

FOR REGISTERED IWA CONFERENCE ATTENDEES ONLY



WORKSHOP PROGRAMME

# **DECENTRALISED WATER REUSE: EXPANDING THE WATER REUSE ARSENAL FOR BUILDING RESILIENT CITIES**

IWA Water Reclamation and Reuse Conference

Date: March 16, 2024, Sunday

Time: 14h00 to 17h00 (before reception at 17h30)

Location: Meeting Room, 2.4.3-2.4.4, CTICC, South Africa



## BACKGROUND

Urban areas around the world are facing increasing water scarcity due to population growth, climate change, and aging infrastructure. In this workshop, we shall engage with participants on how decentralised water reuse and resource management fit with other water reuse approaches for water resilient cities. The decentralised approach can be used where centralised sources and distribution networks are vulnerable to droughts and flooding, making them less reliable in times of a crisis. The approach offers several benefits, including

- Recycling wastewater close to the point of use;
- Does not rely exclusively on centralised supply points or associated infrastructure;
- Reducing dependency on distant sources and improving overall water security in cities and;
- Providing a level of decentralised control to landowners and businesses.

It is important to realise that decentralised and centralised approaches are not opposing strategies, rather they complement each other. The city of Cape Town, where a Day Zero was narrowly avoided, serves the host city for the workshop and thus a rich learning space for thinking creatively about water security.

## WORKSHOP LEARNING & REFLECTION OPPORTUNITY

Join us for this workshop where we will tap into the best of global expertise (from a science and implementation perspective) to understand the promising opportunity that decentralised water reuse presents to our climate-vulnerable cities and unserved communities. More specifically, we going to reflect on:

1. Complementarity between Decentralised Water Reuse strategies, Non-Sewered Sanitation (NSS) and conventional centralised systems as part of integrated water supply.
2. Discussion on the stumbling blocks to alternative approaches including user acceptance, risk assessment, governance, procurement, Public Private Partnership (PPP) management, revenue and tariffs, and innovation.
3. Reflection on the impact of implementing decentralised reuse in different contexts and what it takes to practically get these solutions flourishing in different cities.

The workshop will be facilitate in a manner that encourages all participants to engage and reflect on the topic; and network with others exploring opportunities in this area.

## PROGRAMME AGENDA

Time	Topic	Speaker
14h00	Welcome and buzz session	Shanna Nienaber (WRC)
14h10	Think Holistically, and Learn from other Transitions	Prof Korneel Rabaey (Ghent University, IWA Chair of outreach / conferences)
14h30	Buzz responses in plenary	Shanna Nienaber
14h40	Video Presentation: Scaling Decentralised Water Reuse in Urban Environments: The San Francisco Example	Paula Kehoe, Director of Water Resources (SFPUC)
15h00	Buzz session	Shanna Nienaber (WRC)
15h10	What Can We Glean from Decentralised Water Reuse in Different Countries	Professor Eberhard Morgenroth (EAWAG)
15h30	Buzz session	Shanna Nienaber
15h50	Connecting Decentralised Water Reuse and Non Sewered Sanitation: Connecting lessons from poorly served communities and urban centres	Ednah Mamakoa (WRC)

Time	Topic	Speaker
16h10	Buzz session	Shanna Nienaber
16h20	Question and Answer Session	Shanna Nienaber
16h30	Collective Reflection Session: Decentralised Water Reuse: Your context: Sign-posting the Most Powerful 'Next Step'	Shanna Nienaber
16h40	Plenary Feedback	Shanna Nienaber
16h50	The Way Forward	Shanna Nienaber & Sudhir Pillay (WRC)
17h00	END	

## WORKSHOP PROGRAMME GUIDE

### 14:00 | Decentralised Water Reuse: A Sector Changing Opportunity

*Facilitation and welcome: Shanna Nienaber (WRC)*

### 14:10 | Think Holistically, and Learn From Other Transitions

*Speaker: Prof Korneel Rabaey (Ghent University, IWA Chair of outreach / conferences) Introduction of the topic of the workshop and why this is an important topic on this platform?*

Decentralised systems are often regarded as competing technology relative to centralised approaches. There can be many reasons for this, from lack of knowledge or trust in the technologies, competing interests to misconceptions. Many years ago, solar panels were regarded as an oddity by large electricity producers, but undeniably today these small modular systems are contributing significantly to our energy mix at prices that are often lowest in between the options. Decentralised systems can through mass production become low cost and be implemented fast. The fact that through their installation the need for extensive sewer networks is reduced plays on many levels, and not just cost. They enable lower greenhouse gas emissions and local water reuse as examples. In this presentation, Prof. Rabaey discusses from a more holistic approach how we should look at decentralised systems and how replication can be facilitated – and why.

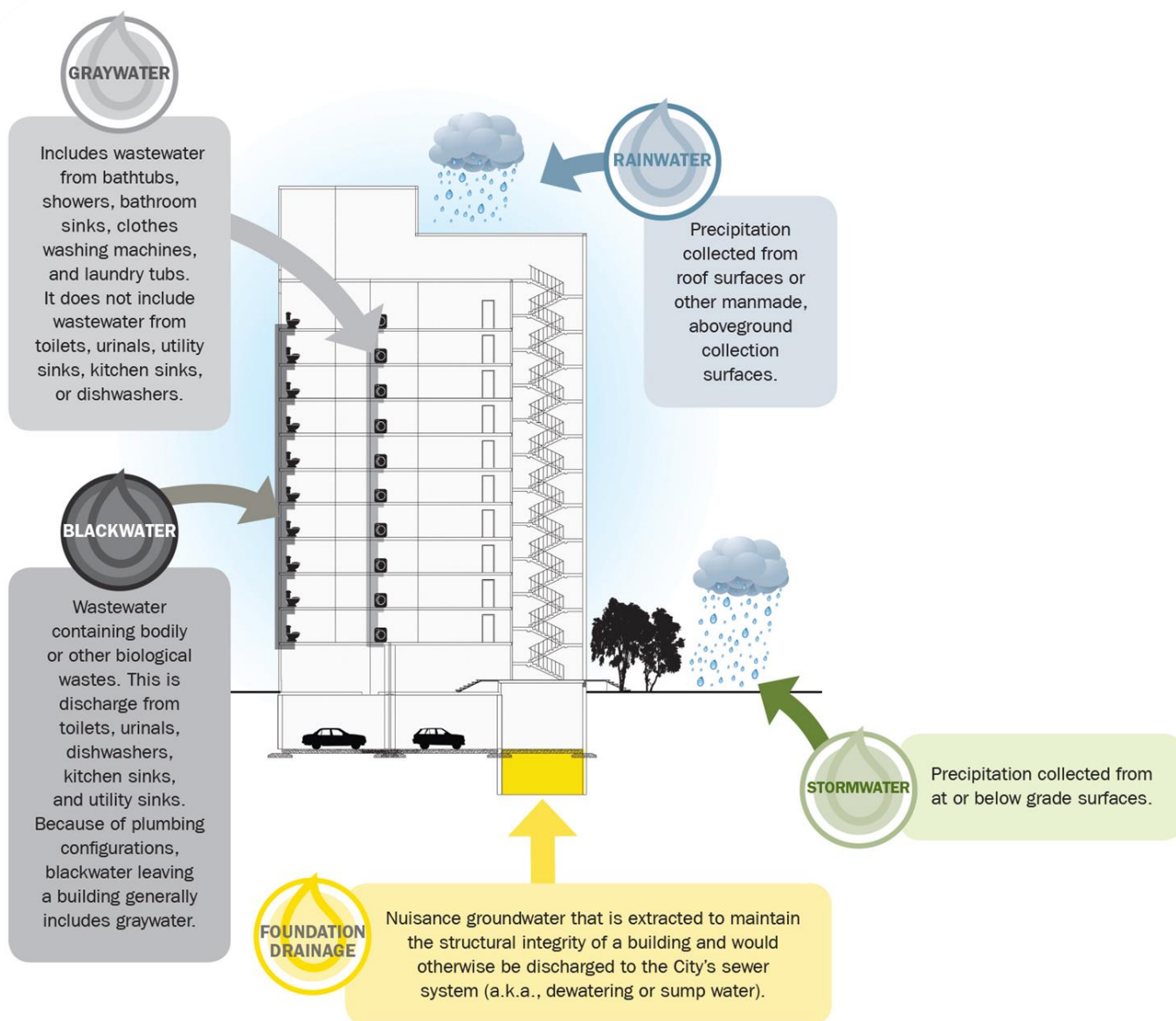
**FOCAL QUESTION TO THE PRESENTER:**  
 HOW DO FOSTER CO-LEARNING BETWEEN DIFFERENT APPROACHES  
 (INCLUDING SANITATION, OTHER REUSE APPROACHES)?  
 HOW TO LEARN FROM OTHER TRANSITIONS?  
 WHAT DOES THE IWA RESOURCE RECOVERY SPECIALIST GROUP PRESENT  
 AS A COORDINATING OPPORTUNITY?

### 14h30 | Buzz responses in plenary

### 14:40 | Video Presentation: Scaling Decentralised Water Reuse in Urban Environments: The San Francisco Example

*Speaker: Paula Kehoe, Director of Water Resources, San Francisco Public Utilities Commission (SFPUC), U.S.A*

Paula Kehoe leads SFPUC's efforts in promoting innovative water reuse strategies. She spearheaded the development and implementation of San Francisco's decentralised water reuse programme, which has become a global model for urban water sustainability. In her keynote, Paula will share insights on scaling decentralised systems, regulatory challenges, and community engagement strategies that have contributed to SFPUC's success. Workshop attendees will be engage Paula on how scaling was achieved.



**FOCAL QUESTION TO THE PRESENTER:**  
 WHAT IS THE OPPORTUNITY THAT DECENTRALISED WATER REUSE PRESENTS TO CITIES?  
 WHAT ARE THE LEVERS THAT BRING THIS TO SCALE?  
 HOW DOES A UTILITY MANAGE RISK, PPP AND REVENUES?

**15h00 | Buzz Responses In Plenary**

**15:10 | What Can We Glean from Decentralised Water Reuse in Different Countries**

*Speaker: Professor Eberhard Morgenroth, EAWAG, Switzerland*

Prof Eberhard Morgenroth is a leading expert in environmental engineering at the Swiss Federal Institute of Aquatic Science and Technology (EAWAG). Prof Eberhard delves into issues of scaling decentralised reuse in different city contexts including user acceptance and behaviour, issues on regulations, and cultural norms and practices.

**FOCAL QUESTION TO THE PRESENTER:**  
HOW MUCH DOES CONTEXT MATTER WHEN IMPLEMENTING  
DECENTRALISED REUSE IN DIFFERENT CITY CONTEXTS?  
AND WHAT ARE THE IMPLICATIONS FOR HOW WE SCALE THESE  
SOLUTIONS IN DIFFERENT PARTS OF THE WORLD?

### 15h30 | Buzz responses in plenary

#### 15h50 | Connecting Decentralised Water Reuse and Non Sewered Sanitation: Connecting Lessons from Poorly Served Communities and Urban Centres

*Speaker: Ednah Mamakoa (WRC)*

South Africa is often ranked among the top 20 driest countries in the world, with water demand projected to exceed supply in less than a decade. Historically, efforts have focused on expanding access to unserved areas—an ongoing priority. Recent climate-resilient NSS innovations have emerged to support these efforts. The NSS solutions do not require a constant external supply of water for operation with wastewater treated and re-used for flushing. From a user perspective, flushing toilets are the preferred technology choice so there tends to be good user experience (compared to dry sanitation). Water reuse and cost savings from flushing have been shown to be major driver for their implementation outside the sewered network – in other words, recycling reduces Non-Revenue Water (NRW) volumes and represent savings. It is possible to expand the application beyond sanitation to include other water activities, such as laundry, which are routinely undertaken in government-sponsored Communal Ablution Blocks (CABs). And transition some of these learnings to urbanised centres which are faced with increased water shortages. In response to water shortages, many households and small businesses have adopted backup water storage systems, sometimes connected to the municipal potable water supply, without fully understanding the associated risks. To address these challenges, it is critical to establish clear guidance on safe water reuse practices to mitigate risks and enhance water resilience.

**FOCAL QUESTION TO THE PRESENTER:**  
WHAT IS THE OPPORTUNITY OF THINKING ABOUT NSS AND  
DECENTRALISED WATER REUSE AND AN INTEGRATED SERVICE OFFERING?  
HOW DOES THIS OPPORTUNITY PLAY OUT IN HISTORICALLY  
UNDERSERVED COMMUNITIES AS OPPOSED TO URBAN CENTRES?





*Non-Sewered Sanitation (NSS) system in Johannesburg, South Africa. The system recycles water for flushing.*

16h10 | Buzz session

16h20 | Q&A

16:30 | Collective Reflection Session: Decentralised Water Reuse: Your Context: Sign-Posting the Most Powerful 'Next Step'

*What is the most practical and powerful opportunity you see for Decentralised water reuse in your context?*

*What is the biggest sectoral/institutional lever that would shift you to that opportunity?*

*What is the most powerful personal opportunity that would connect you with the shift?*

16:50 | THE WAY FORWARD

*Facilitated by Shanna Nienaber (WRC) and Sudhir Pillay (WRC)*

Summary of key takeaways and next steps for workshop participants.

Details for the site visit: climate-resilient water reuse sanitation system in Cape Town.

17h30 | Reception