



# UMGENI WATER

## Infrastructure Master Plan 2010

2010/2011 - 2040/2041

Vol I



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UMGENI WATER  
INFRASTRUCTURE MASTER PLAN 2010

2010/2011 – 2040/2041

MAY 2010

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## P R E F A C E

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This Infrastructure Master Plan 2010 describes Umgeni Water's infrastructure plans for the financial period 2010/2011 – 2040/2041. It is a comprehensive technical report that provides detailed information on the organisation's current infrastructure and on its future infrastructure development plans. This report replaces the last comprehensive Infrastructure Master Plan that was compiled in 2004, as well as the subsequent interim Infrastructure Master Plans of 2008 and 2009.

The report is divided into two volumes:

- **Volume I** describes the most recent changes and trends within the primary environmental dictates that influence Umgeni Water's infrastructure development plans (Section 2). Section 3 provides a review of historic water sales against past projections, as well as Umgeni Water's most recent water demand projections, compiled at the end of 2009. The current water resource situation, for both surface and groundwater, for the catchments that are important to Umgeni Water's operational requirements is described in Section 4. Climatic impacts on these water resources and the potential future impacts of climate change are presented. Future water resource development plans for these catchments, as well as alternatives to the traditional resources, are discussed. Linkages are made to the water supply infrastructure development plans that are discussed in Volume II.
- **Volume II** documents the current water supply infrastructure that Umgeni Water utilises for operational purposes (Section 5). Section 5 then goes on to describe the most recent infrastructure plans that have been developed to address the future water supply requirements. These plans are aligned to the latest water demand projections and proposed water resources infrastructure developments as presented in Volume I. Section 6 describes the waste water works currently operated by Umgeni Water, and Section 7 provides individual project sheets for those infrastructure projects discussed in Section 5. All references made throughout the entire Infrastructure Master Plan are listed at the end of each volume.

It is important to note that information presented in this report is in a summarised form and it is recommended that the reader refer to the relevant planning reports if more detail is sought. Since the primary focus of this Infrastructure Master Plan is on Umgeni Water's existing bulk infrastructure supply network, the water resource infrastructure development plans are not discussed at length. The Department of Water Affairs (DWA), as the responsible authority, has undertaken the regional water resource development investigations within Umgeni Water's area of operation. All of these investigations have been conducted in close collaboration with Umgeni Water and other major stakeholders in order to ensure that integrated planning occurs. Details on these projects can be obtained directly from DWA, Directorate: Options Analysis (East).

Cognisance is taken of the initiatives relating to water conservation and water demand management being undertaken by Umgeni Water and the various Water Services Authorities. However, these are not discussed in this Infrastructure Master Plan as they fall outside of its primary focus, even though they are within the overall framework of Umgeni Water's infrastructure planning process.

The Infrastructure Master Plan is a dynamic and evolving document. Outputs from current planning studies, and comments received on this document will therefore be taken into account in the preparation of the next update.

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AADD	Average Annual Daily Demand
AC	Asbestos Cement
AsgiSA	Accelerated and Shared Growth Initiative of South Africa
BID	Background Information Document
BWL	Bottom Water Level
BWSP	Bulk Water Service Provider
BWSS	Bulk Water Supply Scheme
CAPEX	Capital Expenditure
CMA	Catchment Management Agency
CoGTA	Department of Co-Operative Governance and Traditional Affairs
CWSS	Communities and Water Supply Sanitation project
DAEA	Department of Agriculture and Environmental Affairs
DEA	Department of Environmental Affairs
DFA	Development Facilitation Act (65 of 1995)
DLA	Department of Land Affairs
DLGTA	Department of Local Government and Traditional Affairs
DM	District Municipality
DMA	District Management Area
DPLG	Department of Provincial and Local Government
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EKZN Wildlife	Ezemvelo KZN Wildlife
EMP	Environmental Management Plan
EWS	eThekwini Water Services
EXCO	Executive Committee
FSL	Full Supply level
GCM	General Circulation Model
GDP	Geographic Domestic Product
GVA	Gross Value Added
HDI	Human Development Index
IDP	Integrated Development Plan

IMP	Infrastructure Master Plan
IRP	Integrated Resource Plan
ISP	Internal Strategic Perspective
IWRM	Integrated Water Resources Management
KZN	KwaZulu-Natal
LM	Local Municipality
LUMS	Land Use Management System
m <sup>3</sup> /a	Cubic metres per annum
MA	Moving Average
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
mASL	Metres Above Sea-Level
MBR	Membrane Bioreactor
MMTS	Mooi-Mgeni Transfer Scheme
MMTS-1	Mooi-Mgeni Transfer Scheme Phase 1
MMTS-2	Mooi-Mgeni Transfer Scheme Phase 2
MTEF	Medium Term Expenditure Framework
MTSF	Medium Term Strategic Framework
MWP	Mkomazi Water Project
MWP-1	Mkomazi Water Project Phase 1
NCP-1	North Coast Pipeline I
NCP-2	North Coast Pipeline II
NCSS	North Coast Supply System
NPV	Net Present Value
NSDP	National Spatial Development Perspective
NWSP	National Water Sector Plan
OPEX	Operating Expenditure
p.a.	Per annum
PEST	Political, Economical, Sociological and Technological
PGDS	Provincial Growth and Development Strategy
PPDC	Provincial Planning and Development Commission (KZN's)
PSEDS	Provincial Spatial Economic Development Strategy
PWSP	Provincial Water Sector Plan
RCC	Roller Compacted Concrete
RDP	Reconstruction and Development Programme
RO	Reverse Osmosis

ROD	Record of Decision
RQO	Resource Quality Objective
SCA	South Coast Augmentation
SCP	South Coast Pipeline
SCP-1	South Coast Pipeline Phase 1
SCP-2a	South Coast Pipeline Phase 2a
SCP-2b	South Coast Pipeline Phase 2b
SDF	Spatial Development Framework
STEEPLE	Social/demographic, Technological, Economic, Environmental (Natural), Political, Legal and Ethical
SWRO	Seawater Reverse Osmosis
TBM	Tunnel Boring Machine
TLC	Transitional Local Council
TWL	Top Water Level
UW	Umgeni Water
WBS	Work Breakdown Structure
WC	Water Conservation
WDM	Water Demand Management
WMA	Water Management Area
WRC	Water Research Commission
WSA	Water Services Authority
WSDP	Water Services Development Plan
WSNIS	Water Services National Information System
WSP	Water Services Provider
WTP	Water Treatment Plant
WWW	Waste Water Work

Spellings of toponyms have been obtained from the South African Geographical Names System (SAGNS). This system provides the official spelling of place names and can be accessed at <http://sagns.dac.gov.za/>.

# 1. INTRODUCTION

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## 1.1 PURPOSE

*“Think ahead. Don't let day-to-day operations drive out planning.”*

Donald Rumsfeld

Established in 1974, Umgeni Water has developed into the second largest water utility in South Africa, supplying over 416 million cubic metres of bulk potable water annually to six Water Services Authorities (WSAs), comprising one metropolitan and four district municipalities within the province of KwaZulu-Natal (KZN). These municipalities collectively contribute approximately 80% of the province's Geographic Domestic Product (GDP). However, the largest poverty densities in KZN are also located in these areas. Hence, Umgeni Water is faced with the dual challenge of ensuring that the province's economic engine remains served with a reliable supply of potable water, whilst also ensuring that water is adequately provided for the eradication of water backlogs and the alleviation of poverty.

The environment within which Umgeni Water is required to fulfil its function as a regional bulk water service provider is constantly undergoing change, with many factors influencing both the water demand and water supply components of its business. In particular, the economic up- and down-turns that the country, including KZN, has experienced over the past few years have a marked influence. Umgeni Water's infrastructure planning therefore needs to be continually reviewed, updated and adapted in order to be responsive (wherever possible), to this dynamic external environment .

For any organisation to effectively achieve its mission it needs to have, amongst other things, a clearly defined plan of what is required in the future so that it can be addressed in the present. This Infrastructure Master Plan 2010 (IMP 2010) describes how Umgeni Water intends to address the future bulk water infrastructure requirements within its area of operation in order to meet the anticipated needs. It also indicates the proposed integration between these water supply infrastructure plans and the regional water resource plans being developed by the Department of Water Affairs (DWA).

This report is a comprehensive infrastructure master plan and comprises of the following sections:

- **Section 2** identifies the changes that have occurred in the external environment since the IMP 2009 that have had an impact on the provision of sustainable bulk potable water;
- **Section 3** presents the water demand projections for the 2010/2011 – 2040/2041 period;
- **Section 4** analyses the water resources and identifies the new water resource infrastructure that will be required to meet the projected water demands;
- **Section 5** identifies the capacity constraints and the new infrastructure that will be required to meet the projected water demands;
- **Section 6** describes and identifies the capacity constraints of the waste water infrastructure; and
- **Section 7** provides individual project sheets for those infrastructure projects discussed in Section 5.







## 1.2 SETTING THE SCENE

The distribution of Umgeni Water’s infrastructure and the projects that have been commissioned since the 2008/2009 financial year are shown in **Figure 1.1**. These changes are summarised in **Table 1.1**.

**Table 1.1** Changes in Umgeni Water Infrastructure (2008/2009 – Present).

Infrastructure	Status
Durban Heights Booster Pump Station	Commissioned in December 2009
Avondale to Honolulu Pipeline (NCP-2)	Commissioned in December 2009
Ngcebo Bulk Water Scheme	Commissioned in December 2009

**Figure 1.1 Changes in Umgeni Water's Infrastructure 2008/2009 - Present**

- Legend**
-  UW Operated WTPs
  -  UW Pipelines
  -  Rivers
  -  National Roads
  -  UW Operated Dams
  -  WSAs for whom UW is BWSP

Source:  
 Department of Water Affairs  
 KZN Department of Transport  
 Municipal Demarcation Board  
 Umgeni Water



Original Scale on A4 at 1 : 1 500 000

