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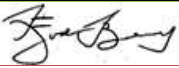
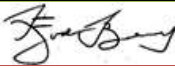
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Document control						
Report title		Water Reconciliation Strategy for Richards Bay and Surrounding Towns				
Document ID		109343	Project number		109343	
File path		P:\Projects\109343 Richards Bay Recon Strategy\03 Prj Delivery\09 Reports\Additional Reports\Literature Review Report.docx				
Client		Department of Water and Sanitation	Client contact		N van Wyk	
Re v	Date	Revision details/status	Prepared by	Author	Verifier	Approver
0	24 June 2014	Draft 1 – v0	Aurecon	EvdBerg	EvdBerg	EvdBerg
1	30 June 2014	Final	Aurecon	EvdBerg	EvdBerg	EvdBerg
Current Revision		Final				

Approval			
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DEPARTMENT OF WATER AND SANITATION

Directorate: National Water Planning

Water Reconciliation Strategy for Richards Bay and Surrounding Towns

LITERATURE REVIEW REPORT

June 2014

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This report is to be referred to in bibliographies as:

Department of Water and Sanitation, South Africa. 2014. *Literature Review Report*. Prepared by Aurecon South Africa (Pty) Ltd as part of the Water Reconciliation Strategy for Richards Bay and Surrounding Towns.

Department of Water and Sanitation
Directorate: National Water Planning

**WATER RECONCILIATION STRATEGY FOR RICHARDS BAY AND
SURROUNDING TOWNS**

APPROVAL

Title : Literature Review
Consultants : Aurecon South Africa (Pty) Ltd
Report status : Final
Date : June 2014

STUDY TEAM

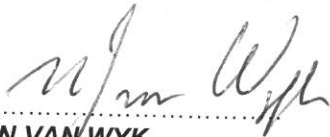
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1 Reference documents sourced

1.1 Documents

The documents listed and discussed in Section 2 below are the main references for the Richards Bay Reconciliation Strategy study. They include reconciliation strategies for other nearby municipalities, planning studies for development of water-related infrastructure in the region, historical data for treatment and usage volumes, academic studies on the relevant water resources, operating rules and programmes for water-related infrastructure, and strategies for water resources in the country.

1.1 Sources

The documents were obtained from a variety of sources, primarily the City of uMhlathuze (abbreviated to City of uMhlathuze in the list below), the Department of Water and Sanitation (DWS), and Mhlathuze Water (MW). Other sources included stakeholders in the area such as key industries, consultants who have carried out studies in the area, and academic institutions.

2 Review

Each reference document has been reviewed in terms of the content of the document, as well as in terms of its relevance for the Reconciliation Strategy Study, as indicated in **Table 2-1** below.

Table 2-1 | Review of Reports

No	Document	Review notes
1.	Client: DWS Date: June 2011 Document Title: Development of a Reconciliation Strategy for All Towns in the Eastern Region: First Order Reconciliation Strategy for the Richards Bay WSSA Author: Water for Africa	Document content This report documents the findings of the water situation assessment for the Richards Bay and the surrounding areas that are supplied from the Mhlathuze River, and proposes a Reconciliation Strategy. It formed part of a suite of reports that were produced for towns falling outside metropolitan municipal areas. Relevance to the Study While the evaluation has limitations because it addressed only some water requirements and at a fairly simplistic level, it provides the study with some useful background information.
2.	Client: DWA Date: Nov 2009 Document Title: Mhlathuze Water Availability Assessment Study Author: WRP	Document content This is a set of seven reports. This study focuses on a technical water resource analysis of the Mhlathuze, Amatikulu and Mlalazi river basins. It addresses Rainfall Data Analysis, Water Use, Water Requirements and Return Flows, Hydrology Assessment (including Groundwater and Water Quality), Monitoring Assessment, Modelling Approach and Procedures for Water Availability Assessment Studies and Systems Analysis. Relevance to the Study These are probably the most relevant reports for the study. The Water Resources Yield Model and Water Resources Planning model descriptions will further prove particularly useful.
3.	Client: Mhlathuze Water Date: Jun 2010	Document content

No	Document	Review notes
	Report: Integrated Water Services Master Planning – Final Planning Report Author: Bigen Africa	<p>This is a fairly standard IWSMP. It provides a general overview of mainly the uMhlathuze Municipality supply area and relevant statistics, elaborates on water sources, spatial planning and water demands. It further addresses Master Planning Scenarios and presents the Master Plan.</p> <p>Relevance to the Study The report is a source of information on water sources, use, demographics and water use. It further provides information on water supply schemes envisaged by Mhlathuze Water.</p>
4.	Client: DWA Date: Nov 2009 Document Title: Water Reconciliation Strategy for the KwaZulu-Natal Coastal Metropolitan Areas: Executive Summary Author: WRP <i>et al</i>	<p>Document content This provides an abridged description of the Water Supply Reconciliation Strategy that was developed during the Water Reconciliation Strategy Study for the KwaZulu Natal Coastal Metropolitan Areas, which consists of the area from Pietermaritzburg to Durban from west to east and from Kwadukuza (Stanger) in the north to Amanzimtoti in the south. It includes the eThekweni Metropolitan and the Msunduzi and Ilembe Municipalities. The main bulk water resources comprises the Mgeni, Mdloti, and Mvoti river systems with support by a transfer scheme sourcing water from the Mooi River.</p> <p>Relevance to the Study This provides an example of the only Reconciliation Strategy Study in KwaZulu-Natal which had previously been undertaken for a metropolitan area.</p>
5.	Client: City of Mhlathuze Date: 2012 Document Title: uMhlathuze IDP 2012-2017 + 2013/14 Review Author: City of uMhlathuze	<p>Document content The 2012 IDP, as well as the updated IDP provides background, an approach and projects for development over the 5-year period from 2012.</p> <p>Relevance to the Study The IDPs provides background information, information on growth and development, spatial planning information and information on a variety of municipal project being planned, some also in relation to initiatives of bulk industrial users.</p>
6.	Client: Mhlathuze Water Date: 2013 Document Title: Mhlathuze Water – historical data 2008-2013 Author: Mhlathuze Water	<p>Document content This is an Excel spreadsheet containing historical water use information of Mhlathuze Water's customers.</p> <p>Relevance to the Study Extremely relevant for especially the Water Requirements Task.</p>
7.	Client: City of uMhlathuze Date: 2013 Document Title: 5-Year Strategic Management Plan for the Reduction of Non-Revenue Water in the City of Umhlathuze Author: City of uMhlathuze	<p>Document content This is a strategic Non-Revenue Water Reduction Master Plan that covered a 5-year outlook in terms of minimizing water losses through the Municipality's area of supply. This Master Plan is concerned with volumes only – revenue collection and debt analysis did not form part of the scope of this appointment. The study determined the baseline situation, identified areas of possible NRW reduction, prepared a consolidated NRW Reduction Intervention programme, establish targets in terms of NRW by volume, addressed internal NRW reduction programme requirements and identified problems and corrective actions for the Municipality's billing database. The evaluation covered Richards Bay, Empangeni, Esikhaleni and Ngwelezane.</p> <p>Relevance to the Study This report will be very important for the evaluation of potential WC/WDM interventions in the strategy area, as it seems to have addressed WC/WDM quite comprehensively.</p>

No	Document	Review notes
8.	<p>Client: RBIDZ Date: 2012 Document Title: Preliminary Design Report on Provision of Civil Engineering Services for Development of Phase 1a Author: Ilifa Africa Engineers</p> <p>Client: RBIDZ Date: July 2013 Document Title: Preliminary Design Report – IDZ, Alton North Phase 1F Author: Endecon Ubuntu</p> <p>Client: RBIDZ Date: October 2013 Document Title: Richards Bay IDZ 50-year Integrated Master Plan, Engineering Services Report: Phase 2 Author: SMEC</p>	<p>Document content Concept design and the relevant design criteria in conformance with the requirements of the Richards Bay Industrial Development Zone and the Local Authority. This reflects the scope of work required for the installation of the civil engineering services to this development.</p> <p>Relevance to the Study Provides information related to potential future industrial expansion, the location thereof and the potential extent of development and possible additional future industrial water requirements.</p> <p>Document content This preliminary design report addresses the civil engineering services required for the development.</p> <p>Relevance to the Study Provides information related to potential future industrial expansion, the location thereof and the potential extent of development and possible additional future industrial water requirements.</p> <p>Document content This Master Plan analysis involved a Zone Options Analysis that entailed the investigation of existing municipal infrastructure available for Industrial development for 10 identified zones within the confines of Umhlathuze and Mbonambi Municipality, as well as preliminary costing of the required bulk and internal infrastructure for each site. A conclusion was then made on the findings in the report, as well as recommendations on the most preferable sites for development from an engineering perspective, in terms of the services required. investigated:</p> <p>Relevance to the Study Provides information related to potential future industrial expansion, the location thereof and the potential extent of development and possible additional future industrial water requirements.to the Consultancy</p>
9.	<p>Client: City of uMhlathuze Date: 2014 Document Title: WSSA abstraction and treatment volumes for Mzingazi, Esikhaleni and Ngwelezane TW Author: WSSA</p>	<p>Document content These are 3 working spreadsheets received from WSSA containing information related to the WTWs they are managing for the municipality. These are:</p> <ul style="list-style-type: none"> • Abstraction and treatment volumes • Monthly performance Report for Water and Sewage Treatment Works • Rainfall 2008-2013 <p>Relevance to the Study Information related to the treatment of water at municipal WTWs and WWTWs. This will be used for the Water Requirements Task as well as for the Interventions Task.</p>
10.	<p>Client: DWAF Date: Mar 2004 Document Title: Internal Strategic Perspective: Usutu to Mhlathuze WMA Author: Tlou & Matji</p>	<p>Document content The report provides the DWS' perspective on water management in the Usutu To Mhlathuze Water Management Area in 2004.</p> <p>Relevance to the Study This report is now quite old but contains some background information that could still be useful.</p>

No	Document	Review notes
11.	Client: DWAF Date: Sep 2003 Document Title: Usutu to Mhlathuze WMA: Overview of Water Resources Availability and Utilisation Author: BKS	Document content This report is one of a series of similar reports covering all 19 water management areas in the country, and results directly from work performed in preparation of the First Edition National Water Resource Strategy. It provides an overview of the 2003 and expected future water resources situation in the Usutu to Mhlathuze WMA, highlights the key issues of relevance and provide broad strategies with regards to the management of water resources in the WMA. Relevance to the Study This report is focussed on a much larger area than the strategy area, is getting outdated and is of limited value.
12.	Client: DWAF Date: Jan 2003 Document Title: Mhlathuze Catchment: Ecological Reserve and Monitoring Programme Author: IWR Environmental	Document content During the 2002 Mhlathuze Monitoring study, additional Reserves were undertaken in the rest of the catchment and a detailed monitoring programme was designed. This report focusses on the design of the monitoring programme. The monitoring programme was addressed for the following parts of the catchment: <ul style="list-style-type: none"> • Rivers: Mhlathuze River, Nseleni River, Mfule River (9 IFR sites). • Lakes: Cubhu, Mzingazi, Nhlabane, Mangeza and Nsezi Lakes. • Estuaries: Mhlathuze, Nhlabane. Relevance to the Study This will be a very useful report for the Environmental Considerations Task to be undertaken, which is an evaluation of the gaps in the available information and the need for determination of the environmental flow requirements and the classification of the water resource.
13.	Client: Uthungulu DM Date: 2009 Document Title: Uthungulu District Municipality WSDP Author: Aurecon	Document content This report documents the review of the WSDP. An annual review of the WSDP must be carried out and is essentially an assessment of the progress made by the Municipality in attaining the goals and priorities set out by its existing water service development policies. The deliverables in accordance with the Terms of Reference for this review include: <ul style="list-style-type: none"> • Update the town master plans for KwaMbonambi, Buchanana, Mtunzini, Eshowe, Nkandla, Gingindlovu and Melmoth • Update the borehole development plan • Determine the district municipality's progress according to the master plan rollout • Compile the municipality's capital budget for completion of the remaining master planning • Update the WSDP document Relevance to the Study The report contains information related to current water use and potential further development of water supply from the City of UMhlathuze for water users located outside the City of uMhlathuze municipal area, but within the uThungulu DM area
14.	Client: DWA Date: Dec 2007 Document Title: Water Allocation Plan to Guide Compulsory Licensing in the Mhlathuze Catchment - Opportunities Report Author: Iliso Consulting <i>et al</i>	Document content The purpose of this section of the water use opportunities is to investigate the marketing opportunities for the HDI group in terms of Irrigation, Commercial Forestry, Mining and Industry. As far as irrigation is concerned a number of crops that are at present cultivated were investigated in terms of not only marketing opportunities but also as far as suitability for new entry farmers is concerned. Relevance to the Study As the focus of the study on irrigation will be very limited, the report holds little value for the study
15.	Client: DWA Date: Dec 2007	Document content This report outlines and calculates the current economic returns of use of water from the Mhlathuze River. This data is then used to estimate future growth on the assumption that water will be available.

No	Document	Review notes
	Document Title: Water Allocation Plan to Guide Compulsory Licensing in the Mhlathuze Catchment - Regional Economy Report Final Author: Iliso Consulting	Relevance to the Study The report provides information on the drivers of water growth and on the local and regional economy. Its water use predictions are outdated.
16.	Client: DWA Date: Dec 2012 Document Title: Mhlathuze Catchment: Modelling Support for Licensing Scenarios Study Author: WRP <i>et al</i>	Document content This was follow-on from the MWAAS study. The main objective was to provide support to the KZN DWA Regional Office to apply the above described model to assist with water reallocation in the catchment, provide analytical support in the management of the water resources and perform a support function in the evaluation of water use licenses. Relevance to the Study This documents the latest available modelling work, which will form the basis for the current 2014 modelling. They is therefore a key report
17.	Client: DWA Date: 2011 Document Title: First Stage Reconciliation Strategy for Middelbush WSA – Umlalazi Local Municipality Author: Water for Africa <i>et al</i>	Document content The Department of Water Affairs (DWA) has initiated a study to develop water reconciliation strategies for selected towns in the Eastern Region, with a view to addressing the towns which have, or may experience water supply deficits over the planning horizons. The objective of the study for the towns in the Eastern Region was to develop water reconciliation strategies for the selected towns to ensure effective and efficient use of the available water supplies, while determining optimal and sustainable ways to source additional water supplies for the selected towns. For the selected towns which were carried forward into Phase 2 of the study, more detailed assessments were undertaken in the development of their water reconciliation strategies. Relevance to the Study The rea falls partly in the Mhlathuze River catchment area and schemes have been conceptualised to obtain water from Goedertrouw Dam and transferred water, notably the Middelbush Water Supply Scheme in the future. The Middelbush Regional Water Supply Scheme area is supplied using the Thukela Transfer scheme abstraction works from where water is pumped to a water treatment works (WTW) which supplies the various villages in the Middelbush supply area. This is therefore particularly relevant to the future planning of the Thukela Transfer Scheme.
18.	Client: DWAF Date: Mar 2000 Document Title: Strategic Environmental Assessment for Water Use, Mhlathuze Catchment Author: DWAF	Document content Strategic Environmental Assessment of the Mhlathuze catchment undertaken by Departmental staff. Relevance to the Study Mostly outdated, but contains some useful summarised information.
19.	Client: DWAF Date: Dec 2001 Document Title: Mhlathuze Operating Rules and Future Phasing (MORFP), Main Report Author: BKS and Knight Piesold	Document content This study (MORFP), followed on from previous investigations of DWAF and Mhlathuze Water in 1998. The main tasks of the study were: <ul style="list-style-type: none"> • Update the surface hydrological database using all available rainfall data with the aim to improve the confidence of the streamflow time series that are used in the water resource models. • Undertake an assessment to determine the interchange between the groundwater and lakes. This was undertaken by specialists of the University of Zululand. • Determine and revise the water demand projections for existing and possible future users supplied from the system.

No	Document	Review notes
		<ul style="list-style-type: none"> Determine the system operating rule and in particular the operation of the transfer from the Thukela River. This also involved the re-evaluation of the yield capability of the system as a whole, as well as of selected components. Schedule the implementation of future augmentation schemes based on selected scenarios of demand projections <p>The list of reports published as part of this study are: Hydrology; Water Demand; Groundwater (Coastal Lakes); Water Demand Management; System Analysis; Water Quality; Phasing Analysis; Operating Rules and Main Report.</p> <p>Relevance to the Study Although several years old, some findings of this study still represents the latest information.</p>
20.	<p>Client: DWAF Date: Aug 2002 Document Title: Mhlathuze River Catchment WCDM Strategy Study, Main Report Author: WRP <i>et al</i></p>	<p>Document content The report provides a framework for a water conservation strategy which, when considered along with the possible further development of the water resources in the future, will ensure adequate and equitable allocation of these resources both for the present situation and for possible future development scenarios. Assessments were undertaken of potential water conservation measures applicable to specified user sectors and individual consumers on the basis of the following user sectoral consultation groups :</p> <ol style="list-style-type: none"> 1. Domestic and commercial; 2. Industry and mining; 3. Irrigation; and 4. Dryland agriculture (which includes both commercial and subsistence agriculture). <p>Relevance to the Study Mostly outdated</p>
21.	<p>Client: DWA Date: July 2012 Document Title: National Water Resource Strategy Author: DWA</p>	<p>Document content 2nd National Strategy developed for South Africa. Overarching core strategies have been developed for the 2nd Edition of the NWRS to address the water resource concerns and to guide future water management and development. These core strategies include outcome, tactical, water business and governance strategies and they set out a different approach to water resources management. They form the framework and context for specific technical and enabling strategies. The core strategies are aligned with the purpose of the NWRS as stated in the National Water Act.</p> <p>Relevance to the Study Generic guiding principles on water resource management, with succinct notes on KZN catchments.</p>
22.	<p>Client: Mhlathuze Water Date: Mar 2010 Document Title: Water Resources Analysis Study: Hydrological Yield Analysis Author: Arcus Gibb</p>	<p>Document content This entailed a water resources assessment study some systems located within the Usutu – Mhlathuze WMA. This focussed on analysing the water sources within the WMA to attain which sources have available yield for possible future allocation. The following relevant systems were analysed:</p> <ul style="list-style-type: none"> Klipfontein Dam within the Mfolozi River System; and Mfolozi River System. <p>Relevance to the Study This provides information relevant to the evaluation of the potential Mfolozi River interventions.</p>
23.	<p>Client: Mhlathuze Water Date: Apr 2010</p>	<p>Document content Evaluation of water demand of the Nsezi WTW to 2030, assessment of the existing works capabilities and design of a future upgrade to accommodate the 2030 requirements, beyond the 205 Ml/d treatment capacity. This includes an analysis of the existing raw water resources and its potential to supply the demand up to 2030.</p>

No	Document	Review notes
	Document Title: Nsezi WTW Study Future Growth for the 2030 Planning Horizon: Feasibility Report Author: Nathoo Mbeyane	Relevance to the Study Some information relative to the operation of the Nsezi WTW and other MW operational aspects
24.	Client: Mhlathuze Water Date: May 2013 Document Title: Development of an Operating Rule for the Mhlathuze Weir Author: Royal Haskoning DHV <i>et al</i>	Document content This describes system analysis for the Mhlathuze River catchment, and the assessment in terms of the hydrology, yields and possible pipeline conveyance from Goedertrouw Dam to improve system efficiency. The pipeline was assessed at conceptual level and a pipeline route was selected. The report further identifies the further potential need for a lower dam on the Mhlathuze River and/or a dam on the Mfule River, to boost yields and serve as in-stream reservoirs. The evaluation included the re-evaluation of the structural and general integrity of the abstraction weir. Relevance to the Study Very relevant as a potential WC/WDM intervention option.
25.	Client: DWA Date: Jul 2013 Document Title: National Water Policy Review – Water Policy Positions Author: DWA	Document content The mandate of the policy review is to determine any unintended oversight and gaps in the current water policies to provide amendment to address these. The key policy issues that need to be addressed are discussed in this policy review, with recommendations on revised or updated policy positions. Relevance to the Study It contains some interesting views on the recognition of historical entitlement to water under customary law and on the impact of climate change on water resources.
26.	Client: Mhlathuze Water Date: 2013 Document Title: Mhlathuze Water Annual Report 2012-2013 Author: Mhlathuze Water	Document content Report produced by MW on their activities during the 2012/13 financial year. Relevance to the Study The “Operational Performance” Chapter provides insight into the workings of MW, and specific information of some of their activities such as their Working for Water programme. It contains information on the Thukela Transfer Scheme / Middledrift Regional WWS, useful insight into operational efficiency and potential improvements, planned bulk water supply schemes and WC/WDM at schools.
27.	Client: DWA Date: Mar 2011 Document Title: Water Quality Planning Studies in Support of Water Quality Planning in the Mhlathuze WMA Author: DWA	Document content This is a report by DWA that: <ul style="list-style-type: none"> Provides a list of available reports and studies in the Mhlathuze WMA that addressed water quality issues; i.e. a list of titles together with concise descriptions of the listed documents’ contents; A methodology and processes followed in collection of the reports and relevant documents. Executive summaries of the identified reports are provided. Relevance to the Study Useful reference document for any water quality related issues.
28.	Client: DWAF Date: Feb 2004	Document content This report is the result of a survey of available water resources planning, management and modelling data and reports on the study area. Many organisations and individuals were liaised with during the compilation of this report, to obtain information and reports and to clarify

No	Document	Review notes
	<p>Document Title: Summary of Available Reports, Data and Water Resource-Related Models Relating to Catchment W100 (produced as part of the study: Development of the TOR for the Provision of Water Resource Modelling and Water Resource Evaluation Services Towards the Assessment of Water Availability in the Mhlathuze Catchment to Support Integrated Water Resources Planning)</p> <p>Author: Ninham Shand</p>	<p>issues. Summarised relevant details of the existing models were prepared, including their capabilities, their geographic coverages, dates of their calibration and other attributes and shortcomings. Summarised details of existing schemes and potential schemes for which modelling may be required in the W100 catchment area was also included.</p> <p>Relevance to the Study</p> <p>Mostly superseded by other reports, but still contains useful data sources and background information.</p>
29.	<p>Client: DWAF</p> <p>Date: 1994/5</p> <p>Document Title: Report on the Proposed Thugela-Mhlathuze River GWS</p> <p>Author: DWAF</p>	<p>Document content</p> <p>Thukela - Mhlathuze Transfer Scheme White Paper.</p> <p>Relevance to the Study</p> <p>Key information document on the Thukela Transfer Scheme.</p>
30.	<p>Client: n/a</p> <p>Date: unknown</p> <p>Document Title: Tugela transfer scheme</p> <p>Author: unknown</p>	<p>Document content</p> <p>Location maps and synopsis on the existing Emergency Transfer Scheme and the Future Planned Tugela Transfer Scheme.</p> <p>Relevance to the Study</p> <p>Useful for the Thukela Transfer Scheme intervention.</p>
31.	<p>Client:</p> <p>Date: Unknown</p> <p>Document Title: Mondi Effluent Scheme diagram</p> <p>Author: BKS</p>	<p>Document content</p> <p>Diagram that provides an overview of the effluent disposal system at Mondi. This formed part of the technical report "<i>Effluent Disposal System Efficiency Improvement Technical Investigations – Technical Report</i>" which was not provided by Mondi.</p> <p>Relevance to the Study</p> <p>May be useful for the reuse intervention evaluation.</p>
32.	<p>Client: City of uMhlathuze</p> <p>Date: 2011</p> <p>Document Title: Key Statistics and Information on the City of Umhlathuze</p> <p>Author: City of uMhlathuze</p>	<p>Document content</p> <p>Various statistics of the City of Umhlathuze</p> <p>Relevance to the Study</p> <p>Background information and relative location of areas.</p>
33.	<p>Client: n/a</p> <p>Date: 2011</p> <p>Document Title: uThungulu DM Population Stats 2001-2011</p> <p>Author: Aurecon</p>	<p>Document content</p> <p>Spreadsheet containing an extract of population statistics for the 6 Local Municipalities within the uThungulu DM.</p> <p>Relevance to the Study</p> <p>Indication of population growth in the uMhlathuze LM.</p>
34.	<p>Client: City of uMhlathuze</p>	<p>Document content</p>

No	Document	Review notes
	Date: undated Document Title: Augmentation of Esikhawini Sewage Treatment Plant: Summary Report Author: Bigen	<p>Detailed studies were undertaken for the future Esikhawini Sewage Treatment Plant and included for the following alternatives :</p> <ul style="list-style-type: none"> a. Augmentation of the plant in its current location; b. Relocating the plant beyond, but bordering the RBM mining lease area; c. Relocating the plant to Felixton; d. Transfer of Esikhawini effluent to the Empangeni Sewage Treatment facility. <p>Costs were determined and option d) was recommended</p> <p>Relevance to the Study Information regarding to future wastewater operational aspects and for the reuse intervention.</p>
35.	Client: WRC Date: Jul 2005 Document Title: The Development of a Computerised System for Auditing Real Time or Historical Water Use from Large Reservoirs in order to Promote the Efficiency of Water Use Author: CPH Water	<p>Document content The Mhlathuze Catchment was chosen as a research area:</p> <ul style="list-style-type: none"> • To develop a water audit system for large dams • To increase the understanding and knowledge of the practicalities, strengths and weaknesses, and potential costs and benefits of developing and implementing a "water audit system" for use by CMAs • To transfer knowledge/technology to decision makers and stakeholders • To assess the feasibility of implementing the water audit system for the management of South Africa's water resources <p>Relevance to the Study As the study seems to specifically promote the use of the MikeBasin and ACRU surface water resources models, the study will be of little use in terms of the modelling aspects. It contains some useful comments on good operational practices for the release of water from large dams and monitoring the use thereof.</p>
36.	Client: City of Mhlathuze Date: Nov 2013 Document Title: Esikhaleni Water Supply System Author: Bhovungane Consulting	<p>Document content The report provides a qualitative overview of the water supply system. It provides where feasible, a visual portrayal of work completed and planned and illustrate the impacts of issues related to the system.</p> <p>Relevance to the Study Information on the Esikhaleni WSS and planned future expansion of the WSS, water supply infrastructure and WC/WDM.</p>
37.	Client: City of Mhlathuze Date: Feb 2014 Document Title: Draft Bulk Water Master Plan Author: CSIR <i>et al</i>	<p>Document content BWMP exercise for the City of uMhlathuze's bulk water supply system that:</p> <ul style="list-style-type: none"> • Proposes a rational bulk WSS for the study area based DWA's water supply guidelines and existing studies • Identify financing models and options. <p>Relevance to the Study Report is still incomplete and holds little useful in its current state.</p>
38.	Client: City of Mhlathuze Date: 2013 Document Title City of uMhlathuze Water Consumption: Author: City of Mhlathuze	<p>Document content Excel spreadsheet which seems to be a database extract of water use by consumers for the last 5 years.</p> <p>Relevance to the Study Interrogation of the spreadsheet indicates that something seems odd with this information and it has not been used for this study.</p>
39.	Client: City of Mhlathuze	Document content

No	Document	Review notes
	Date: Dec 2013 Document Title: Mhlathuze Feasibility Study for reuse of effluent DRAFT Author: CSIR	Focus on utilising waste water from its two macerator stations Alton and Arboretum. The investigation: <ul style="list-style-type: none"> • Advises on the legislative process for the utilisation and/or disposal of sludge & waste water • Conducted an economic assessment of the PPP process illustrating some of the risks and benefits to the municipality • Propose beneficial use opportunities and/or methods of disposal of sludge & waste water • Developed Waste Water Management Plan for the municipality Relevance to the Study Very relevant to the reuse intervention evaluation.
40.	Client: City of Mhlathuze Date: Feb 2007 Document Title: Revision of Spatial Development Framework Author: SiVEST Selatile Moloi	Document content The Spatial Development Framework (SDF) is a sector plan of the municipal IDP (Integrated Development Plan). The SDF is the visual representation of a municipality's vision, goals and strategies. It is a planning document that reflects the current situation and future development options. Relevance to the Study Information on municipal spatial planning, although now somewhat outdated.
41.	Client: City of Mhlathuze Date: 2014 Document Title: Revision Of Umhlathuze Spatial Framework Plan: Status Quo Report Author: SiVEST Selatile Moloi	Document content Visual representation of a municipality's vision, goals and strategies. It is a planning document that reflects the current situation and future development options. Relevance to the Study Information on municipal spatial planning. It indicates area for future IDZ industries.
42.	Client: City of Mhlathuze Date: May 2012 Document Title: uMhlathuze Municipal Human Settlements Plan 2012/13 Author: Unknown	Document content Information on human settlement within the municipal area. Relevance to the Study Limited usefulness
43.	Client: Umkhanyakhude DM Date: 2013 Document Title: Umkhanyakhude DM IDP Review 2013-2014 Author: Umkhanyakhude DM	Document content Integrated Development Plan of this DM Relevance to the Study Mtubatuba LM falls within this DM. Information about the supply to Mpukuyoni and Mtubatuba has been included. Refers to "Nsezi Feasibility Study".
44.	Client: City of Mhlathuze Date: June 2013 Document Title: Water Services Development Plan (2013 update) Author: CSIR	Document content Water Services Development Plan for the City of uMhlathuze: situation assessment of infrastructure, resources, usage and WC/WDM, as well as future trends, goals and implementation strategies Relevance to the Study Includes list of projects/ interventions as well as information on the current and potential infrastructure etc. that can inform interventions, water balance and strategy
45.	Client: City of Mhlathuze Date: June 2014	Document content Evaluation of current bulk water system/ sub-system situation, future requirements and programme for augmentation of bulk water system

No	Document	Review notes
	Document Title: Bulk Water Master Plan – 2014 Final Author: CSIR	Relevance to the Study Bulk water infrastructure plans and recommendations for re-use of wastewater. Also information on current WC/WDM measures being implemented
46.	Client: DWA Date: June 2011 Document Title: Development of a Reconciliation Strategy for All Towns in the Eastern Region: First Order Reconciliation Strategy for Mtubatuba Town and surrounding areas Author: Water for Africa <i>et al</i>	Document content Water balance for the Mtubatuba water supply area, including requirements, treated volumes and consumption. Assessment of water supply issues (including exceedance of registered water use from Mfolozi river) and losses. Relevance to the Study Similar aim and objectives to the current study, as well overlap in water resources and supply systems. Recommendations for interventions include WC/WDM measures, increase of abstraction licence, upgrade of treatment works, off-channel storage and investigation of groundwater potential. The applicability of these interventions to Richards Bay can be considered, given the proximity of the areas, as well as any synergies in implementing interventions.
47.	Client: Exxaro KZN Sands Date: July 2011 Document Title: Proposed Raw Water Supply to Fairbreeze Mine: Draft Basic Assessment Report Author: KZN Dept of Agriculture, Environmental Affairs & Rural Development	Document content Gives some background to the plans for the construction of the Thukela pipeline (Mandini scheme) and development of Fairbreeze mine and its water-supply options and issues. Specifically, assessment of the impacts of the infrastructure, rather than the abstraction, given that this forms part of Mhlathuze Water's licence for abstraction from the Mhlathuze River. Relevance to the Study Gives an indication of any possible environmental issues that might compromise the scheme's feasibility, and the likelihood of the pipeline being built, which is important given that this is likely to be a significant option amongst the possible interventions.
48.	Client: KZN Provincial Treasury Date: Feb 2014 Document Title: Report on Water Use Licence Status - City of uMhlathuze Local Municipality Author: Municipal Crack Team, Anthony Wagenaar	Document content Summary of the current Water Use Registration and Licensing status for the City of uMhlathuze LM. Options on the way forward. Relevance to the Study Gives values for and comments on abstraction volumes and storage applied for in the Richards Bay Water Supply System, as at February 2014, although the licensing process has since reached completion, and final values may be different.
49.	Client: DWA Date: May 2014 Document Title: Esikhaleni Bulk Water: Business Plan Author: Mbona Saunders & Wium	Document content Plan for the augmentation of the bulk supply of water to the south and south-western communities in the City of uMhlathuze LM supplied from eSikhaleni WTW, to meet medium-term requirements of the area. Includes current water demands and future projections, as well as situation assessment for the eSikhaleni bulk systems and its capacity, and the supply options. Relevance to the Study Can be included in the assessment of options/ interventions for addressing water requirements and supply issues. Also highlights the need for WC/WDM measures, and the need for water source security and flexibility of supply.
50.	Client: DWA Date: 1988	Document content Background information on the construction of the dam and the context in which it is operated Relevance to the Study

No	Document	Review notes
	Document Title: Goedertrouw Dam (Brochure) Author: DWA	General information on the area and the historical situation in the area
51.	Client: possibly DWAF Date: May 2003 Document Title: Level of Reserve Determination Required for the Groundwater Component – Mhlathuze Catchment (Report 7 out of a Series of 8) Author: Groundwater Group, Dept of Earth Sciences, University of the Western Cape	Document content Identification of critical groundwater issues in the Mhlathuze River catchment. These include the characteristics of the main aquifers, report on the status quo (at the time) of groundwater abstraction and exploitation potential in the catchment. Also some information on the interaction between the groundwater and the fresh-water lakes in the catchment, which is an issue requiring some attention for this study, as well as references to other studies on the subject, some of which are included in this list. Relevance to the Study Inform the determination of the groundwater task in this study and
52.	Client: DWA Date: Sep 2013 Document Title: Drought rules for those scheduled from the Goedertrouw Dam, Letter Author: DWA	Document content Breakdown of restrictions to be applied to irrigation use in the catchment during various levels of drought. Relevance to the Study Informs the modelling of the water-balance under different conditions
53.	Client: RBM Date: Aug 2012 Document Title: Draft Scoping Report: Richards Bay Mining: Zulti South Project – EMP Amendment, EIA, WULA, NNR Certification and Planning and Development Act Author: SRK Consulting	Document content Breakdown of the components of and processes included in the mining operation, their environmental impacts and the controls and mitigation measures to limit the impacts. This report covers the necessary legislation and documentary requirements for authorisation for the project. Relevance to the Study Informs the future planning for water requirements and use in the area, as well as highlighting important environmental issues associated with this type of mining and the kind of measures that can be implemented.
54.	Client: DWA Date: Aug 2004 Document Title: State of the Mhlathuze Catchment (Output 5) - Describe the Existing Socio-economic Situation (Draft) Author: Unknown	Document content Although focussing primarily on the socio-economic aspects of water supply - domestic water provision, small-scale irrigation and economic returns from water used in the catchment – a short description of the aquatic ecosystems in the catchment is also included. Relevance to the Study Provide background and context to the situation and the socio-economic aspects, the specific angle being the need (at the time) for the compulsory licensing process to be undertaken.
55.	Client: n/a Date: July 2008 Document Title: uMhlathuze Development Update – Edition 8 (Newsletter) Author: Garth Macartney	Document content Outlines some of the planned developments in the City of uMhlathuze LM from 2008. These included a powerstation in the KwaMbonambi/ Nseleni area, the Pulp United development, and Tata Steel's extension, both under the RBIDZ umbrella. Also smaller developments such as a substation, a bakery ingredients manufacturing operation and hotel/ conference facility as well as many other smaller developments, some of which have advanced towards realisation since the publish date, and some of which have not. Relevance to the Study



No	Document	Review notes
		Information on the potential future demands on the water supply system, and expansions in industrial and infrastructural developments



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