Assessing the Impact of the Expansion of Activities of Water Boards

Part A

Report to the
Water Research Commission

by

Kim Walsh[1], Njabulo Ndaba[1] and Rajiv Paladh[2]

[1] Palmer Development Group (Pty) Ltd.
[2] Bosch Capital

WRC Report No. 3140/1/24
ISBN 978-0-6392-0615-8

May 2024

WATER
RESEARCH
COMMISSION

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. C2022/20223-01470) are reported in two reports.
This is **Part A**: Assessing the impact of expansion of bulk infrastructure on the capital requirements of affected water boards.
The other report is **Part B**: Strategic analysis and implication of Water Boards provide retail functions of water services (WRC Report No.3140/2/24).

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 A of the study and assesses the impact that expanding the mandated areas of supply for water boards to align with provincial boundaries will have on their financial performance and capital requirements.

Analysis was undertaken primarily using an Excel-based tool, the Regional Water Utilities Model (RWUM), developed by PDG for previous work on water boards through the WRC. The Annual Financial Statements (AFS) of water boards for 2021/22 were the most important data source used. Additional data was collected from water boards, but the data provided was variable and patchy. Further data verification may refine the results for some water boards, but we believe that the overall findings will remain valid, despite the data constraints.

The reconfigured water board boundaries analysed are:

1. **Rand Water** to cover whole of Gauteng and Mpumalanga provinces.
2. Umgeni Water and Mhlathuze Water to be combined to form a new **KZN Water** water board to cover whole of KwaZulu-Natal province.
3. **Lepelle Northern Water** to cover whole of Limpopo province.
4. **Amatola Water** to cover whole of Eastern Cape province.
5. **Magalies Water** to cover whole of North West province.
6. **Bloem Water** to cover whole of Free State and Northern Cape provinces.
7. **Overberg Water** to expand to cover Swellendam, Overstrand and Kannaland, in line with expansion plans indicated in their Business Plan.

The analysis focussed on the expansion of water boards to meet **future bulk potable water requirements** in these provincial footprints. It did not assume that any schemes currently operated by municipalities would be taken over by water boards. The key findings are summarised below.

- **There is significant current variability between water boards.** They vary in current scale and the extent to which they already supply potable water demand in their proposed provincial footprints. There is a large range in their current operating costs, with costs in Amatola and Overberg particularly high. Current collection rates are very low in Bloem, Magalies and Lepelle Northern Water, according to analysis of available data. In Bloem and Magalies, this is due at least in part to the incorporation of portions of the former Sedibeng Water, although the collection rate in Magalies was already poor prior to this change.
- **There is uncertainty regarding the impact that expansion to provincial boundaries will have on the volumes of water supplied by the water boards.** This is partly because the extent to which future demand will be appropriately met through regional bulk water schemes, rather than local schemes or local sources (both of which are assumed will be provided by municipalities), is unknown. It is also because water boards will not be imposed on municipalities and the extent to which new municipal customers in the provincial footprints will sign water supply agreements with the water boards is unknown.
- **Provincial boundaries do not align with water system logic** and this introduces some administrative complexity related to the transfer of assets and management of cross-boundary supply of bulk potable water between water boards. Cross-boundary supply agreements will need to be put in place between water boards in several cases due to existing supply across provincial boundaries.

- **The potential impact of a 'maximum expansion' scenario in the proposed provincial boundaries is far greater in the smaller water boards than it is for the larger two** in terms of increase in water volume supplied.
- **Expansion will increase the extent of capital expenditure that the water boards need to incur.** With a 'median' unit capital cost assumption, the analysis suggests that the water boards will collectively need to spend between R5.5 to R6.9 billion per annum on average between 2023 and 2042, between 30% and 65% more than they currently spend. The range is due to uncertainties regarding the extent of increase in water supplied due to expansion. There is also a high degree of uncertainty regarding the capital costs of future bulk schemes. This was incorporated by testing three capital cost scenarios. The range of capital expenditure required is R3.6 to R10.9 billion per annum, once the uncertainty regarding both the impact of expansion on volumes of water supplied and uncertainty regarding future capital costs is factored in.
- **Expanding into more rural areas will increase O&M costs**. The analysis assumes that the unit O&M cost for rural bulk water schemes is 33% higher than that for urban schemes. Rand, KZN, Magalies, Bloem and Amatola all potentially expand into more rural areas, resulting in higher O&M costs for schemes in these areas, with the increases most significant in Rand, KZN and Magalies. The areas into which Lepelle Northern and Overberg potentially expand are in fact more urban than those that they currently supply, resulting in lower O&M costs for schemes in these areas.
- **There may be some efficiencies of scale in both O&M and overheads.** Analysis of actual O&M and overheads costs in the water boards suggests that there are efficiencies in scale. The analysis finds that Rand, Bloem and Overberg can achieve some efficiencies on O&M costs even under a low expansion scenario. Under a high expansion scenario, Magalies and Amatola can also achieve some efficiencies in O&M costs due to scale in the second decade of the analysis. Regarding overheads, Rand, KZN, Lepelle Northern, Amatola and Overberg can all achieve some efficiencies on overheads due to increased scale even under a low expansion scenario, with larger improvements under a high expansion scenario. It is important to note that it is uncertain as to whether these theoretical efficiency improvements can actually be achieved in reality.
- **Expansion may affect payment levels and therefore collection rates through the impact of changes in the profile of areas served on both fiscal effort and fiscal capacity**. *Fiscal effort* is related to the capacity of the municipalities served and the effort that they apply to collect user revenues. *Fiscal capacity,* is related to the affordability of water tariffs to the underlying customer base. The analysis finds that Rand, KZN, Magalies, Amatola and Overberg are all likely to see a decline in collection rates due to expansion. Bloem and Lepelle North may see an improvement in collection rates. Again, the extent to which this will actually be achieved in reality is uncertain.
- **These factors play out differently in each water board in respect to the overall impact of expansion on profitability.** Overall, the study finds that the impact of expansion on Rand Water's finances is relatively small. Expansion has a negative effect on KZN, Magalies and Overberg. KZN remains profitable after expansion, but less profitable than current. Magalies and Overberg are not profitable currently (once Magalies' collection rate is accounted for) and become less so if they expand. Expansion has a positive effect in Bloem, Lepelle Northern and Amatola. Bloem Water is currently not profitable once its collection rate is accounted for. It returns to profitability under an expansion scenario, but this depends on expansion improving its collection rate, which is far from certain. Lepelle Northern and Amatola are not profitable currently (once Lepelle's collection rate is accounted for) and remain so under an expansion scenario.
- **There are capital funding gaps in most water boards.** Rand can finance all capital expenditure required under all scenarios tested. KZN and Bloem face financing gaps under higher unit capital cost assumptions. Bloem will need to borrow to finance the infrastructure required. This borrowing may not in fact possible due to the negative impact that the incorporation of a portion of Sedibeng Water has had on Bloem's balance sheet. It will face more substantial financing gaps if it cannot in fact borrow. Magalies and Lepelle Northern have large capital finance gaps under all scenarios tested. Amatola and Overberg have capital finance gaps under higher expansion scenarios or with higher unit capital cost assumptions.

- **The magnitude of grant funding required to close these gaps is relatively small.** Between 5 and 52% of total RBIG allocations (both direct and indirect) are required, depending on the expansion scenario and unit capital cost assumption. These will be higher, up to 74% of current allocations, if Bloem cannot borrow, but under all scenarios, less RBIG will be required by water boards than is currently allocated.
- **These funding gaps will be much lower if collection rates in KZN, Bloem, Magalies and Lepelle Northern can be improved.** Improving collection rates in KZN, Magalies and Lepelle Northern improves profitability and reduces the capital finance gaps but does not eliminate them. Improving the collection rate in Bloem has a strong positive effect on profitability and eliminates funding gaps.
- **There are governance concerns in several of the water boards,** most notably Umgeni, Mhlathuze, Lepelle Northern and Amatola.

A key conclusion of the study is that while expansion may have a positive or negative effect on the water boards, five of the seven, namely Bloem Water, Magalies Water, Lepelle Northern Water, Amatola Water and Overberg Water, are not currently financially viable. **Expanding the mandated areas of supply for these water boards is largely a moot point unless their current financial performance, particularly regarding current collection rates and expenditure efficiencies, can be improved.**

Regarding the question of whether service delivery will be improved by expanding the mandates of water boards to align with provincial boundaries, the answer is likely to be mixed. Expanding Rand Water to cover the whole of Gauteng and Mpumalanga may result in an improvement in service delivery in these two provinces. Expanding Umgeni and Mhlathuze Water to cover the whole of the KwaZulu-Natal province also may result in improved service delivery, if governance issues at Umgeni and Mhlathuze Water can be resolved, but this is subject to a better understanding of the costs and organisational impacts of the recent amalgamation of Umgeni and Mhlathuze Water. Expanding Bloem Water to cover the Free State and Northern Cape provinces may result in improved service delivery if the current financial instability at Bloem Water related to the absorption of Sedibeng Water can be resolved. Expanding Magalies, Lepelle Northern, Amatola and Overberg Water to provincial boundaries is unlikely to result in improved service delivery unless the existing financial and governance issues at these water boards can be resolved.

The failure of Bloem, Magalies and Lepelle Northern will certainly result in a collapse in service delivery in the twenty-five municipalities which currently rely on them for most of their bulk potable water. Improving the current financial performance and governance of these three water boards is a key priority to secure service delivery going forward.

Five over-arching recommendations for DWS emerge from the study, as well as a recommendation regarding each of the proposed provincial water boards. The over-arching recommendations are:

1. Do not proceed with the expansion of water boards to provincial boundaries until they are well governed, organisationally sound and financially sustainable in their current areas of supply.
2. Continue to engage with other stakeholders to advance solutions to poor current collection rates in all water boards but in Bloem, Magalies and Lepelle Northern Water in particular. Ensuring payment of current accounts should be prioritised over the collection of outstanding debt, although repayment of outstanding debt is likely to be necessary before trade payables can in turn be settled.
3. Continue to engage with all water boards regarding expenditure efficiencies, but with particular focus on Bloem, Magalies, Amatola and Overberg.
4. Establish a clear set of principles to guide the transfer of assets between water boards due to the move to provincial boundaries and conduct a detailed assessment to determine which assets will be affected, before moving further with implementation.

5. Determine where cross-boundary supply of bulk potable water between water boards will be necessary under provincial boundaries and put bulk supply agreements in place to cover these.

The recommendations regarding each individual water board assume that the over-arching recommendations are implemented. The recommendations regarding each water board are:

6. Proceed with the proposed expansion of Rand Water to cover the entire Gauteng and Mpumalanga provinces.
7. The recent amalgamation of Umgeni Water and Mhlathuze Water is likely to incur costs and have organisational impacts. The expansion of the newly formed KZN Water to a provincial boundary should only proceed once the costs and organisational impacts of the amalgamation are known and have been adequately managed, and if there are no significant effects on performance resulting from the amalgamation. The newly formed KZN Water should delay taking on new municipal customers until any instability due to the amalgamation has been resolved.
8. Bloem Water has only recently taken over a large share of the former Sedibeng Water. Indications are that this has had an extremely negative impact on the performance of Bloem Water. The expansion of Bloem Water to cover the whole of the Free State and Northern Cape provinces should be delayed until these issues are resolved.
9. Magalies Water should not be expanded to cover the whole of the North West province until current issues with their financial viability are resolved, including resolving any declines in performance related to the recent incorporation of a share of Sedibeng Water. Magalies Water will face the most complexity with cross-border infrastructure and supply of water as the result of the introduction of provincial boundaries and these should be resolved prior to any change, in line with recommendations 4 and 5.
10. Lepelle Northern Water should not be expanded to cover the whole of the Limpopo province until current issues with their financial viability and governance are resolved.
11. Amatola Water should not be expanded to cover the whole of the Eastern Cape province until current issues with their financial viability and governance are resolved.
12. Overberg Water should not be expanded until current issues with their financial viability are resolved.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS & ABBREVIATIONS

AFS	Annual Financial Statements
AG	Auditor-General
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CRC	Current Replacement Cost
CRZ	Current Replacement Zone
DWS	Department of Water and Sanitation
DZ	Demand Zone
EUL	Estimated Useful Life
GIS	Geographic Information System
NRW	Non-Revenue Water
O&M	Operations and Maintenance
PDG	Palmer Development Group
PPE	Property, Plant and Equipment
RBIG	Regional Bulk Infrastructure Grant
RWUM	Regional Water Utilities Model
SIU	Special Investigations Unit
TOR	Terms of Reference
WRC	Water Research Commission

This page was intentionally left blank

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 A 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; and
- Reviewing the geographic boundaries of the water boards.

Regarding the review of geographic boundaries, the Minister has proposed that water boards should be reconfigured to align with provincial boundaries to '*have clear provincial institutional accountability/responsibility'* (DWS, nd). The rationale for provincial boundaries is thus focused largely on streamlining inter-governmental relations so that DWS engagements at provincial levels can be with provincial Premiers, WSAs in each province and a provincial water board.

DWS documentation indicates that the reconfiguration is also intended to allow water boards and water services providers to '*consolidate assets and skills for key infrastructure development and access to water for the entire province'* (DWS, 2022c). It states further that it is intended to achieve:

- Rationalisation of systems to ensure better economies of scale.
- Enhance market capitalisation for infrastructure projects.
- Increase water access to un-serviced rural areas.
- Enable more leveraged cross-subsidisation.
- Facilitate differential service delivery levels and tariff modelling across the province.

DWS does not intend to attempt any Constitutional reform or impose water boards on municipalities. Provincial boundaries for water boards would still leave municipalities the freedom to choose whether to use a water board to provide bulk water or to continue the provision themselves. This decision is likely to be influenced by the extent to which the water board can provide bulk water more reliably or more cost effectively than the municipality itself.

There will therefore be *no transfer of existing bulk water assets between water boards and municipalities* on revision of the water board areas of supply. Water boards will continue to operate any schemes that they are currently operating on behalf of municipalities but will not take over operation of additional municipal schemes (even if these are regional). There *may be some transfer of assets between water boards where schemes currently owned by water boards cross provincial boundaries*. There has not yet been rigorous analysis of exactly which assets this covers for each water board.

The key intention of expanding the water boards is that they will be able to provide infrastructure to meet *future potable bulk water requirements* in the provinces that they cover. It is therefore important to determine the extent to which the water boards will be able to raise capital finance in future. This is the focus of this study. The key question to be answered through Phase A of the study therefore is:

How will the financial viability of the water boards change if they expand, and will they be able to raise the capital financing to invest in the additional regional bulk infrastructure needed for potable water in each province?

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 this report. The second three relate to Part B, still to be undertaken.

1. Improved understanding of the implications of expanding the boundaries of water boards on their financial performance and position, as well as any additional fiscal support required.
2. High level comment on whether either the expansion of the footprint of water boards or will enable improved service delivery.
3. Recommendations regarding the financial impacts of expanding the footprint of water boards, to inform policy decisions.
4. 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.
5. High level comment on whether water boards taking on retail activities will enable improved service delivery.
6. 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

2.1 DATA COLLECTION

The Annual Financial Statements (AFS) of water boards for 202/22 were the most important data source used. These were obtained from the water boards themselves or from their websites.

Requests for support with additional data collection were sent to the executive management of each water board on 7 February 2023. Data was collated from available documentation and submitted to the water boards in a template, with a request for verification. Additional data was also requested, primarily data on assets and detailed GIS maps of schemes. Follow up meetings were held with each water board, with most taking place in March 2023. The first meeting with Rand Water took place only in May. Mhlathuze Water never responded to the request for data or for a meeting.

In general, the data provided by the water boards was variable and patchy. There was little coordination of the data provided: the data template seemed to be passed on to several different people, who sent piecemeal responses. In some cases, two different sets of data were provided by different people at a water board. Most water boards provided good data on volumes of water sold. The remainder of the data was variable. Rand Water did not provide any data aside from sales volumes. No water board provided any data on assets, and only Magalies Water and Lepelle Northern Water provided maps of schemes showing how they relate to provincial boundaries.

After multiple follow ups, and a delay of several months in the project timeframe, the data collection process was brought to a close at the end of May 2023. The analysis has been conducted based on interpretation of the data provided by that time, and assumptions to fill gaps where necessary. While further data verification may refine the results for some water boards, we believe that the overall findings will remain valid, despite the data constraints.

No data collection directly from municipalities was undertaken. Analysis was conducted based on existing data sets on municipal finances kept by National Treasury.

Data on Regional Bulk Infrastructure Grant (RBIG) projects was collected from DWS to inform the estimation of the future capital costs of bulk potable water schemes.

2.2 A NOTE ON FINANCIAL BASELINE DATA FOR BLOEM, MAGALIES AND KZN WATER

It is important to bear in mind that this study has been undertaken only shortly after the incorporation of portions of the former Sedibeng Water into Bloem Water and Magalies Water. Sedibeng Water was disestablished in July 2022. At this point, Bloem Water took over the supply of bulk water to nine local municipalities located in the Northern Cape, Free State and North West. Magalies Water took over the supply of three local municipalities and one district municipality, all located in North West.

It has been less than a full financial year since this change took place, and Annual Financial Statements (AFS) for Bloem and Magalies Water including the absorbed portions of Sedibeng Water are not yet available. To prepare the financial baseline for this study, the AFS of the portion of Sedibeng Water absorbed by each was added on to the AFS of Bloem and Magalies Water respectively.

KZN Water will be formed through an amalgamation of Umgeni and Mhlathuze Water. The financial baseline for KZN Water in this study is the AFS of Umgeni and Mhlathuze Water combined. No costs or efficiency changes due to the amalgamation have been included in the analysis.

2.3 ANALYSIS

Analysis was undertaken primarily using an Excel-based tool, the Regional Water Utilities Model (RWUM), developed by PDG for previous work on water boards through the WRC. Key features of the tool are described below[1]:

- It is structured based on **'demand zones'** with a demand zone (DZ) equal to a municipality. The user specifies the DZs currently served by the water board as well as the DZs that will be served in future.
- **Current and future demand** for bulk water is estimated from first principles for each DZ in the tool, with domestic demand based on the population, access to services and income profile, and non-domestic demand based on economic activity. For this study, current and future demands were calibrated to demand projections from the National Water and Sanitation Master Plan.
- **Bulk supply schemes** are linked to DZs. Bulk supply schemes can be specified as regional or local, with local schemes typically grouped together and assumed to have common characteristics while regional schemes are specified separately. The user must specify whether any future water demand in excess of current scheme capacity will be supplied through local or regional schemes.
- Water board operating expenditures are estimated based on **O&M costs per kl** for each existing bulk scheme and assumed costs for future schemes. O&M unit costs include staff costs, energy, chemicals, and maintenance. These unit costs are calibrated based on water board financial statements. **Raw water purchases** are estimated separately based on estimated volumes and a unit cost in R per kl. **Depreciation** is also estimated separately based on the value of assets and a depreciation rate calibrated to current levels of expenditure. Finally, **finance costs** are estimated based on the level of borrowing projected in the tool (see later bullet). The user can also specify **other expenditure** which is simply projected forward at a specified growth rate. Expenditure on **overheads** is projected as a separate expenditure item, with the user specifying the extent to which overheads costs per kl will increase or decrease.
- Capital expenditures on **new infrastructure** and **renewal** are estimated. Capital expenditure on new infrastructure is based on the expansion in bulk supply schemes described in a previous bullet, and a unit capital cost. Expenditure on renewal is based on the Current Replacement Cost (CRC) of infrastructure (also estimated based on the unit capital cost, as data on CRCs is typically not available), Estimated Useful Life (EUL) and condition.
- **Revenues** are estimated based on assumed bulk water tariffs.
- The tool allows for capital expenditure to be financed out of a mix of grants, Free Cash Flow, reserves and borrowing. For this analysis, **grant finance** was set to zero. The analysis then indicates what grant finance would be needed to close any capital financing gap. In estimating what internal funding is possible from **reserves,** the tool assumes that a liquidity reserve of 25% of total operating expenditure must be retained. Any reserves above this amount can be used to finance capital expenditure. **Free Cash Flow** is the projected cash flow after catering for normal operating expenditures, with adjustments made for servicing and repayment of existing debt; retention of cash for expenditure on small capital works; and retention of cash in a liquidity reserve. The tool assumes that capital expenditure will be financed out of grants, reserves and Free Cash Flow if there are

[1] The description focusses on how the tool projects potable demand and bulk water infrastructure as this is the focus of Part A.

sufficient funds from these sources available. If grants, reserves and Free Cash Flow are not sufficient to finance capital expenditure directly, then the tool assumes that the Free Cash Flow will be used to leverage borrowing. **Borrowing** capacity is estimated as the *present value of future Free Cash Flow*. In other words, borrowing capacity is estimated based on an assessment of whether the water board will have the cash flow in future to repay the debt incurred.

- The tool includes a cash flow assessment. Key to this is an estimate of **non-payment for services**. The likelihood of future non-payment is estimated by looking at two factors.
    - The first is *fiscal capacity,* which is related to the affordability of water tariffs to the underlying customer base. The tool uses data on levels of Non-Revenue Water and municipal expenditures on water distribution (and bulk provision where they undertake this) to estimate an end-user water tariff and assesses the affordability of these tariffs with consideration to the income profile of the customer base. If tariffs are not affordable, it is assumed that non-payment will increase due to lack of fiscal capacity. Tariffs are calculated based on volumes of water sold by the municipalities, so high levels of Non-Revenue Water will increase tariffs and have a negative impact on affordability.
    - The second is *fiscal effort,* which is related to the capacity of the municipality and the effort that it applies to collect user revenues. Metropolitan municipalities are assumed to exert higher fiscal effort than local municipalities, who exert higher fiscal effort than district municipalities. Within these categories, further categorisation into high, medium and low capacity is also applied.

  Non-payment for services is calibrated against current collection rates for the base year of the analysis. The tool projects it to increase in future if there is a decline in fiscal capacity and effort, or to decrease if these two parameters improve.

Note that the tool allows for the user to specify an expansion in the role of water boards regarding water resources, bulk wastewater supply, non-potable water and retail services in addition to the expansion of bulk potable water activities. For the purposes of Part A of this study, it was used to assess expansion of provision of bulk potable water only.

The tool draws extensively on data related to the existing cost structure of the water board. It is also grounded in data regarding the economic base of the area served by the water board, with this primarily impacting expected non-payment for services.

The base year for analysis was 2022, with forward projections undertaken in the tool up until 2042.

2.4 KEY ASSUMPTIONS

The tool draws on a large amount of default data and parameters. Key assumptions made in the analysis are summarised below.

2.4.1 Current and future demand for bulk potable water

Current and future demand for bulk potable water was estimated based on data in the National Water and Sanitation Master Plan, with provincial distribution of bulk water demand obtained from No Drop analysis. The assumed current and future demand is shown in the table below.

Table 1: Current and future demand for bulk potable water assumed in the analysis

Million m^3 pa	**2022**	**2032**	**2042**	**Average % increase per annum, 2022 to 2042**
EC	362	390	418	0.7%
FS	227	254	284	1.1%
GT	1 608	1 992	2 471	2.2%
KZN	761	885	1 027	1.5%
LIM	307	358	414	1.5%
MP	296	355	424	1.8%
NW	225	278	341	2.1%
NC	103	123	144	1.7%
WC	527	636	770	1.9%
Total	**4 416**	**5 272**	**6 293**	**1.8%**

2.4.2 Future water board boundaries

The reconfigured water board boundaries to be analysed were specified in the scope of the study to be:

1. **Rand Water** to cover whole of Gauteng and Mpumalanga provinces.
2. Umgeni Water and Mhlathuze Water to be combined to form a new **KZN Water** water board to cover whole of KwaZulu-Natal province.
3. **Lepelle Northern Water** to cover whole of Limpopo province.
4. **Amatola Water** to cover whole of Eastern Cape province.
5. **Magalies Water** to cover whole of North West province.
6. **Bloem Water** to cover whole of Free State and Northern Cape provinces.
7. **Overberg Water** to expand in line with expansion plans indicated in their Business Plan.

The expansion indicated in Overberg's Business Plan is to cover Swellendam, Overstrand and Kannaland.

As noted in the introduction to this report, water boards will not be imposed on municipalities and so the extent to which this expansion in boundaries will in fact translate into increased bulk water supplied is uncertain. This uncertainty was accommodated by running two model scenarios.

- In the first, referred to as **'current only'** in the report, the boundaries of water boards' authorised areas of supply are adjusted to align with provincial boundaries, but *no new municipal customers sign bulk supply agreements*. This means that the water boards continue to supply any municipal customers that they are currently supplying in their new provincial boundaries, stop supplying any municipal customers that they are currently supplying outside of their new provincial boundaries, and start supplying any municipal customers in their new provincial boundaries that are currently being supplied by another water board.
- In the second, referred to as **'all future'** in the report, the boundaries of water boards' authorised areas of supply are adjusted to align with provincial boundaries, and *all municipalities in those boundaries sign bulk supply agreements* with water boards to supply their future water demands. As for the 'current supply' scenario, the water boards continue to supply any municipal customers that they are currently

supplying in their new provincial boundaries, stop supplying any municipal customers that they are currently supplying outside of their new provincial boundaries, and start supplying any municipal customers in their new provincial boundaries that are currently being supplied by another water board. In addition, they start supplying all other municipalities that fall within their new provincial boundaries.

In both scenarios it is assumed that municipalities continue to supply the volume of bulk potable demand that they currently supply. *Water boards expand to supply future demand only*. This is in line with the study specification that water boards will not take over assets currently owned by municipalities. The existence of spare capacity in municipal systems, and therefore the extent to which municipal supply can expand to meet future demand, has not been considered. The share of future demand that will be met from local schemes (and therefore municipalities) and not regional schemes (and therefore water boards) is unknown. This is flagged as an uncertainty in the study findings.

2.4.3 Transfer of cross-border infrastructure

A detailed analysis of the extent of cross-border infrastructure was outside of the scope of this study. The transfer of assets between Magalies Water and Rand Water was considered, largely because Magalies Water highlighted this as a key issue for them in meetings regarding data, and provided maps showing the location of schemes that allowed us to accommodate this into the specification of the models.

Three particular schemes currently owned by Magalies Water are at issue.

- *Klipdrift*, located in Gauteng, but largely supplying Moretele in North West and Bela Bela and Modimolle in Limpopo, as well as parts of Hammanskraal in Tshwane in Gauteng.
- *Wallmansthal* and *Cullinan*, located in Gauteng and supplying City of Tshwane.

The location of these schemes is shown in the figure below.

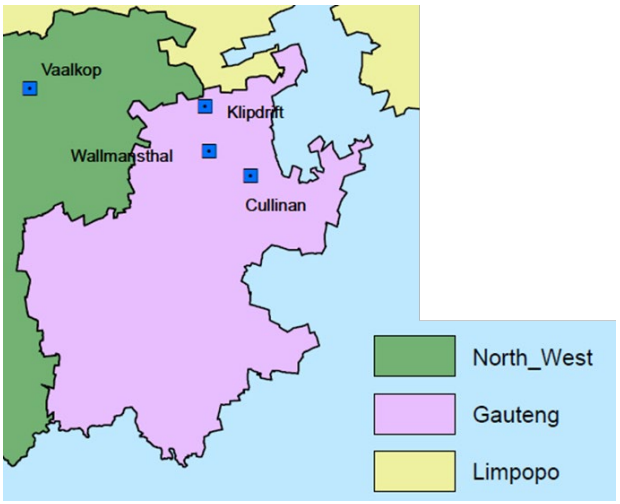

Figure 1: Map showing cross-border schemes currently owned by Magalies Water

Magalies Water has other cross-boundary supply, with Thabazimbi in Limpopo currently supplied by Vaalkop scheme, located in the North West.

The study proposes that the following principles are applied when determining which assets should be transferred between water boards:

1. An individual asset must be allocated to an individual water board. Ownership of a single asset should not be shared between two water boards.
2. Wherever possible, a scheme should be allocated to a single water board in its entirety.
3. A water board should take ownership of a scheme if municipalities in its supply area are dependent on that scheme for most of their bulk water.
4. A water board should take ownership of a component of a scheme if it is the only water board that relies on that component for the provision of bulk water.

These principles essentially propose that 'provincial boundaries' should mean that the area of supply falls in a province, not necessarily the physical infrastructure.

- In the case of Klipdrift, the area of supply is primarily in the North West, although the scheme is physically located in Gauteng. The study has therefore assumed that Klipdrift will be retained by Magalies Water, based on Principle 3.
- Wallmansthal and Cullinan, however, primarily serve the City of Tshwane in Gauteng, and will therefore be transferred to Rand Water under the same principle.
- In the case of the supply to Thabazimbi, Principle 4 above would indicate that Magalies Water should retain ownership of most of the Vaalkop scheme including the treatment works. However, any bulk pipelines, pumping stations and other infrastructure that are used exclusively to supply water from the Vaalkop treatment works to Thabazimbi would be transferred to Lepelle Northern, as it would be the only water board relying on these assets for the provision of water.

No other transfer of cross-border assets has been accounted for in the study as analysis on information on assets that may be affected was not available.

2.4.4 Capital cost of future expansion of bulk potable water schemes

There is extensive variability in the capital cost of new bulk schemes, with costs depending on the specification of each scheme. Assumptions on the possible cost were made based on analysis of RBIG projects. Only 22 RBIG projects had data on the additional capacity to be created through the project. The cost of these projects varied extensively, with a range from R3.3 to R84.9 million per ML per day additional capacity provided. The analysis here focusses on bulk potable infrastructure only, so excludes all water resources. Some of the costs included in the projects are not related to bulk infrastructure, and so the RBIG costs were adjusted down by 20% to allow for this.

To accommodate the variability in costs, three model scenarios were run, with low, 'base' and high capital cost assumptions. The unit costs assumed for each scenario are shown in the table below.

Table 2: Capital unit cost assumptions for three cost scenarios

Scenario	Unit cost (Rmill per Ml pd)	Comment
Base	32.4	Median of the RBIG projects analysed
Low	21.2	20th percentile of the RBIG projects analysed
High	50.7	80th percentile of the RBIG projects analysed

2.4.5 Operations and maintenance (O&M) costs of rural schemes

Rural schemes are typically more expensive to operate than urban schemes (World Bank, 2013) but there is a wide range in the cost of rural schemes, driven by many factors including technology and scale (Gibson, 2010). There is therefore not strong data available on the exact extent to which O&M costs are higher in rural

areas. For the purposes of this study, the O&M costs of rural schemes are assumed to be 33% higher than those of urban schemes.

2.4.6 Impact of scale on O&M costs

O&M costs per kl are higher for smaller schemes than they are for larger schemes (see, for example, DWS, 2016). Figure 2 below is a plot of the O&M unit cost per kl against Ml sold.

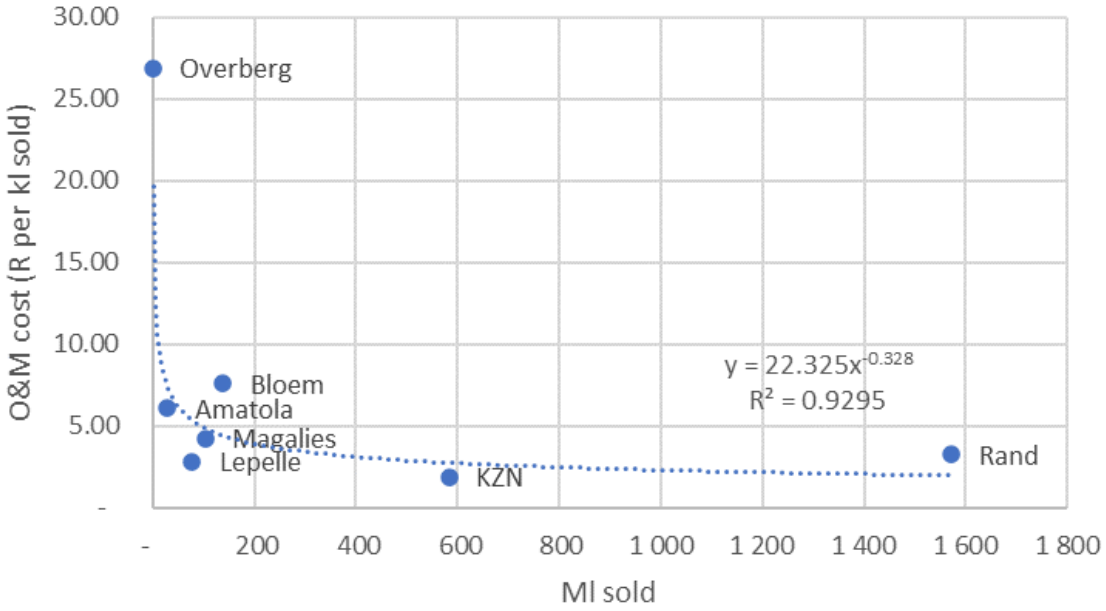

Figure 2: O&M costs per kl vs Ml sold in each of the seven proposed waterboards in 2022

The line of best fit shown in the figure has a R^2 value of 0.9295, indicating a strong fit. The figure indicates that there is a steep decline in O&M costs per kl with increases in scale at low scale, but that increases at larger scale result in smaller declines in O&M costs. The formula from this line of best fit was used to estimate the impact of increased scale on O&M costs under the two model scenarios for expansion.

2.4.7 Impact of scale on overheads

Figure 3 below provides s similar plot to Figure 2, but this time for overheads expenditures.

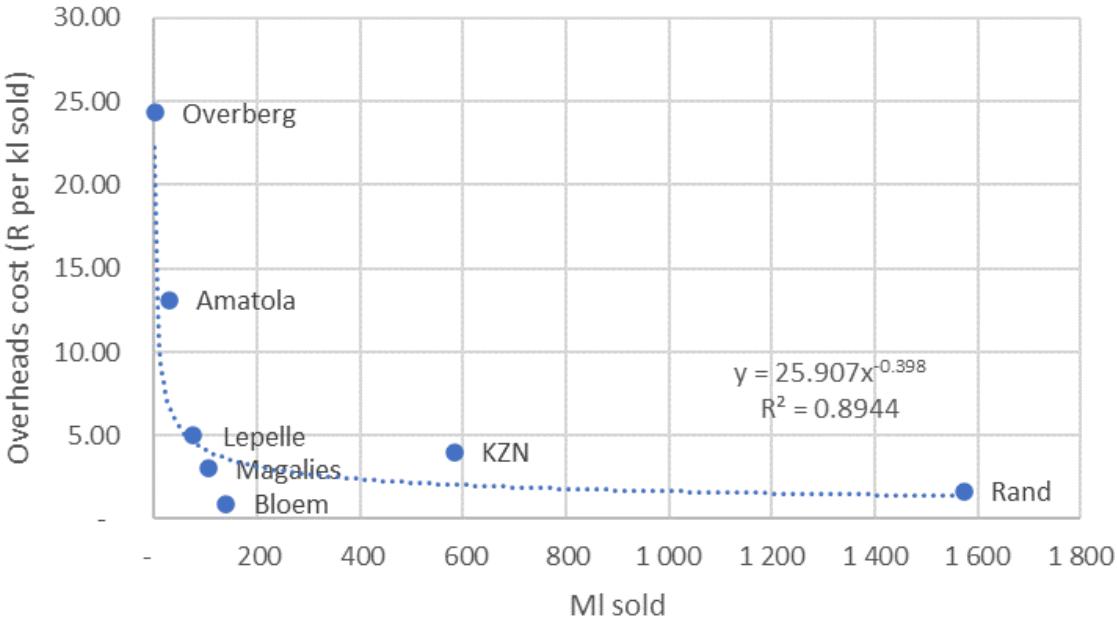

Figure 3: Overheads costs per kl vs Ml sold in each of the seven proposed waterboards in 2022

Once again, a power line of best fit has a strong R^2 value. The formula for this line of best fit was used to estimate the impact of increased scale on overheads costs under the two model scenarios for expansion.

2.4.8 Affordability parameters

As noted in Section 2.3, the projection of non-payment for services in the analysis was based on an assessment of the impact of expansion on *fiscal effort* and *fiscal capacity*, with fiscal capacity related largely to the affordability of water.

Affordability was assessed based on the end-user municipal tariff charged for water. Municipal expenditure on the provision of water was estimated using the following assumptions:

- *O&M on internal infrastructure:* R16.50 per hh per month for a public standpipe, and R82.50 per hh per month for a yard or in-house connection, with adjustments for settlement type;
- *O&M on connector infrastructure:* R1.03 per kl;
- *O&M on municipal bulk infrastructure*: R2.40 per kl;
- *Bulk purchases*: estimated based on volumes purchased from water board and water board tariff;
- *Municipal overheads:* 45% mark up on O&M cost;
- *Depreciation:* 12% mark up on O&M cost; and
- *Finance charges*: 4% mark up on O&M cost.

These assumptions were based on previous costing work undertaken by PDG and on analysis of municipal financial information.

Tariffs were calculated by dividing the municipal expenditure on the provision of water by the water volume sold. The volume of water sold was estimated based on an assumption of Non-Revenue Water (NRW) of 41%, disaggregated into 28% technical and 13% non-technical losses.

Several assumptions were made to estimate the affordability of the resulting water tariffs:

- Any household earning less than R3 500 per month was classified as ‘low income’.
- *Low-income households will pay no more than 3% of their monthly household income for water*. This is a fairly widely applied benchmark for the affordability of water. Assuming an even spread of household incomes between R0 per month and R3 500 per month for low-income households, this results in a monthly payment of no more than R52.50 per household per month by low-income households.
- *For high income households and non-residential customers, a payment of up to R25.00 per kl of water was assumed to be affordable*. This was based on an assessment of current tariff levels.

It is assumed that municipalities will use up to 36% of their equitable share allocations to subsidise the provision of water to low-income households. While the equitable share is a completely unconditional grant, 36% is the portion of the allocation that is made for water according to the equitable share formula.

CHAPTER 3: FINDINGS

3.1 CURRENT VARIABILITY BETWEEN WATER BOARDS

The water boards are a diverse group, with significant variability between them. As can be seen in Table 3, they differ significantly in terms of scale and the extent to which they already supply demand in their proposed provincial footprints.

Table 3: Current water board sales volumes and share of provincial demand currently supplied

	Potable volume sold in 2022 (million m^3 pa)	Share of provincial demand
Rand	1 572	80%
KZN	583	77%
Bloem	139	42%
Magalies	104	39%
Lepelle Northern	75	25%
Amatola	29	8%
Overberg	1	5%

The larger two water boards in particular, Rand and KZN, already supply the bulk of demand in their respective future provincial footprints.

There is also a high degree of variability in water board costs. This can be seen in Figure 4 below, which shows the unit operating cost in Rands per kl sold in each of the seven water boards in 2022, based on analysis of their AFS.

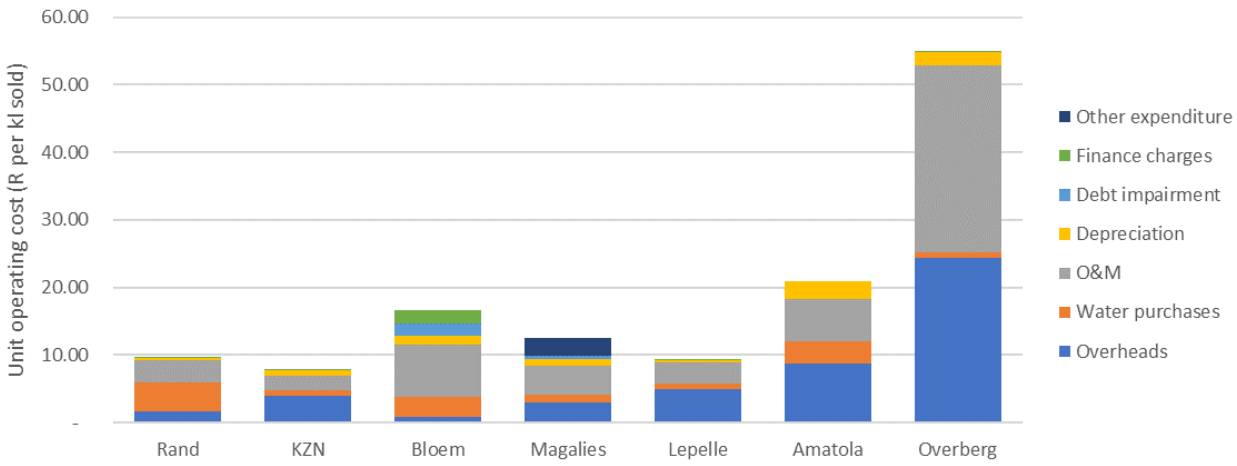

Figure 4: Unit operating costs in each of the seven waterboards in 2022

The average cost is around R10 per kl, with KZN's cost slightly lower, Bloem and Magalies on the high side, and Amatola and Overberg notably high. Scale is certainly a factor here but there are other influences at play, and efficiencies or inefficiencies that are not related to scale in some of the water boards. Figure 4 does suggest, though, that there may be a scale at which a water board is too small to be viable.

It is difficult to comment on the composition of costs because of differences in the way that the different water boards allocate costs in their reporting. This is most notable when looking at *overheads* and *O&M* costs. Water boards report most expenditures as either 'cost of sales' or 'operating expenses'. The latter was assumed to be overhead, while 'costs of sales' excluding raw water purchases and depreciation were assumed to be O&M. It is clear from Figure 4 that 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 disaggregated unit costs are not comparable.

Looking at the other cost items, there is significant variability in *water purchases* costs, with this cost highest in Rand Water, at R4.27 per kl of water sold, and lowest in KZN, at R0.72 per kl sold. This will be determined largely by the source of the raw water purchased, with bulk system losses playing some role.

Depreciation is surprisingly variable. This is clear in Table 4 below, which shows depreciation expenditure and the value of Property, Plant and Equipment (PPE) in 2022, as well as the depreciation expenditure as a share of the value of PPE.

Table 4: Depreciation as a % of PPE in 2022 in each of the seven water boards

	Depreciation expenditure (Rmillion)	Book value of PPE (Rmillion)	Depreciation as % of PPE	Years to be fully depreciated if other assets are not added
Rand	409	28 342	1.4%	69
KZN	425	10 125	4.2%	24
Bloem	189	6 063	3.1%	32
Magalies	107	3 066	3.5%	29
Lepelle Northern	31	2 603	1.2%	85
Amatola	77	1 708	4.5%	22
Overberg	3	32	8.8%	11

Depreciation as a % of the value of PPE is very high in Overberg at 8.8%. If PPE continues to be depreciated at this rate, it will be fully depreciated in 11 years if other assets are not added. At the other end of the scale, depreciation is low in Lepelle Northern and Rand Water, at 1.2% and 1.4% of the value of PPE. If PPE continues to be depreciated at this rate in these two water boards, it will be fully depreciated in 85 and 69 years respectively.

The rate of depreciation is different for different assets, and so the composition of the asset base will explain some of this variability. However, given that the water boards all primarily supply bulk water and would therefore be expected to have relatively similar asset bases, the degree of variability is surprising. National Treasury (2004) suggests a range of useful lives of between 10 and 55 years for bulk water assets.

Turning to *debt impairment*, only Bloem and Magalies reported any significant impairment of debt in 2021/22. Rand showed a net income due to the reversal of debt impairment in previous years. Amatola also showed a net income from debt impairment, although this was not explained in its AFS. This is notable given the fact that the water boards are all reporting increases in debtor books and all comment on challenges related to collection of debt in their annual reports. Most of this comment relates to the collection of outstanding debt, and so the extent of issues with current collections is not always clear. The current collection rate estimates the share of revenue invoiced in a period that is in fact collected. This is not reported on explicitly by water boards but can be estimated by two methods, the first looking at the movement in the debtors' book in a year compared to the revenue invoiced in that year; and the second looking at the cash collected from water sales in a year compared

to the revenue invoiced. Collection rates calculated by these two methods are shown in Table 5 and discussed below.

Table 5: Current collection rates in each of the seven water boards in 2022

	Estimated through movement in debtors' book	Estimated through movement in cash	Assumed in analysis
Rand	97%	99%	97%
KZN	99%	94%	93%
Bloem	78%		78%
Magalies	62%		62%
Lepelle Northern	84%	106%	84%
Amatola	107%	111%	100%
Overberg	108%	107%	100%

In general, collection rates estimated based on the movement in cash are higher than those estimated based on the movement in the debtors' book. The movement in the debtors' book has largely been used as the basis for assumptions on current collection rates in the analysis. Comment on each water board is provided below:

- *Rand* indicate in note 24 to their financial statements that they do not recognise revenue if the probability of default is likely. The did not recognise R86 million in revenue in 2021 and R117 million in 2022 due to this reason, 1.45% and 2.02% of revenue respectively. The analysis has assumed a 97% current collection rate, which is acceptably strong.
- Umgeni Water indicates in note 16 to its AFS that the expected default rate on current invoices is 7.45%. This was used to inform the assumption of a 93% current collection rate for *KZN* Water. 95% is a commonly applied benchmark for current collection rate, so KZN's collection rate is slightly lower than would be desired.
- The low collection rate for *Bloem* Water is due almost entirely to the incorporation of a portion of the former Sedibeng Water. Prior to this, the collection rate for Bloem Water using the movement in the debtors' book was estimated to be 98%. The collection rate estimated using the same method in the portion of Sedibeng taken over was, however, only 63%, leading to a rate of 78% in the aggregated entity. This is very low and not sustainable. While one of the few entities to report any debt impairment, the combined Bloem Water reported debt impairment of 12% of its revenue in 2022. When assessing the funding of municipal budgets, National Treasury suggests that debt impairment should be approximately equal to 1 – the current collection rate. Against this measure, Bloem Water would need to impair 22% of its revenue to account for its low collection rate. Estimation of the collection rate based on movement in cash was not possible for Bloem Water due to the unavailability of data on the former Sedibeng, hence the blank cell in the table above.
- The even lower collection rate in *Magalies* Water is also due in part to the absorption of part of the former Sedibeng Water. The collection rate in Magalies Water was poor, however, even prior to taking over a part of Sedibeng. Using the movement in debtors' book, Magalies Water had a collection rate of only 78% prior to the change. The portion of Sedibeng absorbed by Magalies showed a negative cash collection (in other words, the debtors book increased by more than the revenue reported for the year). On balance, a collection rate of 62% is assumed in the analysis for the combined entity. This is not sustainable. The combined Magalies Water reported impairment of 4% of its revenue in 2022, significantly lower than the 38% that the National Treasury guideline of 1 – collection rate would suggest. As for Bloem Water, estimation of the collection rate based on movement in cash was not possible for Magalies due to the unavailability of data on the former Sedibeng, hence the blank cell in the table above.

- Using the movement in the debtors' book, *Lepelle Northern* had a current collection rate of 84% in 2022, also too low to be sustainable. It indicates in note 7 to its AFS that it increased its provision for impairment by R12 million in 2022, only 1.5% of its revenue for that year. This is significantly less than the 16% that the National Treasury guideline of 1 – collection rate would suggest.
- Analysis of *Amatola's* AFS suggests a current collection rate of 100% (the figures of above 100% in Table 5 suggest some collection of outstanding debt). This is surprisingly high considering the historic challenges that Amatola has experienced with debt collection in Amathole District Municipality in particular. In the absence of other data, the analysis has assumed a current collection rate of 100%.
- Similar to Amatola, *Overberg*'s AFS suggests current collection rates of in excess of 100%. The analysis has assumed 100% current collection rate in the absence of better data.

In sum, the current collection rate in Rand Water looks strong. KZN is high but can be improved further. Bloem, Magalies and Lepelle Northern all have very weak current collection rates and are inadequately impairing their revenues to account for this. Current collection rates of these levels are not sustainable and are likely to lead to financial collapse if not significantly strengthened. 100% collection rates have been assumed for Amatola and Overberg based on their AFS.

Note that adequate or strong current collection rates do not suggest that there are no problems with debt in the water boards. Levels of trade and other receivables at the end of June 2022 are shown in the table below, together with debtor days reported in annual reports for 2022.

Table 6: Trade and other receivables and debtors' days for each of the seven water boards in 2022

	Trade and other receivables (Rmillion)	**Debtors' days (days)**
Rand	2 965	77
KZN	1 233	103
Bloem	5 281	928*
Magalies	2 176	908*
Lepelle Northern	989	518
Amatola	251	206
Overberg	15	98

*Debtors' days for Bloem and Magalies after the incorporation of Sedibeng have not been reported and were calculated by the authors for this table.

Debtors' days are above recommended benchmarks for all of the water boards but are extraordinarily high for Bloem and Magalies post the incorporation of Sedibeng, and extremely high for Lepelle Northern and Amatola as well. Trend analysis has not been conducted for this study, but reporting elsewhere shows that debt has been climbing steadily. It is worth noting that Amatola Water's debtors' days, however, decreased in 2022 from 225 in 2021.

Returning to the operating expenditure items in Figure 4, *finance charges* are notably higher in Bloem than in the other water boards. This is almost entirely due to a very large finance cost (R231million) inherited from Sedibeng Water. This is not related to interest-bearing borrowings but rather to interest charged by creditors for payment. The analysis in this study has focussed on the ongoing sustainability of the operating account. It has not looked at repayment of outstanding trade receivables or at payment of outstanding trade payables. It is noted, however, that many of the water boards have very high levels of outstanding trade payables. Settling these balances will only be possible in most cases if outstanding trade receivables are settled. This is particularly true for Bloem and Magalies, as outstanding trade payables were extraordinarily high in Sedibeng Water, and these have simply been transferred to Bloem and Magalies. Thus, while the focus of this study has

been on current collection rates, reducing outstanding debtors (trade receivables) and paying off outstanding trade receivables is also a critical issue.

Table 7: Trade and other payables for each of the seven water boards in 2022

	Trade and other payables (Rmillion)
Rand	3 557
KZN	1 058
Bloem	4 517
Magalies	1 893
Lepelle Northern	718
Amatola	373
Overberg	5

Because the analysis has not looked at the repayment of trade payables, the late payment fees of R231million have been assumed to remain in place for Bloem Water, negatively affecting its projected financial performance.

As shown in Table 8, the water boards have very low borrowing, with only Rand, KZN, Bloem and Overberg currently reporting any interest-bearing borrowings in their financial statements.

Table 8: Outstanding borrowing and debt:equity ratios in each of the seven water boards in 2022

	Outstanding borrowing (Rmillion)	Debt:equity
Rand	4 384	0.136
KZN	1 187	0.081
Bloem	55	0.008
Magalies	0	0
Lepelle Northern	0	0
Amatola	0	0
Overberg	123	0.001

In sum, the water boards differ significantly in terms of scale, current composition of expenditure and performance on key financial parameters such as current collection rate. It is anticipated that expansion to provincial boundaries will impact them differently.

3.2 UNCERTAINTY REGARDING EXTENT TO WHICH FUTURE WATER DEMAND WILL BE MET THROUGH REGIONAL SCHEMES

Section 2.4.1 presented the extent of total future demand in each province. Section 2.4.2 has noted that water boards will not be imposed onto municipalities and the extent to which they will therefore enter into bulk supply agreements with the proposed provincial water boards is unknown. This is partly related to the extent to which the future demand in each province will be appropriately met through regional bulk water schemes, as opposed to local schemes or local sources.

A degree of uncertainty also persists about the definition of ‘regional bulk’. DWS’ Institutional Realignment and Reforms study in 2011 proposed that ‘regional bulk’ should be defined as infrastructure that crosses or serves more than one water services authority, serves a mine or industry of regional significance, or a regional irrigation or mixed-used scheme. The grant framework for the RBIG in the Division of Revenue Act, however,

regional schemes are defined as ‘infrastructure of regional significance that connects water resources to infrastructure serving extensive areas across municipal boundaries or large regional bulk infrastructure serving numerous communities over a large area within a municipality’. This is very open to interpretation and may allow quite small schemes to be defined as ‘regional’.

Regardless of definition, local conditions in each province will determine the extent to which regional schemes are the most appropriate option for supplying bulk water. Assessing this requires a detailed engineering assessment, outside of the scope of this study. This further contributes to uncertainty regarding the impact that the proposed provincial boundaries will in fact have on water board operations, which has been captured in the analysis through the use of the two expansion scenarios (‘current only’ and ‘all future’).

3.3 ADMINISTRATIVE COMPLEXITY INTRODUCED BY PROVINCIAL BOUNDARIES

Previous proposals regarding reform to water board boundaries have recommended that water board service areas should be defined by the logic of the water system, that is the physical location and configuration of the assets and how these assets are inter-connected (DWS, 2011). Provincial boundaries do not comply with systems logic and this introduces administrative complexity related to the transfer of assets and cross-boundary water supply.

The discussion in Section 2.4.3 has noted that uncertainty remains regarding what assets may potentially need to be transferred between water boards as a result of a shift to provincial boundaries and has proposed some principles to guide this decision. *Regardless of how the asset transfer takes place, there will be a degree of cross-boundary supply of bulk water under the proposed provincial boundaries.* For example, if the principles proposed in Section 2.4.3 are applied, Magalies Water would retain ownership of Vaalkop bulk scheme, which currently supplies Thabazimbi in Limpopo. This means that Lepelle Northern Water, who would now be responsible for supplying bulk water to Thabazimbi, would need to purchase this water from Magalies. The same would potentially be true for other cases where a water board is currently supplying water outside its proposed provincial boundary (including Maquassi Hills, Modimolle-Mookgopong, City of Tshwane, Govan Mbeki, Thembisile Hani, Metsimaholo, Ngwathe, Madibeng and Rustenburg). This will require bulk supply agreements to be put in place between the water board who will own the assets under the new provincial boundaries, and that which will now be responsible for the bulk water supply. The extent of these agreements is yet to be resolved and so the management of cross-boundary supply of bulk potable water is another uncertainty related to the move towards provincial boundaries for water boards.

3.4 IMPACT OF EXPANSION ON VOLUMES OF BULK WATER SUPPLIED

The discussion in 2.4.2 noted that the extent to which expansion in water board boundaries to align with provincial boundaries will in fact translate into increased bulk water supplied is uncertain, because it is not known whether municipalities in the provincial boundaries will choose to enter into bulk supply agreements with the water boards. Section 3.2 above has expanded on this to note that the extent to which regional schemes will be appropriate for the provision of future bulk water in each province is also unknown. Together, these two uncertainties mean that the extent to which the introduction of provincial boundaries for water boards will in fact result in an increase in the volume of water supplied by the water boards is uncertain. The two scenarios run in the study (‘current only’ and ‘all future’) represent a range of possibilities, with the actual position likely to lie somewhere between the two.

The extent of impact on the volume of water supplied by the water boards under the two scenarios is shown in Table 9.

Table 9: Impact of expansion on volume of water supplied by each of the seven waterboards under the two expansion scenarios

	Volume of water supplied (million m^3 pa)			Increase in volume supplied 2022 to 2042		
	2022	**'Current only' 2042**	**'All future' 2042**	**'Current only'**	**'All future'**	**Difference 'all future' to 'current only**
Rand	1 572	2 393	2 511	52%	60%	7%
KZN	583	803	849	38%	46%	8%
Bloem	139	181	233	30%	68%	38%
Magalies	104	147	178	41%	71%	30%
Lepelle Northern	75	154	182	104%	142%	37%
Amatola	29	38	83	33%	188%	155%
Overberg	1	4	15	197%	936%	739%

The difference between the 'all future' and 'current only' scenarios is greatest in the smallest two water boards, Overberg and Amatola. The 'all future' scenario in particular has a very large impact on the volume of water supplied by these two water boards, relative to their current supply.

The difference between the 'all future' and 'current only' scenarios is of similar magnitude for Bloem, Magalies and Lepelle Northern. Even the 'current only' scenario has a significant impact on the volume of water supplied by Lepelle Northern Water, because it currently supplies a relatively small share of the demand of its customer municipalities, and so supplying all future demand, even in these municipalities only, has a relatively large impact. The same is true of Overberg, based on the data provided.

The difference between the 'all future' and 'current only' scenario is small for the larger two water boards, Rand and KZN. They already supply the bulk of the water in the provinces that they are intended to serve, and so further expansion has a comparatively small impact.

In sum, the impact of expanding water board operations significantly in the proposed provincial footprints, captured in the 'all future' scenario, is far greater in the smaller water boards than it is for the larger two.

3.5 MAGNITUDE OF CAPITAL INVESTMENT REQUIRED BY WATER BOARDS TO SUPPLY FUTURE DEMAND

The magnitude of capital investment required is influenced by the expansion scenario applied ('current only' vs 'all future') as well as the unit capital cost assumed ('low', 'base' or 'high').

The average capital expenditure required per annum between 2023 and 2042 for the 'current only' scenario under each of the three cost scenarios is shown in Table 10 below. Required expenditure is compared to average actual capital expenditure for 2021 and 2022. The same data for the 'all future' scenario is shown in Table 11.

Table 10: Average capital expenditure required per annum from 2022 to 2042 under the 'current only' expansion scenario and three capital cost scenarios for each of the seven water boards

Rmill pa from 2023 to 2042	**Actual**	**Low cost**	**Base cost**	**High cost**	**% increase actual to base**
Rand	2 621	1 835	2 803	4 380	7%
KZN	969	985	1 504	2 350	55%
Bloem	129	195	299	467	131%
Magalies	319	205	313	490	-2%
Lepelle Northern	120	316	483	754	303%
Amatola	45	47	72	113	62%
Overberg	20	3	5	8	-75%
Total	**4 223**	**3 586**	**5 480**	**8 652**	**30%**

Table 11: Average capital expenditure required per annum from 2022 to 2042 under the 'all future' expansion scenario and three capital cost scenarios for each of the seven water boards

Rmill pa from 2023 to 2042	**Actual**	**Low cost**	**Base cost**	**High cost**	**% increase actual to base**
Rand	2 621	2 177	3 327	5 198	27%
KZN	969	1 117	1 707	2 667	76%
Bloem	129	347	530	829	311%
Magalies	319	296	452	706	42%
Lepelle Northern	120	398	608	950	407%
Amatola	45	177	271	424	507%
Overberg	20	35	53	83	171%
Total	**4 223**	**4 547**	**6 948**	**10 857**	**65%**

Collectively, the water boards will need to spend R6.9 billion per annum on average between 2023 and 2042 on capital expenditure,65% more than current expenditure levels, under the 'all future' expansion scenario with the base cost assumption. Under the 'current only' expansion scenario with the base cost assumption, they need to spend R5.5 billion per annum on average, 30% more than current.

The capital expenditure that might be required ranges from R3.6 billion per annum on average under the 'current only' scenario with a low capital cost assumption to R10.9 billion per annum on average under the 'all future' scenario with a high capital cost assumption.

The capital expenditure requirements calculated by the models are high level estimates based on projected demand, an assessment of existing spare capacity, and unit capital costs. Actual capital expenditures incurred by the water boards are dependent on the capacity to implement projects (many water board projects are delayed) and the actual costs of those projects. Projections used in tariff applications and business plans appear to be optimistic in many cases. In some cases, actual water board expenditures include some water resources infrastructure or infrastructure to supply non-potable demand or retail customers. There are therefore many reasons for the differences between the model estimates and the actual expenditures. The analysis estimates that capital expenditure required in Magalies and Overberg under the 'current only' scenario is lower than current capital expenditure. In Magalies this is due to the initial drop in volume supplied by the water board on the introduction of provincial boundaries, due to the transfer of Tshwane to Rand Water. In Overberg, it is due to the fact that more than half of the water sold by Overberg is retail, and not included in this analysis.

3.6 IMPACT OF EXPANSION ON O&M COSTS DUE TO CHANGING URBAN/RURAL PROFILE

As noted in Section 2.4.5, O&M costs are higher in rural than in urban areas. If expansion to the proposed provincial boundaries means that water boards will supply water in more rural areas than current, then the expansion is likely to increase their O&M costs, and vice versa if the expansion is into more urban areas. This impact will be felt under the 'all future' scenario only, as under this scenario the water boards supply all future demand in all municipalities in their proposed provincial boundaries, and therefore take on new municipal customers. As shown in Table 12 below, the new municipalities supplied by the water boards under the 'all future' scenario are more rural than those current served for all water boards, aside from in Lepelle Northern and Overberg.

Table 12: Impact of expansion on urban/rural profile of areas served by water boards, and assumed resulting impact on O&M unit costs

	Current % urban	% urban in new areas	Current O&M unit cost (R/kl)	Estimated O&M unit cost in new areas (R/kl)	% change in unit cost
Rand	92%	47%	3.29	3.78	15%
KZN	65%	35%	1.89	2.07	9%
Bloem	89%	78%	7.61	7.87	3%
Magalies	74%	55%	4.25	4.51	6%
Lepelle Northern	22%	30%	2.83	2.77	-2%
Amatola	61%	52%	6.08	6.25	3%
Overberg	84%	93%	26.89	26.13	-3%

In particular, the new areas to be potentially taken over by Rand, KZN and Magalies are significantly more rural than those currently supplied, resulting in a 15%, 9% and 6% estimated increases in O&M unit cost in these areas for these three water boards respectively.

Bloem and Amatola will also expand into more rural areas under the 'all future' scenario, resulting in an estimated 3% increase in O&M unit cost in the new areas supplied for these two water boards.

The areas into which Lepelle Northern and Overberg will potentially expand are in fact more urban than those that they currently supply, resulting in an estimated decrease in O&M unit costs of 2% and 3% respectively for these two water boards in the new areas supplied. When looking at this result for Lepelle Northern in particular it is important to remember that the scope of this study does not include taking over existing schemes. Existing schemes in Mopani, Vhembe and Sekhukhune are large with dubious viability. The possibility of Lepelle Northern taking these schemes over is not considered in this study.

3.7 IMPACT OF EXPANSION ON O&M COSTS DUE TO INCREASED SCALE

Section 2.4.6 noted that scale appears to have an impact on O&M costs, particularly at smaller scale. This was estimated by applying the formula of the line of best fit in Figure 2 to the future volumes sold by the water boards under the two expansion scenarios and assessing the magnitude of any decreases in unit cost. The estimated impacts of increased scale on O&M unit costs are shown in Table 13 below.

Table 13: Estimated O&M unit costs after expansion as a percentage of current O&M unit costs by 2032 and 2042 for the two expansion scenarios

	'Current only'		'All future'	
	2032	**2042**	**2032**	**2042**
Rand	94%	87%	93%	86%
KZN	100%	100%	100%	100%
Bloem	96%	92%	92%	84%
Magalies	100%	100%	100%	96%
Lepelle Northern	100%	100%	100%	100%
Amatola	100%	100%	100%	86%
Overberg	80%	70%	58%	46%

Efficiencies are assumed under the 'current only' scenario for Rand, Bloem and Overberg only. This is largely because these three water boards currently sit above the line of best fit in Figure 2, indicating that there is existing inefficiency. While there may be some improvements due to scale under the 'current only' scenario for the other water boards, they sit below the line and the indication is therefore that they are already relatively efficient regarding O&M and that the relatively small increases in scale under the 'current only' scenario would not result in further efficiency in this regard.

Under the 'all future' scenario, more substantial efficiencies are achieved by Rand, Bloem and Overberg, due to greater increases in scale, and there are some efficiencies gained by Magalies and Amatola in the second ten years.

3.8 IMPACT OF EXPANSION ON OVERHEADS DUE TO INCREASED SCALE

Section 2.4.7 noted that, as for O&M, scale has an impact on overheads cost. This was estimated in a similar way to O&M, by applying the formula of the line of best fit in Figure 3 to the future volumes sold by the water boards under the two expansion scenarios and assessing the magnitude of any decreases in unit cost. The estimated impacts of increased scale on O&M unit costs are shown in Table 13 below.

Table 14: Estimated overheads unit costs after expansion as a percentage of current O&M unit costs by 2032 and 2042 for each of the seven water boards under the two expansion scenarios

	'Current only'		'All future'	
	2032	**2042**	**2032**	**2042**
Rand	93%	85%	92%	83%
KZN	94%	88%	93%	86%
Bloem	100%	100%	100%	100%
Magalies	100%	100%	100%	100%
Lepelle Northern	85%	75%	81%	70%
Amatola	98%	89%	79%	66%
Overberg	77%	65%	52%	39%

The estimated efficiencies on overheads costs are more significant than those on O&M. Under the 'current only' scenario, Rand, KZN, Lepelle Northern, Amatola and Overberg all achieve some efficiencies on overheads due to increased scale, with the improvements in Overberg and Lepelle Northern the most significant, and substantial improvement in KZN and Amatola as well.

Under the 'all future' scenario, which has larger increases in scale, the efficiency improvements are larger.

It is important to note for both overheads and O&M that these are theoretical improvements only. The extent to which water boards will in fact improve efficiencies as they grow is uncertain.

3.9 IMPACT OF EXPANSION ON CASH COLLECTION AND DEBT IMPAIRMENT

As noted in Section 3.1, poor current collection rates are already a key concern in Bloem, Magalies and Lepelle Northern Water. The analysis considers the extent to which collection rates are likely to improve or decline as a result of expanding to proposed provincial boundaries. As noted in Section 2.3, two factors are considered: the *fiscal effort* that will be applied by the water boards' municipal customers to collect revenues from their customers; and the *fiscal capacity* of the municipal customers, related to the affordability of the end-user water tariffs. Both of these factors are complex and could be the subject of a study itself. The assessment in this study may miss some nuance in particular cases but is an important attempt to demonstrate the impact the of expansion in terms of the way that it changes the profile of the underlying area supplied.

The findings regarding impact on collection rates are shown in Table 15 below. The findings suggest that expansion to proposed provincial boundaries will have a negative impact on collection rates for all water boards aside from Bloem and Lepelle Northern.

Table 15: Current collection rates after expansion for each of the seven water boards under the two expansion scenarios

		'Current only'		'All future'	
	2022	**2032**	**2042**	**2032**	**2042**
Rand	97%	96%	96%	96%	96%
KZN	93%	92%	92%	92%	92%
Bloem	78%	79%	82%	83%	86%
Magalies	62%	57%	58%	58%	59%
Lepelle Northern	84%	84%	84%	84%	85%
Amatola	100%	98%	97%	99%	99%
Overberg	100%	96%	93%	99%	96%

Comment on the finding for each water board is provided below:

- *Rand* sees a small decline in collection rate due primarily to a decline in fiscal capacity, in other words in the affordability of the end-user water tariffs. This is observed in both the 'current only' and 'all future' scenarios.
- *KZN* sees a small decline in collection rate due to a decline in fiscal capacity under the 'all future' scenario but less impact under the 'current only' scenario.
- *Bloem* sees an improvement in collection rate under both scenarios, with the improvement in fact greater under the 'all future' scenario. This relates largely to the mix of municipal and water board bulk supply. Bloem's tariffs are high compared to the assumed cost of bulk water produced by a municipality. Bloem's current customers purchase almost all of their bulk water from Bloem, but new customers in the province will purchase only future demand from Bloem, a relatively low share of total demand. This means a lower average bulk water price for the new municipal customers compared to the current customers, and an improvement in affordability and fiscal capacity. This happens even under the 'current only' scenario, as Bloem takes over Ngwathe and Metsimaholo from Rand Water.

- *Magalies* sees a decline in collection rate under both scenarios, due to both a decline in fiscal effort and fiscal capacity. This relates in part to the loss in sales to Tshwane under both scenarios, as Tshwane has higher fiscal effort and fiscal capacity than most other Magalies customers.
- *Lepelle Northern* sees an improvement in collection rate under the 'all future' scenario due to expanding from serving primarily district municipalities into local municipalities, assumed in the analysis to have stronger fiscal effort.
- *Amatola* sees a decline in collection rates under both scenarios, with the decline more significant in the 'current only' than the 'all future' scenario. Amatola is expanding into municipalities anticipated to show poorer fiscal effort under the 'all future' scenario. Fiscal capacity also declines under the 'all future' scenario, but the decline in fiscal capacity is larger under the 'current only' scenario due to the relative levels of the water board tariff and assumed cost of bulk water produced by the municipality, similar to that observed for Bloem. The 'all future' expansion scenario for Amatola includes expansion into Nelson Mandela Bay metro, and this plays a significant role in reducing the decline in collection rate under this scenario, compared to the 'current only' scenario.
- *Overberg* sees a decline in collection rates under both scenarios. Fiscal effort is relatively good under both scenarios but there is a decline in fiscal capacity, with this decline larger under the 'current only' scenario due to the relative mix of water board tariff and assumed cost of bulk water produced by the municipality, as for Amatola and Bloem.

The discussion above makes it clear that the cost of bulk water purchased from a water board compared to the cost of bulk water produced by municipalities has a key impact on affordability. This is also likely to be a factor considered by municipalities when deciding whether to enter into bulk supply agreements with the water boards.

Bloem and Lepelle Northern see an improvement in collection rate under both expansion scenarios. Rand and KZN see small declines, with these declines larger under the 'all future' scenario. Magalies, Amatola and Overberg see larger declines, with these declines smaller under the 'all future' scenario.

3.10 NET IMPACT OF EXPANSION ON THE PROFITABILITY OF WATER BOARDS

The findings presented previously in this report have shown that the water boards are a diverse group prior to any expansion. Expansion to provincial boundaries will impact the scale of some water boards significantly but have little impact on the scale of others. Expansion may result in increased O&M costs as water boards expand into more rural areas, but there may also be efficiencies of scale in both O&M costs and overheads in some. Finally, the impact on cash collection will depend on the capacity of municipalities in the areas into which water boards expand, the relative cost of water supplied by the water board compared to that produced by the municipalities, and the resulting affordability of water tariffs to end users. In sum, there are multiple factors at play, and they interact in different ways in each water board.

The net impact of these various factors on the overall profitability of the water boards for the 'all future' scenario under the base capital cost assumption is presented visually in Figure 5 below.

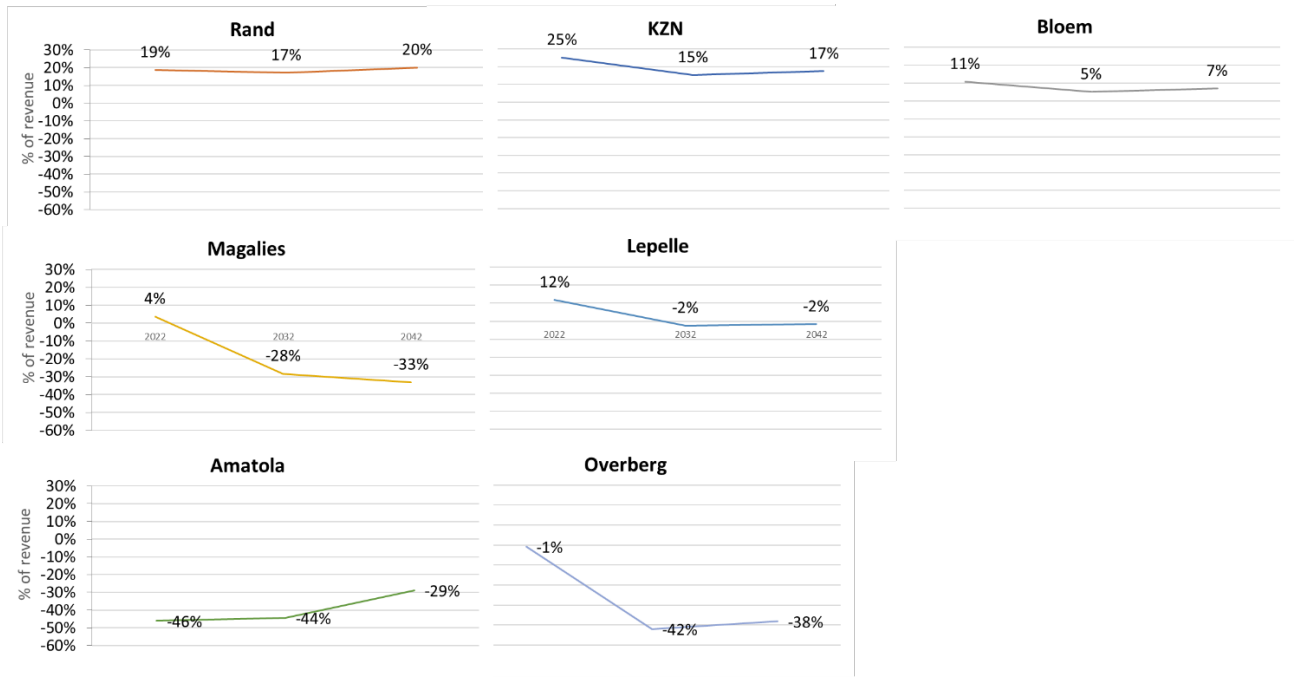

Figure 5: Profit or loss as a percentage of revenue between 2022 and 2024 for each of the seven water boards under the 'all future' expansion scenario and base capital cost assumption

Rand, KZN and Bloem all remain profitable with profitability in fact improving in Rand over time.

- *Rand* sees an initial decline in profitability due to higher O&M costs as it expands into more rural municipalities. These higher costs are compensated for over time by efficiencies in both O&M and overheads due to scale. Rand sees a slight decline in collection rate.
- *KZN* sees a decline in performance over time, but with some improvement in the second decade. It incurs higher O&M costs as it expands into more rural municipalities, with no compensating improvement in O&M efficiency due to scale. However, there are some improvements in overheads efficiency due to scale, and these result in an improvement in profitability in the second decade. KZN sees a slight decline in collection rate.
- *Bloem* is currently under-impairing its debt and a significant increase in debt impairment is required to account for its poor collection rate. Introducing higher debt impairment takes it from an 11% profit position to a 1.6% loss, prior to any expansion. Bloem sees a moderate increase in O&M costs as it expands into more rural areas, but this is more than compensated for by improved efficiencies in O&M costs due to scale. The collection rate remains unacceptably high but improves from current, further improving financial performance from the 1.6% loss position, although it does not reach the 11% profit that it is currently reporting.

Magalies and Lepelle Northern, however, move from a currently profitable position to unprofitable, with the decline in Magalies far more significant than that in Lepelle Northern. Lepelle Northern stabilises in the second decade while Magalies continues to decline. As noted below, *the decline in profitability is primarily due to increases in debt impairment to account for current low collection levels, rather than due to expansion*. The same is true for Bloem above.

- *Magalies* is currently under-impairing its debt and a significant increase in debt impairment is required to account for its very poor collection rate, the lowest of all water boards based on available information. This immediately takes it from the 4% profit reported in its AFS to a 32% loss, prior to any expansion. Magalies sees an increase in O&M costs as it expands into more rural areas, with an improvement in efficiency in O&M cost due to scale only in the second decade. In addition, the expansion results in a further decline in its collection rate, already unsustainable.

- *Lepelle Northern* is currently under-impairing its debt and an increase in debt impairment is required to account for its poor collection rate. This takes it from the 12% profit reported in its AFS to a 4% loss, prior to any expansion. The analysis suggests that the provincial expansion is positive for Lepelle Northern. It expands into more urban areas and sees a decline in its O&M costs as a result. Although it does not see any further improvements in O&M costs due to scale, there is substantial improvement in overheads expenditure possible. It also sees a slight improvement in its collection rate, although it remains far lower than acceptable levels.

Amatola and Overberg are currently not profitable and remain so under the expansion scenarios. The impact of expansion, however, is different, with Amatola becoming significantly more profitable over time, while Overberg continues to worsen.

- *Amatola* sees a moderate increase in O&M costs as it expands into more rural areas. This is compensated for to at least some extent in the second decade, when there is the potential for efficiency improvements in O&M due to scale. The analysis assumes significant improvements in the efficiency of overheads expenditures due to scale, which is the primary reason for the improvement in profitability observed for Amatola in Figure 5. Amatola sees a small decline in its collection rate. It is notable that these results assume that Amatola takes on the supply of future water demand in Nelson Mandela Bay metropolitan municipality. Without this, its supply area would become considerably more rural, with a resulting higher increase in O&M costs, and the efficiency improvements due to scale would be significantly lower.
- The provision of potable water by *Overberg* relies heavily on cross-subsidisation from its non-potable water sales, which currently generate 68% of its revenue. It sees a decrease in its O&M costs for potable water due to expanding into more urban areas, as well as significant efficiencies on O&M and overheads due to increased scale. However, even with these improvements, its financial performance still declines steeply as the currently unsustainable potable water business expands, but the non-potable business remains as current.

Figure 5 shows the projection of profitability of the water boards under the ‘all future’ scenario with the base unit capital cost assumption. Profitability under the ‘current only’ scenario and under alternative unit cost assumptions for each water board is shown in a table for each water board.

Table 16: Profit or loss as a percentage of revenue between 2022 and 2024 for Rand Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
‘All future’	Base	19%	17%	20%	1%
‘All future’	High	19%	15%	15%	-4%
‘All future’	Low	19%	18%	21%	2%
‘Current only’	Base	19%	17%	20%	2%

Profitability for Rand Water is marginally better under the ‘current only’ scenario compared to ‘all future’. The higher capital cost assumption has a negative impact on profitability, but Rand Water remains profitable even under this assumption.

Table 17: Profit or loss as a percentage of revenue between 2022 and 2024 for KZN Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
'All future'	Base	25%	15%	17%	-8%
'All future'	High	25%	12%	2%	-23%
'All future'	Low	25%	18%	21%	-4%
'Current only'	Base	25%	17%	20%	-5%

Profitability for KZN Water is better under the 'current only' scenario with lower expansion than under the 'all future' scenario. The higher capital cost assumption has a significantly negative impact on profitability for KZN Water. It remains profitable but only marginally so under this assumption.

Table 18: Profit or loss as a percentage of revenue between 2022 and 2024 for Bloem Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
'All future'	Base	11%	5%	7%	-4%
'All future'	High	11%	3%	5%	-5%
'All future'	Low	11%	7%	12%	1%
'Current only'	Base	11%	3%	5%	-6%

Profitability for Bloem Water is better under the 'all future' scenario with higher expansion than under the 'current only' scenario. This is primarily because the 'all future' scenario results in a greater improvement in collection rates and allows for greater economies of scale in O&M costs. The higher capital cost assumption results in lower profitability, but profitability remains positive under all scenarios.

Table 19: Profit or loss as a percentage of revenue between 2022 and 2024 for Magalies Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
'All future'	Base	4%	-28%	-33%	-37%
'All future'	High	4%	-30%	-36%	-40%
'All future'	Low	4%	-27%	-31%	-35%
'Current only'	Base	4%	-25%	-30%	-34%

The decline in profitability for Magalies Water is more significant under the 'all future' scenario than under the 'current only' scenario. The higher capital cost assumption results in a further negative impact.

Table 20: Profit or loss as a percentage of revenue between 2022 and 2024 for Lepelle Northern Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
'All future'	Base	12%	-2%	-2%	-13%
'All future'	High	12%	-5%	-6%	-17%
'All future'	Low	12%	-1%	1%	-11%
'Current only'	Base	12%	-3%	-3%	-14%

The decline in profitability for Lepelle Northern Water is lower under the 'all future' scenario with greater expansion than under the 'current only' scenario. This is because expansion is positive for Lepelle Northern, resulting in efficiencies and an improvement in collection rates. The higher capital cost assumption results in a further decline in profitability compared to the base cost assumption.

Table 21: Profit or loss as a percentage of revenue between 2022 and 2024 for Amatola Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
'All future'	Base	-46%	-44%	-29%	17%
'All future'	High	-46%	-48%	-33%	13%
'All future'	Low	-46%	-42%	-26%	20%
'Current only'	Base	-46%	-49%	-47%	0%

The decline in profitability for Amatola Water is dramatically higher under the 'current only' scenario, with more limited expansion, than under the 'all future' scenario. This is due largely to the positive impact that supplying future demand in Nelson Mandela Bay has under the 'all future' scenario. Without this, Amatola Water sees an insufficient increase in scale to result in O&M cost efficiencies, and lower efficiencies in overheads costs. It also sees a greater decline in collection rates.

Table 22: Profit or loss as a percentage of revenue between 2022 and 2024 for Overberg Water under various scenarios

Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
'All future'	Base	-1%	-42%	-38%	-37%
'All future'	High	-1%	-45%	-42%	-41%
'All future'	Low	-1%	-40%	-36%	-35%
'Current only'	Base	-1%	-16%	-19%	-18%

The decline in profitability for Overberg Water is significantly lower under the 'current only' scenario with more limited expansion than under the 'all future' scenario. The 'current only' scenario retains some efficiency improvements on O&M and overheads costs, and also allows Overberg Water to retain a higher degree of cross-subsidisation of its potable water business from the sale of non-potable water.

3.11 ABILITY TO FINANCE CAPITAL EXPENDITURE REQUIRED

The extent to which each water board can finance the capital expenditure required under the 'all future' scenario with the base capital unit cost assumption is presented in the tables that follow. No grant funding has been assumed in this analysis. Comment on the magnitude of capital grants required to close funding gaps is provided later in this section. Recall from Section 2.3 that Free Cash Flow is the projected cash flow after catering for normal operating expenditures, with adjustments made for servicing and repayment of existing debt; retention of cash for expenditure on small capital works; and retention of cash in a liquidity reserve.

Table 23: Capital finance mix for Rand Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	25 810	33 476
Reserves	7 253	-
Borrowing	-	-
Gap	-	-
Total	**33 063**	**33 476**
Gap as % of total	0%	0%

Rand Water can finance the capital expenditure required out of a mix of reserves and free cash flow.

Table 24: Capital finance mix for KZN Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	10 351	16 549
Reserves	6 924	1 834
Borrowing	-	-
Gap	-	-
Total	**17 275**	**18 383**
Gap as % of total	0%	0%

KZN Water can finance the capital expenditure required out of a mix of reserves and free cash flow.

Table 25: Capital finance mix for Bloem Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	430	1 891
Reserves	4 779	1 751
Borrowing	-	1 757
Gap	-	-
Total	**5 209**	**5 399**
Gap as % of total	0%	0%

Bloem Water can finance the capital expenditure required out of a mix of reserves and free cash flow in the first 10 years. In the second 10 years, it must borrow an average of R178 million per annum to finance the

capital expenditure required. The analysis suggests that Bloem Water has the Free Cash Flow required to repay this debt. However, the willingness of lenders to lend to the water board is likely to depend on the extent to which it can strengthen its balance sheet by reducing trade receivables and payables. If Bloem cannot raise the borrowing finance indicated, it will have a funding gap of 33% of the required capital expenditure in the second decade.

Table 26: Capital finance mix for Magalies Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	-	-
Reserves	2 547	-
Borrowing	-	-
Gap	1 777	4 715
Total	**4 325**	**4 715**
Gap as % of total	41%	100%

Magalies Water can make use of some reserves to finance capital expenditure in the first decade, but these are depleted by the second decade. Its poor collection rate and operating deficits mean that it has no free cash flow available. It can finance only 28% of the capital expenditure required under the 'all future' scenario with the base capital unit cost assumption over the full 20-year period.

Table 27: Capital finance mix for Lepelle Northern Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	-	168
Reserves	2 962	-
Borrowing	-	-
Gap	2 935	6 089
Total	**5 897**	**6 257**
Gap as % of total	50%	97%

Lepelle Northern Water can make use of some reserves to finance capital expenditure in the first decade, but these are largely depleted by the second decade. It generates a very small amount of free cash in the second decade but can finance only 26% of the capital expenditure required under the 'all future' scenario with the base capital unit cost assumption over the full 20-year period.

Table 28: Capital finance mix for Amatola Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	-	-
Reserves	1 657	-
Borrowing	-	-
Gap	1 043	2 721
Total	**2 700**	**2 721**
Gap as % of total	39%	100%

Amatola Water can make use of some reserves to finance capital expenditure in the first decade, but these are depleted by the second decade. Its large operating deficits mean that it has no free cash flow available. It can finance only 31% of the capital expenditure required under the 'all future' scenario with the base capital unit cost assumption over the full 20-year period.

Table 29: Capital finance mix for Overberg Water under the 'all future' expansion scenario and base capital cost assumption

Rmillion	**2023 to 2032**	**2033 to 2042**
Free Cash Flow	-	-
Reserves	69	-
Borrowing	-	-
Gap	402	593
Total	**470**	**593**
Gap as % of total	85%	100%

Overberg Water has only a very small quantum of reserves available for financing capital expenditure before it reaches liquidity limits. Its large operating deficits mean that it has no free cash flow available. It can finance only 7% of the capital expenditure required under the 'all future' scenario with the base capital unit cost assumption over the full 20-year period.

The tables above showed the capital finance mix for the 'all future' scenario with the base unit capital cost assumption. Table 30 below now shows the funding gap in each water board under both the 'current only' and 'all future' scenarios, and with all three unit capital cost assumptions.

Table 30: Funding gaps as % of total capital expenditure required for each of the seven water boards under all expansion and cost scenarios

Expansion scenario	**'Current only'**			**'All future'**		
Unit capital cost assumption	**Low**	**Base**	**High**	**Low**	**Base**	**High**
Rand	0%	0%	0%	0%	0%	0%
KZN	0%	0%	10%	0%	0%	26%
Bloem	0%	0%	18%	0%	0%	39%
Magalies	38%	59%	74%	57%	72%	82%
Lepelle Northern	53%	69%	80%	61%	74%	83%
Amatola	0%	0%	25%	54%	69%	80%
Overberg	10%	36%	57%	91%	94%	96%

Comment on each water board is provided below.

- *Rand* can finance all capital expenditure required under both expansion scenarios and with all unit capital cost assumptions.
- *KZN and Bloem* face financing gaps under both expansion scenarios with the higher unit capital cost assumptions. Bloem must finance a portion of its capex through borrowing under the 'current only' scenario with higher cost and under the 'all future' scenario with base costs or higher costs. If it cannot borrow due to issues on its balance sheet, the funding gaps under these three scenarios increase to 18%, 17% and 48% of capital expenditure required respectively.

- *Magalies* and *Lepelle Northern* have large capital finance gaps under all expansion scenarios and with all unit capital cost assumptions.
- *Amatola* and *Overberg* have large capital finance gaps under the 'all future' expansion scenario with all unit capital cost assumptions. They can finance their capital needs under the 'current only' expansion scenario under the low and base capital unit cost assumptions but have financing gaps under the 'current only' scenario with the high unit capital cost assumption.

The analysis above has assumed no funding from RBIG. Table 31 below shows the magnitude of RBIG funding that would be required to close the capital finance gaps.

Table 31: Total capital finance gap over 20 years in each of the seven water boards compared to current RBIG funding

Expansion scenario	**'Current only'**			**'All future'**		
Unit capital cost assumption	**Low**	**Base**	**High**	**Low**	**Base**	**High**
Rand	-	-	-	-	-	-
KZN	-	-	4 983	-	-	14 094
Bloem	-	-	1 680	-	-	6 455
Magalies	1 563	3 700	7 227	3 376	6 492	11 572
Lepelle Northern	3 325	6 644	12 064	4 840	9 024	15 845
Amatola	-	-	567	1 915	3 764	6 789
Overberg	7	36	87	631	995	1 590
Total	**4 895**	**10 380**	**26 608**	**10 762**	**20 275**	**56 344**
Total per annum	**245**	**519**	**1 330**	**538**	**1 014**	**2 817**
Current RBIG allocation	5 431	5 431	5 431	5 431	5 431	5 431
Funding required as % of current RBIG allocation	5%	10%	24%	10%	19%	52%

R5.4 billion is allocated to RBIG for 2022[2]. The analysis above suggests that between 10% and 52% of this amount per annum would be required between 2023 and 2042 on average under the 'all future' expansion scenario, depending on what capital costs prove to be. Between 5% and 24% is required under the 'current only' scenario. If Bloem Water is not able to borrow due to its weak balance sheet, the RBIG required increases to a maximum of 74% of current under the 'all future' scenario and 33% of current under the 'current only' scenario.

The magnitude of grant funding required to close the capital finance gaps is therefore relatively modest, lower than current funding available. This suggests that, overall, *funding capital is not the most pressing issue related to the expansion of water boards to provincial boundaries. The issue rather is the current poor financial performance of several of the water boards, with this potentially compounded in some cases by expansion.*

[2] This is for both the direct and indirect portion of the grant. The indirect portion alone is R2.1 billion. Under an expansion scenario, the water boards will be supplying a larger share of bulk water and so it has been assumed that the indirect portion of the grant would increase. Capital expenditure needs have therefore been compared to the full grant allocation.

3.12 POTENTIAL IMPROVEMENT IF COLLECTION RATES ARE STRENGHTENED

Bloem, Magalies and Lepelle Northern Water currently have very low collection rates, according to estimates made based on their AFS, of 78%, 62% and 84% respectively. KZN Water also has a collection rate that is slightly below a benchmark of 95%. The impact of improved collection rates on profitability and ability to finance capital in these four water boards is presented in this section. In all cases, an improvement to 95% was assumed. Results are presented for the 'all future' scenario under the base unit capital cost and high unit capital cost assumptions. These first has been used as the base case for most results presented in this report. The second has the largest funding gaps.

The impact on profitability and ability to finance capital expenditure for KZN Water is shown in Table 32and Table 33 below.

Table 32: Profit or loss as a percentage of revenue between 2022 and 2024 for KZN Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
Current	'All future'	Base	25%	15%	17%	-8%
95%	'All future'	Base	24%	18%	20%	-4%
Current	'All future'	High	25%	12%	3%	-23%
95%	'All future'	High	24%	14%	5%	-19%

Table 33: Funding gap in Rmillions and as a % of total capital expenditure for KZN Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	Funding gap (Rmillions)	Funding gap as a % of capital expenditure required
Current	'All future'	Base	0	0%
95%	'All future'	Base	0	0%
Current	'All future'	High	14 049	50%
95%	'All future'	High	11 275	40%

An improvement in collection rate to 95% reduces the decline in profitability observed for KZN Water, but a funding gap remains under the high unit capital cost assumption, although the size of the gap is reduced.

The impact on profitability and ability to finance capital expenditure for Bloem Water is shown in Table 34 and Table 35 below.

Table 34: Profit or loss as a percentage of revenue between 2022 and 2024 for Bloem Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
Current	'All future'	Base	11%	5%	7%	-4%
95%	'All future'	Base	10%	21%	27%	16%
Current	'All future'	High	11%	3%	5%	-5%
95%	'All future'	High	10%	19%	24%	14%

Table 35: Funding gap in Rmillions and as a % of total capital expenditure for Bloem Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	Funding gap (Rmillions)	Funding gap as a % of capital expenditure required
Current	'All future'	Base	0	0%
95%	'All future'	Base	0	0%
Current	'All future'	High	6 445	39%
95%	'All future'	High	0	0%

The profitability of Bloem Water improves substantially if it improves it returns its collection rate to 95%. It becomes very profitable and can finance all capital expenditure required, even under the higher capital unit cost scenarios. It does not require any borrowing under these scenarios and is able to finance all capital expenditure using Free Cash Flow and reserves.

The impact on profitability and ability to finance capital expenditure for Magalies Water is shown in Table 36 and Table 37 below.

Table 36: Profit or loss as a percentage of revenue between 2022 and 2024 for Magalies Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
Current	'All future'	Base	4%	-28%	-33%	-37%
95%	'All future'	Base	4%	-4%	-6%	-10%
Current	'All future'	High	4%	-30%	-36%	-40%
95%	'All future'	High	4%	-6%	-9%	-13%

Table 37: Funding gap in Rmillions and as a % of total capital expenditure for Magalies Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	Funding gap (Rmillions)	Funding gap as a % of capital expenditure required
Current	'All future'	Base	6 492	72%
95%	'All future'	Base	5 842	65%
Current	'All future'	High	11 572	82%
95%	'All future'	High	10 919	77%

Improving collection rate reduces the losses incurred by Magalies Water significantly, but it still incurs operating losses. The size of the funding gap is reduced but still remains substantial.

The impact on profitability and ability to finance capital expenditure for Lepelle Northern Water is shown in Table 38 and Table 39 below.

Table 38: Profit or loss as a percentage of revenue between 2022 and 2024 for Lepelle Northern Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	2022	2032	2042	Change 2022 to 2042
Current	'All future'	Base	12%	-2%	-2%	-13%
95%	'All future'	Base	12%	0%	8%	-3%
Current	'All future'	High	12%	-5%	-6%	-17%
95%	'All future'	High	12%	1%	-5%	-17%

Table 39: Funding gap in Rmillions and as a % of total capital expenditure for Lepelle Northern Water under 'all future' scenario and base and high unit capital cost assumptions, with improved collection rate

Collection rate assumption	Expansion scenario	Capital unit cost assumption	Funding gap (Rmillions)	Funding gap as a % of capital expenditure required
Current	'All future'	Base	9 024	74%
95%	'All future'	Base	6 421	53%
Current	'All future'	High	15 845	83%
95%	'All future'	High	13 011	79%

Improving collection rate takes Lepelle Northern Water from a loss to a profit position by 2042. The size of the funding gap is reduced but still remains substantial.

3.13 INSTITUTIONAL CAPACITY AND GOVERNANCE IN THE WATER BOARDS

A detailed assessment of the institutional capacity and governance in the water boards is outside the scope of this study, but some comment is provided below based on available data.

Table 40: Staffing at the seven water boards in 2022 according to annual reports

	Total staff	Professional and skilled staff	Total staff per kl potable water sold	% of staff that are professional and skilled
Rand	3 437	2 246	2.4	65%
KZN	1 263	935	2.2	74%
Bloem	391*/1 015	135*	7.3	35%*
Magalies	308*/ 592	144*	5.7	47%*
Lepelle Northern	452	241	6.0	53%
Amatola	287	126	11.6	44%
Overberg	62	15	78.2	24%

*Indicates prior to the absorption of Sedibeng Water for Bloem and Magalies. Sedibeng had 908 staff when it was disestablished. It has been assumed that 69% of these were transferred to Bloem and the remaining 31% to Magalies, based on the way in which the employee related costs of the former Sedibeng were allocated between the two in the disestablishment report.

Staffing levels per kl of potable water sold once again reflect the efficiencies due to scale noted elsewhere in this report. The allocation of Sedibeng staff between Bloem and Magalies in the table is an estimate, but the huge organisational impact of taking on these staff is clear. Based on these estimates, Bloem increased its staffing by 159% after taking over a portion of Sedibeng, and Magalies by 92%.

There are concerns with governance at some of the water boards. Several indicators in this regard are presented below. Note that this data is from 2022 and there may have been some change in some of these indicators.

Table 41: Governance indicators for the seven water boards

	2020/21 audit result	Board	CEO	CFO
Rand	Unqualified with findings	September 2022	5-year contract ended 31 March 2023	5-year contract
Umgeni	Unqualified with findings	April 2023	Acting	Acting
Mhlathuze	Unqualified with findings	November 2022	5-year contract, ends 30 April 2023	5-year contract
Bloem	Unqualified with findings	March 2023	5-year contract, ends 23 May 2023	5-year contract
Magalies	Clean	Interim board	5-year contract, ends 31 December 2022	5-year contract
Lepelle Northern	Unqualified with findings	August 2025	Acting	Acting
Amatola	Qualified with findings	Interim board	Acting	Acting
Overberg	Clean	March 2032	5-year contract, ends 31 December 2022	5-year contract

In her report on water boards' audit results for 2020/21, the Auditor-General (AG) noted that seven water boards (Amatola Water, Bloem Water, Lepelle Northern Water, Mhlathuze Water, Rand Water, Sedibeng Water and Umgeni Water) did not comply with key legislation, which resulted in material findings being reported on compliance with legislation. The main areas of non-compliance were quality of financial statements, procurement and contract management, expenditure management, consequence management and revenue management (AGSA, 2022). Leadership instability at Amatola Water and Umgeni Water were identified as key concerns, resulting in slow responses to recommendations made by the AG in previous periods.

There were several investigations by the Special Investigations Unit (SIU) related to water boards noted in 2022 (DWS, 2022):

- A completed investigation related to Mhlathuze Water, resulting in a criminal case referred to law enforcement and the resignation of officials concerned.
- Two in-progress investigations in Lepelle Northern Water with allegations of procurement processes not being followed and corruption.
- One in-progress investigation in Umgeni Water with allegations of maladministration and corruption.
- New investigation in Lepelle Northern Water related to procurement irregularities.
- New investigation in Amatola Water related to procurement irregularities and corruption.

In sum, there are governance concerns in several of the water boards, most notably Umgeni, Mhlathuze, Lepelle Northern and Amatola.

CHAPTER 4: CONCLUSIONS

This study has undertaken an assessment of the impact of expansion to provincial boundaries on the finances of water boards and, specifically, their ability to finance the capital expenditure required.

Key uncertainties related to the expansion of water boards to provincial boundaries remain. It is not clear whether municipalities will in fact choose to enter into bulk supply agreements with water boards, even if the mandated areas of supply for those water boards are expanded. Assuming that water boards remain responsible largely for regional water schemes, it is also not certain what proportion of future water demand in each province will be met through regional schemes, as opposed to local schemes or local supply.

Provincial water boards are a step away from boundaries that are aligned with water system logic and will introduce complexities in administering cross-boundary supply of bulk water. The extent of assets to be transferred between water boards must still be determined. A move to provincial boundaries will result in some cross-border supply of bulk water between water boards, and the contractual arrangements for this must still be clarified.

There are other uncertainties related to specific water boards. Bloem Water and Magalies Water have only recently taken over portions of the former Sedibeng Water. The impact of this is still emerging. This analysis has simply added the AFS of the portion of Sedibeng Water allocated to each to the AFS of Bloem and Magalies. This has a strong negative impact on both, particularly regarding collection rates, outstanding trade receivables and trade payables. This has been most strongly felt in Bloem Water. The costs or potential efficiency losses associated with the amalgamation of Umgeni Water and Mhlathuze Water to form KZN Water are unknown and have been excluded from the study.

Within the constraints of these uncertainties, the study draws the following conclusions.

The impact of expansion in terms of the increase in the volume of bulk potable water supplied is different in each water board. The impact of expanding water board operations significantly in the proposed provincial footprints is far greater in the smaller water boards than it is for the larger two.

Expansion to provincial boundaries impacts water boards' finances through several mechanisms, some related to changes in the profile of the areas supplied, and some related to scale. Regarding the profile of the areas served:

- If water boards expand into more *rural* areas, their *O&M costs* are likely to increase; and vice versa if they expand into more urban areas.
- If water boards expand into areas with *lower capacity municipalities*, the overall *fiscal effort* that the water boards' municipal customers apply in collecting debt from their customers will decline, resulting in a higher likelihood of non-payment of water board debt by municipal customers, and a decline in current *collection rates*.
- If water boards expand into areas with *poorer economic profiles*, the overall *fiscal capacity* of municipal customers will decline due to a decline in the affordability of water tariffs for municipal customers, again resulting in higher likelihood of non-payment of water board debt by municipalities, and a decline in current *collection rates*.

Regarding scale, analysis suggests that there are some *economies of scale to be gained on overheads and O&M costs* as water boards expand. In some cases, these costs are already relatively low and so the extent of efficiencies due to scale may be limited. The extent to which theoretical improvements in efficiency due to scale will in fact manifest in reality is uncertain. The current unit operating costs of water boards suggest that

that there may be a scale at which a water board is too small to be viable. However, expansion alone is not a solution to viability and its impacts will depend on the profile of the area being expanded into.

These factors are complex and interact in different ways in each water board. Overall, the study finds that:

- *The impact of expansion on Rand Water's finances is relatively small*. Rand Water already supplies a large proportion of the water in its proposed provincial footprints. It experiences negative impacts due to expansion into more rural areas and a small decline in collection rates, but these are compensated for by efficiency improvements due to expansion.
- *Expansion has a negative effect on KZN, Magalies and Overberg:* these three water boards expand into areas that are more rural, and with likely lower fiscal effort and fiscal capacity. These negative impacts can be compensated for to some extent by increased efficiencies due to scale over time, but overall profitability declines with expansion for these three water boards. *KZN remains profitable after expansion, but less profitable than current*. Its profitability declines significantly if the capital costs of expansion are higher. *Magalies and Overberg are not profitable currently* (once Magalies' collection rate is accounted for) and become less so if they expand.
- *Expansion has a positive effect in Bloem, Lepelle Northern and Amatola*, but the reasons for this are somewhat different in each.

  Lepelle Northern expands into areas that are more urban and with assumed higher fiscal effort. This reduces its O&M costs and improves its collection rates. Lepelle Northern is not currently profitable, however (once its collection rate is accounted for) and remains so under an expansion scenario.

  The positive impact in Bloem is largely due to an improvement in collection rate due to improved fiscal capacity linked to increased affordability of tariffs. This is, however, because Bloem Water's tariffs are very high. The affordability improvement is because its new municipal customers purchase relatively low proportions of their overall water demand from Bloem Water compared to its existing customers. As a result, their end-user water tariffs are more affordable than those in Bloem Water's existing customers. While this finding suggests that expansion is good for Bloem Water, it highlights the current unaffordability of Bloem Water's bulk tariffs. Bloem Water is currently not profitable after its poor collection rate linked to the incorporation of a portion of Sedibeng Water is accounted for. The analysis suggests that the expansion may improve things somewhat, but this finding should be treated cautiously given the reasons for the improved collection rate outlined here.

  Both the factors at play in Lepelle Northern and those at play in Bloem influence the result in Amatola. Its proposed expansion takes it into areas with stronger fiscal effort, as long as the expansion includes Nelson Mandela Bay. It also sees an improvement in affordability, as it takes on new customers that purchase a relatively small share of their total bulk water requirements from Amatola, which has high bulk tariffs. As for Bloem, the unaffordability of the Amatola bulk water tariffs is highlighted here. Amatola Water, however, is not currently profitable and remains unprofitable if it expands.

Regarding capital financing, the study concludes that **there are significant capital funding gaps in four of the seven water boards**, namely Magalies Water, Lepelle Northern Water, Amatola Water and Overberg Water. Rand can finance all of the capital expenditure required for expansion to provincial footprints, and KZN and Bloem can do so under low or median unit capital cost assumptions, but not under high unit capital cost assumptions. Bloem's ability to finance its capital expenditure assumes that it can raise some debt finance. The analysis suggests that it will have the cash flow to do this, but this study has not looked at the repayment of existing trade receivables or trade payables. Lenders are likely to be unlikely to want to lend to Bloem Water without an improvement in its balance sheet after he negative impact of incorporating a portion of Sedibeng Water. If it cannot in fact borrow, then Bloem Water will face more extensive funding gaps.

The magnitude of RBIG funding required to close these gaps is relatively modest, compared to current allocations in the Division of Revenue Act. The availability of capital finance does not, therefore, emerge as a key issue related to expansion in the study, assuming that national government continues to be willing to grant finance regional bulk infrastructure.

Overall, the study concludes that it is not in fact the impact of expansion that is cause for concern with water board financial performance. While expansion may have a positive or negative effect, five of the seven 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. **Expanding the mandated areas of supply for these water boards is largely a moot point unless their current financial performance, particularly regarding current collection rates and expenditure efficiencies, can be improved**.

- *Bloem Water* was a strong performer prior to the incorporation of a portion of Sedibeng Water but that incorporation has had an extremely negative effect on its current collection rate, trade receivables and trade payables. It is estimated that taking over the portion of Sedibeng Water decreased Bloem's collection rate from 98% to only 78%, extraordinarily low and simply not sustainable. The analysis suggests that Bloem Water can return to a strongly profitable position if it can increase its collection rate to 95%. This will require a change in the payment behaviour of the municipalities that it took over from Sedibeng Water. Bloem's average unit operating cost after incorporating Sedibeng is also very high suggesting the need for efficiency improvements.
- For *Lepelle Northern* Water, the issue relates largely to current collection rates, which is estimated to be only 84%. This is not sustainable. The analysis suggests that if the collection rate can be increased to 95%, Lepelle Northern can be profitable, although it is likely to continue to require capital financing support. There are also concerns regarding governance at Lepelle Northern that must be resolved.
- For *Magalies* Water, the issue appears to be a combination of the collection rate and current cost structure. The collection rate is estimated to be only 62% in Magalies after the absorption of a portion of Sedibeng Water. This is not sustainable and must be improved. However, the analysis suggests that increasing the collection rate to 95% is not sufficient alone to bring Magalies Water to a profitable position. Its unit operating cost is relatively high (see Figure 2) and it is likely to require improvements in efficiencies before it is able to achieve financial viability.
- For *Amatola* Water, available data suggests that current collection rate is not a concern, although levels of outstanding debt are high. The issue for Amatola appears to be primarily a very inefficient cost structure, with its unit operating costs very high compared to the other water boards. Amatola Water is currently not generating sufficient revenue to cover these very high costs but is unlikely to be able to increase its tariffs significantly without creating issues with affordability and non-payment. There are also concerns regarding governance at Amatola Water that must be resolved.
- Similarly, available data suggests that the cost structure for *Overberg Water* is not sustainable. Its unit operating costs are extraordinarily high. This is in part due to scale, but there also appear to be significant inefficiencies that must be resolved. Overberg Water currently seems to rely heavily on the cross-subsidisation of the provision of potable water by that of non-potable water.

No significant financial concerns were identified in the study for *KZN* Water, but there are governance issues at both Umgeni and Mhlathuze Water that must be resolved. No specific concerns related to *Rand* Water were identified in the study.

Regarding the question of whether service delivery will be improved by expanding the mandates of water boards to align with provincial boundaries, the answer is likely to be mixed.

- *Expanding Rand Water to cover the whole of Gauteng and Mpumalanga may result in an improvement in service delivery in these two provinces*. Rand Water is financially viable, its cost structure is comparatively efficient, and there are no key concerns relating to its institutional capacity or governance.
- *Expanding Umgeni and Mhlathuze Water to cover the whole of the KwaZulu-Natal province also may result in improved service delivery, if governance issues can be resolved, but this is subject to a better understanding of the costs and organisational impacts of amalgamating Umgeni and Mhlathuze Water.* These impacts are likely to be negative and will need to be carefully managed if the combined entity is to remain functional and therefore able to provide improved service delivery. This is a key uncertainty at present. At the very least, it is likely that the amalgamation will be destabilising initially.
- *Expanding Bloem Water to cover the Free State and Northern Cape provinces may result in improved service delivery if the current financial instability at Bloem Water related to the absorption of Sedibeng Water can be resolved.* This requires a dramatic improvement in collection rates and expenditure efficiencies.
- *Expanding Magalies, Lepelle Northern, Amatola and Overberg Water to provincial boundaries is unlikely to result in improved service delivery unless the existing financial and governance issues at these water boards can be resolved.*

Bloem, Magalies and Lepelle Northern in particular are relatively large water boards, currently supplying most of the bulk water to twenty-five municipalities. Their failure will certainly result in a collapse in service delivery in these municipalities, and so improving their current financial performance and governance is a key priority in order to secure service delivery going forward.

CHAPTER 5: RECOMMENDATIONS

The scope of this study assumed the introduction of provincial boundaries for water boards and the recommendations are all therefore based on that assumption. The negative impacts of provincial boundaries compared to boundaries aligned with water system logic in terms of the administrative complexity of managing cross-boundary water supply have been noted.

Five over-arching recommendations for DWS emerge from the study, as well as a recommendation regarding each of the proposed provincial water boards. The over-arching recommendations are:

13. Do not proceed with the expansion of water boards to provincial boundaries until they are well governed, organisationally sound and financially sustainable in their current areas of supply.
14. Continue to engage with other stakeholders to advance solutions to poor current collection rates in all water boards but in Bloem, Magalies and Lepelle Northern Water in particular. Ensuring payment of current accounts should be prioritised over the collection of outstanding debt, although repayment of outstanding debt is likely to be necessary before trade payables can in turn be settled.
15. Continue to engage with all water boards regarding expenditure efficiencies, but with particular focus on Bloem, Magalies, Amatola and Overberg.
16. Establish a clear set of principles to guide the transfer of assets between water boards due to the move to provincial boundaries and conduct a detailed assessment to determine which assets will be affected, before moving further with implementation.
17. Determine where cross-boundary supply of bulk potable water between water boards will be necessary under provincial boundaries and put bulk supply agreements in place to cover these.

The recommendations regarding each individual water board assume that the over-arching recommendations are implemented. The recommendations regarding each water board are:

18. Proceed with the proposed expansion of Rand Water to cover the entire Gauteng and Mpumalanga provinces.
19. The recent amalgamation of Umgeni Water and Mhlathuze Water is likely to incur costs and have organisational impacts. The expansion of the newly formed KZN Water to a provincial boundary should only proceed once the costs and organisational impacts of the amalgamation are known and have been adequately managed, and if there are no significant effects on performance resulting from the amalgamation. The newly formed KZN Water should delay taking on new municipal customers until any instability due to the amalgamation has been resolved.
20. Bloem Water has only recently taken over a large share of the former Sedibeng Water. Indications are that this has had an extremely negative impact on the performance of Bloem Water. The expansion of Bloem Water to cover the whole of the Free State and Northern Cape provinces should be delayed until these issues are resolved.
21. Magalies Water should not be expanded to cover the whole of the North West province until current issues with their financial viability are resolved, including resolving any declines in performance related to the recent incorporation of a share of Sedibeng Water. Magalies Water will face the most complexity with cross-border infrastructure and supply of water as the result of the introduction of provincial boundaries and these should be resolved prior to any change, in line with recommendations 4 and 5.
22. Lepelle Northern Water should not be expanded to cover the whole of the Limpopo province until current issues with their financial viability and governance are resolved.

23. Amatola Water should not be expanded to cover the whole of the Eastern Cape province until current issues with their financial viability and governance are resolved.
24. Overberg Water should not be expanded until current issues with their financial viability are resolved.

CHAPTER 6: REFERENCES

AGSA. 2022. Water boards report - FINAL. Retrieved from: https://www.agsa.co.za/Portals/0/Reports/Special%20Reports/Water%20board/Water%20Boards%20Report%20-%20FINAL%20(print)%20-%20QR%20code.pdf?ver=2022-09-14-091539-760.

DWS. 2022. Assessment of water boards in respect of mandate, institutional arrangement, governance, budget and operations. Presented to: Portfolio Committee on Water and Sanitation, 31 May 2022.

DWS. 2022a. Presentation to the Amanzi Bargaining Council. 2 November 2022.

DWS. 2011. Institutional reforms and re-alignment: the management of regional water infrastructure and the future role of regional water utilities.

DWS. 2016. Cost benchmarks for water services.

DWS. nd. Addressing the gaps in the provision of water and sanitation. Ministerial briefing to the National Council of Provinces.

Gibson, J. 2010. Operation and maintenance of rural water supplies: A review of sustainability factors and approaches. IRC Wash. Retrieved from: https://www.ircwash.org/sites/default/files/Gibson-2010-Operation.pdf

National Treasury. 2004. Local government capital asset management guideline. Retrieved from: https://www.westerncape.gov.za/text/2009/9/a_guide_to_municipal_financial_management_for_councillors.pdf.

Western Cape Government. 2009. A guide to municipal financial management for councillors. Retrieved from: https://www.westerncape.gov.za/text/2009/9/a_guide_to_municipal_financial_management_for_councillors.pdf

World Bank Blogs. 2013. 3 Innovative ways to manage rural water supply. Retrieved from: https://blogs.worldbank.org/water/3-innovative-ways-manage-rural-water-supply