THE OPPORTUNITY FOR INDEPENDENT WATER PRODUCERS IN SOUTH AFRICA

By Kevin Foster[1], Rajiv Paladh[1], Andy Knox[2] & Jay Bhagwan[3]

[1]Bosch Capital
[2]Bosch Holdings
[3]Water Research Commission

ABSTRACT

President Ramaphosa highlighted the need for Independent Water Producers to contribute towards South Africa's water security future during the 2020 budget speech. The Water Research Commission initiated a study that explored this opportunity within the South African water legislative and institutional framework. This paper thus presents the findings from the study, and details future steps that need to be completed in order to establish Independent Water Production in South Africa.

An Independent Water Producer (IWP) is an entity, which is not a publicly owned utility, but which owns and operates facilities to produce water for sale to customers. Customers can include utilities, central government, municipalities and end users (industry or farmers).

There are two broad pathways for the introduction of IWP in South Africa. This is either the introduction of IWP within the existing legislative and institutional framework or amending the current framework to allow for the introduction of IWP within the existing water value chain. Including IWP within the existing legislative framework may require the introduction of additional regulations to prevent unintended consequences.

The opportunity for IWP in South Africa exists around desalination, wastewater reuse and small scale production for industry. IWP could therefore be implemented by focussing on Water Boards and Water Services Authorities (WSA) that:

- Are developing programmes around desalination and wastewater reuse;
- Have strong credit ratings; and
- Would benefit from streamlined processes for procuring these projects.

An alternative approach would be to develop a single off-taker with sovereign guarantees to procure water from IWP on behalf of Water Boards and WSAs.

Industry will develop its own water supply to ensure security of supply security in the appropriate conditions. This additional supply and possible redundancy is useful for building resilience in the broader water sector and the national economy. However, it does pose threats to municipal revenue. Restrictions and uncertainties created in the regulations around water sector intermediaries are the biggest barrier to industry doing this and should be improved. However, these activities should not be subsidised through public funds.

The study raises several key questions and positions on the role and inclusion of IWPs in the water sector. A key question is around the issue of what independence actually means in the South African landscape. Any issues of licensing and allocation of water resources raise the conflict of independence.

INTRODUCTION

President Cyril Ramaphosa, in his budget speech of 2020, mentioned and highlighted the need for independent water producers to play a role in ensuring South Africa's water security future. This was a relatively new concept and institutional modality in the South African water landscape. The Water Research Commission (WRC) initiated a study to unpack and understand this opportunity within the South African water legislation and institutional context, as well as exploring the route to the introduction of independent water producers in South Africa.

This study undertook a literature review of international experience of IWPs, local experience and the South African water sector landscape and legislation. It then analysed the key areas of Legislation; Regulatory mechanisms; Capacity requirements; Institutional dynamics; Financial; and Social Aspects. The study also included a stakeholder engagement component to obtain information from sector experts and institutions that may benefit from the introduction of IWP in South Africa.

This paper presents the key findings from the study and aims to facilitate further discussions on the position of IWP in South Africa. The paper also presents the emerging framework for the implementation of IWP in the South African water value chain.

DEFINING AN IWP

Independent water production (IWP) is an increasingly common approach to securing water supplies internationally. This is particularly true of drought prone and water scarce states and regions. This typically involve the private ownership of water production assets (treatment works, dams, barges) and the sale of water to public off-takers at scale for public distribution. Recent droughts in Australia, California (USA) and Spain, as well as increasing development in Dubai, Abu Dhabi and Israel, for example, have seen a rise in seawater desalination plants, many of which are owned and independently operated for supply to cities and industries. These operations typically have long-term offtake agreements with the public operator or other customers.

The international experience of independent water producers has been varied, with viability depending heavily on contextual factors including scale, quality of feedwater, location of plant, extent of environmental regulation, cost and availability of energy, and the extent of drought.

For the purposes of this study, Independent Water Production has been defined as follows:

> 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. Customers can include utilities, central government, municipalities and end users, like industry or farmers.

Importantly, this definition does not include private operation of distribution networks infrastructure.

CONTEXT

A review of the literature and engagement with key stakeholders suggest that there are both IWP and other private sector service provision opportunities in the South African water sector. IWP opportunities exist through several technologies, some well-established either in South Africa or internationally, and others that are emerging and are untested. This section of the paper outlines the key contextual elements that will guide the positioning of IWP in the South African water value chain.

These are as follows:

Strengths
South Africa has some high performing WSAs and Water Boards that could procure from IWPs in the short term. South Africa also has significant engineering capability in the private sector and access to international skills, and has demonstrated the ability to create the right market conditions as demonstrated through the REI4P programmes.

Weaknesses
Many South African water institutions are weak and in financial distress, with customers that have poor payment records. These are red flags that will deter investment that relies on these institutions as off-takers.

Opportunities
Desalination and wastewater treatment in high functioning WSAs presents the strongest short- and medium-term opportunities for IWP. Work is already being done by the DBSA towards establishing a programme for wastewater treatment PPPs and this should continue and be supported.

Threats
Political and institutional instability in the water sector generally and WSAs specifically pose the biggest threat the implementation of IWPs. This both threatens the business case for IWP and also makes navigating long regulatory processes more challenging, as they become vulnerable to changes in key role-players within institutions.

Regulation
Water is a tightly regulated sector, however, there are gaps in the legislation, which does not anticipate the emergence of new modes of production in the South African water sector, such as desalination and wastewater reuse. These gaps need to be clarified, particularly if private sector investment in these modes of production is being sought. This will provide investors with regulatory certainty.

Beyond water sector regulation, the regulation of public entities and municipalities seeking to do business with the state is severely slow and difficult to navigate, which significantly increase transaction costs. If the use of IWPs is to be encouraged, a means to reduces the complexity and timeframes for these processes need to be identified. Learnings from South Africa's IPP experience could add value here.

Institutions
The water sector institutional landscape has a large number of players and strict regulation over their roles. Key players in that landscape including DWS, some water board and many water services authorities are currently in financial and organisational distress for various reasons including, weak governance, poor financial management and controls, bad debts, political instability and low engineering and project management capacity. These factors create an opportunity for independent water producers to play a role, bringing in management and technical capacity and being able to source finance.

However, they also create a significant challenge. 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, from end user households to Water Services Authorities, to Water Boards, to 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.

Social
It is unlikely that there would be significant social rejection of introducing IWPs in Africa. Household attitudes appear amenable to private roles in water production and provision, and experiences suggests that socially challenging technologies.

Given the experience of introducing alternative technologies, particularly wastewater treatment for potable reuse in South Africa, social acceptance challenges are likely to be able to be overcome through educating citizens about the safety of the technology and the reasons as to why it is being used.

OPTIONS FOR THE INTRODUCTION OF IWP

There are two broad pathways that existing for the introduction of IWP in South Africa. These are the introduction of IWP within the existing legislative and institutional framework or amending the current legislative framework to allow for the introduction of IWP within the existing water value chain.

Amending the existing legislative framework will require Ministerial approval and compliance with the consultation and other existing processes to amend legislation. However, the introduction of IWP within the existing legislation framework may still require the introduction of additional regulations to prevent unintended consequences.

The potential implications of these broad pathways are outlined in each of the options that are specified below.

Option 1: Conventional bulk production (ground and surface water)
Conventional bulk production IWPs would involve the ownership of water source and the associated bulk production infrastructure (treatment works and bulk pipelines) by the Independent Water Producer. The IWP would also manage the operation and maintenance of the infrastructure and would assume the risk associated with this. These IWPs would require long term offtake agreements with its customers. Under current legislation the IWP could not own the resource where from which they source their water.

Potential impact
The potential impact of using IWPs for conventional bulk production will depend on the scale at which this will implemented. Smaller schemes will have shorter delivery periods but impact will delivered at a local level, as compared to larger regional schemes. The impact of this option is also moderated by the fact that it does not increase the resiliency of the system as supply options remain undiversified and the system remains vulnerable to droughts.

Institutional complexity
Conventional bulk production (ground and surface water) has a layer of institutional complexity as IWP will essentially be performing the same function that TCTA, Water Boards, WSAs and some WUAs perform, essentially becoming competitors to these institutions. It is also likely that these IWP will need to directly link into the bulk network of these competitors, which risks creating institutional friction. The introduction of another institution that duplicates the role of existing institutions also increases the overall costs of providing water services to the end consumer.

Regulatory complexity
IWPs operating in conventional bulk production spaces would need Water Use Licences and would need to comply with the National Water Act. They would have limited control over the water resource which would limit their ability to supply their customers.

Skills availability
Given the conventional nature of these projects, there are adequate private sector technical skills available for the development of these types of solutions in South Africa. There is a need to enhance contract management skills in some Water Services Authorities to ensure that the long-term contracts can be correctly monitored and enforced.

Option 2: Desalination for bulk water production
IWPs could be the owner of the desalination infrastructure. The IWP would also manage the operation and maintenance of the infrastructure and would assume the risk associate with this activity. These IWPs would

require long term offtake agreements with large public sector off takers such as Water Boards, and WSAs in coastal areas. It is likely that these IWP operations would take the form of a PPP.

Potential impact

IWP using desalination for bulk water production can have a significant impact in the areas in which they are needed. Potential sites that are being considered in South Africa include cities and large town where there are both economically strong municipalities and significant industrial customers.

IWP using desalination would be particularly effective in coastal areas that are prone to drought or are expected to experience reduced annual rainfall or increased surface water evaporation as a result of climate change. Climate change will particularly reduce rainfall at the coast in the Northern Cape, Western Cape and Eastern Cape, as well as parts of KwaZulu-Natal. Introducing IWP for desalination in these contexts can increasing water security and resilience to drought by diversifying the by diversifying the water mix.

Typically, these projects are expected to be large and would impact positively on the economy as industry and businesses have greater security about their water supply. The energy intensive nature of desalination, particularly reverse osmosis, also presents co-generation opportunities with electricity provision, enabling desalination alongside independent power production projects, particularly solar, wind and natural gas projects.

Institutional complexity

IWP using desalination would be simpler to implement from an institutional perspective as compared to Option 1 as there are currently no large institutions in the country that has been tasked with unlocking the desalination potential in the country. Whilst there have been several institutions that are considering the implementation of desalination opportunities, there has been limited delivery of these types of projects due to the costs and complexity associated with these projects.

In addition, the offtaker from the IWP is expected to be a Water Board or large WSA. Institutional complexity is also reduced as these institutions are empowered to execute on their mandates whilst being supported by the Independent Water Producer.

The institutional complexity could be increased by increasing the number of parties that are involved in the transaction (multiple WSAs or a WSA and industrial off takers) and if the transaction results in reduced demand by a Water Service Authority from its Water Board, thereby reducing the revenue of the Water Board.

Regulatory complexity

The regulatory complexity that will need to be overcome for the implementation of Option 2 are elements of the MFMA and Municipal Systems Act and their associated regulations. These include the requirements for:

- Long-term contracts;
- Adherence to Section 78 processes; and
- Adherence to any PPP regulations that may be triggered.

The National Water Act does not include the regulation of the treatment of seawater that is converted to potable water or for industrial purposes. Additional regulatory complexity may be created by amendments to the National Water Act to address desalination. Site specific environmental regulatory complexity may also need to be considered.

Skills availability

There have been limited large scale desalination projects undertaken in South Africa, therefore the technical skills base is expected to be limited. However, there have been several examples of projects being completed internationally with smaller scale plants haven been built and operated for use by industry in Mossel Bay,

Saldana Bay and Richards Bay. It is therefore expected that the South African skillset would have to be supplemented with experienced international resources.

There is a need to enhance contract management skills in some Water Services Authorities to ensure that the long-term contracts can be correctly monitored and enforced.

Option 3: Wastewater treatment for reuse

Wastewater treatment IWPs in this context would involve the ownership of the treatment works infrastructure by the IWP and the distribution network to the customer. The IWP would also manage the operation and maintenance of the infrastructure and would assume the risk associated with this. These IWPs would require long term offtake agreements with off takers most likely WSAs, but potentially water boards or industry.

IWP is this context would most likely be reliant on a WSA for this unless a large wastewater producer could be sourced. The IWP may need to take over management of WSA wastewater treatments plant to ensure effluent quality is suitable for potable water production. It is likely that these IWP operations would take the form of a PPP given the likelihood need to integrate into a municipal network unless a large industrial or commercial customer could be sourced as an off-taker.

Potential impact

IWP using wastewater treatment has significant potential impact in areas where:

- Reliable wastewater systems exist;
- End Users (households, industry of WSAs) are in relatively close proximity and are close to end-users (households and industry) or bulk infrastructure; and
- End Users are in a financially sound position.

In particular, there is potential for this option in coastal areas where downstream users need not be considered as effluent is discharged into the ocean, and the environmental requirements may not be as stringent for discharge in the ocean.

Introducing IWP for reuse can increasing water security and resilience to drought by diversifying the by diversifying the water mix. However, the impact of this is not as significant as Option 2 as wastewater produced under drought conditions is expected to decrease thereby reducing the volume available for production by this method. There may be an additional limitation in the discharge of effluent from wastewater treatment works has to be returned to the river to maintain flowrates for downstream users and other environmental reasons.

However, introducing IWP for reuse would increase the availability of water in non-coastal areas thus increasing resiliency. Typically, these projects are expected to be large and would impact positively on the economy as industry and businesses are more secure about their water supply.

Institutional complexity

There is institutional complexity associated with this option as WSAs are responsible for wastewater treatment works within the areas of jurisdiction. IWPs treating wastewater will be required to rely on Water Service Authorities for input water at reliable quality levels. This means that the WSA need a functional and well maintained water and sewerage network as well as treatment works. This may prove challenging as 57% of works in South Africa are not well run according to the last Green Drop and the enforcement of wastewater regulations is unreliable (Kalebaila, Swartz, Marais, & Lubbe, 2020).

It is also likely that IWPs operating in this context will trigger PPP processes in terms of the MFMA Regulations, particularly if treatment works need to be taken over and run by the IWP. Other institutional challenges are expected to be similar to that of Option 2.

Regulatory complexity
The regulatory complexity that will need to be overcome will be similar to that of Option 2.

Additional regulatory complexity may be created by amendments to the National Water Act and the need to maintain flow rates and ensure downstream user and the ecological reserve have sufficient water.
A further regulatory challenge is that SANS241 does not currently deal with water quality standards associated with wastewater treatment for potable use and regulations around this would need to be developed.

Skills availability
Private industry will draw on capacity in the South Africa and international engineering firms as evidenced by the City of Cape Town that is currently developing a project of this nature (Faure New Water Scheme) to produce 100 Ml/day. The private sector firms are expected to react to challenges with greater speed and agility than public sector institutions due to reduced supply chain compliance requirements. There is a need to enhance contract management skills in some Water Services Authorities to ensure that the long-term contracts can be correctly monitored and enforced.

Option 4: Community management through water services committees
IWPs in this context would involve the contracting of an IWP by a water services committee in terms of Section 51 of the Water Services Act where WSAs are unable to provide the service. The IWP could build operate and maintain new water production infrastructure, likely groundwater abstraction and treatment, wastewater treatment or seawater desalination and would assume the risk associate with this. It could also potentially manage, operate and maintain existing water infrastructure. These IWPs would likely be moderately sized and required medium term off-take agreements for implementation.

Potential impact
IWPs operating on behalf of water services committees have the potential to address service failures by chronically dysfunctional Water Service Authorities and implement solutions that improve water security. This could improve access to water in South Africa and improve water local water infrastructure.

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. Communities are unlikely to object to private provision with public provision is dysfunctional, although this could be contingent on the revenue collection mechanisms that is used.

Institutional complexity
Water services committees required the approval of the Minister of Water and Sanitation and the Water Service Authority, as well as, consultation with the local community. Local politics may pose a significant challenge to getting approvals from the local water service authority to form a water services committee.

Regulatory complexity
The regulatory complexity lies in the requirements of the minister to consult the local community and the WSA, the minister for local government and the province. This is potentially a long process, with few guarantees of establishing a water services committee.

The other regulatory barrier is the Minister's ability to disestablish water services at short notice, at which points the assets of the committee vest in the Minister. This is a great risk to private party that has funded the development of the infrastructure that would then be ceded to the Minister.

Skills availability
Significant technical skills in the private sector exist to deliver water at this scale in South Africa. Water services committees may need capacitation to manage IWP contracts.

Option 5: Emerging innovations
IWPs using emerging innovation will be structured in a way that best responds to the technology. They could supply potentially at any scale, which any type of off-taker. If that off-taker is a public institution there is a high possibility that the IWP will need to be procured through an unsolicited bid.

Potential impact
The potential impact of emerging technologies varies greatly in terms of both timelines and scale. However, supporting emerging innovations align with national objectives around development of innovation and technology development as well as the diversification of water supply sources.

Institutional complexity
The institutional complexity of emerging innovations lies primarily in the perceptions of risk amongst decision makers and accountable officials in the relevant water sector institutions. These decision makers face significant risks should innovations are procured fail to meet the expected requirements. IWPs can avoid this by taking on risk, including financing infrastructure required to connect their technologies to appropriate point in the water systems, and asking the off-taker to only pay for water received. Transferring the cost of building and maintaining this infrastructure to the IWP ameliorate this risk to the WSA.

Regulatory complexity
If an innovation is marketed as supplying water to a WSA through an IWP it is likely that that innovation will encounter the MFMA SCM regulation regarding unsolicited bids. This is expected to be a protracted process and contingent on the satisfying the concerns of municipal accounting officer. In some instances, they may also trigger PPP regulations. Other regulatory concerns are likely to be innovation specific and related to the quality of water produces and the environmental impact of the production process.

Skills availability
The availability of skills to develop innovation from a concept into viable, scalable solutions is a challenge in South Africa. However, innovators linking with suitable partners, such as established engineering firms offers a means to overcome this and implement innovations at scale.

MANAGING THE FUNDING RISK

It is expected that the introduction of IWP in a South African context should be structured in a manner that is able to attract private sector investment. The factors that will impact on securing this investment are further discussed below.

The customer
An investor will assess the credibility of the customer of the IWP when making an investment. The customers that have been identified for IWP include:

- WSAs and water boards;
- Industrial and agricultural consumers; and
- Communities and households.

It is likely that only the large WSAs and Water Boards that serve areas that have strong economic bases and good credit ratings would attract investment. Investment in the remaining institutions would require guarantees to be provided by National Treasury.

The price point
There is a view that the current water tariffs may not fully reflect the cost of water produced in South Africa and IWP producing water at a higher price than existing solutions may result in the higher prices being challenged. Conversely, conversations with key stakeholders suggest that the low price of water may result in investors being reluctant to invest in the sector.

Site specific costs are also expected to have a significant impact on the cost of water production. The costs of producing the water and transporting the water to the identified customer would need to be carefully evaluated before an investment decision can be made.

Contractual certainty
Private funding will depend on the ability of the water services committee to sign offtake agreements that will last long enough for IWPs and their funders to recover their investment. For small scale plant this could be achieved within a few years, but larger plants will require bigger investments and longer offtake agreement. An investor would expect that the contract entered into by the IWP will honoured by all parties for the duration of the contract.

Declining municipal revenue
It may be possible to attract private sector investment if IWP produces water to be sold to industrial or commercial agricultural customers. However, this could result in a decline of the water revenue for WSAs or WUAs and would have to be carefully considered. An intervention that redirects revenue from a municipal customer (households and industrial) towards IWP could have a significant negative impact on the finances of the WSA. 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.

Social considerations
It is unlikely that there would be significant social rejection of introducing IWPs in Africa. Household attitudes appear amenable to private roles in water production and provision, and experiences suggests that socially challenging technologies.

Given the relatively infancy of the IWP concept, it may be possible to use the opportunity to position IWP in manner that addresses some of the inherent challenges in the water sector whilst still protecting the rights to access of water by users, and unaffordable tariffs.

CONCLUSION AND WAY FORWARD

The opportunity for IWP exists in South Africa, particularly around desalination, wastewater reuse, and small-scale production for industry. However, for IWP to contribute to addressing South Africa's water challenges, of adequate skills, finance, and water resilience, significant work is needed to be done to address areas of institutional weakness in the water sector. A small number of water boards and WSAs could currently be reliable customers for IWPs, with the majority of water sector institutions being considered investment partners.

IWP could be implemented either by focusing on those water boards and WSAs that:

- Have strong credit ratings;
- Are developing programmes associated with specific type of projects, such as seawater desalination or wastewater reuse; and
- Streamline process around procuring these projects and bringing them online.

An alternative approach would be to develop a single off-taker with sovereign guarantees to purchase water on behalf of waterboards and WSAs from IWP at scale, for distribution into the networks and free up water upstream in the value chain. This would require institutional restructuring at a national level. However, it may be possible to incorporate this into the development of the NWRIA.

Key questions to be addressed
The table below further summarises the emerging position of IWP and identifies key questions that will need to be considered in confirming the position of IWP in South Africa. These will be explored with stakeholders during the proposed workshop and further engagements.

Table 1: Emerging positions and key questions

Emerging position	Key questions to be addressed
Position 1: IWP means the production of water by a private company, for own use or sale to and off taker. It is not useful to narrow this definition, except for programmatic purposes, and in the programming process to introduce IWP at the identified areas in the South African water value chain.	Is this an appropriate definition? Is narrowing the definition per program a useful way to apply IWP in South Africa?
Position 2: In most instances, the model for IWPs providing water to government agencies, is likely to be a PPP arrangement, and programmes should be established in the appropriate branches of government to enable these arrangements at the various points in the water value chain.	Are PPPs the most viable approach to IWP in South Africa? Where should programmes to enable IWPs be located organisationally?
Position 3: Pursuing IWP would require different programmatic approaches depending on scale and the point in the water value chain. This includes a programme toward: • The procurement IWPs for resource development and bulk production for appropriate water boards and WSAs. • Enabling WSA to appoint IWPs to treat wastewater for reuse. • Allowing IWPs to pilot and scale emerging technologies and strategies. • Enabling community self-provision through water committees and IWPs, using section 51 of the Water Services Act	Should we apply a differentiated programmatic approach? Are these the appropriate programmatic approaches to take?
Position 4: An economic regulator would be ideal, and assist IWPs and build confidence for IWP investment, however it needs to be highly capacitated, and be backed by a long track record of good data, which may not yet exist. The development of the track data should be a sector priority towards the establishment of a regulator.	Is there a need for a regulator? What should be considered for the introduction of a regulator? This can include the need for independence, contractual obligations and risks.
Position 5: Emerging Innovations should be further explored for IWP with proof of concept required before being scaled	Can these innovations provide opportunity for IWP in future? How can this opportunity be unlocked?
Position 6: The appropriate form of regulation of the of independent water production should be explored, whether this should fall under the National Water Act and the Department of Water and Sanitation, or the Department of Trade and Industry, or the Department of Environmental Affairs. This should also consider whither this regulation should be determined technology or resource used.	Who should regulate IWPs? Should regulation of IWPs be contingent on the technology used? Should regulation of IWPs be contingent on the water source used?

Towards the implementation of IWP in South Africa

Based on the emerging position of IWP, the table below outlines the emerging framework for the way forward to enable the introduction of IWP in South Africa. It outlines the initial steps that would need to be taken and the key principles that need to be considered within each of the identified steps.

Table 2: Emerging framework for implementation

Steps	Key principles
Investigate regulatory implications for the preferred programmes	The principle of this step is to establish which is the correct regulatory domain for IWP the Department of Water Affair and the National Water Act, the Department of Environmental Affair and the National Environmental Management Act of the Department of Trade and Industry.
Establish a regulator	The establishment of the regulator should be done in a way that ensures alignment with current processes to establish a water regulator beyond just IWP and considers the wider institutional framework. The principles of the regulator are to: • Ensure credible quality control of water being used and entering the South African Water System. • Ensure low negative impact on municipal business models to ensure that the introduction of IWP does harm democratic local government. • Ensure IWP has limited environmental impacts that might threaten South African water ecosystems.
Establish IWP Procurement Programmes	**Process** The process principles of the establishment of an IWP Procurement Programmes are: • To ensure a proven market for independent water production so that efforts to establish IWP opportunities is not wasted. • To establish a credible, reliable and fair framework for public procurement from independent water producers to give appropriate confidence in the projects. **Commercial** The commercial principles of the programme are: • To ensure credible off-takers of water produced by IWP to provide security and credibility for the required investment. • To establish bankability of IWP projects to attract the required investment. • To support producers and off-takers to prepare transactions in a complex governance framework.
Investigate emerging innovations for water production	The principle of this process is to ensure technologies used are proven before use to maintain reliable water production and water quality, while preventing investment losses.
Investigate the further use of Section 51 of the Water Services Act to enable independent community water provision in a sustainable way	This process should enable communities to provide their own water and sanitation, through water committee, where municipal service provision fails, and allow them to choose the manner in which they do so but ensuring that it is done in a sustainable way.

REFERENCES

Kalebaila, N., Ncube, E., Swartz, C., Marais, S., & Lubbe, J. (2020). *Strengtheing the implementation of water reuse in South Africa.* Pretoria: Water Research Commission.