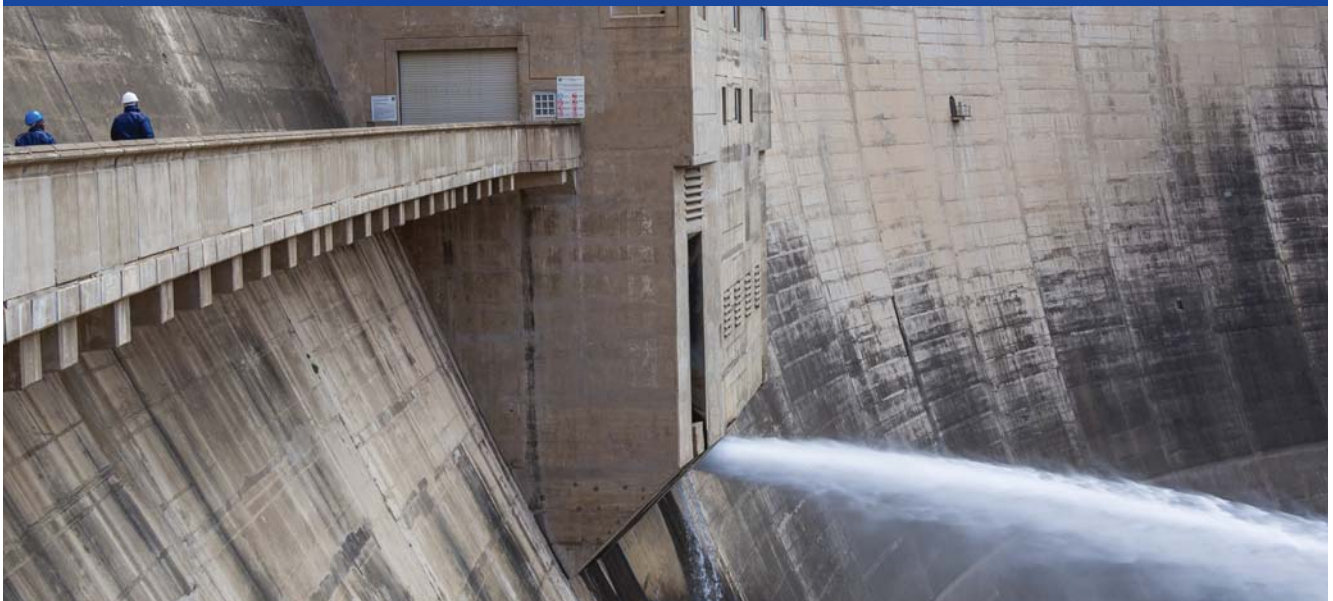


WATER CRISIS

Gauteng: Multipronged solution required to keep SA's economic heart beating

To avoid a water crisis that could cripple Gauteng will require a concerted effort by authorities at all levels as well as all water users in the province. This is according to Department of Water and Sanitation (DWS) DG, Dr Sean Phillips. Speaking at a webinar hosted by the Strategic Water Partners Network (SPWN) and the NEPAD Business Foundation in June, he said that neglected infrastructure, ballooning demand, and mismanagement have pushed Gauteng's water supply to the brink. "We are now in a situation where the demand for treated water in Gauteng is already occasionally exceeding the supply, particularly during peaks of demand." The consequences of inaction could be catastrophic. Article by Lani van Vuuren.



Water supply to the economic heartland of South Africa has always been a precarious issue. The first challenge is Gauteng's unfortunately location. The province sits on top of the watershed that divides the Limpopo and Orange River basins with rain falling north of Johannesburg's Parktown ridge draining into the Limpopo River and Indian Ocean while rain falling south of the ridge drains into the Vaal River and eventually into the Atlantic Ocean.

The discovery of gold on the Witwatersrand in 1886 did not only result in the establishment of large mines and industries in an area devoid of large rivers, but also led to an influx of people

and the founding of cities such as Johannesburg. Through the decades Gauteng has had to meet its steadily rising demand for water by the creation of a sophisticated engineered bulk water storage and delivery system, the Integrated Vaal River System (IVRS). The system includes the transfer of water, through dams, canals and tunnels, from the high rainfall regions of the upper Thukela and Usutu rivers as well as the Senqu River in the highlands of Lesotho. Together, the 14 dams in the IVRS store over 9 300 million m³ of water, equivalent to nearly five years of average flow in the Vaal River.

In 2009, the DWS, through its reconciliation studies highlighted

that Gauteng's water situation once again necessitated the augmentation of bulk water supplies. The second phase of the Lesotho Highlands Water Project (LHWP2) was approved. The project, which includes the construction of Polihali Dam and associated infrastructure, will increase the yield of the Vaal River basin by around 15%. Initially planned to be completed by 2018, endless delays have resulted in the LHWP2 now only expected to come on stream in 2028. Phillips admitted that much of the delay was due to the change in leadership experienced at the DWS. Since 2013, the department has had 5 different ministers (with a sixth just appointed) and 11 different DG or acting DGs, resulting in delays in decision-making and frequent changes in policies and strategies.

Rampant urbanisation and population growth

Certainly, Gauteng's water consumption will have to be kept at sustainable limits until the new bulk water infrastructure comes on stream. However, LHWP2 alone will not solve Gauteng's water woes. A major contributing factor to the province's water demand / supply dichotomy is population growth, both as a result of the increase of the province's own population as well as in-migration.

Gauteng's population sits at 15 million at present, making it the most populous province in South Africa. This population is

growing by around 3% a year, meaning that every year water needs to be supplied to over 400 000 additional people.

The bulk water supply for Gauteng water users is provided by Rand Water through its network of 3 500 km of pipes and 60 reservoirs. (In addition to Gauteng, this network also supplies municipalities in the Free State, North West and Mpumalanga provinces). Rand Water is licenced to withdraw a maximum of R1 600 million m³/year from the IVRS. The licence is granted by the DWS and based on calculations to enable the system to remain sustainable, even in times of drought.

However, over the last six years the water utility has exceeded this licenced amount, this despite initiatives such as Project 1600, a collaborative effort with Rand Water's major consumers to reduce water use to enable it to comply with its water licence conditions. Phillips noted that water users would have to make do with the allowable volume of extraction until LHWP2 came on stream. "It would be irresponsible to allow [Rand Water] to abstract more. If we had a drought, this could mean a day zero situation in Gauteng".

The tight water supply-demand situation has made the system vulnerable to disruption caused by high-stage loadshedding, electro-mechanical breakdowns or theft of cables or severe heatwaves, as Gauteng experienced in March. "Usually,



Water enters South Africa from the Lesotho Highlands Water Project. Phase will increase supply from the system by around 15%.

Table 1. Increasing demand in Gauteng

Financial year	Actual abstraction by Rand Water
2018/19	1 668 million m ³ /year
2019/20	1 691 million m ³ /year
2020/21	1 664 million m ³ /year
2021/22	1 727 million m ³ /year
2022/23	1 755 million m ³ /year
2023/24	1 793 million m ³ /year

Source: Rand Water

breakdowns would not have a noticeable effect on water supply due to the ability to draw on reserve supply capacity, however, there is not such reserve in the Gauteng water system," Dr Phillips said.

Curbing non-revenue water and high water use

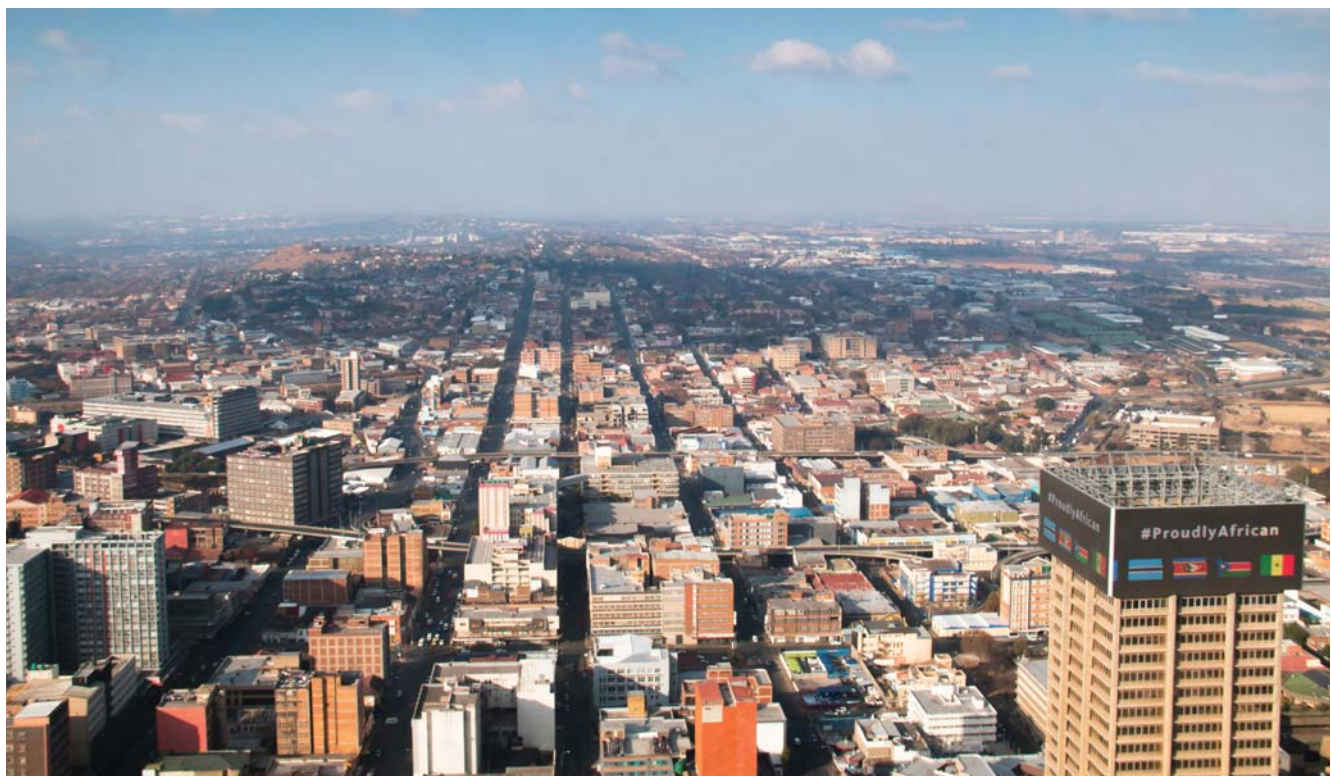
Compounding the problem, according to Dr Phillips, is the fact that municipalities have neglected to keep up maintenance of their water-supply systems. The province is experiencing staggering water losses at municipal level. The largest municipal water user, Johannesburg's, physical losses stand at 25%. The city's overall non-revenue water stands at 40%. (Non-revenue water refers to physical water losses as well as unpaid and unmetered water suppliers to users).

"Municipalities must have efficient revenue collection systems and reduce non-revenue water losses, or they won't be able to pay Rand Water for the water provided," noted Salome Chilokane-Nwabueze, Head of Integration, Monitoring and Evaluation at

Rand Water. The water board has been assisting municipalities to draw up adequate water infrastructure and maintenance budgets to remedy the situation.

Rand Water embarked on an extensive proactive maintenance of its own infrastructure from 22 June to 29 July. Proactive infrastructure maintenance is important to preserve the quality and integrity of the infrastructure, reduce maintenance costs in the long term and increase the lifespan of the infrastructure and assets. It is important to note that as a result of this preventative outlook, the water board experiences only 4% water losses in its own infrastructure system.

The province also has a high per capital water consumption. Standing at 250 litres per person a day (this figure includes leaks), Gauteng residents' water use far exceed the international average of 170 litres per person per day, an unacceptable situation considered South Africa is a water scarce country. Dr Phillips decried what he called the 'trust deficit' that currently existed between residents of the province and government



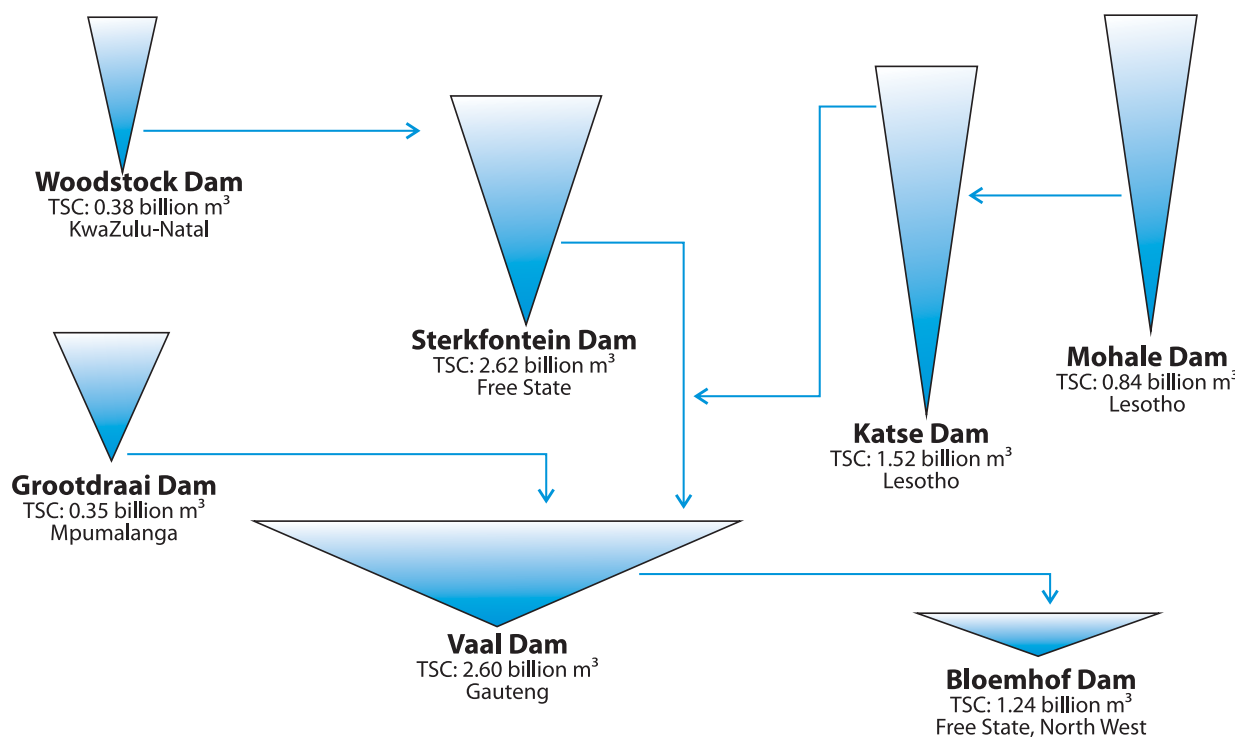
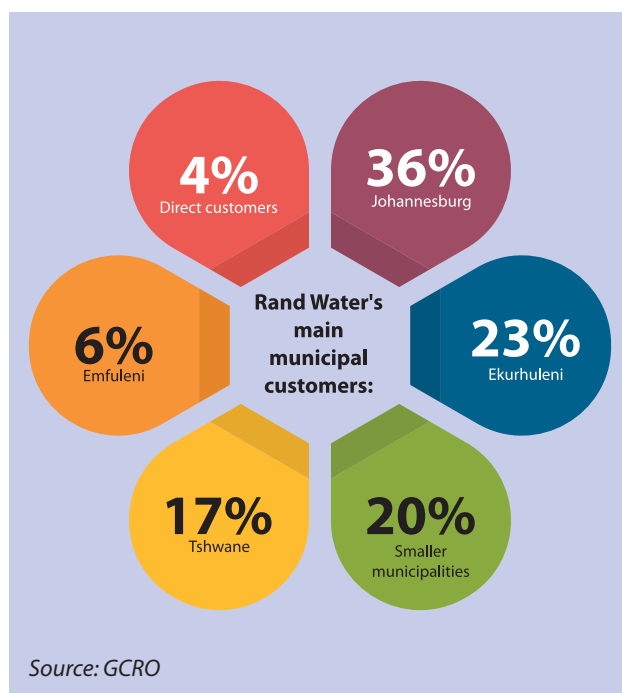
Johannesburg is the largest municipal water user in Gauteng.

authorities. “When residents are asked to use less water, there is the perception that they are being blamed for the province’s water situation. This certainly is not the case, but we all have a responsibility to alleviate the situation.”

The department is currently working with the World Bank and other partners towards a large-scale awareness campaign, drawing on lessons from the Cape Town experience that saw the city narrowly miss a day zero situation during an extended drought a few years ago.

Clearly, a multipronged approach is required. As Phillips pointed out: “If we do only 2 out of the 4 or 5 things, then we are still going to have a high risk of disruptions.” Chiloane-Nwabueze added that each person and entity in the province had to play their part. “It is not just the responsibility of water boards or municipalities or the [DWS] – it [is] the responsibility of each and every individual to ensure water is consumed wisely for sustainability.”

To watch the webinar, Visit: <https://www.youtube.com/watch?v=kTJtuuf5Z68>



The main dams of the Integrated Vaal River System.

Additional references

- B.C. Simelane, ‘Lesotho Highlands Water Project won’t fix Gauteng’s infrastructure and supply woes, experts warn’, Daily Maverick, 28 April 2024, <https://www.dailymaverick.co.za/article/2024-04-28-lesotho-highlands-water-project-wont-fix-gautengs-infrastructure-and-supply-woes-experts-warn/>
- M. Muller et al, Water security perspective for the Gauteng-city region (Gauteng City Region Observatory: Johannesburg, 2019)
- P. Kotzé, ‘The balancing act of Gauteng’s water security’, The Water Wheel, March/April 2020, pp. 38-42, <https://journals.co.za/doi/pdf/10.10520/EJC-1d51e17f31>
- Rand Water, Annual Report 2022/23.