Assessing the Impact of the Expansion of Activities of Water Boards

Part B

Report to the
Water Research Commission

by

Kim Walsh and Njabulo Ndaba
Palmer Development Group (Pty) Ltd.

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Obtainable from
Water Research Commission
Bloukrans Building, Lynnwood Bridge Office Park
4 Daventry Street
Lynnwood Manor
PRETORIA

orders@wrc.org.za or download from www.wrc.org.za

The outcomes of this project (Assessing the Impact of the Expansion of Activities of Water Boards, WRC project no. C2022/2023-01470) are reported in two reports.
This is **Part B**: Strategic analysis and implication of Water Boards provide retail functions of water services.
The other report is **Part A**: Assessing the impact of expansion of bulk infrastructure on the capital requirements of affected water boards (WRC Report No. 3140/1/24)
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EXECUTIVE SUMMARY

PDG was appointed by the Water Research Commission (WRC) on behalf of the Department of Water and Sanitation (DWS) to conduct research on expanding the activities of water boards. This report covers Part B of the study, a strategic analysis of the implications of water boards providing the retail water function on behalf of Water Services Authorities (WSAs).

This research applied a case study approach. Four case studies were investigated, namely Bloem Water providing retail water in Matjhabeng local municipality (LM) in the Free State province, uMngeni-uThukela Water[1] in King Cetshwayo district municipality (DM) in KwaZulu-Natal, Magalies Water in Maquassi Hills LM in the North West and Lepelle Northern Water in Mopani DM in Limpopo. The work was entirely desk-top and based on secondary sources. Analysis focussed on quantifying the expenditures that the water board and WSA would need to incur to provide the retail water service optimally, and the tariffs that would be required to ensure that this provision was financially viable. It was assumed that the WSA would transfer any grants and subsidies allocated to it for water over to the water board, including the portion of the local government equitable share (LGES) allocated to water in the LGES formula. This is an important assumption and will need to be a key element of any contract entered not between a water board and WSA for the provision of retail services.

The expenditures required, operating subsidy transferred, and average tariffs required are shown in the table below.

	Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
O&M cost per kl sold[2]	24.74	41.33	25.96	41.59
Other expenditure per kl sold[3]	6.58	9.67	10.69	9.02
Total expenditure per kl sold	*31.32*	*51.00*	*36.65*	*50.61*
Less: LGES per kl sold	- 7.47	- 13.34	- 14.76	- 8.82
Average tariff required per kl sold	**23.85**	**37.65**	**21.89**	**41.79**
Current service charge revenue per kl sold	18.89	6.59	31.78[4]	4.15
Tariff required as % of current service charge revenue per kl sold	126%	571%	69%	1006%

The estimated average tariff required for Bloem Water to run the retail service sustainably in Matjhabeng is higher than the current average tariff but may be possible given the underlying revenue base in this municipality. Magalies Water may be able to collect revenues of R21.89 per kl in Maquassi Hills, although this is likely to be more tenuous than in the case of Bloem Water in Matjhabeng, and Magalies Water may continue

[1] uMngeni-uThukela Water has recently been formed through the amalgamation of Umgeni and Mhlathuze Water.

[2] O&M unit costs were calculated based on cost benchmarks, applied per kl SIV. It was assumed that water boards will optimise expenditure by reducing technical losses and therefore reducing SIV, and optimise sales by reducing non-technical losses.

[3] 'Other' expenditure included direct expenditures such as depreciation, interest, debt impairment, irrecoverable debts written off, and losses; as well as customer management costs and other overheads, including the costs of functions such as HR, budgeting and accounting that support the provision of the service.

[4] Maquassi Hills LM indicated that it generated R31.78 per kl of water sold in 2021/22. This revenue is very high. The Maquassi Hills tariffs in place in that year were between R21.01 and R28.95 per kl. These tariffs are relatively high but would not result in overall revenue of R31.78 per kl sold. It seems likely that Maquassi Hills has understated the kl of water that it sold in 2021/22 in its AFS or has overstated water revenues.

to struggle with collection rates. It will be important to lower the costs of supply where possible. The tariffs required for uMngeni-uThukela Water and Lepelle Northern Water to run the retail water service sustainably in King Cetshwayo and Mopani DMs are very high and unlikely to be affordable to the communities in these municipalities and will not be collectible. The O&M expenditures required to run the service sustainably were estimated based on cost benchmarks from 2016 as no more recent cost benchmarks are available. It is possible that these benchmarks overstate the costs, but the costs of water supply in low density, rural contexts in South Africa are certainly very high. It is very unlikely that either uMngeni-uThukela or Lepelle Northern Water will be able to run a viable water distribution service in these municipalities.

In response to these findings, the study concludes that there is no blanket answer as to whether water boards taking over retail water services will improve service delivery but the circumstances in which this will be successful are very limited. At best, the financial viability of a retail service provided by a water board in a currently failing WSA will be tenuous; at worst, the service will not be viable, with negative implications for service delivery. Much depends on the causes of current WSA failure. Each water board/WSA pairing must be considered as a unique case.

There are several implications to this conclusion:

- A robust diagnostic is required before the provision of a retail service by a water board is considered as the solution. Some elements of such a diagnostic are included in the existing Section 78 process in the Municipal Systems Act. However, Section 78 processes must be initiated by the WSA itself and are often poorly undertaken. They will require firm oversight to be useful in determining whether a water board should be considered as a provider of the retail service.
- This diagnostic should consider not only the municipal situation but also the performance, capacity and governance of the water board. Rand Water is currently the only water board with the performance, capacity and governance required. Bloem Water may be a candidate in very specific circumstances.
- Water boards will not be able to resolve problems related to the lack of economic viability of the water distribution service in low density rural municipalities. These issues must be resolved through the identification of cheaper servicing options (which can be provided by a WSA, water board or other provider) or a review of the allocation of subsidies. Robust cost benchmarks that demonstrate the minimum expenditure required to provide a sustainable service will be needed before a review of subsidies can take place.
- Issues of non-payment must be addressed nationally and resolved separately from considerations of retail service provision arrangements.
- Water boards do not currently have the capacity to provide retail water services and may face the same challenges as municipalities in developing this capacity.
- Bringing a water board in is therefore not a quick fix. A transition process is required between the current service provision arrangement and the final contracting of the water board. This transition process should be facilitated, ideally by a strong public national entity, but possibly by the private sector where public sector capacity is lacking.
- Water boards are not the only option. Changing WSA authorisations, community-based service provision or drawing on private sector expertise should also be considered. All options should be considered as part of a Section 78 process.
- Sound contracting is essential with concession arrangements the ultimate goal.
- Contracts must include clauses governing the transfer of subsidies and grants to the water board or other service provider.

Based on these implications, the study makes the following recommendations:

1. Undertake a robust diagnostic into the causes of failure in any individual municipality before deciding to change the service provision arrangements. If this diagnostic is to be undertaken as part of a Section 78 process, there must be sufficient oversight of the Section 78 to ensure that it is rigorous and fair.
2. Assess the performance, capacity and governance of a water board before considering it as a potential provider of water distribution services. In the short term, only Rand Water should be considered as a potential provider of distribution services. Bloem Water may be considered in specific cases.
3. Do not consider the transfer of the distribution function to a water board to be the solution to service delivery challenges in low, density rural municipalities. Issues in these contexts must be resolved through the identification of cheaper servicing options (which can be provided by a WSA, water board or other provider) or a review of the allocation of subsidies. Robust cost benchmarks that demonstrate the minimum expenditure required to provide a sustainable service will be needed before a review of subsidies can take place. These currently do not exist. The introduction of more affordable servicing options will require strong political backing.
4. Address issues of non-payment nationally, providing strong and clear political support for credit control and debt collection, alongside sound indigent management.
5. If a decision is made to bring in an alternative provider for the distribution service, consider all options, including authorising LMs as WSAs in the case of failed DM WSAs; community-based service provision; or some form of private sector involvement.
6. If deciding to proceed with contracting a water board to provide the water distribution service, the following process is proposed:
    a. The process must be mediated by a national entity with sufficient capacity to oversee such contracts.
    b. A transition arrangement must be put in place, aimed firstly at assessing the current situation with water services; and secondly establishing a business plan for long term performance improvement. There are several ways of doing this with a management contract a strong candidate as it has the benefit of bringing in high level expertise to improve management of the service. Incentives and performance measures are required for the entity managing this transition, with increased customer satisfaction and increased revenue being key performance indicators.
    c. The water board should enter into a long-term contract based on the business plan, with a concession being the ultimate goal.
    d. If not a concession, there is the option of an interim stage based on an operating contract but here it is notable that there must be sufficient funds to pay for the contract.
7. Contracts must include clauses governing the transfer of subsidies and grants to the water board or other service provider.

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ACRONYMS & ABBREVIATIONS

AFS	Annual Financial Statements
CPAF	Contract Price Adjustment Factor
CPI	Consumer Price Index
CRC	Current Replacement Cost
DWS	Department of Water and Sanitation
EUL	Estimated Useful Life
KZN	KwaZulu-Natal
LGES	Local Government Equitable Share
MIG	Municipal Infrastructure Grant
NRW	Non-Revenue Water
O&M	Operations and Maintenance
PDG	Palmer Development Group
SIV	System Input Volume
TOR	Terms of Reference
WRC	Water Research Commission
WSIG	Water Services Infrastructure Grant

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CHAPTER 1: INTRODUCTION

PDG was appointed by the Water Research Commission (WRC) on behalf of the Department of Water and Sanitation (DWS) to conduct research on expanding the activities of water boards.
The Terms of Reference (TOR) specified a study in two parts.

- PART A: Undertake a study to assessing the impact of expansion of bulk infrastructure on the capital requirements of affected water boards only and specifically taking into account the existing boundaries as well as proposed boundaries as specified.
- PART B: Strategic analysis and implication of Water Boards provide retail functions of water services.

This report is the final report for Part B of the study.

1.1 PROJECT BACKGROUND

The Minister of Water and Sanitation has indicated the need to relook the mandates and operational jurisdiction of water boards in several speeches and at the last Water summit. This is motivated largely by a desire to strengthen the provision of water services.

The reconfiguration and reorientation of water boards is a strategic priority for DWS (DWS, 2022a) and includes strengthening and extending the roles, responsibilities and capacity of water boards so that they are able to provide water and sanitation services in instances where municipalities are failing to provide the services.

1.2 RESEARCH AIMS

There are six identified aims for this research. The first three of these relate to Part A of the study, work covered in the previous report generated under the study. The three below relate to Part B, covered in this report.

1. Improved understanding of the implications of water boards taking on retail activities on their financial performance and position, and that of the municipalities affected, as well as any additional fiscal support required.
2. High level comment on whether water boards taking on retail activities will enable improved service delivery.
3. Recommendations regarding the financial impacts of water boards taking on retail activities, to inform policy decisions.

Overall, the study is intended to inform policy and decision making by providing the Minister and the DWS with strategic information to allow for informed decisions regarding expansions in the footprints or mandates of water boards.

CHAPTER 2: METHODOLOGY

This research applied a case study approach. The work was entirely desk-top and based on secondary sources. There was no primary gathering of data from the case study municipalities or water boards and no engagement with the municipalities or water boards.

All data was sourced from nationally available data sources. Primary sources of data were:

- Statements of Financial Performance and Financial Position for the water function from the National Treasury Local Government Database
- Census 2022
- Municipal Annual Financial Statements
- Water board Annual Financial Statements

2.1 SELECTION OF CASE STUDIES

It is assumed that a water board would be approached to provide the water distribution function in a WSA only if that WSA is currently under-performing. Non-payment to the water boards was chosen as the metric to assess under-performance in this study, and so case studies were selected from municipalities with high levels of non-payment to the water boards currently providing them with bulk water.

The capacity of the water board is also a factor in deciding whether it should take over retail functions. The case studies were selected to include some with high-capacity water boards and some with low-capacity water boards. The financial performance of the water board was used as the metric to determine capacity.

Finally, a geographic spread and a mix of LM and DM WSAs were selected.

The case studies selected were:

- Bloem Water and Matjhabeng LM
- uMngeni-uThukela Water and King Cetshwayo DM
- Magalies Water and Maquassi Hills LM
- Lepelle Northern Water and Mopani DM

2.2 OVERVIEW OF CASE STUDY WSAS SELECTED

An overview of each case study WSA is provided below.

2.2.1 Matjhabeng LM

Matjhabeng LM is located in the Lejweleputswa DM in the Free State province.

It is primarily urban, with 98% of its households living in urban areas, according to Census 2011[5] and includes the towns of Welkom, Virgina, Odendaalsrus and Allanridge.

[5] Data on geography types per municipality had not yet been released for Census 2022 at the time of writing this report.

GVA per capita is relatively high at R138 per person per annum (Quantec EasyData, 2023). The economy is heavily dependent on mining, with mining and quarrying contributing 36% of GVA. Finance, insurance, real estate and business services contributes a further 14% and community, social and personal services and wholesale and retail trade, catering and accommodation each make up a further 11%.

The population was 439 034 in 2022 according to Census 2022, living in 126 068 households. This gives an average household size of 3.48 people. Household growth between Census 2011 and Census 2022 was low, at only 0.2% per annum on average.

The municipality covers 5 699 km^2. Only 1% of the landcover is urban, with a resulting high settlement density of 98 people per ha.

Access to water services in 2022 is summarised in the table below.

Table 1: Access to water services in Matjhabeng LM in 2022

No access	Communal standpipes	Yard tap	In-house
2%	5%	31%	61%

Source: StatsSA Census 2022

Access to water is high, with only 2% of households reported as having no access and 92% having on-site water.

According to the 2021/22 Annual Financial Statements (AFS), the System Input Volume (SIV) was 48 470 Ml and the volume of water sold was 21 815 Ml. This gives a Non-Revenue Water (NRW) figure of 55%, higher than the national average of around 41%. The split between technical and non-technical losses is not known. For the purposes of analysis, it has been assumed that 85% of losses are technical. This is in line with figures quoted in the National Water and Sanitation Master Plan (DWS, 2014), which states that total losses in SA the time of writing were 41% and that technical losses were 35% (i.e. 85% of the total).

Adjusting for non-technical losses, assuming that households with on-site water consume 2.5 times the amount consumed by those with communal standpipes, and that the non-residential share of consumption is 15%, the data suggests that 15.3 kl of water is consumed per household with on-site per month. With an average household size of 3.48 people, this is 146 litres per person per day.

As shown in Table 2 below, reported expenditure on water in Matjhabeng makes up 22% of all expenditure. Overheads (Governance and Administration) accounts for a further 23%.

Table 2: Overall composition of municipal expenditure in Matjhabeng LM in 2022, in R'000

Governance and Administration	Water	Other	Total expenditure
953 415	905 704	2 263 932	4 123 051
23%	22%	55%	100%

Source: Audited Annual Financial Statements, 2021/22

Expenditures reported on the water function in 2021/22 are shown in Table 3 below.

Table 3: Expenditure on water in Matjhabeng LM in 2021/22, in R'000

Item	Expenditure
Employee related costs	59 828
Inventory consumed	619 715
Debt impairment	-
Depreciation and amortisation	15 377
Interest	-
Contracted services	7 883
Irrecoverable debts written off	214 150
Operational costs	5 296
Losses on disposal of assets	-
Other losses	-16 545
Total	**905 704**

Source: Audited Annual Financial Statements, 2021/22

Matjhabeng did not report any impairment of debt against the water function in 2022. It is likely that this expenditure was reported entirely against the Governance and Administration functions. The very high expenditure on irrecoverable debts written off reported in 2021/22 is notable.

Bulk purchases expenditure, which is reported as part of inventory consumed after recent reforms to municipal financial reporting, was R608 million in 2021/22. 67% of all expenditure was therefore on bulk purchases, with a further 9% on other O&M (employee related costs, other inventory consumed, contracted services and operational costs) and the remaining 24% on other expenditures (debt impairment, depreciation and amortisation, interest, irrecoverable debts written off and losses). Expenditure per kl of reported SIV for each of these items is shown in the table below.

Table 4: Expenditure on water per kl of reported SIV in Matjhabeng LM in 2021/22 in Rands

Bulk	O&M	Other	Total
12.55	1.75	4.39	18.69
67%	9%	24%	

Source: Audited Annual Financial Statements, 2021/22

Total expenditure on water is R18.69 per kl of SIV. A share of municipal overheads is incurred in support of the water function. If a share of overheads expenditure is allocated to water in proportion to the share of water in the total budget, this allocates an additional R4.16 per kl SIV, indicating a total expenditure on the provision of the water service of R22.85 per kl SIV.

Revenues reported from the water function in 2021/22 are shown in Table 5 below.

Table 5: Revenues generated on water in Matjhabeng LM in 2021/22 in R'000

Item	Expenditure
Service charges	412 093
Interest earned from receivables	114 623
Total	**526 716**

Source: Audited Annual Financial Statements, 2021/22

Matjhabeng indicated that it generated R18.89 in service charges revenue per kl of water sold. Taking NRW into account, this is R10.87 per kl SIV, significantly less than the R22.85 per kl SIV cost of providing water. A

collection rate of 51% reported in 2020/21 and 59% in 2018/19[6] for Matjhabeng on the Municipal Money website.

2.2.2 Maquassi Hills LM

Maquassi Hills LM is located in the Dr Kenneth Kaunda DM in the North-West province.

It is primarily urban, with 79% of its households living in urban areas, according to Census 2011 and includes the towns of Wolmaransstad, Makwassi, Leeudoringstad and Witpoort. The rural areas are primarily commercial farms.

GVA per capita is relatively low at R46 per person per annum (Quantec EasyData, 2023). The economy is mixed with on 'community, social and personal services'; 'agriculture, forestry, and fishing'; and 'general government' contributing 19%, 18% and 17% of GVA respectively. 'Wholesale and retail trade, catering and accommodation' and 'finance, insurance, real estate and business services' each make up a further 15%.

The population was 90 302 in 2022 according to Census 2022, living in 25 067 households. This gives an average household size of 3.60 people. Household growth between Census 2011 and Census 2022 was 1.8% per annum on average, marginally below the national average of 1.9% per annum.

The municipality covers 4 678 km^2. Only 0.19% of landcover is urban, with a resulting high settlement density of 79 people per ha.

Access to water services in 2022 is summarised in the table below.

Table 6: Access to water services in Maquassi Hill LM in 2022

No access	Communal standpipes	Yard tap	In-house
7%	6%	46%	40%

Source: StatsSA Census 2022

Access to water is relatively high, with only 7% of households reported as having no access and 86% having on-site water.

According to the 2021/22 Annual Financial Statements, the System Input Volume was 4 161 Ml and the volume of water sold was 2 144 Ml. This gives a NRW figure of 48%, higher than the national average of around 41%. The split between technical and non-technical losses is not known. As for Matjhabeng, it has been assumed that 85% of losses are technical, in line with figures quoted in the National Water and Sanitation Master Plan (DWS, 2014).

Adjusting for non-technical losses, assuming that households with on-site water consume 2.5 times the amount consumed by those with communal standpipes, and that the non-residential share of consumption is 12%, the data suggests that 8.0 kl of water is consumed per household with on-site water per month. With an average household size of 3.60 people, this is 74 litres per person per day. This is relatively low consumption.
As shown in Table 7 below, reported expenditure on water in Maquassi Hills makes up 10% of all expenditure. Overheads (Governance and Administration) accounts for a further 71%. As noted below, it appears that Maquassi Hills reports all expenditures such as debt impairment, depreciation and interest as Governance and Administration, rather than allocating portions of these to individual services. This overstates their Governance and Administration expenditure and under-states the expenditures incurred on providing services.

[6] There was no collection rate reported in 2019/20. Note that data on cash collection rates is very poor, particularly since the introduction of mSCOA in 2018/19.

Table 7: Overall composition of municipal expenditure in Maquassi Hills LM in 2022, in R'000

Governance and Administration	Water	Other	Total expenditure
443 496	63 030	120 042	626 568
71%	10%	19%	100%

Source: Audited Annual Financial Statements, 2021/22

Expenditures reported on the water function in 2021/22 are shown in Table 8 below.

Table 8: Expenditure on water in Maquassi Hills LM in 2021/22, in R'000

Item	Expenditure
Employee related costs	11 109
Inventory consumed	53 590
Debt impairment	-
Depreciation and amortisation	-
Interest	-
Contracted services	-1 916
Irrecoverable debts written off	109
Operational costs	138
Losses on disposal of assets	-
Other losses	-
Total	**63 030**

Source: Audited Annual Financial Statements, 2021/22

Maquassi Hills did not report any impairment of debt, depreciation or interest expense against the water function in 2022. There is a negative expenditure reported on contracted services.

Bulk purchases expenditure, which is now reported as part of inventory consumed, was R52 million in 2021/22. 83% of all expenditure was therefore on bulk purchases, with a further 17% on other O&M (employee related costs, other inventory consumed, contracted services and operational costs) and the remaining 0.17% on other expenditures (debt impairment, depreciation and amortisation, interest, irrecoverable debts written off and losses). This expenditure composition is not useful due to the way that Maquassi Hills has allocated its expenditures. Expenditure per kl of reported SIV for each of these items is shown in the table below, none-the-less.

Table 9: Expenditure on water per kl reported in Maquassi Hills LM in Rands

Bulk	O&M	Other	Total
12.52	2.60	0.03	15.15
83%	17%	0.17%	

Source: Audited Annual Financial Statements, 2021/22

Total expenditure on water is R15.15 per kl of SIV. If a share of overheads expenditure is allocated to water, in proportion to the share of water in the total budget, this allocates an additional R11.03 per kl SIV, indicating a total expenditure on the provision of the water service of R26.17 per kl SIV.

Revenues reported from the water function in 2021/22 are shown in Table 10 below.

Table 10: Revenues generated on water in Maquassi Hills LM in 2021/22 in R'000

Item	Expenditure
Service charges	68 148
Interest earned from receivables	42 786
Operational revenue	405
Total	**111 339**

Source: Audited Annual Financial Statements, 2021/22

Maquassi Hills LM indicated that it generated R31.78 per kl of water sold in 2021/22. This revenue is very high. The Maquassi Hills tariffs in place in that year were between R21.01 and R28.95 per kl. These tariffs are relatively high but would not result in overall revenue of R31.78 per kl sold. It seems likely that Maquassi Hills has understated the kl of water that it sold in 2021/22 in its AFS or has overstated water revenues.

Taking NRW into account, the reported service charges revenue is R26.76 per kl SIV, similar to the R26.17 per kl SIV cost of providing water. Collection rates of 5.7% and 20% were reported respectively in 2020/21 and 2018/19 for Maquassi Hills on the Municipal Money website. See footnote 6 earlier in this report regarding the poor quality of data on collection rates, particularly since 2018/19. It is likely that these low collection rates are due to incorrect reporting and not a reflection of actual collection rates.

2.2.3 King Cetshwayo DM

King Cetshwayo DM is located in the KwaZulu-Natal province and is the DM to uMfolozi LM, uMhlathuze LM, uMlalazi LM, Mthonjaneni LM, and Nkandla LM. King Cetshwayo is the WSA in all of the LMs aside from uMhlathuze. All information in this report refers to King Cetshwayo as the WSA, not the DM, and therefore excludes uMhlathuze.

King Cetshwayo is primarily traditional area, with 83% of its households living in traditional areas, according to Census 2011 and is bordered by uMkhanyakude to the north, Zululand to the north-west, uMzinyathi to the north-west and iLembe District to the south.

GVA per capita is low at R37 per person per annum (Quantec EasyData, 2023). The economy is heavily dependent on ‘agriculture, forestry, and fishing’ (19%) and ‘community, social and personal services’ (19%), which together contributing to 38% of the overall GVA. ‘Finance, insurance, real estate and business services’ contributes a further 13%.

The population was 609 269 in 2022 according to Census 2022, living 105 298 households. This gives an average household size of 5.79 people. Household growth was negative between Census 2011 and Census 2022, at -0.3% per annum on average.

The population covers 7 038 km^2. Only 8% of landcover is urban, with a very low settlement density of 1 person per ha.

Access to water services in 2022 is summarised in the table below.

Table 11: Access to water services in King Cetshwayo DM in 2022

No access	Communal standpipes	Yard tap	In-house
23%	14%	36%	27%

Source: StatsSA Census 2022

Access to water is moderate, with 23% of households reported as having no access and 63% having on-site water.

According to the 2021/22 Annual Financial Statements, the SIV was 18 101 Ml and volume of water sold was 9 123 Ml. This gives a NRW figure of 50%, higher than the national average of around 41%. The split between technical and non-technical losses is not known. Anecdotal evidence suggests that levels of non-technical losses are high in rural DMs, due extensive illegal connections to bulk pipelines. It has therefore been assumed that non-technical losses are 50% of total losses in King Cetshwayo.

Adjusting for non-technical losses, assuming that households with on-site water consume 2.5 times the amount consumed by those with communal standpipes, and that the non-residential share of consumption is 26%, the data suggests that 11.6 kl of water is consumed per household with on-site per month. With an average household size of 5.79 people, this is 67 litres per person per day.

As shown in Table 12 below, reported expenditure on water in King Cetshwayo makes up 60% of all expenditure. Overheads (Governance and Administration) accounts for a further 25%.

Table 12: Overall composition of municipal expenditure in King Cetshwayo DM in 2022, in R'000

Governance and Administration	Water	Other	Total expenditure
237 058	572 208	141 221	950 487
25%	60%	15%	100%

Source: Audited Annual Financial Statements, 2021/22

Expenditures reported on the water function in 2021/22 are shown in Table 13 below.

Table 13: Expenditure on water in King Cetshwayo DM in 2021/22, in R'000

Item	Expenditure
Employee related costs	108 016
Inventory consumed	123 967
Debt impairment	-
Depreciation and amortisation	90 739
Interest	559
Contracted services	199 175
Irrecoverable debts written off	7 628
Operational costs	41 623
Losses on disposal of assets	501
Other losses	-
Total	**572 208**

Source: Audited Annual Financial Statements, 2021/22

King Cetshwayo did not report any impairment of debt against the water function in 2022. The high expenditure on contracted services reported in 2021/22 is notable, 47% of which was accounted for as 'maintenance and equipment'.

Bulk purchases expenditure, which is now reported as part of inventory consumed, was 129 361 million in 2021/22. 23% of all expenditure was therefore on bulk purchases, with a further 60% on other O&M (employee related costs, other inventory consumed, contracted services and operational costs) and the remaining 17% on other expenditures (debt impairment, depreciation and amortisation, interest, irrecoverable debts written off and losses). Expenditure per kl of reported SIV for each of these items is shown in the table below.

Table 14: Expenditure on water per kl of reported SIV in King Cetshwayo DM in 2021/22 in Rands

Bulk	O&M	Other	Total
7.15	18.97	5.49	31.61
23%	60%	17%	

Source: Audited Annual Financial Statements, 2021/22

Total expenditure on water is R31.61 per kl of SIV. A share of municipal overheads is incurred in support of the water function. If a share of overheads expenditure is allocated to water, in proportion to the share of water in the total budget, this allocates an additional R10.13 per kl SIV, indicating a total expenditure on the provision of the water service of R47.14 per kl SIV.

Revenues reported from the water function in 2021/22 are shown in Table 15 below.

Table 15: Revenues generated on water in King Cetshwayo DM in 2021/22 in R'000

Item	Expenditure
Service charges	60 144
Interest earned from receivables	352
Rental from fixed assets	415
Fines, penalties and forfeits	25
Transfer and subsidies - Operational	271 909
Total	**332 815**

Source: Audited Annual Financial Statements, 2021/22

King Cetshwayo indicated that it generated only R6.59 in service charges revenue per kl sold in 2021/22. This is extraordinarily low, particularly as its tariffs in that year ranged between R14.11 per kl for the lowest tariff block and R36.47 for the highest. Adjusted for NRW, this gives R18.39 in service charges revenue per kl SIV, significantly less than the R47.14 per kl SIV cost of providing water. Collection rates of 148% and 91% were reported in 2020/21 and 2018/19 for King Cetshwayo on the Municipal Money website. These are very strong. Note, however, footnote 6 earlier in this report and discussion in the previous sections on other municipalities about the poor quality of data on collection rates.

2.2.4 Mopani DM

Mopani DM is located in the Limpopo province and is the DM to Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM and Maruleng LM. Mopani is the WSA but has WSP arrangements in place with all of the LMs in its jurisdiction. Under these arrangements, Mopani provides water services in rural areas and the LMs provide these services in the towns. Performance of the water services is poor across the DM area and so, for the purposes of this study, it has been assumed that a water board would be brought in to provide the distribution water function in all LMs in Mopani DM.

It is primarily traditional area, with 82% of its households living in traditional areas, according to Census 2011 but includes the towns of Giyani, Gravelotte, Haenertsburg, Hoedspruit, Leydsdorp, Modjadiskloof and Tzaneen.

GVA per capita is low at R56 per person per annum (Quantec EasyData, 2023). The economy is heavily dependent on mining, with mining and quarrying contributing 28% of GVA. 'Wholesale and retail trade', 'catering and accommodation' and 'community, social and personal services' each make up a further 16%. Finance, insurance, real estate and business services contributes a further 15%.

The population was 1 372 873 in 2022 according to Census 2022, living 358 153 households. This gives an average household size of 3.83 people. Household growth between Census 2011 and Census 2022 was 1.7% per annum on average, marginally below the national average of 1.9% per annum over the period.

The municipality covers 20 199 km^2. Only 4% of the landcover is urban, with a resulting very low settlement density of 2 people per ha.

Access to water services in 2022 is summarised in the table below.

Table 16: Access to water services in Mopani DM in 2022

No access	Communal standpipes	Yard tap	In-house
23%	24%	26%	28%

Source: StatsSA Census 2022

Access to water is poor, with 23% of households reported as having no access. 54% have access to on-site water.

The 2021/22 AFS reported a SIV of 200 078 Ml and sales of 180 714 Ml, indicating NRW of only 10%. This seems unlikely. The SIV reported in the most recent WSDP was 83 684 Ml. This second figure was assumed to be correct and has been used in the study. The level of NRW in Mopani has also been assumed, at 47%, which is the average for Limpopo province in the most recent No Drop assessment in 2015. This gives an estimated volume of water sold of 44 352 Ml. As for King Cetshwayo DM, it has been assumed that 50% of losses are non-technical.

Adjusting for non-technical losses, assuming that households with on-site water consume 2.5 times the amount consumed by those with communal standpipes, and that the non-residential share of consumption is 15%, the data suggests that 20.0 kl of water is consumed per household with on-site per month. With an average household size of 3.83 people, this is 174 litres per person per day.

As shown in Table 17 below, reported expenditure on water in Mopani makes up 59% of all expenditure. Overheads (Governance and Administration) accounts for a further 24%.

Table 17: Overall composition of municipal expenditure in Mopani DM in 2022, in R'000

Governance and Administration	Water	Other	Total expenditure
379 349	937 539	264 673	1 581 561
24%	59%	17%	100%

Source: Audited Annual Financial Statements, 2021/22

Expenditures reported on the water function in 2021/22 are shown in Table 18 below.

Table 18: Expenditure on water in Mopani DM in 2021/22, in R'000

Item	Expenditure
Employee related costs	178 567
Inventory consumed	353 042
Debt impairment	29 834
Depreciation and amortisation	228 350
Interest	1 605
Contracted services	72 430
Irrecoverable debts written off	-
Operational costs	70 653
Losses on disposal of assets	-
Other losses	3 058
Total	**937 539**

Source: Audited Annual Financial Statements, 2021/22

Bulk purchases expenditure, which is now reported as part of inventory consumed, was R209 million in 2021/22. 22% of all expenditure was therefore on bulk purchases, with a further 50% on other O&M (employee related costs, other inventory consumed, contracted services and operational costs) and the remaining 28% on other expenditures (debt impairment, depreciation and amortisation, interest, irrecoverable debts written off and losses). Expenditure per kl of reported SIV for each of these items is shown in the table below.

Table 19: Expenditure on water per kl of reported SIV in Mopani DM in 2021/22 in in Rands

Bulk	O&M	Other	Total
2.51	5.56	3.14	11.20
22%	50%	28%	

Source: Audited Annual Financial Statements, 2021/22

Total expenditure on water is R11.20 per kl of SIV. A share of municipal overheads are incurred in support of the water function. If a share of overheads expenditure is allocated to water, in proportion to the share of water in the total budget, this allocates an additional R2.53 per kl SIV, indicating a total expenditure on the provision of the water service of R13.73 per kl SIV.

Revenues reported from the water function in 2021/22 are in Table 20 below.

Table 20: Revenues generated on water in Mopani DM in 2021/22 in R'000

Item	Expenditure
Service charges	184 179
Interest earned from receivables	65 159
Other gains	1 410
Total	**250 748**

Source: Audited Annual Financial Statements, 2021/22

Using the estimated sales volume, Mopani reported revenue of R4.14 per kl sold in 2021/22, an extraordinarily low figure. Given the estimated NRW of 47%, this is R3.00 in service charges revenue per kl SIV, significantly less than the R13.73 per kl SIV cost of providing water. Collection rates of 53% and 48% were reported in 2020/21 and 2019/20 respectively for Mopani DM on the Municipal Money website. Note footnote 6 earlier in this report and discussion in the previous sections on other municipalities about the poor quality of data on collection rates.

2.2.5 Key case study statistics at a glance

Key statistics for the four case study municipalities are provided in the table below.

Table 21: Key statistics for the four case study municipalities

	Units	Matjhabeng LM	Maquassi Hills LM	King Cetshwayo DM	Mopani DM
Population	people	439 034	90 302	609 269	1 372 873
Households	Hhs	126 068	25 067	105 298	358 153
Household size	Ppl per hh	3.48	3.60	5.79	3.83
% urban	%	98%	79%	10%	10%
GVA per capita	R per pp pa	138	46	37	56
Settlement density	Ppl per ha	98	79	1	2
% of hhs with piped water	%	92%	86%	63%	54%
System Input Volume	Ml	48 470	4 161	18 101	83 684
% NRW	%	55%	48%	50%	47%
Water consumption pc pd	litres	146	74	67	174

2.3 CONTRACTING ARRANGEMENTS ASSUMED

The terms of reference for this study refers to water boards 'providing retail functions in support of municipalities'. There are a range of activities involved in providing a retail or distribution service. Infrastructure must be provided, which implies raising finance and running a capital programme, the infrastructure must then be operated and maintained, finally, customers must be managed, and revenues must be metered, billed and collected. There are many different contracting arrangements possible to bring a water board in to provide retail services. They differ in the extent of activities taken over by the water board, as well as the risks transferred.

While not formally contracted as such, the arrangements currently in place with water boards to provide bulk water services would fall under what is called a *Built-Operate-Transfer (BOT) contract*. BOT contracts involve the provision of a component of a water supply or sanitation system by a Contractor on behalf of the WSA which has an identified revenue stream. Most commonly this is a bulk water supply where the Contractor is paid based on a tariff for supplying bulk water. As the Contractor is responsible for capital works, including raising finance, such contracts are long term, typically thirty years.

Options for expanding water board support to the provision of retail services include concessions, leases, operating contracts or management contracts. Each of these is described below.

2.3.1 Concessions

Under a concession-type contract the Contractor, in this case the water board, provides an integrated bulk and retail service and is responsible both for raising its own revenue and for financing capital works. This is subject to them receiving the share of transfers from the national fiscus for water services associated with the service and related infrastructure for which they are responsible. Under its revenue responsibilities the Contractor bills customers directly but the tariff is negotiated with the WSA. Due to the obligation of the Contractor to raise capital, the contract period needs to be long enough for the Contractor to recover funds to pay off loans and a thirty-year contract period is typical. The best example of a concession contract is that with a private contractor

in the City of Mbombela. This contract has been in place for some 23 years and has been fairly successful, although it is notable that it does not cover the whole municipal area. There have also been examples of water boards undertaking retail water supply on behalf of WSAs and these may have involved providing capital, but they were poorly structured contracts and were terminated by WSAs, typically without proper process.

2.3.2 Leases

With a lease-type contract the Contractor takes the risk on the operating account but not the capital account. This means they are responsible to operating the complete bulk and retail system raise their own revenue from customers, but they are not responsible for capital works, for renewing and expanding infrastructure. Hence the WSA needs to provide the capital either through grants or borrowing. The typical contract period is fifteen years. There are previous examples of leases with private contractors in the Lukanji municipality in the Eastern Cape.

2.3.3 Operating contracts

Operating contracts are relatively low risk for the Contractor as the Contractor is paid a monthly amount for operating the system in terms of agreed parameters which typically require the Contractor to provide staff, equipment, and materials to operate the system for a period of three to five years. There must be clear deliverables for the Contractor and possible penalties for non-performance and/or bonus payments for excellent performance. Examples of private operating contracts include uThungulu (now King Cetshwayo) District operating contracts and one currently in place in Overstrand.

2.3.4 Management contracts

Under a management contract the Contractor brings in high level professional staff to manage the system, with the contract period typically being five years. Payment is made as a fixed amount per month with penalties for non-performance and/or bonus payments for excellent performance. The staff in the municipality remain in place, including senior staff, who work together with the Contractor's managers to improve the performance of the system. At the end of the contract period the assumption is that the performance of the system should be sufficiently sound, and 'in house' management sufficiently competent, for the Contractor to withdraw. Alternately the contract may be a precursor to some other type of contract mentioned above, with more on this topic in following sections. While not common, management contracts have been applied successfully in South Africa, with the Jo'burg Water contract in the late 1990s being internationally acclaimed. Management contracts with a water board have also been applied, with the Rand Water contract with Maluti a-Phofung Municipality in the 2000s being a notable, if less successful, example.

2.3.5 Contracting arrangement assumed in study

Precursors for successful contracting and a process for contracting water boards are discussed later in this report. A concession arrangement transfers significant risk to the contractor and is likely to be the cheapest and most financially sustainable option for service provision in the long term. For the remainder of the analysis, therefore, *it is assumed that water boards are brought in under a long-term concession type arrangement, and are therefore responsible for capital works, operations and maintenance, as well as customer management and revenue collection*.

2.4 KEY QUESTIONS AND ASSUMPTIONS UNDERLYING ANALYSIS

The approach to analysis was informed by several key questions and assumptions. These are outlined below.

2.4.1 Levels of expenditure incurred

The first key question is what level of expenditure the water board will incur in providing the retail service? It is assumed that water boards will be brought in to provide retail services where there is municipal failure and that the intention in bringing in a water board is to improve service provision. It has thus been assumed that the *water boards must incur a level of expenditure required to run a service optimally*. They will introduce efficiencies where necessary, most notably regarding reducing levels of NRW. They may also need to increase expenditure on capital, maintenance and customer management if there is under-expenditure currently. The assumption of optimal water board expenditure is an important one. It must be noted that running a retail water service is quite different to running a bulk water service. Water boards currently do not have any capacity or expertise related to the provision of retail services. These will need to be developed by the water board before they are able to run a retail service optimally.

Water boards will also incur some additional overheads expenditure if they expand their operations from bulk water provision only to retail. They will incur costs related to customer management, noted above. They are also likely to need to increase other general overheads, related to human resources management, budgeting and accounting and so on. It has been assumed that the current overheads efficiencies in water boards will remain, and so *water boards will increase their overheads in proportion to current levels in R/kl sold*. WSAs, on the other hand, will no longer incur any overheads expenditure related to the water retail service. This is an important assumption and may not materialise in reality, resulting in considerable inefficiency. There will be some *new expenditures introduced for the WSA, related to contract management costs*. Concessions are complex contracts and must be effectively managed to ensure performance. This will require the WSAs to develop capacity and incur costs related to contract management.

2.4.2 Transfer of grants and subsidies to the water board

The second key question is what level of grants and subsidies must be transferred to the water board to support the provision of the retail service? A portion of the Municipal Infrastructure Grant (MIG) allocated to municipalities is intended for the subsidisation of capital expenditure on water distribution infrastructure. Municipalities also receive the Water Services Infrastructure Grant (WSIG), which is primarily intended to subsidise water distribution infrastructure. While an unconditional grant, a portion of the Local Government Equitable Share (LGES) is allocated to municipalities for the provision of water to poor households in the LGES formula. It has been assumed in the analysis that *municipalities contracting water boards to provide retail services will transfer the portions of the MIG and LGES allocated to water in the relevant grant formulae, as well as any other grants and subsidies allocated for water, including WSIG*. This is an important assumption and will need to be a key element in any contract entered into between a water board and a WSA for the provision of retail services.

2.4.3 Water services tariff required

In line with the assumption that the water board will provide the retail service optimally, it has been assumed that *water tariffs will be set to cover all expenditures incurred in providing the water service, including both overheads required to support this provision, less any subsidies allocated*. The extent to which such tariffs will be affordable will be a key research question for the study.

2.4.4 Summary of assumptions underlying the analysis

The key assumptions underlying the analysis are thus:

1. Water boards will build the capacity required to provide the retail service optimally and will incur the level of capital, operating and customer management expenditures required to provide the service optimally.
2. Water boards will increase their general overheads in proportion with their current overheads.
3. The WSAs will no longer incur any direct expenditures or overheads related to the provision of retail water services but will start incurring contract management expenditures.
4. The WSAs will transfer the portions of the MIG and LGES allocated to water in the relevant formulae, as well as any other grants and subsidies allocated for water, including WSIG, to the water boards.
5. Water tariffs will be set to cover all expenditures incurred in providing the water service, including both water board and municipal overheads required to support this provision, less any subsidies allocated.

The extent to which such tariffs will be affordable is a key research question for the study.

CHAPTER 3: FINDINGS

Findings related to the impact of contracting water boards to provide retail water services on the financial sustainability of water provision, and therefore on water board finances in the short and long term, are summarised below.

The analysis looks at the expenditure that would be required by the water board and WSA should the water board provide an optimal retail service. The findings are for expenditure in a single year, with 2021/22 used as the year of analysis due to the availability of data. The analysis culminates in the estimation of the level of water tariff required to run the retail service sustainably, and the aggregate impact of the transfer of the distribution service on water board and municipal finances.

3.1 CAPITAL EXPENDITURE AND FINANCING

High level estimates of infrastructure investment needs were made to assess capital financing requirements. These estimates were based on unit costs developed through previous costing work done by PDG for the Municipal Services Financial Model in 2019, inflated using the Contract Price Adjustment Factor (CPAF). The unit costs are provided in Annexure A to this report.

Infrastructure investment needs were estimated for growth in distribution and connector infrastructure and for renewal. A growth factor of 1.9% per annum was assumed for all four WSAs. This was based on the average inter-census household growth rate in South Africa between 2011 and 2022. Household growth was used to estimate the need for additional distribution infrastructure and growth in SIV used to estimate the need for additional connector infrastructure. The unit costs were applied to the current number of households and SIV to estimate the Current Replacement Cost (CRC) of existing infrastructure. An Estimated Useful Life (EUL) of 35 years was assumed, based on the Local Government Financial Capital Asset Management Guidelines (National Treasury, 2008), which indicate an average EUL of between 20 and 50 years for water distribution infrastructure. It was assumed that the full CRC of the asset base must be renewed over the EUL of the assets.

The assumptions and resulting capital expenditure need estimates pa are summarised in the table below.

Table 22: Estimated capital expenditure required for new distribution and connector infrastructure and renewal of existing infrastructure, as well as underlying assumptions

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Growth rate	1.90%	1.90%	1.90%	1.90%
Additional households (hh)	2 395	2 001	476	6 805
Weighted cost of distribution infrastructure (R per hh)	8 593	10 144	8 588	9 588
Capital expenditure required pa: new distribution infrastructure (R'000)	*20 582*	*20 296*	*4 090*	*65 248*
Additional connector capacity required	1.47	1.06	0.15	5.51
Weighted cost of connector infrastructure (Rmillion per Ml pd)	15.29	16.35	15.52	16.36
Capital expenditure required pa: new connector infrastructure (R'000)	*22 431*	*17 407*	*2 354*	*90 070*

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
CRC of existing infrastructure (R'000)	2 174 063	1 446 382	309 489	5 643 045
EUL (years)	35	35	35	35
Capital expenditure required: renewal (R'000)	*62 116*	*41 325*	*8 843*	*161 230*
Total capital expenditure required pa (R'000)	**105 129**	**79 028**	**15 287**	**316 548**
% renewal	59%	52%	58%	51%

Source: authors' estimates

The estimates of capital expenditure need are compared to the average level of capital expenditure between 2020 and 2022 in the table below.

Table 23: Estimated capital expenditure need pa compared to average capital expenditure incurred pa between 2020 and 2022

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Estimated capital expenditure required (R'000)	105 129	79 028	15 287	316 548
Average actual capital expenditure incurred (R'000)	8 400	205 081	22 816	420 994
Actual as % of need	8%	260%	149%	133%

Source: actual capital expenditure ex National Treasury MBRR Table A5, capex required is authors' estimate

Average capital expenditure incurred on water was significantly lower than the estimated need in Matjhabeng but higher in the other three case study WSAs. Mopani is providing a significant portion of its own bulk water and so this may explain the higher capital expenditure here. WSAs may also be spending on large 'lumpy' capital projects not well captured in the estimate of need. It is also possible that capital costs are higher in these WSAs than the national average unit costs used in the estimate of expenditure need, either due to local conditions or due to inefficient or corrupt contracts. Finally, all of these WSAs are heavily dependent on grant funding for capital expenditure and so the level of capital expenditure incurred may simply be related to the extent of grants allocated.

Capital grants allocated for water in 2021/22 are shown in the table below and compared to the capital expenditure need. The grants include the MIG and WSIG. MIG is a consolidated grant, used for water, sanitation, roads and other local government infrastructure. Based on the MIG formula, it has been assumed that 27% of the total grant allocated is available for water in local municipalities and 45% in district municipalities[7].

[7] Water is allocated through the so-called B component of the grant, which makes up 75% of the allocation. 72% of the B component is for water and sanitation. It has been assumed that 50% of this is for water. District municipalities do not receive allocations for infrastructure other than water, but there are nodal and fixed portions of the grant in addition to the B component. It has been assumed that 90% of the grant is for water and sanitation in district municipalities and, as for locals, 50% of this is for water. The assumed portion of the MIG available for water in King Cetshwayo DM was further moderated down to remove a portion assumed allocated to uMhlathuze LM.

Table 24: Capital grants available for water distribution in 2021/22 compared to estimated capital expenditure need

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Estimated capital expenditure required (R'000)	*105 129*	*79 028*	*15 287*	*316 548*
MIG available for water	35 929	69 402	10 701	216 841
WSIG (R'000)	25 000	70 000	30 000	42 363
Total grants (R'000)	*60 929*	*139 402*	*40 701*	*259 204*
MIG as % of capex required	34%	88%	70%	69%
WSIG as % of capex required	24%	89%	196%	13%
Total grants as % of capex required	*58%*	*176%*	*266%*	*82%*
% poor households	*60%*	*67%*	*71%*	*71%*

Source: Grant allocations ex Division of Revenue Act 2020, capex required is authors' estimate

Capital grants allocated are in excess of the estimated capital expenditure need in King Cetshwayo and Maquassi Hills. In Maquassi Hills, this is due largely to the very large WSIG allocation. The estimates used in this study are acknowledged to be high level and may underestimate need somewhat. The estimates used here suggest that capital grant allocations are sufficient to fund a significant portion of capital expenditure required, and all capital expenditure required in King Cetshwayo and Maquassi Hills. It is further assumed that the water boards will loan fund any capital expenditure that is not funded through grants. The resulting capital finance mix is shown in the table below.

Table 25: Assumed capital finance mix applied by the water board in each WSA in R'000

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Estimated capital expenditure required	105 129	79 028	15 287	316 548
Grants	60 929	139 402	40 701	259 204
Loans	44 200	-	-	57 344

Source: Grant allocations ex Division of Revenue Act 2020, capex and loans required are author's estimate

3.2 OPERATING EXPENDITURE INCURRED BY THE WATER BOARD

As noted in Section 2.4.1, it has been assumed that water boards will improve the delivery of the retail water service and that, to do so, they must incur a level of expenditure required to run the water service optimally. The 'optimal' level of expenditure required to provide water is highly uncertain. Evidence such as rising levels of infrastructure failure and water services interruptions suggests that levels of expenditure are currently inadequate. However, good cost benchmarks for the provision of a retail water service in South Africa do not exist and there are many factors that impact expenditures required.

Expenditures to be incurred by the water board were disaggregated into 'operations and maintenance' (O&M), customer management, 'other' direct expenditures and overheads for analysis. 'Other' direct expenditure included depreciation, interest, debt impairment, irrecoverable debts written off, and losses. Overheads include the costs of functions such as HR, budgeting and accounting that support the provision of the service. O&M unit costs were calculated per kl SIV. It was assumed that water boards will optimise expenditure by reducing technical losses and therefore reducing SIV.

3.2.1 Optimisation of SIV

The optimisation of SIV assumed in the study for each case study municipality is shown in the table below. Note that this includes reduction of technical losses only. Reducing non-technical losses improves revenue but does not impact SIV (because this water is consumed but simply not paid for) and so has been incorporated later in the analysis, when determining average tariffs required.

Table 26: Optimal SIV assumed under water board provision of retail

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Current SIV (Ml)	48 470	18 101	4 161	83 684
Assumed current technical losses (%)	47%	25%	41%	24%
Assumed optimal technical losses (%)	10%	10%	10%	10%
Assumed optimal SIV (Ml)	26 619	13 992	2 586	66 695
Optimal SIV as % of current	55%	77%	62%	80%

Source: current SIV ex AFS of each WSA for 2021/22, other elements are author's estimates

It is important to note that expenditure must be incurred to reduce NRW and these costs have not been included in the analysis. These reductions also take time to achieve. The reductions in NRW indicated above may in fact take decades to achieve. The optimal SIV indicated above is therefore a desired state. O&M expenditures, which are calculated based on SIV, will remain higher than those indicated in the section that follow for many years while efficiencies in NRW are implemented.

3.2.2 O&M expenditures required

In the absence of any other reliable benchmarks for O&M costs, this study has made use of the DWS cost benchmarks for water services from 2016 (DWS, 2016). While now significantly out of date, these benchmarks provide operating and maintenance costs for reticulation for house connections, yard taps and communal standpipes in low, medium and high density settlements and in hard, moderate or soft soil. No more reliable recent cost benchmarks for South Africa are available.

The nature of the soil in the case study municipalities is unknown, and so the average of costs in hard, moderate or soft soil was assumed. Matjhabeng and Maquassi Hills have high density settlements while King Cetshwayo and Mopani have low density settlements. The mix of house connections, yard taps and communal standpipes was applied from StatsSA Census 2022. The cost benchmarks in the DWS reference were per household and were adjusted to a per kl SIV basis. Costs were inflated from 2016 to 2022 using the level of cost inflation assumed by National Treasury in their unit costs for water applied in the LGES formula.

The resulting optimal unit costs for operations and maintenance related to the retail water service in each case study municipality are shown in the table below.

Table 27: 'Optimal' unit costs for operations and maintenance assumed in the study in R per kl SIV

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
20.91	33.60	21.98	33.94

Source: authors' estimates based on cost benchmarks in DWS (2016)

The impact of settlement density is notable. The costs in high density settlements such as those in Mathjabeng and Maquassi Hills are significantly lower than the costs in low density settlements such as those in King Cetshwayo and Mopani.

These cost benchmarks are a key informant of the overall study findings. They were verified against two other sources. The first is the unit cost for water assumed by National Treasury in the formula used to allocate the LGES. This was R155.73 per household per month in 2021/22, for the provision of 6 kl of water. It thus translates to R25.96 per kl, higher than the unit costs in Matjhabeng and Maquassi Hills but lower than those in King Cetshwayo and Mopani. The second source is international, from Whittington (2020). This source provides unit costs for piped water in low, middle and high income countries in US dollars. These are shown in the table below, adjusted to SA Rands assuming a 0.054 exchange rate for Rands to dollars.

Table 28: Cost of piped water supply ex Whittington (2020) in low, middle and high income countries

Low income	Middle income	High income
22.22	29.63	37.04

Source: Whittington (2020), adjusted to Rands using an exchange rate of 0.054 Rands to the dollar

Again, the optimal unit costs assumed in the case study municipalities based on the DWS benchmarks from 2016 are in the same range as those quoted in Whittington (2020), with the costs in the higher density settlements slightly lower than those quoted by Whittington for low income countries and those in the lower density settlements somewhere between those quoted for middle and high income countries.

Applying the optimal unit costs to the optimised volumes of SIV assumed in the study, results in the following estimate of O&M expenditure required to provide the water distribution service optimally.

Table 29: Estimated optimal O&M expenditure required pa in R'000

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
556 643	470 093	56 847	2 263 541

Source: authors' estimates

3.2.3 Customer management expenditures required

Under a concession type arrangement, the water board takes over the full revenue value chain, metering, billing and collecting revenues. They will need to incur some expenditure in undertaking these activities. Required expenditures on customer management have been estimated based on a cost benchmarking study undertaken for SALGA in 2013, with costs escalated between 2013 and 2022 based on CPI. This gives a customer management cost of R202.55 per customer. This figure has been applied to the number of households with piped water according to Census 2022 to estimate customer management expenditures required, shown in the table below.

Table 30: Estimated customer management expenditure required pa in R'000

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
24 957	16 365	4 705	56 057

Source: author's estimates based on SALGA (2013)

3.2.4 'Other' direct water expenditures required

'Other' expenditures that are directly related to the provision of water services include depreciation, interest, debt impairment, irrecoverable debts written off, and losses.

Depreciation

Depreciation required has been estimated based on estimates of the historic cost of distribution infrastructure and EULs of assets. Historic cost was estimated based on the CRC of assets, previously estimated, and an assumption that the historic cost is 50% of the CRC. The resulting CRC of assets, historic costs of assets, and annual depreciation assumed are shown in the table below.

Table 31: Estimated CRC, historic costs and annual depreciation required pa in R'000

	Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
CRC	2 174 063	1 446 382	309 489	5 643 045
Historic cost	1 087 032	723 191	154 745	2 821 522
Annual depreciation	31 058	20 663	4 421	80 615

Source: author's estimates

Interest

The extent of loan finance required was previously estimated in Section 3.1. Interest has been estimated based on an assumed loan term of 10 years and interest rate of 10% per annum.

Table 32: Estimated interest expenditure pa in R'000

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
4 420	-	-	5 734

Source: author's estimates

Debt impairment

If it performed optimally, the water board would collect 95% of revenues, in line with National Treasury targets for collection rates, and therefore impair only 5% of revenues. This level of collection has been assumed in estimating debt impairment expenditure for the purpose of determining tariffs. The extent to which it is in fact possible is discussed later in the report when the required tariffs are presented. Estimated debt impairment expenditure required is shown in the table below.

Table 33: Estimated debt impairment expenditure required in R'000

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
31 164	25 829	3 225	123 678

Source: author's estimates

Other expenditures

No expenditure on irrecoverable debts written off or on losses has been assumed in the estimates of optimal expenditure required.

3.2.5 Overheads

The high degree of variability in the cost structure of water boards was noted in the previous report produced for this study (Walsh, Ndaba and Paladh, 2023). That report noted that it is difficult to comment on the composition of water board costs because of differences in the way that the different water boards allocate costs in their reporting. This is most notable when differentiating between overheads and O&M costs. Water boards report most expenditures as either 'cost of sales' or 'operating expenses'. The latter is assumed to be overhead, while 'costs of sales' excluding raw water purchases and depreciation is assumed to be O&M. However, some water boards allocate most of their expenditures to 'cost of sales', while others allocate more to 'operating expenses'. The share allocated to each is not consistent and this means that the overhead cost per kl sold differs significantly between water boards. This can be seen in the table below for the four water boards who would be contracted to provide distribution services in each of the four case study WSAs.

Table 34: Current water board overheads in Rands per kl of bulk water sold

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
0.82	3.78	2.71	4.22

Source: author's analysis of water board AFS 2021/22

For the water boards as a group, the weighted average overhead per kl sold is R2.43. To ensure consistency and avoid issues related to different approaches to reporting, this weighted average was applied to all of the case study water boards in place of the reported overheads shown in Table 34. Applied to the sales volumes in each of the case study WSAs, this figure results in the estimated general overheads expenditures to be incurred by the water board in providing the retail service shown in the table below.

Table 35: Estimated overheads expenditures incurred by water board in support of the provision of the retail service

Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
52 906	22 126	5 200	107 566

Source: authors' estimates

3.3 OPERATING EXPENDITURE INCURRED BY THE WSA

As noted in Section 2.4.1, WSAs will no longer incur direct expenditures related to operating or managing the water distribution service, or any overheads linked to this service, but will start to incur expenditures related to overseeing and managing the contracts in place with the water boards. These are complex contracts and capacity is required to monitor the performance of the contractor (the water board in this case) and ensure compliance with the conditions of the contract.

The costs of contract management have been estimated based on the organisational structure in place to undertake compliance and monitoring of the concession in place in the City of Mbombela, with some adjustment on the assumption that these costs will vary with the WSA size. The assumed contract management costs are summarised in the table below.

Table 36: Estimated contract management costs to be incurred by the WSA in R'000

Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
3 547	2 326	669	7 967

Source: authors' estimates

3.4 TOTAL OPERATING EXPENDITURE INCURRED TO RUN SERVICE OPTIMALLY

The total estimated operating expenditure that must be incurred by the water board and WSA together to run the distribution service optimally in each WSA is summarised in the table below.

Table 37: Estimated total operating expenditure to be incurred by the water board and WSA in R'000

	Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
Water board expenditure				
O&M	556 643	470 093	56 847	2 263 541
Customer management	24 957	16 365	4 705	56 057
Depreciation	31 058	20 663	4 421	80 615
Interest	4 420	-	-	5 734
Debt impairment	31 164	25 829	3 225	123 678
Overheads	52 906	22 126	5 200	107 566
Total water board expenditure	*701 149*	*577 760*	*79 599*	*2 746 362*
Municipal expenditure				
Contract management	3 547	2 326	669	7 967
Total municipal expenditure	*3 547*	*2 326*	*669*	*7 967*
Total expenditure	**704 697**	**580 086**	**80 268**	**2 754 329**

Source: authors' estimates

3.5 ALLOCATION OF EQUITABLE SHARE

Turning now to revenue, the study has assumed that the WSAs will transfer the portion of the LGES allocated to water in the LGES formula to the water boards to subsidise the provision of the retail water service. As already noted in Section 2.4.2, this is a key assumption. It is unlikely that the water boards will be able to provide the retail service in an affordable manner without the transfer of LGES from the WSAs, but transferring this portion of LGES to the water boards is also likely to have a significant impact on the funding of other functions undertaken by the WSAs. The LGES is an unconditional grant and municipalities may use it to subsidise their operations in any way that they see fit. Although no reporting on the way that it is currently allocated in a municipality is currently required, the Municipal Standard Chart of Accounts (mSCOA) does allow for municipalities to account for how much LGES is allocated to each function. This functionality in mSCOA has not, however, been utilised by any of the four WSA case studies. It is thus not possible to determine how they are currently allocating their LGES and what the impact of transferring a portion of LGES to the water boards would be.

The total LGES allocation received by each WSA in 2021/22 is shown in the table below, as well as the portion allocated for the provision of water in the LGES formula. This portion has been assumed to be transferred to the water board to subsidise the retail water service.

Table 38: Total LGES allocation received by each WSA in 2021/22 and portion assumed allocated to the water board for the retail water service, in R'000

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Total LGES received	561 595	271 387	138 653	899 903
LGES allocated for water in formula	167 973	151 767	32 331	480 207
Allocation to water as % of total	30%	56%	23%	53%

Source: National Treasury LGES summary data and formula, 2021

Water services are the only basic service provided by DMs and so the share of DM LGES that is allocated for the provision of water is substantial, more than half their total allocations. This level of revenue decrease for King Cetshwayo and Mopani may have a major ability on their ability to function, even if they are not providing the water service.

3.6 IMPACT ON TARIFFS

Tariffs must raise sufficient revenue to cover all the costs incurred in providing the retail water service, including the contract management costs of the municipality and capital financing costs, less the LGES allocated. The revenue required from tariffs in each WSA is shown in the table below.

Table 39: Revenue required from tariffs in R'000

	Matjhabeng	King Cetshwayo	Maquassi Hills	Mopani
Total operating expenditure	704 697	580 086	80 268	2 754 329
Less: LGES allocated	- 167 973	- 151 767	- 32 331	- 480 207
Revenue required from tariffs	**536 724**	**428 319**	**47 937**	**2 274 123**

Source: author's estimates

This revenue must be generated from the kl of water sold. It has been assumed in this study that the water board will optimise NRW and therefore reduce non-technical as well as technical losses. The optimised volume of water sold is shown in the table below.

Table 40: Optimal sales volume assumed under water board provision of retail

	Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
Current sales volume (Ml)	21 815	9 123	2 144	44 352
Assumed current non-technical losses (%)[8]	8%	25%	7%	24%
Assumed optimal non-technical losses (%)	5.0%	5.0%	5.0%	5.0%
Assumed optimal sales volume (Ml)	22 500	11 375	2 190	54 420
Optimal sales volume as % of current	103%	125%	102%	123%

Source: current sales volumes ex AFS of each WSA for 2021/22, other elements are author's estimates

[8] Recall from Section 2.2 that the split of losses into technical and non-technical is not known. 85% of losses have been assumed to be technical in Matjhabeng and Maquassi Hills but only 50% in King Cetshwayo and Mopani.

It must be noted that the assumed optimal technical and non-technical losses combined (i.e. assumed optimal NRW) are 15%. This is highly optimistic and in line with the strongest performing countries in the world.

The average tariff required can now be calculated by dividing revenue required by the optimal sales volume. This is compared to the current service charge revenue generated per kl sold in each WSA in the table below.

Table 41: Average tariff required for retail service compared to current service charge revenue generated per kl

	Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
O&M cost per kl sold	24.74	41.33	25.96	41.59
Other expenditure per kl sold	6.58	9.67	10.69	9.02
Total expenditure per kl sold	*31.32*	*51.00*	*36.65*	*50.61*
Less: LGES per kl sold	- 7.47	- 13.34	- 14.76	- 8.82
Tariff required per kl sold	**23.85**	**37.65**	**21.89**	**41.79**
Current service charge revenue per kl sold	18.89	6.59	31.78	4.15
Tariff required as % of current service charge revenue per kl sold	126%	571%	69%	1006%

Source: author's estimates

This table presents the key finding of the study and is discussed for each WSA separately below.

The estimated average tariff required for Bloem Water to run the retail water service sustainably in Matjhabeng is R23.85 per kl, 26% higher than the current reported service charge revenue of R18.89 per kl. Note that these tariffs are inclusive of the purchase of bulk water as well as municipal O&M and other expenditures. This is the retail tariff that will need to be charged to the end user. While the collection rate reported by Municipal Money for Matjhabeng in 2022 was high (92%), it was closer to 50% in other reporting years. Matjhabeng is therefore not able to collect the R18.89 per kl currently generated. However, Matjhabeng has a comparatively strong economic base and higher proportion of non-poor households than the other three case study municipalities. It is possible that this tariff may be affordable in this context and that poor collection rates are due to factors other than ability to pay. It is thus possible that, with sound management and strong political support, Bloem Water would be able to provide a sustainable retail water service in a financially viable manner in Matjhabeng.

The estimated average tariff required for Magalies Water to run the retail water service sustainably in Maquassi Hills is R21.89 per kl. This is lower than the current reported service charge revenue of R31.78 per kl, but this reported revenue seems high, as already noted in Section 2.2. The 21.98 per kl required is comfortably in line with current tariff levels in Maquassi Hills, however. The collection rate reported for Maquassi Hills in 2021/22 seems erroneous. Collection rates in previous years have been 20% and 57%. Maquassi Hills is thus not able to collect current tariffs. The extent to which poor collection is due to inability to pay or other factors is unknown. It is possible that Magalies Water may be able to collect revenues of R21.89 per kl, although this is likely to be more tenuous than in the case of Bloem Water in Matjhabeng and Magalies Water may continue to struggle with collection rates. It will be important to lower the costs of supply where possible.

The picture in the two district WSAs is, however, very different. The tariffs required for uMngeni-uThukela Water and Lepelle Northern Water to run the retail water service sustainably in King Cetshwayo and Mopani DMs respectively are in excess of R35 per kl, above R40 per kl in Mopani. These two DMs currently generate almost no tariff revenue and struggle to collect the revenue that they do generate. There is certainly some mismanagement and lack of fiscal effort here, but tariffs in excess of R35 per kl are significantly in excess of

what will be affordable in these contexts and will not be collectible. It is very unlikely that either uMngeni-uThukela or Lepelle Northern Water will be able to run a viable water distribution service in these municipalities.

3.7 AGGREGATE IMPACT ON WATER BOARD EXPENDTIURE

The impact of taking over the water distribution service on water board expenditure is demonstrated in the table below.

Table 42: Overall impact of taking over distribution service on water board expenditure in R'000

	Bloem in Matjhabeng	uMngeni-uThukela Water in King Cetshwayo	Magalies Water in Maquassi Hills	Lepelle Northern Water in Mopani
Expenditure in 2021/22 on provision of existing services	2 296 939	4 526 514	1 299 219	710 750
Additional expenditure required to provide distribution service	701 149	577 760	79 599	2 746 362
Total expenditure	**2 998 089**	**5 104 274**	**1 378 818**	**3 457 112**
Additional expenditure as % of current expenditure	31%	13%	6%	386%

Source: author's estimates

The impact varies significantly between the water boards. The impact of uMngeni-uThukela Water and Magalies Water taking over distribution services in King Cetshwayo and Maquassi Hills respectively is relatively small. Bloem Water taking over water distribution in Matjhabeng would imply a significant change in their business model, with about a quarter of their expenditure incurred in providing the distribution service. Taking over the distribution of water in Mopani DM would fundamentally alter the business model of Lepelle Northern Water, requiring a massive increase in their operations and shifting them from a bulk water supplier to primarily a water distributor, with only around a fifth of their expenditure on bulk water provision and other existing activities.

3.8 AGGREGATE IMPACT ON WSA EXPENDITURE

The impact of transferring the water distribution service to a water board on the finances of the WSA is demonstrated in the table below.

Table 43: Overall impact of transferring distribution service on WSA expenditure in R'000

	Matjhabeng	King Cetshwayo*	Maquassi Hills	Mopani**
Expenditure in 2021/22	4 123 051	950 487	626 568	1 581 561
Reduction in direct expenditure on water distribution	- 905 704	- 572 208	- 63 030	- 937 539
Reduction in governance and administration	- 201 438	- 183 403	- 45 902	- 211 375
Additional expenditure due to contract management costs	3 547	2 326	669	7 967
Net reduction in expenditure	*- 1 103 595*	*- 753 285*	*- 108 263*	*- 1 140 946*
Total expenditure	**3 019 456**	**197 202**	**518 305**	**440 615**
Reduction expenditure as % of current expenditure	-27%	-79%	-17%	-72%

Source: authors' estimates

** and ** Note that the expenditure reductions in Mopani and, to a lesser extent in King Cetshwayo, are over-stated. Mopani provides a substantial portion of the bulk water service itself and King Cetshwayo also provides some bulk, although to a lesser extent. The transfer of this remaining portion of bulk water supply has not been considered in the analysis but the share of existing expenditure that is on bulk water supply as opposed to distribution is not known. The reduction shown in this table is the elimination of all direct expenditure on water and governance and administration costs linked to this.*

As would be expected, the impact of transferring the water distribution function to a water board is significant in the two district WSAs. This analysis has looked at water distribution only, and so these WSAs retain the sanitation service. As already noted, the extent to which the municipalities reduce governance and administration expenditures after transfer of the distribution service is a key question with a potentially significant impact on the overall efficiency of service provision. The figures in Table 43 assume that the WSAs reduce their governance and administration expenditures substantially, as well as ceasing to incur direct expenditure in providing water distribution.

CHAPTER 4: CONCLUSION

This study presents analysis of the impacts of water boards taking over retail water services in four case study municipalities. The analysis was desktop only and the data available limited and often poor. Despite these limitations, a clear conclusion emerges: **There is no blanket answer as to whether water boards taking over retail water services will improve service delivery but the circumstances in which this will be successful are very limited.** At best, the financial viability of a retail service provided by a water board in a currently failing WSA will be tenuous; at worst, the service will not be viable, with negative implications for service delivery.

Much depends on the causes of existing WSA failure. This is expanded on in the discussion that follows in the next section.

CHAPTER 5: DISCUSSION

Key implications of the analysis presented above for service delivery and water board finances are discussed below.

5.1 IMPLICATIONS FOR SERVICE DELIVERY

It has been assumed in this study that water boards will be brought in to provide retail services where there is existing municipal failure. The causes of that failure can broadly be grouped into four categories: lack of economic viability, unwillingness to pay, lack of technical capacity, or mismanagement and corruption in the WSA. That this is not an exhaustive list, but it covers many of the issues facing municipalities and is useful in discussing the extent to which a water board will be able to solve these problems. This is done below.

5.1.1 Lack of economic viability

Many municipalities have weak revenue bases, with limited commercial and industrial activity and low numbers of non-poor households. This results in a limited ability to pay for services. Services can be made more affordable in such contexts by reducing their costs of supply. However, if the costs of supply are high in these municipalities it can be difficult to provide a retail water service sustainably, even with some subsidisation, due to lack of revenue base.

The analysis in this study has shown this to be an issue in the two district WSA case studies, King Cetshwayo and Mopani. There is a lack of recent, reliable cost benchmarks for water supply in South Africa and it is possible that the benchmarks applied in this study overstate the costs, but the costs of water supply in low density, rural contexts are certainly very high. LGES allocations for water are generous, at around R25 per kl currently, but this may not be adequate to fully subsidise the cost of supply in these contexts. As a result, the water services provider is typically unable to raise the revenue required to cover the expenditures needed to run the service sustainably.

Bringing a water board in to provide the retail service will not solve these issues of economic viability. They must be resolved through the provision of cheaper servicing options or a review of the allocation of subsidies. Robust cost benchmarks that demonstrate the minimum expenditure required to provide a sustainable service will be needed before such a review of subsidies can take place. The introduction of more affordable servicing options will require strong political backing.

5.1.2 Unwillingness to pay

The deep issues with non-payment for services in South Africa are due in part to inability to pay, discussed above, and in part due to unwillingness to pay. The extent to which ability or unwillingness to pay is more important is unknown but research suggests that there is willingness to pay for a secure and reliable water service in a range of circumstances (see, for example, Turpie and Letley, 2021, Rananga and Gumbo, 2015, and Snowball, Willis and Jeurissen, 2009). It is almost certain, therefore, that non-payment is not exclusively due to inability to pay and that unwillingness to pay is a key factor.

Unwillingness to pay may be due to many factors. Dissatisfaction with the quality of service is one. If a water board can improve the quality of service, it may be able to resolve this issue. Fjeldstad (2004) also argues that unwillingness to pay is related to trust in local government to use revenues to provide expected services, trust in authorities to establish fair procedures for revenue collection and provision of services, and trust in other

citizens to pay their share. These may also be issues that a water board can go at least part-way to resolving if they are perceived as more competent and less corrupt that the WSA and are able to implement credit control and debt collection in a consistent and fair manner. The extent to which a water board is perceived as more competent and less corrupt than the WSA is likely to vary from water board to water board, with issues related to corruption or poor governance at Mhlathuze Water, Lepelle Northern Water, Umgeni Water, and Amatola Water already flagged in the previous report produced for this study (Walsh, Paladh and Njabulo, 2023).

The extent to which water boards are able to implement credit control and debt collection will depend to at least some extent on political support. Municipalities indicate that councillors often undermine their credit control and debt collection efforts by telling constituents that they do not need to pay (Walsh and Shai, 2019). No service provider, whether public, para-statal or private, can run a water distribution service viably if consumers do not pay for consumption of the service above a free level. Bringing a water board in to provide the retail service will only improve service if they have the political support at local level to collect the revenues needed to provide the service sustainably. National political support is also likely to be required to ensure this change at local level and to counter prevailing ‘cultures of non-payment’.

5.1.3 Lack of technical capacity

There has been a decline in technical capacity in municipalities over a long period of time (see for example, Lawless, 2015 and 2007) with implications on the ability of WSA’s to manage water supply infrastructure. This issue could be resolved through contracting a water board with better technical capacity to provide the retail service. However, it is very important to note that there are currently significant differences in the capacity of the water boards (see Walsh, Paladh and Njabulo, 2023) and that water boards only currently have capacity for their current functions, largely managing bulk water systems. Water boards will have to develop the capacity required to manage the water distribution service. This will take time and they are likely to face similar challenges to municipalities in recruiting and retaining the required technical expertise.

5.1.4 Mismanagement, poor governance, and corruption by the WSA

Some of the issues with the provision of water services by WSAs are related to mismanagement, poor governance, and corruption. Bringing a water board in to resolve these issues may work if the water board is adequately capacitated, well managed and has a track record of good governance. It is again noted that the existing water boards are a diverse group with some well-capacitated, well-governed and with little evidence of corruption, but concerns about governance and corruption in others, as already noted.

The water board will also need to be adequately insulated against issues related to poor governance and corruption in the WSA. The impact of messaging by councillors on payment for services, for example, has already been noted.

5.2 IMPLICATIONS FOR WATER BOARD FINANCES

Table 42 showed that the magnitude of the impact of taking over water distribution services on water board finances will differ significantly depending on the water board and WSA pairing considered. In the case of a small water board taking over a relatively large WSA, the implications may be very large, as shown in the case of Lepelle Northern Water in Mopani DM. The implications will be far less significant in the case of a large water board taking over distribution in a small municipality. The financial implications must therefore be assessed on a case-by-case basis if the transfer of distribution to a water board is to be considered.

Regardless of the magnitude of impact, taking over the distribution service will have a positive or neutral impact if the service can be run in a financially viable manner, that is, if the water board is able to generate and collect sufficient revenue to cover its operating and capital financing costs. Again, this is likely to differ case to case. The analysis conducted in this study suggests that it may be possible for Bloem and Magalies Water to provide a distribution service in a financially viable manner in Matjhabeng and Maquassi Hills respectively, although this will require substantial improvements in the management of the service and in revenue collection. It will not be possible for uMngeni-uThukela and Lepelle Northern Water to provide the service viably in King Cetshwayo and Mopani DMs, however, without interventions to substantially reduce the costs of sustainable supply and to provide additional subsidy. Taking over distribution services in circumstances such as this will have a negative impact on the finances of the water boards: they will be taking over financially unviable services, and therefore taking on substantial operating account deficits with knock-on negative impacts on balance sheets.

In the cases where a water board can operate a sustainable distribution service in a financially viable manner, including collecting revenues, taking over the distribution service may have a positive effect on water board finances by reducing further increases in debt currently owed by WSAs to the water boards. This depends on the extent to which the water board is better able to collect revenue from customers compared to the WSA. As already noted, non-payment for services is due to a complex mix of factors, including ability to pay, willingness to pay and political interference. A water board may be able to address some of these factors but will not be able to correct others. At least some of the non-payment issues do not depend on the institution providing the service and must be resolved regardless of who the service provider is. Care should be taken in assuming that a water board taking over the retail service will resolve collection issues. The underlying reasons for poor collection should be established first.

The previous report for this study (Walsh, Paladh and Ndaba, 2023) noted that five of the water boards, namely Bloem Water, Magalies Water, Lepelle Northern Water, Amatola Water and Overberg Water, are not currently financially viable once their current collection rates are accounted for. That report recommended that the expansion of boundaries of these water boards should not be considered until they are well governed, organisationally sound and financially sustainable in their current areas of supply. This can be extended to a discussion of the impact of taking over retail water services. These water boards are not currently able to run their bulk water businesses sustainably. The provision of water distribution services may go some way to resolving issues of non-payment but should not be regarded as the solution to current financial difficulties in water boards. Water boards must be stabilised with their current functions before any consideration is given to bringing them in to provide the retail service.

CHAPTER 6: IMPLICATIONS

This study has concluded that there is no blanket answer as to whether water boards taking over retail water services will improve service delivery and that the circumstances in which this will be successful are very limited. The implications of this conclusion are outlined below.

A robust diagnostic is required before the provision of a retail service by a water board is considered as the solution. This diagnostic should examine the current causes of municipal failure and determine the extent to which a change in water service provider arrangements is the solution to these problems. The right water board may be able to solve some of the problems related to unwillingness to pay, lack of technical capacity and poor management, governance and corruption in municipalities; but they will not be able to resolve problems related to lack of economic viability or political interference in revenue collection.

A Section 78 process under the Municipal Systems Act may meet some of the requirements of this diagnostic but will require firm oversight. WSAs must undertake a Section 78 process when considering a change in service provision arrangements. Section 78 processes must be initiated by the WSA itself and are often poorly undertaken. They will require firm oversight to be useful in determining whether a water board should be considered as a provider of the retail service.

This diagnostic should consider not only the municipal situation but also the performance, capacity and governance of the water board. Water boards will only be able to resolve issues of unwillingness to pay, lack of technical capacity, mismanagement, poor governance and corruption if they themselves are well-capacitated, well-managed and has a track record of good governance. Current issues with governance in Umgeni, Mhlathuze, Lepelle Northern and Amatola Water must be resolved before they are considered as possible providers of retail water services. Bloem, Magalies, Lepelle Northern, Amatola and Overberg Water are not financially viable with their current functions. Issues regarding current financial performance must be resolved before they are brought in to provide retail water services in municipalities. Umgeni Water and Mhlatuze Water have recently been amalgamated to form uMngeni-uThukela Water and the costs and organisational impacts of this amalgamation are not yet fully known. The amalgamated water board must be allowed to stabilise before it takes on additional functions. This means that the only water board that can currently be considered as a possible provider of retail water services to municipalities is Rand Water. Bloem Water was a strong performer prior to its take-over of large shares of the former Sedibeng Water. They may be a candidate as a provider of water distribution services, but this should be considered only in WSAs where Bloem can be sure of providing the service viably and improving revenue collection based on the diagnostic mentioned above.

Water boards will not be able to resolve problems related to the lack of economic viability of the water distribution service in low density rural municipalities. These problems are not related to the institution providing the service but rather to the costs that must be incurred to provide it sustainably, and the lack of revenue base. These issues must be resolved through the identification of cheaper servicing options (which can be provided by a WSA, water board or other provider) or a review of the allocation of subsidies. Robust cost benchmarks that demonstrate the minimum expenditure required to provide a sustainable service will be needed before a review of subsidies can take place. These currently do not exist. The introduction of more affordable servicing options will require strong political backing.

Issues of non-payment must be addressed nationally. The reasons for non-payment are multiple. Some are related to ability to pay, others due to unwillingness to pay based on national circumstances. Political interference in credit control and debt collection processes is also a factor. This must be addressed at national level as no service provider, whether public, para-statal or private, can run a water distribution service viably if consumers do not pay for consumption of the service above a free level. Sound metering, billing and use of

flow-limiting devices will be necessary to address the non-payment challenge and require local and national political backing.

Water boards do not currently have the capacity to provide retail water services and may face the same challenges as municipalities in developing this capacity. A retail service is very different to a bulk water service. If water boards are to take on customer management, metering, billing and revenue collection, they will need to build the capacity to provide these.

Bringing a water board in is therefore not a quick fix. They will take time to develop capacity. They will also take time to solve any existing service delivery problems. **A transition process is required between the current service provision arrangement and the final contracting of the water board.** This transition process should be facilitated, ideally by a strong public national entity, but possibly by the private sector where public sector capacity is lacking.

Water boards are not the only option. If the WSA is a DM which has consistently underperformed as a WSA, the possibility of authorising the LMs as WSAs can be assessed. This brings the WSAs closer to communities and integration with other services in the local municipality may improve the prospect for financial sustainability. Community-based service provision is an option in some municipalities. There may also be a role for the private sector through a range of contracting arrangements. The proposed Regional Management Support Contracting programme in DMs, which would bring an increased level of expertise into the sector but has not been properly applied to date, remains a possibility, either as a transition towards a long-term concession with a water board or other entity or simply to stabilise provision with current service arrangements. All options should be considered as part of a Section 78 process.

Sound contracting is essential. Contract periods must be aligned with the type of contract. Municipalities must build the capacity to manage these contracts, and contracts should be overseen by a national entity with sufficient capacity and experience. There is a range of contract types possible, and different contracting might be required in the transition stage. A concession arrangement is a good option as the ultimate goal as it transfers extensive risk to the contractor and is of a long term nature.

Contracts must include clauses governing the transfer of subsidies and grants to the water board or other service provider. It is not possible to provide a retail water service in most South African municipalities without substantial operating and capital subsidy. If a water board or other service provider is brought in to provide the retail service, the share of the LGES allocated to water in the LGES formula must be transferred to this service provider, along with the share of the MIG allocated to water and any other relevant grants and subsidies, including WSIG.

CHAPTER 7: RECOMMENDATIONS

The following recommendations are made based on the conclusion of this study and its implications.

1. Undertake a robust diagnostic into the causes of failure in any individual municipality before deciding to change the service provision arrangements. If this diagnostic is to be undertaken as part of a Section 78 process, there must be sufficient oversight of the Section 78 to ensure that it is rigorous and fair.
2. Assess the performance, capacity and governance of a water board before considering it as a potential provider of water distribution services. In the short term, only Rand Water should be considered as a potential provider of distribution services. Bloem Water may be considered in specific cases.
3. Do not consider the transfer of the distribution function to a water board to be the solution to service delivery challenges in low, density rural municipalities. Issues in these contexts must be resolved through the identification of cheaper servicing options (which can be provided by a WSA, water board or other provider) or a review of the allocation of subsidies. Robust cost benchmarks that demonstrate the minimum expenditure required to provide a sustainable service will be needed before a review of subsidies can take place. These currently do not exist. The introduction of more affordable servicing options will require strong political backing.
4. Address issues of non-payment nationally, providing strong and clear political support for credit control and debt collection, alongside sound indigent management.
5. If a decision is made to bring in an alternative provider for the distribution service, consider all options, including authorising LMs as WSAs in the case of failed DM WSAs; community-based service provision; or some form of private sector involvement.
6. If deciding to proceed with contracting a water board to provide the water distribution service, the following process is proposed:
    a. The process must be mediated by a national entity with sufficient capacity to oversee such contracts.
    b. A transition arrangement must be put in place, aimed firstly at assessing the current situation with water services; and secondly establishing a business plan for long term performance improvement. There are several ways of doing this with a management contract a strong candidate, as it has the benefit of bringing in high level expertise to improve management of the service. Incentives and performance measures are required for the entity managing this transition, with increased customer satisfaction and increased revenue being key performance indicators.
    c. The water board should enter into a long-term contract based on the business plan, with a concession being the ultimate goal.
    d. If not a concession, there is the option of an interim stage based on an operating contract but here it is notable that there must be sufficient funds to pay for the contract.
7. Contracts must include clauses governing the transfer of subsidies and grants to the water board or other service provider.

CHAPTER 8: REFERENCES

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APPENDIX A: UNIT COSTS APPLIED

APITAL UNIT COSTS APPLIED

Distribution infrastructure costs per household served

	Urban	Rural
Standpipe	3 365	4 879
Yard tap	6 729	9 757
In-house	9 854	14 289

Connector unit costs in R/million ML/day

Urban	Rural
15.27	16.48

O&M UNIT COSTS APPLIED

From DWS, 2016

	Maintenance			Operation		
Housing density	Low	Medium	High	Low	Medium	High
Hh per ha	5	15	40	5	15	40
	R per hh pa	R per hh pa	R per hh pa	R per hh pa	R per hh pa	R per hh pa
Reticulation: house connection						
Hard soil	5 364	3 215	2 136	5 191	5 191	5 191
Moderate soil	4 358	2 603	1 735	5 191	5 191	5 191
Soft soil	3 352	2 010	1 335	5 191	5 191	5 191
Reticulation: yard connection						
Hard soil	3 545	2 010	1 278	1 997	1 997	1 997
Moderate soil	2 880	1 633	1 039	1 997	1 997	1 997
Soft soil	2 215	1 256	799	1 997	1 997	1 997
Reticulation: standpipe						
Hard soil	1 987	1 028	571	1 198	1 198	1 198
Moderate soil	1 614	835	464	1 198	1 198	1 198
Soft soil	1 242	642	357	1 198	1 198	1 198

Volumes assumed in DWS, 2016

	l pp pd	ppl per hh	Losses	kl per hh pm
House connection	250	5	22%	45.75
Yard connection	80	5	22%	14.64
Standpipe	25	5	22%	4.58

Assumed inflation 2016 to 2022,
ex LGES formula: 1.56