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# Regional meeting of the **Megacities Alliance for Water and Climate (MAWAC)**

(City of Johannesburg)

Presenter: (Ms Nomvula Mofokeng)



# Content

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- ❖ Background on CoJ water supply
- ❖ Challenges
- ❖ Opportunities
- ❖ Solutions
- ❖ Others



# Background

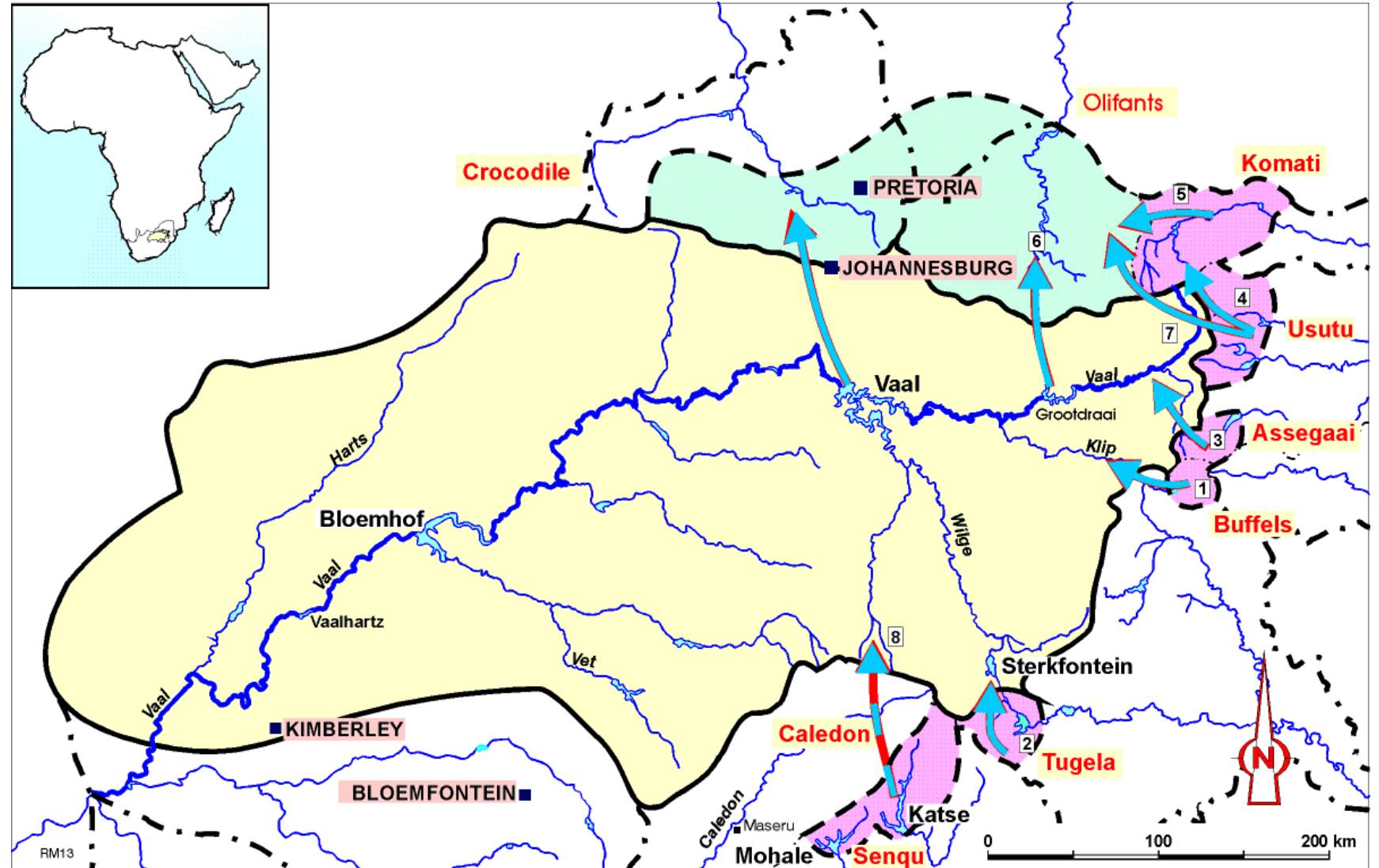
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**Where do get our water?**



# Understanding our water system – most of our water comes from outside our jurisdiction.....A city built on gold and not water

- From Lesotho is then pumped to the Vaal River Integrated System (VRS) via the Vaal Dam
- Vaal River System entails:
  - Upper Vaal
  - Middle Vaal
  - Lower Vaal
- Gauteng – CoJ is supplied by the Upper Vaal



# A VERY COMPLEX QUANTITY AND QUALITY SYSTEMS MODELS WHICH HARNESS INDIRECT REUSE

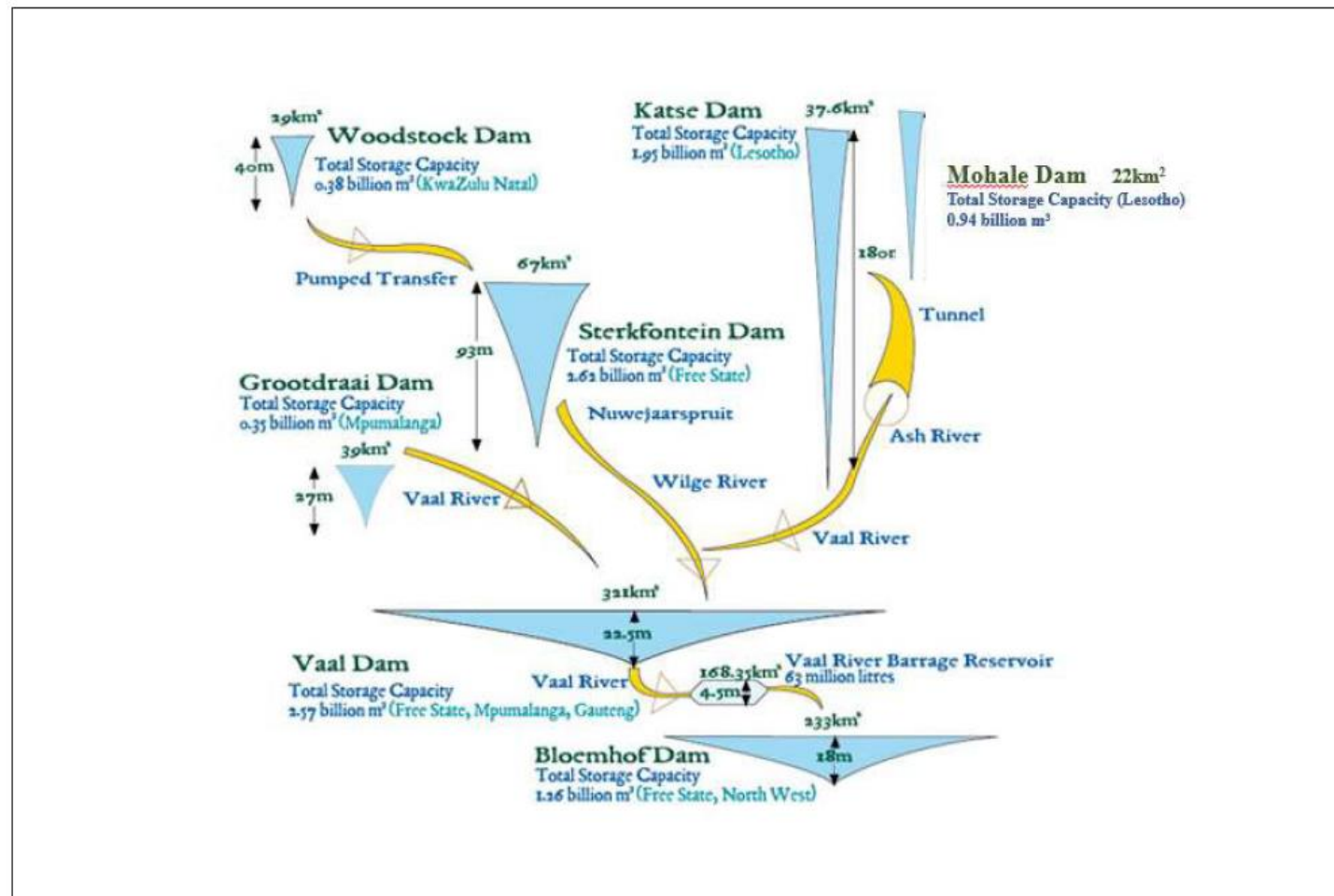
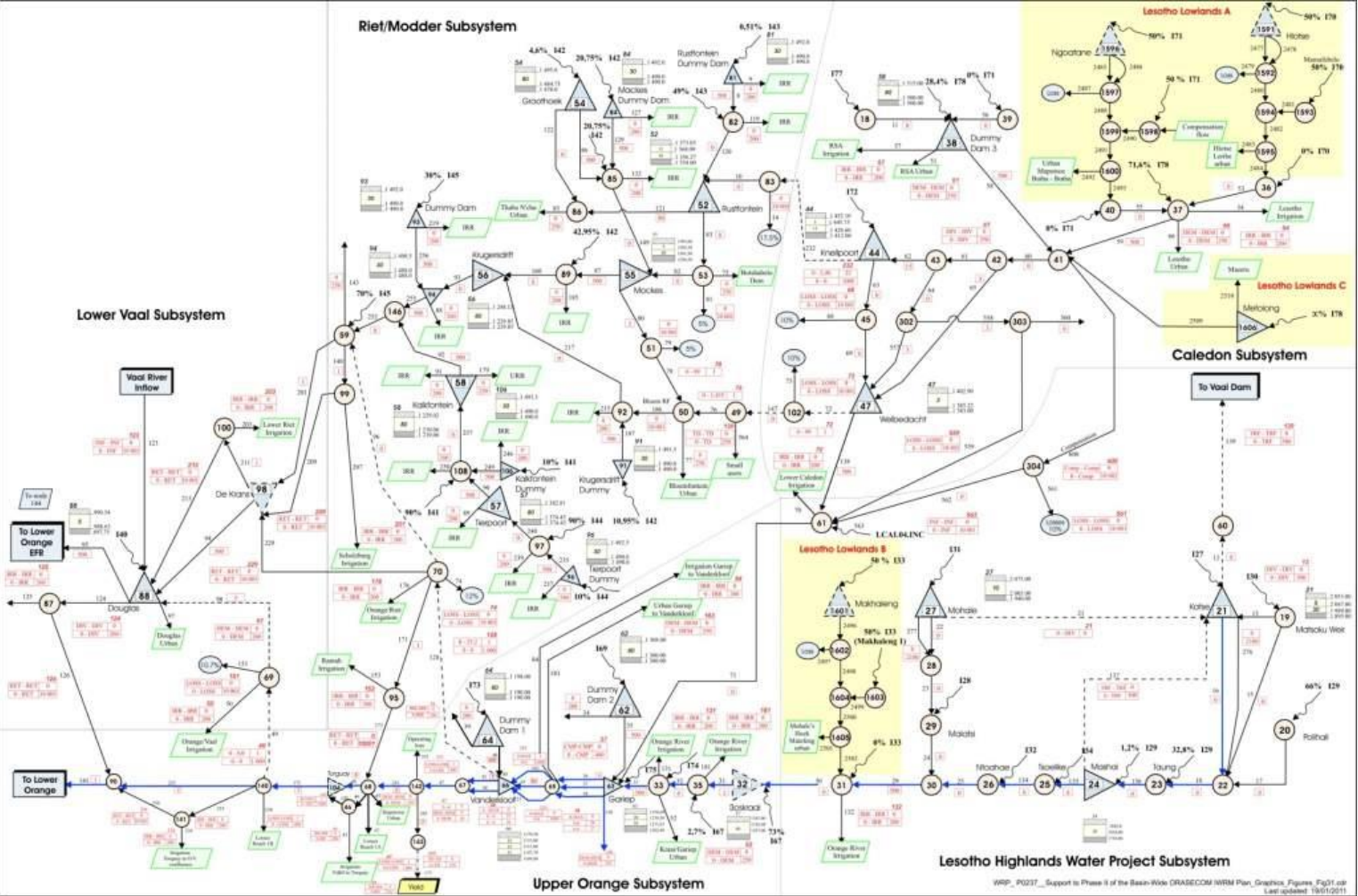


Figure 1. Major dams in the IVRS. Source: Adapted from Water Security Plan Gauteng City Region.

# A VERY COMPLEX QUANTITY AND QUALITY SYSTEMS MODELS WHICH HARNESS INDIRECT REUSE



## Background

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- ❖ The CoJ buys bulk **TREATED DRINKING water** from Rand Water – Water board
- ❖ Rand Water treats water from the Integrated Vaal River System (IVRS) and distribute to its customers including the City
- ❖ The CoJ is the largest (40% of total RW supply) consumer within the IVRS
- ❖ Current license is capped at 494 681 Ml/annum
- ❖ Approximately 1 617 Ml/day is distributed by the CoJ. Return Flows.....
- ❖ The CoJ supplies domestic, commercial and industrial customers and serves an estimated consumer base of 5.87 million people

## Background

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- ❖ Potable water procured from Rand Water, is supplied daily through a water distribution network of 12 307 km, 128 reservoirs and water towers, and 37 water pump stations
- ❖ Wastewater is then collected and reticulated via 11 769 km of wastewater distribution network and 39 sewer pump stations
- ❖ Johannesburg Water treats average of 1 005 Ml of sewage per day at its six-wastewater treatment works (WWTW based on the annual average tariff increase of 6.8%
- ❖ The CoJ through WSP (JW) runs a capital budget of R1.1 billion (\$68million), operating budget of R13.4 (\$830million), revenue of R14.5 billion (\$95million)



# Challenges

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## ❑ Water security

### Catchment – bulk supply

#### ❖ What factors contribute to the limited supply of water

- Reduction of dam levels due to climate change
  - increase in temperature and limited rainfall
- Quantity affected by illegal abstraction (farmers) and other users from the (VRS)
- Quality of water threatened by pollution and the destruction of river catchments
- Population growth as well as economic growth resulting in an increase in water demand
- Further water losses due to ageing infrastructure



# Challenges

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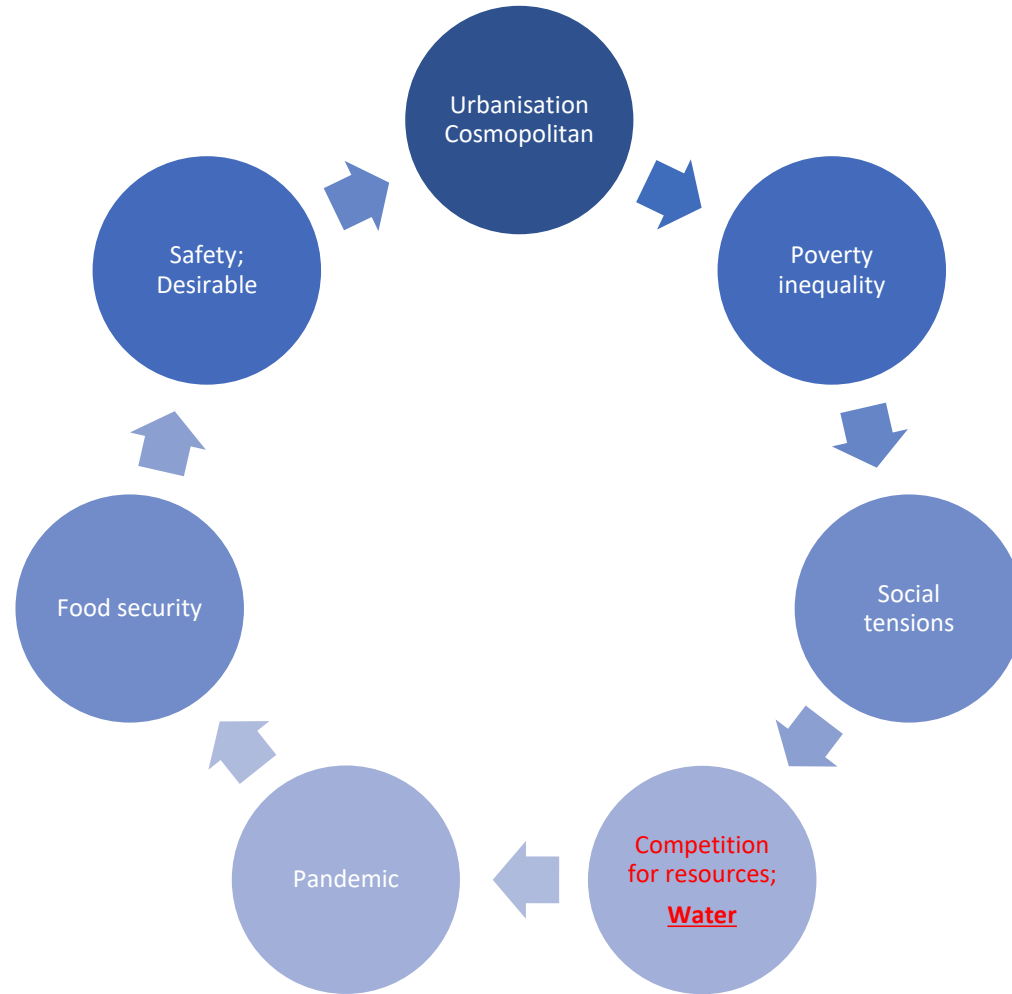
## ❑ Water security

### City of Joburg

- The City's Climate Action Plan (CAP) has identified drought as an important climate hazard, and that the city must implement water security actions to safeguard its socio-economic viability.
- Prof Francois Engelbrecht, lead author of the IPCC Working Group 1, 6<sup>th</sup> Assessment report, sounded a word of caution regarding the possibility of a "Gauteng Day Zero drought" in the near future, i.e., 10 to 20 years. Gauteng province (including Johannesburg) has to fully grasp and prepare for the climate risk of intense and multi-year drought.
- CoJ water abstraction exceeds Rand Water license allocation
  - The CoJ is 20% above the abstraction license.
- High Non - Revenue Water
- Non-compliance to policies and legislation

# Challenges

## Social Development



# Challenges

## Social Development in the context of water services

- ❖ High rate of Urbanisation – primarily in the lower income groups
- ❖ Increasing population growth
- ❖ Increased demand for services in informal settlements
- ❖ Higher demand for pro-poor investment (access to water and sanitation)
- ❖ Sustainable water services delivery is understood to be a key driver for Social Development
  - Water is a Human right
  - Improved Quality of Life
  - Reducing competition and associated social tensions (universal access to services)
  - Affordable services and good living conditions help provide a way out of poverty and promote upward social mobility

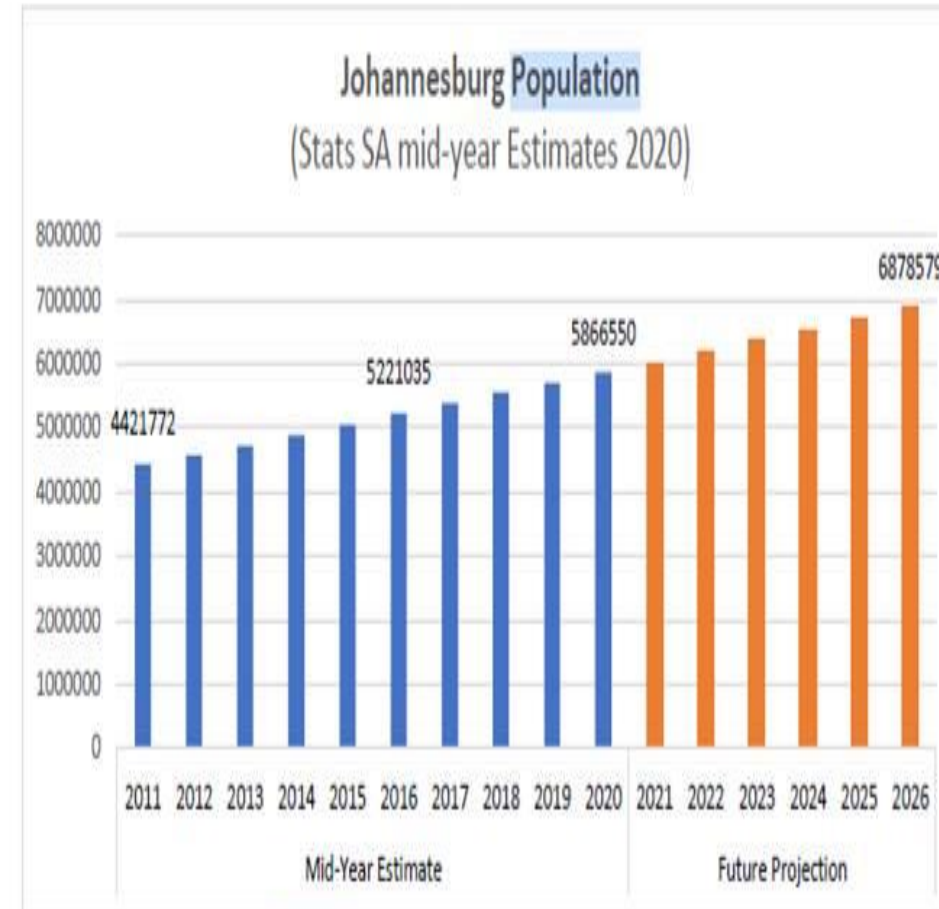


Figure 3: Johannesburg Mid-Year Population Estimates and Projections 2011 to 2026 (Stats SA, 2020)

# Challenges

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- **Economic Growth**

- Economic development

- Business require infrastructure and stable services to be able to operate
    - Importance in terms of supporting the informal economy and township economies and guaranteeing safe and hygienic environments
    - Opportunity to develop the economy and by promoting construction linked to infrastructure services particularly green/alternative models which will positively influence the society & the city environment

- Higher demand for social investment

# Opportunities

- ❖ Water conservation
- ❖ Infrastructure renewal
- ❖ Technology and Innovation
- ❖ Introducing a water mix – stormwater and rainwater harvesting, reuse, recycling etc
- ❖ Behavioural change
- ❖ Radical technology solutions – non-sewered sanitation, water loss reduction

# Solutions

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## What has been done

- ❖ Implementation of Water Conservation and demand management Strategy
- ❖ Alternative water sources
  - ✓ Boreholes/use of groundwater which is ongoing
  - ✓ Development of Rainwater harvesting guideline
  - ✓ Promote Greywater use
  - ✓ Promote and encourage effluent reuse
    - Effluent by law promulgated in April 2017
- ❖ Review of the Water Services by law to intergrade alternative water sources
- ❖ Development of the Sanitation policy
  - Critical on issues of sustainable sanitation services (reduce, reuse, recycle, recover and reclaim)
- ❖ Development of Drought Management Plan
- ❖ Development of Water Security Strategy (will be concluded by February 2022)
- ❖ Development of Climate Action Plan

# Others

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## Collaborative Engagements

- ❖ Water Research Commission
  - Water and sanitation pilot projects that seeks to explore sustainable use of water
- ❖ Rand Water
  - Feasibility studies on alternative water sources
- ❖ CSIR (Council for Scientific and Industrial Research)
  - Water and Sanitation pilot projects, e.g. Use of bioremediation products to address pollution incidents impacting on Rivers
- ❖ Higher Education Institution
  - Research on Water and Sanitation, e.g. Improvement of the treatment processes, treated effluent discharge of Zero (0) E.Coli to the environment
- ❖ City of Windhoek
  - On the basis of information sharing
  - Best practice on water reclamation



# Thank you

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