeholder analysis



- Initial arena engagement (June 2019)
- 22 Semi-structured interviews in CPT and Jhb with city officials, consultants, provincial authority, utility officials, academics
- System and actor analyses
- Article 1 on *"Scoping prevailing conditions for the transition towards water resilient futures in Cape Town and Johannesburg"*
- 'Top-down' approach looking at coalitions, networks, learning & expectations around WSD from the regime or city governance's perspective
- Article 2 on social network analyses of Cape Town water sphere (in-process)

# Existing policy - Jhb






**STORMWATER MANAGEMENT MANUAL**

**REVISION CV8 AF CJB 2018/12/12**

REPORT TO

**CITY OF JOHANNESBURG**

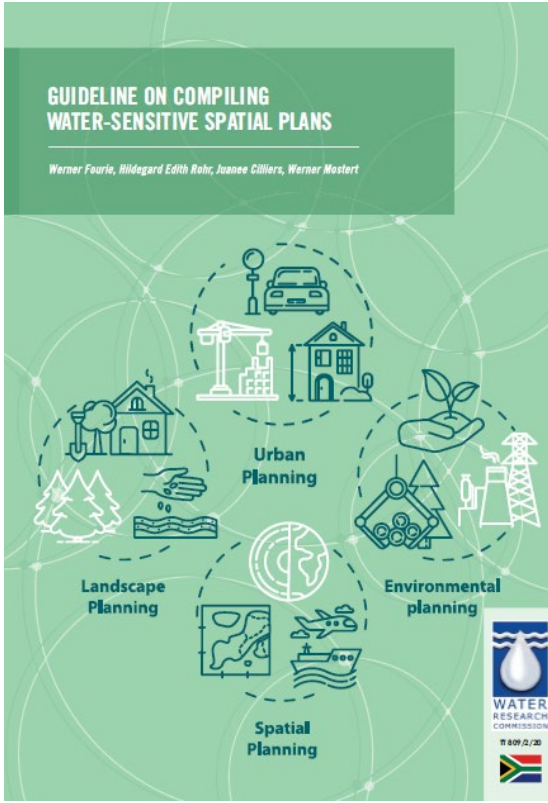
**JOHANNESBURG BUILT ENVIRONMENT GUIDELINES AND STANDARDS**

**(JBEGS)**

November 2014

Development Planning
City Transformation & Spatial Planning

Joburg
a world class African city




https://www.gcro.ac.za/news-events/news/detail/gauteng-launches-sustainable-drainage-manual/

# Existing policy – Cape Town



| Keyword | Resilient Cape Town | Cape Town Water Strategy | Water Services Development Plan | Climate Change Policy | Management of Urban Stormwater Impacts Policy | Cape Town Municipal Spatial Development Framework |
|---|---|---|---|---|---|---|
| Nature Based Solutions | 0 | 0 | 0 | 0 | 0 | 0 |
| Water sensitive | 0 | 37 | 7 | 6 | 11 | 2 |
| Water Sensitive City | 0 | 26 | 7 | 0 | | 0 |
| Water Sensitive Urban Design | 0 | 6 | 0 | 5 | 11 | 2 |
| Green Infrastructure | 3 | 0 | 0 | 9 | 0 | 2 |
| Sustainable Urban Drainage Systems | 0 | 0 | 0 | 0 | 11 | 0 |
| Stormwater harvesting | 0 | 24 | 0 | 1 | 0 | 0 |
| Decentralised | 1 | 0 | 0 | 1 | 0 | 0 |

# Practitioner survey




Focus Groups

Arena

- *SuDS*
- *WSD*
- *Revised Red Book*
- *CoJ Stormwater Manual*

- *Young Professionals (Public & Private)*
- *Experienced Professionals (Public & Private)*
- *Authors (Red book & Stormwater Manual)*
- *Property Developers*
- *Cross Cutting (GCRO, WRC, Water for the Future)*

# Progress in a pandemic



- No ‘product’; i.e. physical pilots - but considerable progress on process
- Field activities and face-to-face interaction has been difficult but some activities have been re-thought to be more Covid-friendly

**WP1**

**Physical pilot establishment**

**Evaluation and tests in the field**

***Sharing and site at UCT***

**WP2**

**Face-to-face interviews**

**Stakeholder engagement**

***Online survey and group discussions***

# Initial findings



*What does an enabling governance environment for increased water resilience entail and how can it be supported?*

- Coordination and network building remains challenging
- Water and sanitation deficits remain a priority
- Lack of integrated water management approach
- WSD-specific skills  and confidence in an approach with limited proof of concept
- Apprehension about practical implementation (asset management and maintenance)

# Looking ahead into 2021



- Establishment of experiments in Cape Town
- More local stakeholder engagement in Cape Town

- Stormwater modelling in Joburg
- Shadowing of key stakeholders in Joburg

- Stakeholder engagement; arenas – ‘local arena’ in Cape Town and ‘practitioners arena’ in Joburg