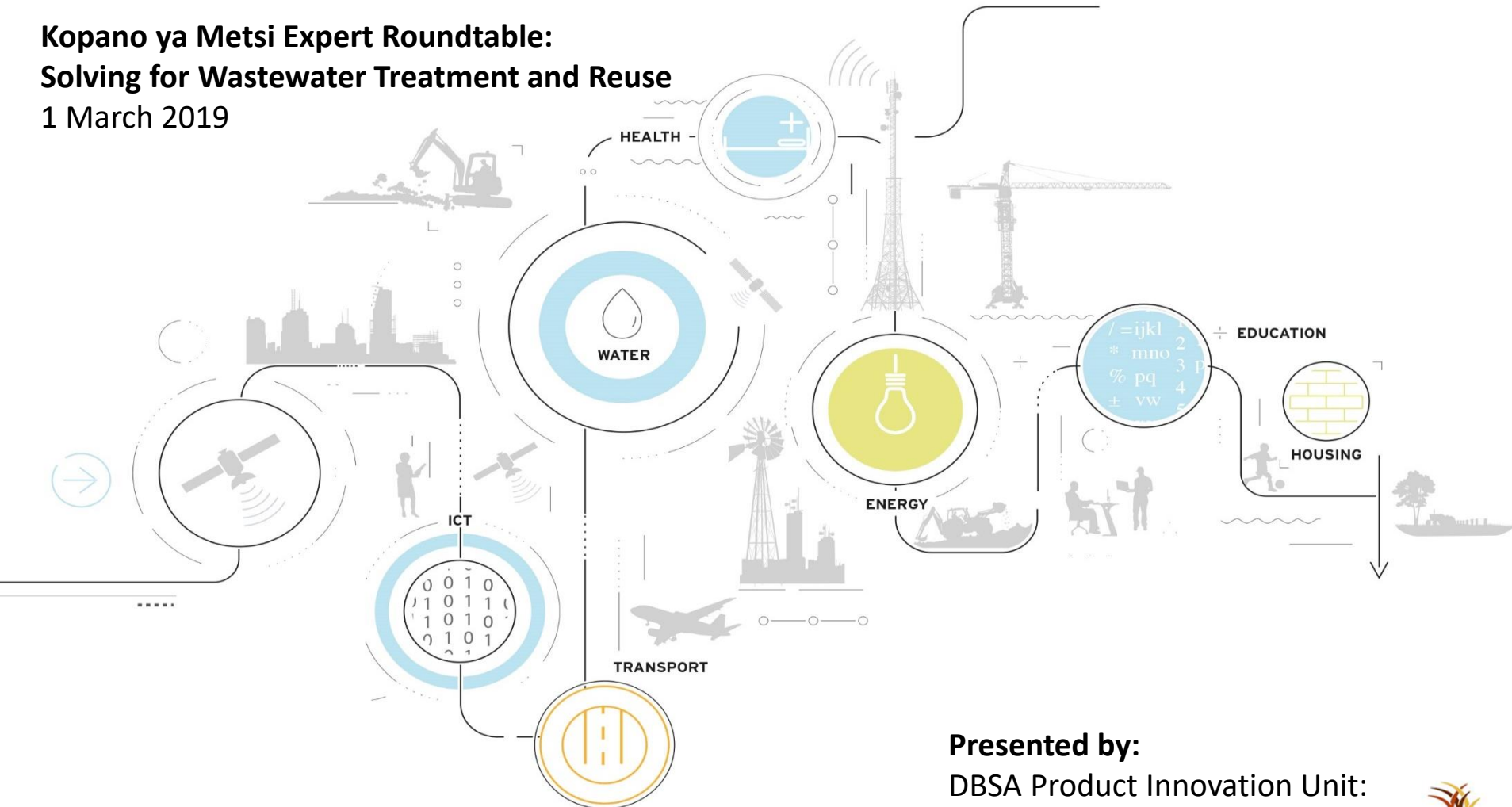


DBSA Water Reuse Initiative

A programmatic approach to establishing municipal water reuse infrastructure as a new asset class – an innovative funding solution

**Kopano ya Metsi Expert Roundtable:
Solving for Wastewater Treatment and Reuse**

1 March 2019



Presented by:

DBSA Product Innovation Unit:
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Problem statement

South Africa is facing a projected 17% water deficit by 2030

- Recent drought in SA placed renewed focus on the **optimal utilization of water as a scarce resource**
- South Africa is a **water scarce country** BUT we continue to see this **valuable resource lost** down our rivers and streams and into our oceans
- We have not seen the adoption of **large scale projects and programmes** of water re-use (and specifically effluent re-use) in South African municipalities:
 - While there are undoubtedly **notable examples** of treated effluent use and reuse (some of which include Beaufort West, Rustenburg and the City of Umhlathuze), these projects were often **reactive and responded to emergency situations**
- Significant **opportunity to extract maximum value** from water as a scarce resource by using it more than once

International experiences

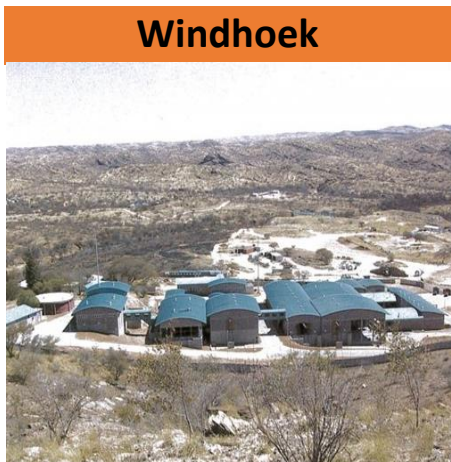
Reuse in Singapore is up to 30% of the demand and up to 85% in Israel

- Water reuse exists globally, can take various forms and has overcome the stigma of “toilet to tap”
- Countries such as the **United States of America, Spain, Singapore, Australia, Israel and China** has seen the large scale implementation of reuse projects to augment water supply schemes
- Water reuse and reclamation is **nothing new** and has been **widely practiced in both developed and emerging economies** – neighboring Namibia has been one of the **pioneers with regard to direct potable reuse** since the 1960s

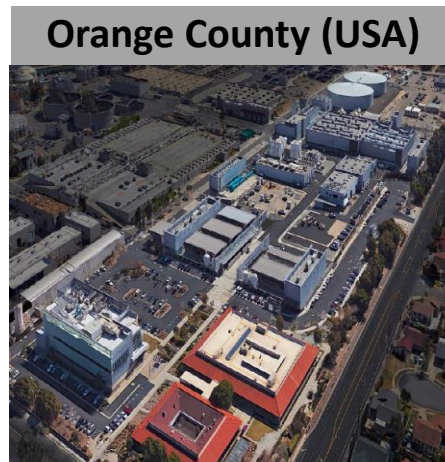
Israel



Windhoek



Orange County (USA)



Singapore



Water reuse and reclamation has various forms and applications

Effluent water for reuse is always present

- Reuse can be **direct or indirect** and can be intended for **potable use, industrial (mining, power generation, etc.) use, agricultural use, etc.**
 - Technology is available to treat used water to potable standard – applied in many cases across the world
 - Potable quality water often used in industrial processes which often do not require such high quality water
 - Treated effluent, which is rich in nutrients, can be used very effectively for irrigation purposes



Direct/indirect potable use



Industrial use



Agricultural use

Public perception and acceptability

Need for a national public awareness, education and communication process

- **Public perception, social, cultural and religious beliefs** often prevent direct potable reuse options from being considered, despite being able to treat water to required standards
- **Indirect potable reuse and blending options** that may be socially more acceptable than direct (“toilet-to-tap”) potable reuse (perceptions)
- Ironically, we are **already exposed to some form of reuse** with the unintended consequence that such reuse is **unplanned** – we should however strive towards **intentional and planned reuse** to manage risks and monitor and control quality
- A **national and regional public awareness and education process** will be required to ensure the **successful scaling and implementation of reuse in South Africa** – let us also learn from those who have already gone through this process

Key drivers to enable a successful water reuse programme

What are the implications of withholding (reusing) water on downstream users?

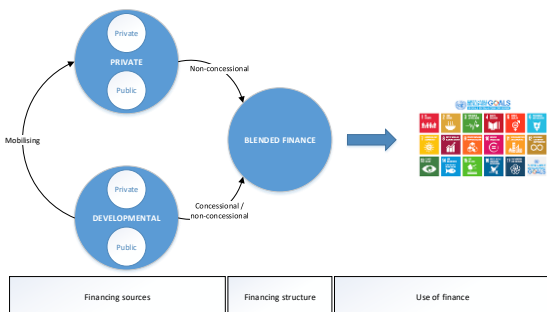
- Amongst the key drivers affecting water reuse choices, **water quality**, the **cost relative to other water supply options** and the **social, cultural and religious perceptions** rank the highest
 - **water quality requirements are highly achievable** although it may come at a cost – continuous improvements in technology however driving this cost down
 - Importance of **cost reflective tariffs** to ensure bankable revenue streams
 - **security of supply** often result in water users willing to pay more for water to ensure availability
 - water reuse **ranks favorable when compared to other water source options**, specifically sea water desalination
- And we need to be mindful of the **regulatory enabling environment**
 - Withholding (reusing) water within a city or town will impact on the downstream uses, being both downstream users (agriculture, towns, etc.) as well as the ecological reserve
 - Inland municipalities (cities and towns) are more exposed to this requirement than coastal municipalities who discharge water into the ocean with no downstream users

The opportunity

The DBSA recognizes this challenge but also the opportunity and its mandate enables the Bank to act as a catalyst to develop a reuse programme

- **DBSA Municipal Water Reuse Initiative:**

- encourage and assist municipalities with the **scaling of their reuse projects and programmes**
- support activities include:
 - ✓ **project preparation support** to progress municipal reuse projects to a bankable stage
 - ✓ **blended finance solution** that will allow municipalities an alternative (and competitively priced) option to fund the implementation of such reuse projects and programmes
- blended finance solution will be designed around a **‘funding platform’** concept which will allow the **crowding in of commercial funding** (commercial banks, asset managers, pension funds and other institutional investors) **alongside DFI, concessional and grant funding**
- ultimate objective is to create a new **financial asset class** around reuse infrastructure in the country
- as part of the aim to create a blended finance solution, the DBSA intends submitting an application to the GCF for concessional and grant funding to enhance the blended finance approach and to pass the benefit of such funding on to all municipalities



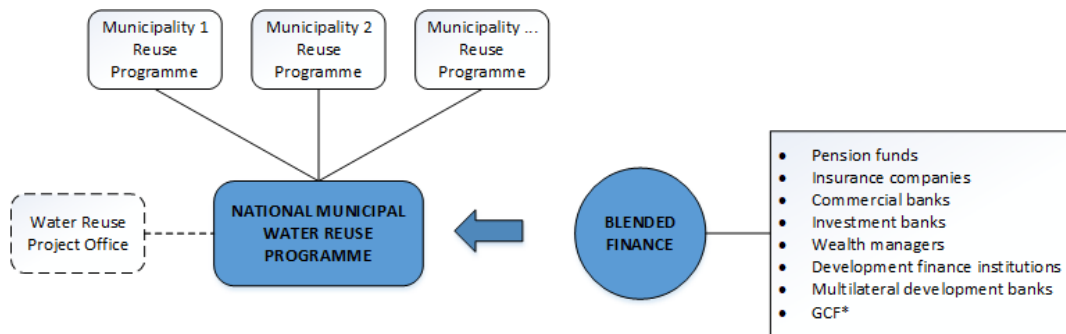
A programmatic approach

Establish a national reuse programme that will support the preparation, financing and implementation of municipal water reuse projects

• **Benefits of a programmatic approach will include:**

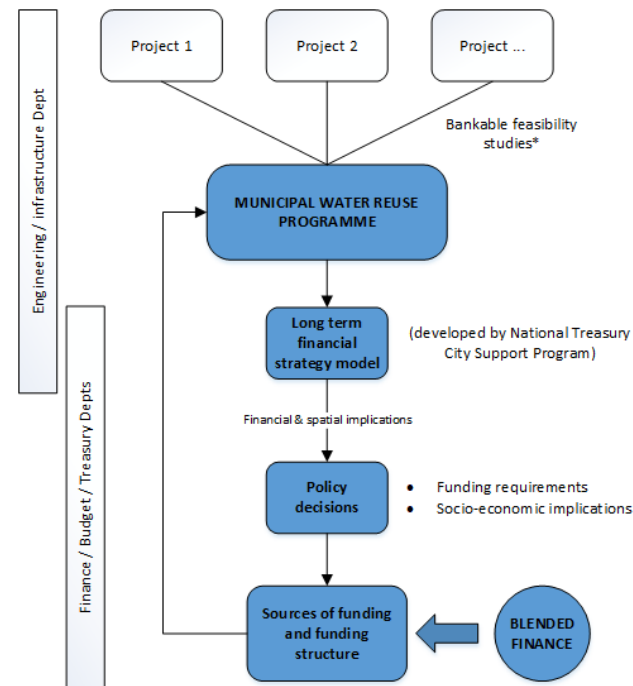
- the establishment of a **reuse project office**
- the **standardization** of contracting documents, procurement of professional service providers and contractors
- apply **best practice** design and innovative technology
- **lessons learnt**
- **cost optimisation**

National Programme



* Aim to apply to the Green Climate Fund for grant and concessional funding to enhance the affordability of funding for the national reuse programme

Municipal Programme



* Support available from the DBSA for project preparation USAID WASH-FIN capacity support available to municipalities

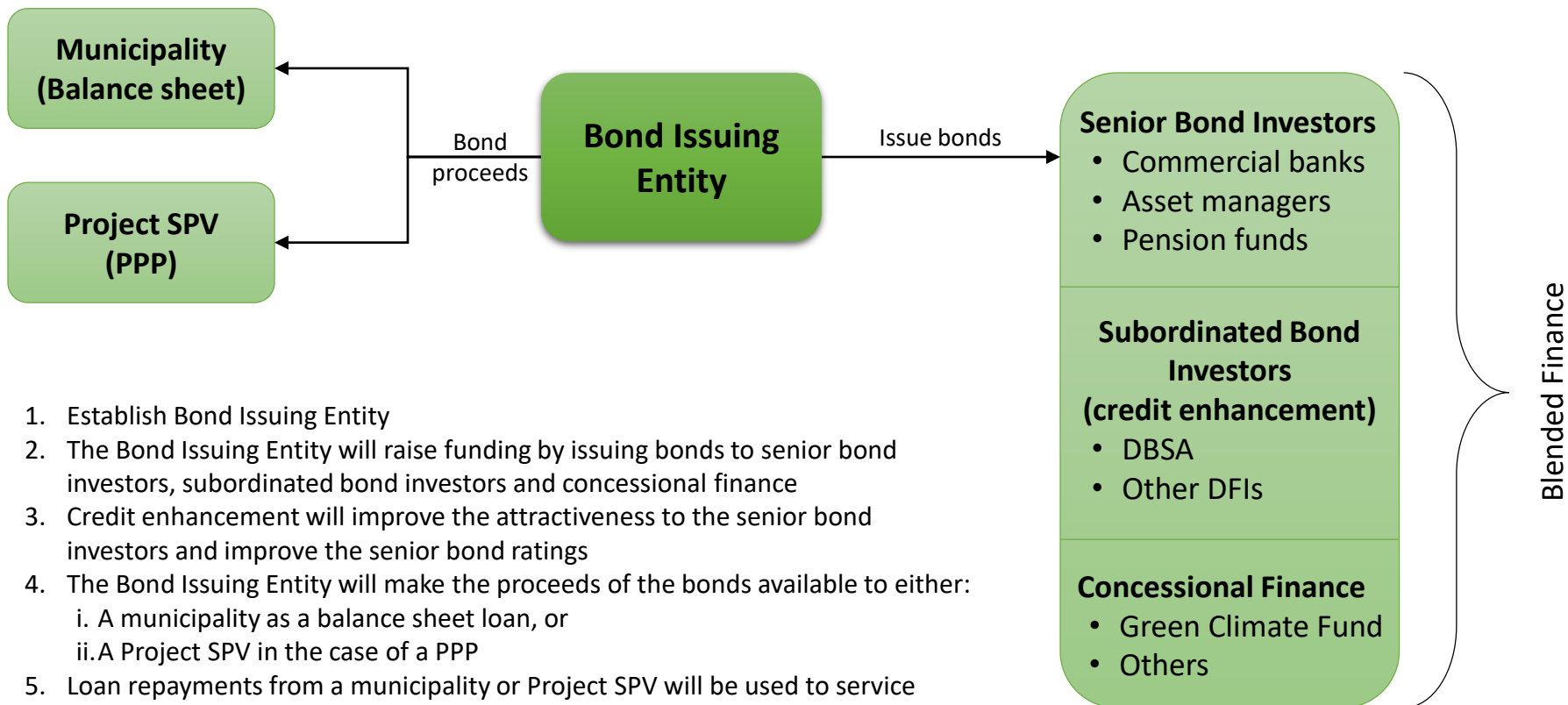
Proposed funding solution

Regulatory environment and listing requirements for Project Bonds on the JSE are in place

- Aim of this initiative is to create a **new asset class** by using **credit enhancement** to **crowd in private sector funding** targeted towards **developing DCM instruments** around a specific asset class
- Asset class of larger scale water reuse infrastructure assets that offer **acceptable financial returns** but are in line with **ESG impacts** and help to meet the UN SDGs (Goal 14 – sustainable oceans and Goal 6 – safe and clean water and sanitation)
- **Project bonds** will define the asset class – arguably the best suited instrument to fund large scale infrastructure related projects and programmes
- The use of **credit enhancement** to support the blended finance approach:
 - 1st loss / subordinated facilities
 - Tenor extension
- The construction period lends itself to the use of a **“construction” project bond** that can be **refinanced** in full or part through **post construction bonds**

Proposed funding solution

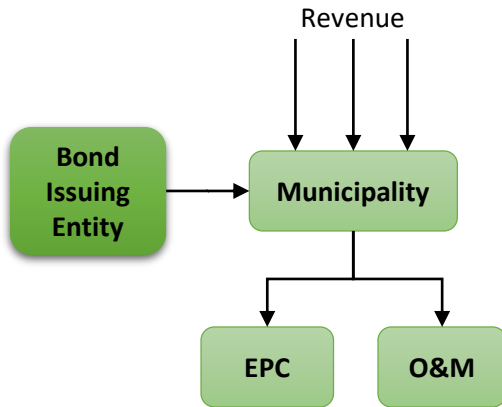
Basic Structure



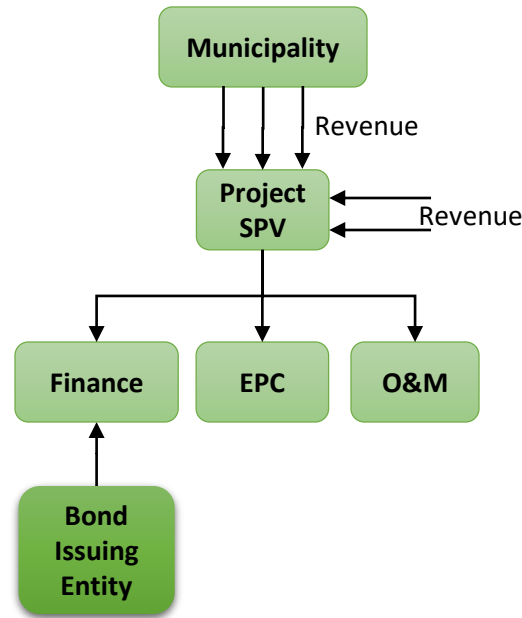
1. Establish Bond Issuing Entity
2. The Bond Issuing Entity will raise funding by issuing bonds to senior bond investors, subordinated bond investors and concessional finance
3. Credit enhancement will improve the attractiveness to the senior bond investors and improve the senior bond ratings
4. The Bond Issuing Entity will make the proceeds of the bonds available to either:
 - i. A municipality as a balance sheet loan, or
 - ii. A Project SPV in the case of a PPP
5. Loan repayments from a municipality or Project SPV will be used to service coupons and bond repayments
6. Proposed funding solution can be applied to three cases:
 - i. A conventional service delivery option (municipal balance sheet)
 - ii. A PPP/concession service delivery option
 - iii. A hybrid – a PPP/concession service delivery option (PPP without finance)

Proposed funding solution – application

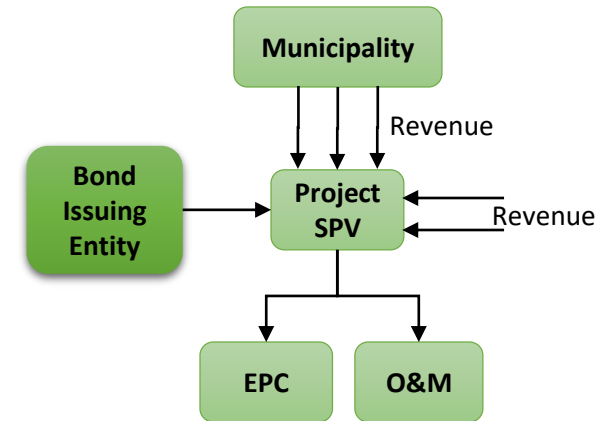
Conventional (municipal balance sheet)



PPP / Concession (design, build, finance, O&M)



Hybrid (PPP without finance)



1. Funding options to a municipality for water reuse projects:
 - i. Loan funding
 - ii. Municipal (green) bond (City of Cape Town example) – no credit enhancement required
 - iii. Project bond – credit enhancement required and done through the Bond Issuing Entity
2. For option iii (as per structure above):
 - a. The municipality will appoint EPC and O&M providers
 - b. The municipality will raise funding via a loan (b/s) from the Bond Issuing Entity
 - c. The municipality will generate revenue and service the loan

1. Typical PPP for design, build, finance, operate and maintain
2. Revenue accrues to the Project SPV directly from external sources (off-takers) or via the municipality (as off-taker)
3. The Project SPV will be required to raise funding which can be provided by the Bond Issuing Entity on the following basis:
 - i. Similar offering made available to all prospective bidders
 - ii. Bidders not obliged to accept the offer i.e. can provide own funding

1. Hybrid between the Conventional and PPP structures with the following differences:
 - i. Request to the market will only include design, build and operate and maintain – funding to be made available separately to the Project SPV i.e. the Project SPV will not be required to raise funding
 - ii. The Project SPV will only be procured on the basis of its EPC and O&M capabilities and cost

Discussion

How can the DBSA assist in establishing a water reuse programme for South African municipalities?

- What are the factors preventing municipalities from developing water reuse projects at scale?
- How do we address the negative public perceptions around direct potable reuse?
- How do we address the aspect of reusing water vs. the impact (less water available) it will have on downstream users?

Thank you

