

WATER INFRASTRUCTURE

Independent water producers – The opportunities and the challenges for SA

A recently completed Water Research Commission (WRC) project investigated the issues surrounding independent water production in South Africa. Article by Sue Matthews.



Marine salvage expert Nicholas Sloane became world-famous in 2013 for his leading role in righting and later refloating the capsized *Costa Concordia*, which ran aground off the coast of Italy in January 2012. He was back in the news again in 2018 with his proposal to tow an iceberg from Antarctica to help relieve Cape Town's water crisis during the Western Cape drought. His plan was to get private investors to fund the project, and then sell the freshwater released from the iceberg as it melted to the City of Cape Town municipality.

This would have made Sloane and his partners independent water producers, or IWPs, according to a definition contained in a WRC Working Paper titled "The opportunity of independent water producers in South Africa". Co-authored by research consultant Kevin Foster, Bosch Capital's Rajiv Paladh and Andy Knox, and WRC Executive Manager Jay Bhagwan, the Working Paper summarises the findings of their recently completed WRC research project, in which they analysed the key areas of legislation, regulatory mechanisms, capacity requirements, institutional dynamics, and financial and social aspects of IWPs.

"An independent water producer is understood to be an entity, which is not a publicly owned water utility, but which owns

and operates facilities to produce water for sale to customers," they state in the Working Paper. "Customers can include utilities, central government, municipalities and end users, like industry or farmers."

The City of Cape Town Municipality wasn't supportive of the iceberg idea, having already embarked on a range of emergency measures that were deemed more cost-effective and logistically viable. These included abstraction from groundwater aquifers and springs, three temporary desalination plants located along the coast at Strandfontein, Monwabisi and the V&A Waterfront, and a water reuse plant at the Zandvliet wastewater treatment works (WWTW). But by the end of May 2018, even before good winter rains later replenished the city's dams and allowed water restrictions to be eased somewhat in November, the municipality had announced that temporary desalination and water reuse would not be pursued further as emergency solutions, as they were not affordable and rarely provided the promised volumes of water.

Once the drought was over, the temporary desalination plants – all of which were owned and operated by private companies and were therefore IWPs – were decommissioned. The water

reuse plant belonged to the same IWP as the Strandfontein and Monwabisi desalination plants, and since it only started yielding potable water after dam levels had recovered, it was converted into a demonstration plant without ever being integrated into the water distribution network. The municipality is now constructing a much larger water reuse facility, the Faure New Water Scheme, and investigating the feasibility of a permanent desalination plant, both of which will supplement the water supply from ground and surface sources and ensure future resilience.

In their Working Paper, Foster et al. note that desalination and water reuse from wastewater present the best opportunities for IWPs in South Africa in the short and medium term. This is partly because these relatively new technologies require skills that aren't widely available in the country, but also because implementing such projects would involve less regulatory and institutional complexity than IWP projects using ground or surface water. The National Water Act does not explicitly recognise either seawater or wastewater as a water resource, which is defined as a watercourse, surface water, estuary or aquifer. Of course, other legislation, such as the National Environmental Act (NEMA) Environmental Impact Assessment Regulations and Integrated Coastal Management Act, would still apply, and the National Water Act could potentially be amended to include desalination and water reuse. In fact, say the authors, any gaps in the water legislation should be clarified if private sector investment is going to be sought for desalination and water reuse projects, so that investors can be provided with regulatory certainty.

From an institutional perspective, both desalination and water reuse IWPs would require long-term offtake agreements with large-scale public-sector organisations responsible for water services delivery – such as Water Boards and municipal Water Services Authorities (WSA) – and would probably entail public-private partnerships (PPPs). This would have implications in terms of the Municipal Systems Act (MSA) and the Municipal Finance Management Act (MFMA). For example, section 78 of the MSA requires any municipality wanting to explore the possibility of providing a municipal service through an external mechanism to conduct a lengthy process that includes public participation, a feasibility study and a thorough cost-benefit assessment of impacts on the environment, human health and safety, as well as job creation and employment patterns.

Likewise, the MFMA stipulates under section 33 that another onerous process must be followed for long-term contracts imposing financial obligations on a municipality. This would not only require a municipality wanting to enter into a contract with an IWP to undertake public participation, but also to solicit the views and recommendations of the national and provincial treasury and the national departments responsible for local government and water. The Municipal Public-Private Partnership Regulations promulgated under the MFMA give detailed instructions for undertaking feasibility studies for PPP agreements, in addition to outlining their procurement rules and basic requirements.

All of these regulatory processes significantly increase the cost of getting IWP projects up and running, as well their timelines. In the intervening years, key roleplayers in the political landscape

or within institutions may be replaced, and permissions could potentially be revoked if legislation or circumstances change. The authors point out that this threatens the business case for IWP and may act as a barrier to private sector investment.

"If the use of IWPs is to be encouraged, a means to reduce the complexity and timeframes for these processes need to be identified. Learnings from South Africa's IPP experience could add value here," say the authors, referring to independent power producers in the energy sector. But the regulatory issues are certainly not the only challenges.

"Any gaps in the water legislation should be clarified if private sector investment is going to be sought for desalination and water reuse projects, so that investors can be provided with regulatory certainty."

"Private investment decisions are based on the ability of customers to pay for the services provided by the infrastructure and there are limitations on the ability to pay throughout South Africa's water value chain," note the authors, explaining that this encompasses households, WSAs, Water Boards, the Department of Water and Sanitation (DWS) and the Water Trading Entity. "The combination of poor financial standing of these institutions, and weak governance in many of them, make investments in water infrastructure unappealing."

Overcoming this would require a coordinated programme with high levels of project management capacity and political buy-in, backed by financial guarantees, most likely from National Treasury, they add. The current situation implies that opportunities for IWPs exist primarily in financially sound and institutionally stable WSAs and Water Boards, where investors can be confident that their primary offtaker would be able to pay for the water provided.

It would also be relatively straightforward for IWPs to enter into offtake agreements with large industrial, commercial or agricultural customers. Around the country, small-scale desalination and water reuse plants have already been built and operated for private companies to ensure their own supply, while freeing up water that the WSA or Water Board could distribute to other users. However, offtake agreements between IWPs and such customers would have to be carefully considered if they were to reduce the revenue of the WSA or Water Board to the



point of threatening their financial stability. In the case of WSAs, the authors highlight the far-reaching secondary effects.

“This would further impact on the services provided by the WSAs in the provision of water services (particularly indigent households) and other social services that are offered and cross subsidized from water and sanitation tariffs.”

One solution to simplify procurement processes, offtake agreements and the requirements for credit guarantees would be to have a single offtaker for IWPs. The authors suggested that this could possibly be the National Water Resource Infrastructure Agency (NWRIA), but since the publication of the Working Paper DWS has held a two-day consultation session about the establishment of the NWRIA, which will involve a merging of the Trans Caledon Tunnel Authority (TCTA), the Water Trading Entity (WTE) and the DWS Infrastructure Branch. A statement issued by DWS at the time indicated that the NWRIA's function will be to provide raw water, and its main focus will be on the underserved and the poor to ensure a sustainable, equitable and reliable supply of water from national water resources infrastructure.

The authors note that water reuse IWPs may encounter some complicating factors that do not apply to desalination IWPs. They need a reliable source of wastewater, probably from a municipal WWTW, and the quality of its final effluent needs to be suitable for further treatment to potable standard, which may necessitate the IWP taking over the management of the WWTW to achieve this. During drought conditions, the volume of wastewater typically decreases as water usage becomes more stringent. And unlike in coastal areas, where WWTW effluent is discharged directly or via a watercourse into the sea, in inland areas it may need to be returned to a river to maintain flow rates for downstream users and ecosystem health. Both scenarios might limit the amount of final effluent available for treatment and reuse. What's more, the South African National Standard for drinking water quality, SANS 241: 2015, assumes that intake water is raw, untreated water, so it does not address emerging contaminants that may be present in elevated concentrations in wastewater effluent intended for further treatment and reuse. The authors note that regulations around this would need to be developed.

Of course, IWPs could potentially use raw water from ground and surface sources for conventional bulk production of water. Under current legislation they would need a Water Use Licence and would not own the water resource – the National Water Act designated national government the public trustee of the country's water resources – but could own the necessary infrastructure, such as treatment works and pipelines. However, the authors point out, “most of the economically feasible sites in and around the major towns and development nodes in South Africa have already been exploited. Therefore, any new development would require a higher cost than existing infrastructure and would be located further away from the economic centres that are experiencing water security challenges.”

These kinds of IWPs would essentially become competitors to WSAs, Water Boards and some Water User Associations fulfilling the same function, and would probably need to link into their bulk networks. Apart from the risk of institutional friction, duplicating the role of existing institutions will likely increase the overall cost of providing water services to the end consumer.

Another option with far more positive social impact, though, would involve the contracting of an IWP by a water services committee. According to Section 51 of the Water Services Act, the Minister may establish a water services committee to provide water services in areas where the WSA is unable to.

“Secure water supply would improve economic and social outcomes for those served, and IWPs could employ local people to assist with operating and maintaining infrastructure,” note the authors. “Communities are unlikely to object to private provision when public provision is dysfunctional, although this could be contingent on the revenue collection mechanism that is used.”

Nevertheless, the extensive consultation process required before a water services committee can be established may act as a hindrance, with local politics potentially posing a challenge. And if the water services committee would need to operate the WSA's infrastructure to provide water to its designated area, significant investment might be needed for repairs or upgrades. This highlights another barrier: the minister may disestablish a water services committee, at which point its assets are vested with the Minister, who may transfer them to the relevant WSA or Water Board. This is clearly a considerable risk to any private party that has funded the development of infrastructure.

The authors conclude the Working Paper by posing key questions to be addressed and outlining the emerging framework for the way forward to enable the introduction of IWP in South Africa. The framework identifies the initial steps that would need to be taken and the key principles to be considered within each of these steps.

- To access the Working Paper, *The opportunity of independent water producers in South Africa*, visit: http://wrcwebsite.azurewebsites.net/wp-content/uploads/mdocs/Working%20Paper_IWP_Feb%202022.pdf
- To access the research report, *Independent water production and producers in South Africa (WRC report no. 3012/1/22)* visit: <http://wrcwebsite.azurewebsites.net/wp-content/uploads/mdocs/30121.pdf>

Definitions according to the Water Services Act

- “Water board” means an organ of state established or regarded as having been established in terms of this Act to perform, as its primary activity, a public function;
- “water services authority” means any municipality, including a district or rural council as defined in the Local Government Transition Act, 1993 (Act No. 209 of 1993), responsible for ensuring access to water services;
- “water services provider” means any person who provides water services to consumers or to another water services institution, but does not include a water services intermediary;
- “water services intermediary” means any person who is obliged to provide water services to another in terms of a contract where the obligation to provide water services is incidental to the main object of that contract;