



WATER AND SANITATION REPORT FOR 28 NOVEMBER 2024 FORUM



CITY OF CAPE TOWN
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A) INTRODUCTION

The Energy Water and Waste Forum was held on the 28 November 2024 at the Bloemhoef Electrical Building, Cape Town – themed 'Building Resilience through Desalination'.

Objective

The Forum aims to equip owners and managers of offices, shopping centres, hotels, and other commercial and public buildings with practical knowledge and support to enhance resource efficiency and reduce landfill waste. It targets large and small property owners, managing agents, facility managers, and related sectors. Effective waste management is a vital service provided by the City to maintain cleanliness and promote health and well-being for both local and international communities. This commitment is outlined in the City's Integrated Waste Management Plan (IWMP) and aligns with the Western Cape Provincial Integrated Waste Management Plan.

Forum attendance and survey feedback

Attendees were asked to complete a feedback form, which included questions on topics of interest for the EWW Forum meeting. Of the 52 attendees, 41 submitted feedback forms. The key points highlighted in the feedback were:

1. Most guests found the forum very informative and well organized.
2. A few respondents expressed that the following should be included in the upcoming forum as they are topics of interest:
 - Micro-grids
 - Electric vehicles
 - How Portable Chemical Toilets impact on Wastewater Treatment Works
 - Further discussion regarding the disadvantages of desalination
 - Work on myths around outfalls
 - Wastewater reuse
 - Small scale embedded energy storage (100KW – 10MW)
 - Wave energy
 - New innovations for landfills

B) REPORT ON CONTENT OF THE MEETING

Programme outline

Time	Item	Speaker
09:00	Registration and Coffee	
09:30	Welcome	Anele Viti, Head: Communications and Stakeholder Engagement, City of Cape Town: Water and Sanitation

09:35	Occupational Health and Safety briefing	Godwin Blignaut, Principal Facility Officer, City of Cape Town: Energy
09:40	Keynote address	Cllr Zahid Badroodien, Mayoral Committee Member, City of Cape Town: Water and Sanitation
09:50	Energy updates	Cabral Wicht, Senior Professional Officer, City of Cape Town: Energy
10:00	Waste updates	Oliver Stotko, Head: Research and Development, City of Cape Town: Urban Waste Management
10:10	Update on the City's New Water Programme	Barry Wood, Manager: Bulk Water, City of Cape Town: Water and Sanitation
10:30	City's Desalination projects: 1. Desalination process and Monwabisi and Strandfontein desalination plants case study 2. Paarden Eiland Desalination Plant (PEDP) and progress to date	Nichilis Tredoux, Senior Professional Officer, City of Cape Town: Water and Sanitation
10:45	Q&A	
10:55	Tea Break	
11:10	What's on the horizon? Innovation in seawater desalination.	Louis Koen, Technical Director, Water and Wastewater Treatment, Zutari
11:30	CEO guide to water resilience	Nkululeko Mabila, Senior Water Analyst, GreenCape.
11:45	Panel discussion	Moderator: Jane Reddick, Water Programme Manager, GreenCape. Panelists: - Barry Wood, City of Cape Town - Nichilis Tredoux, City of Cape Town - Nkululeko Mabila, GreenCape - Louis Koen, Zutari
12:30	Q&A	By moderator
12:50	Closing and thanks	Anele Viti, Head: Communications and Stakeholder Engagement, City of Cape Town: Water and Sanitation
13:00	Lunch & networking	

PDF of presentations can be requested from EWW.Forum@capetown.gov.za.

The event was officially opened by **Anele Viti, Head of Community Engagement for the City of Cape Town's Water and Sanitation Directorate**, who also facilitated the proceedings. A keynote address was delivered by **Councillor Zahid Badroodien, the Mayoral Committee Member for Water and Sanitation**. He emphasized the importance of building public trust in the implementation of desalination and reflected on challenges

faced during the drought when temporary desalination plants were commissioned to supplement the City's water supply.

These challenges included high construction and operational costs, logistical delays in water production, environmental concerns regarding brine disposal into the ocean, and public scepticism about the safety and taste of desalinated water. Addressing these issues required robust education and engagement efforts to foster public trust.

Councillor Badroodien highlighted that successful commissioning of the permanent desalination plant would depend heavily on training, stakeholder engagement, and expert guidance. Public perception is critical, and the City must translate the technology and its benefits into accessible terms for residents to ensure acceptance and support. While capable engineers and experts will handle the technical aspects, the ultimate success will hinge on how transparently and effectively the City engages with its residents.

Energy Updates: Cabral Wicht (CCT) – gave an update on the City's Small-Scale Embedded Generation (SSEG) online application platform which has seen great progress since its launch in March 2024 and has received more than 5000 applications. This streamlined process allows for faster turnaround times, increased transparency of the application progress and status as well as automating the issuing of PTI letters for most application types. Key highlights from Energy also included the Wheeling Pilot Programme which has been split in two phases, phase 1 includes Bilateral Wheeling (1-1 agreement) will conclude end December 2024 and opened to market in early 2025. Phase 2 which consists of Pool Wheeling (1-many, many-many, many-1) will carry on for another year and likely be opened to market mid-2026. The Independent Power Producer (IPP) Programme, targets a combined capacity of 200MW and is currently in contract negotiation phase. First power expected 2026. The Atlantis Solar PV 7MW plant under construction with power coming online by late 2025.

Waste Updates: Oliver Stotko (CCT) – provided an overview of the Landfill Airspace Project is underway at the Vissershok Landfill. According to current projections, current available airspace for the City is predicted to run out by 2036, however, this project should be able to extend available airspace by at least two years through the construction of two new cells for safely containing waste. The construction of additional cells at Vissershok North currently in planning phase will also further increase airspace security. The Coastal Park Material Recovery Facility (MRF) is close to being commissioned, this facility will be able to process up to 65 tons of waste daily which will allow for the dramatic increase in diversion of recyclable material from landfills in Cape Town. The directorate is also conducting a Regional Waste Management Facility Feasibility Assessment and exploring Alternative Waste Treatment Options.

Update on the City's New Water Programme: Barry Wood, Manager: Bulk Water (CCT) provided an update on the City's ambitious New Water Programme, which is aimed at diversifying the City's water resources to ensure water resilience by 2030. Updates in this regard is as follows:

1. Groundwater:

- The Table Mountain Group Aquifer Scheme's Steenbras Wellfield is anticipated to be completed in 2024 with a water yield of 25 Megaliters per day. The Nuweberg and Groenlandberg Wellfield is expected to provide an additional 27 Megaliters per day by 2040.
- Cape Flats Aquifer MAR Scheme's Strandfontein West Wellfield is expected to be completed in 2025, with a yield of Megaliters per day, the Hanover Park / Philippi Wellfield is anticipated to be completed by 2026 with a yield of 12 Megaliters per day and the largest Mitchells Plain Wellfield anticipated to be completed by 2030 will be able to yield about 24 Megaliters per day.
- Atlantis Aquifer MAR Scheme's wellfields and treatment infrastructure is currently undergoing rehabilitation once completed a 20 Megaliters per day. With additional wellfields to be commissioned in 2026.

2. Water Reuse: The detailed designed is largely complete, once the Faure New Water Scheme is commissioned in 2030 it will yield 70 Megaliters per day. Evaluating procurement mechanisms are currently underway.

3. Seawater Desalination: A site has been identified in Paarden Eiland and feasibility studies are underway, it is estimated to be commissioned by 2030 and will yield an additional 60 Megaliters per day. Investigations are underway to secure another site for commissioning in 2038.

4. Alien Invasive Vegetation Clearing: It is estimated that approximately 200 MLD would be lost by 2045 if invasive vegetation is not managed. Clearing efforts are underway through a partnership agreement between City and The Nature Conservancy (NPO), the City is investing R25 Million per financial year.

The City is also exploring expansion efforts for beyond 2030 with surface water diversions, additional water reuse plants and additional permanent desalination plants.

City's Desalination Projects: Nichilis Tredoux (CCT) – took us through the case studies of the City's temporary desalination plants in Standfontein and Monabisi which has since been decommissioned. The plants collectively produced 14 Megaliters per day and was operated by a City appointed contractor. Following exploratory a site in Paarden Eiland has been identified, An independent advisory panel (IAP) of 12 international and local desalination experts, consisting of scientists, engineers, public health and social science practitioners, was established through the WRC to guide the City in making informed decisions regarding the establishment of a permanent seawater desalination plant.

What's on the horizon? Innovation in seawater desalination: Louis Koen (Zutari) – provided insight into the various technology available with regard to seawater desalination as well as trends and international best practice in terms Energy Recovery with it only being a matter of time before we see desalination plants operating on a 1.0–1.5 kWh/m³ energy consumption. Rapid improvement in technology for renewable wave energy development from 1974 to 2024 with CorPower leading in this regard. Large desalination plants have a contribution to play in Lithium production through Brine Mining.

CEO guide to water resilience: Nkululeko Mabila (Greencape) – shared a 5-step water process outline on how businesses can become more water resilient. The steps are as follows:

Step 1: Understand water uses and risks through through sub-metering (with smart water meters) and water audits.

Step 2: Reduce water usage through efficient technologies and water-wise behaviour.

Step 3: Water reuse on-site by implementing reuse systems for grey water, black water, process water or industrial effluent.

Step 4: Use of alternative water supply sources for potable and non-potable purposes, such as rainwater, groundwater, desalinated water and treated effluent.

Step 5: Catchment-level water stewardship, at a catchment level businesses can develop resilience partnerships and networks to encourage collaboration to support catchment-level projects.

Panel discussion:

Jane Reddick, Water Programme Manager (GreenCape) moderated the panel discussion about desalination implementation for the City of Cape Town as well as in business. The panellists included: Barry Wood from the City of Cape Town, Nichilis Tredoux from the City of Cape Town, Nkululeko Mabila from GreenCape and Louis Koen and Zutari.

Some of the key points that arose from the panel discussion:

- Barry delved into the benefits of desalination for the City and its future development and economic growth and delivering basic needs of water to the residents of the City.
- Louis expanded on the benefit local businesses can expect from the City's New Water Programme including the desalination project, he advised that business will be required in both the construction and operation phases of the desalination plant, businesses should also consider the supply of the required chemicals, Reverse Osmosis membranes and consumables needed as part of the plant's operations.
- Nkululeko advised that should businesses should consider groundwater or seawater desalination for their operations they should consider their current and future water needs as well as a feasibility around location, the availability of ground or seawater then consider regulations and finance in terms of capital and operation expenditure.
- Nichilis provided recommendations on how businesses can overcome the potential risks and challenges associated should they consider to implement desalination at their facilities, this includes compliance to the SANS 241 (Water Quality Standard), and ensuring competency of the implementing and production perspective and Water Safety Planning is an important part of ensuring that water is safe to drink.
- Louis commented on the most suitable technology for business desalination needs and mentioned that there is no prescribed technology but would recommend pre-treatment with ceramic membrane technology has amazing capabilities and will last for over 30 years.

- Nichilis provided insight into the City's Independent Advisory panel, which consists of international experts, which provided advice on the initial planning and design to ensure the successful implementation.
- Lastly, Nkululeko provided some advice on the most crucial step of the 5 step guide, for South African businesses to prioritise, he advised step 1 in the process in terms of understanding the businesses water uses and risks would be most important, this will provide the business an opportunity to reassess water usages and make changes that would come and minimal to no cost to the business.