Western Cape Government

BETTER TOGETHER.

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Western Cape Sustainable Water Management Plan - 2012

Part 1: "The Water Plan"

PROJECT TEAM

- Dr Joy Leaner – Department: Environmental Affairs and Development Planning (DEADP)
- Ms Catherine Bill – DEADP
- Mr Russell Mehl – DEADP
- Ms Sunette Ruch – DEADP
- Ms Luscha Hendricks – DEADP
- Ms Aa-ishah Petersen – DEADP
- Mr Gunther Frantz – DEADP
- Ms Caren George – DEADP
- Ms Raudhiyah Dien – DEADP
- Ms Chrizelle Kriel - DEADP
- Ms Pumza Gasa-Lubelwana – DWA-RO
- Ms Ashia Petersen – DWA-RO
- Ms Wilna Kloppers – DWA-RO
- Ms Melissa Lintnaar-Strauss – DWA-RO
- Mr Peter Keuck – Department of Agriculture (Western Cape)
- Mr Marius Wust – Department of Local Government
- Ms Samantha Braid – Aurecon
- Mr Graham English – Aurecon
- Ms Joy Larsen – Aurecon

STEERING COMMITTEE

- Dr Joy Leaner – Department: Environmental Affairs and Development Planning (DEADP)
- Ms Catherine Bill – DEADP
- Mr Russell Mehl – DEADP
- Mr Gottlieb Arendse – DEADP
- Mr Chris Rabie – DEADP
- Mr André van der Merwe – DEADP
- Mr Anwaar Gaffoor – DEADP
- Mr Pierre de Villiers – CapeNature
- Dr Hildegarde Fast – Department of Local Government
- Mr Marius Wüst – Department of Local Government
- Mr Rashid Khan – Department of Water Affairs - Regional Office Bellville (DWA-RO)
- Ms Pumza Gasa-Lubelwana – DWA-RO
- Ms Ashia Petersen – DWA-RO
- Mr Peter Keuck – Department of Agriculture (Western Cape)
- Mr André Roux – Department of Agriculture (Western Cape)
- Mr Kenneth Kirsten – Department of Human Settlements
- Mr Thurston Marinus – Provincial Treasury
- Ms Samantha Braid – Aurecon
- Mr Graham English – Aurecon

ACKNOWLEDGMENTS

- All Heads of Departments and officials from the Western Cape Government, the District and Local Municipalities, as well as the City of Cape Town for their contributions in the authorities meeting held.
- All stakeholders (public, water institutions, and authorities) who participated in the public meetings, as well as provided comment during the public commenting period.
- Ms Miranda Greenwood, Ms Sharifa Ebrahim, Ms Marsha Fredericks and Ms Beverley Barry, our administration officials in the Directorate Pollution Management (DEADP), for their contribution in the process.
- Mr Mike Killick (Aurecon), Ms Karen Versveld (Aurecon), Ms Sheena Swartz (Aurecon), Mr Mike Shand (Aurecon), Mr Nico Rossouw (Aurecon), Mr André Görgens (Aurecon), Ms Karen Shippey (Aurecon), Ms Bea Whittaker (Milkwood Communications), Ms Clarissa Molteno (Envolve), Mr Karl Reineke (Southern Warters), Dr Cate Brown (Southern Warters), Mr Willie Enright (Wateright), Mr Julian Conrad (GEOSS), Steven Marks (DEADP), Ms Lize Jennings (DEADP), Mr Jaques Jansen van Rensburg (SALGA), Ms Shantal Harigobin (SALGA), Mr Paul Herbst (DWA), Mr. John Roberts (DWA), Mr Simphiwe Maschila (DWA), Derril Daniels (DWA) for contributions made during the development of the Water Plan.

"Water is life!"

FOREWORD

Water is critical for the survival of our planet, and therefore for our many industries, our agricultural activities, our livelihoods and our other natural resources. The Western Cape is already facing water stress; this pressure will only increase as the need for growth and development increase, and as the impacts of climate change become more evident through, amongst others, low rainfall and extreme weather events.

In view of the importance of water security in supporting human survival and economic livelihoods, as well as the water needs of the ecosystems providing these services, the Western Cape Sustainable Water Management Plan provides the foundation for managing our water resources in a sustainable manner, so that the growth and development needs of the region can be achieved. This valuable resource needs to be used efficiently across all sectors, and also needs to be of a high quality so as not to compromise the health of the people of the Western Cape. Options such as desalination of sea water, water re-use and deep aquifer water sources need to be investigated and implemented without further delay! We do, however, need to strike a balance between water demand and water supply, to ensure the availability of this resource for all, today and in the future.

This Water Plan is a proactive approach that requires all spheres of Government, and the public, to become involved in a co-operative manner to ensure that the water, on which our quality of life depends, is managed to ensure its long-term sustainability, while providing for growth and development in the region.

Anton Bredell
WESTERN CAPE MEC: LOCAL GOVERNMENT,
ENVIRONMENTAL AFFAIRS AND
DEVELOPMENT PLANNING

EXECUTIVE SUMMARY

i. INTRODUCTION

The Sustainable Water Management Plan (hereafter referred to as "the Water Plan") for the Western Cape Province was developed, following the recommendations made at the Water INDABA held in Cape Town during November 2009. Its development was undertaken collaboratively by the Western Cape Government and the National Department of Water Affairs: Bellville Regional Office. Short (1-5 years), medium (6-15 years) and long term (+16 years) actions to guide the implementation of projects / activities were developed, as a means towards achieving integrated and sustainable management of water in the Western Cape. The overall aim of the Water Plan is to guide sustainable water management towards meeting the growth and development needs of the region.

The Water Plan was developed in two phases, *viz*. Phase I: an intensive Status Quo Assessment, followed by Phase II: the development of the Water Plan itself. Figure (i) represents the extent of the Provincial boundary in relation to the Water Management Areas (WMAs) with which it intersects. The Western Cape includes 5 District Municipalities (*viz*. West Coast, Eden, Central Karoo, Cape Winelands and Overberg) and the City of Cape Town Metropolitan Municipality (CCT), all of which encompass 30 local municipalities.

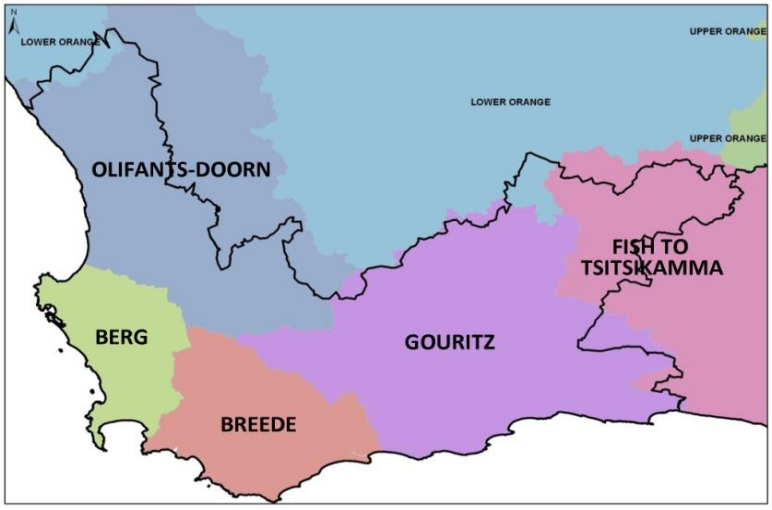

Figure (i): Water Management Areas in the Western Cape Province.

ii. INTERFACING WITH CURRENT STRATEGIES / PLANNING INITIATIVES

The Water Plan links with the current strategies and planning initiatives of the country and the Western Cape, at National, Provincial and Local Government levels. A summary of the key strategies and planning initiatives reviewed during the development of the Water Plan is provided in **Annexure 1**.

iii. SUMMARY OF THE WESTERN CAPE STATUS QUO ASSESSMENT

a. Water Use Efficiency & Alternative Augmentation Options

Historically, the management of water shortages or inadequate assurance of water supply was primarily driven by the development of new bulk water supply infrastructure (such as dams, water transfer schemes, groundwater development, etc.) These conventional sources are becoming few and far between. A strong shift in water resource management and

planning is taking place in terms of addressing the water demand-side interventions. By reducing the volumes of water abstracted from rivers and aquifers, a positive benefit results, *viz*. a delayed implementation date for new infrastructure, as well as provision towards meeting the Reserve, a requirement of the National Water Act (Act 36 of 1998).

A brief summary of the following water use efficiency and alternative augmentation options explored during the development of the Water Plan is provided below:

- Water conservation and water demand management (WC/WDM)
- Water re-use
- Desalination

WC/WDM planning studies and strategies developed to date are numerous and there is a significant opportunity for its implementation in both the urban and agricultural sector. This will require cooperative governance between authorities and heightened public awareness. Although Government has an important role to play, it cannot be solely accountable for all WC/WDM efforts – all water users need to implement WC/WDM measures.

Efficiency of water use within the irrigation sector is influenced by conveyance losses, irrigation application methods and scheduling of irrigation are three key significant factors. Where farmers have optimized water use and achieved water savings, the latter is often used for further expansion, as per their permitted water allocations (i.e. more crop per drop). The refurbishment of large irrigation conveyance infrastructure, offers significant water saving opportunity, where up to 30% reduction in losses could be achieved.

Water consumption monitoring is a critical and imperative intervention that must be implemented by all water users. The Water Users Associations (WUAs) are required to address this in the irrigation sector; while the Water Services Authorities (WSAs) are required to address this in the urban sector.

Water re-use opportunities have been investigated at a cursory level of detail and implemented to some extent in the Province, most notably in Beaufort West, George and in the larger towns of the Cape Winelands District. The City of Cape Town has scheduled a feasibility study to investigate large-scale water re-use opportunities. Water storage is critical if water re-use is to be implemented at scale.

Desalination of sea water effectively offers an unlimited source of water supply and such schemes have already been implemented in the Province (e.g. Bitterfontein, Mossel Bay, Sedgefield, Plettenberg Bay). The City of Cape Town is also currently investigating desalination at scale.

b. Gaps and Recommendations

Numerous gaps, concerns and issues were identified during Phase 1 (Status Quo Assessment). Briefly, these were summarised into the following 12 Themes:

Theme 1: Institutional Capacity

There is limited capacity and a shortage of technical resources within the operation and management of most areas of water services and water resource planning. This leads to a lack of continuity in the planning and management of the resource by the responsible

authorities, and limited availability of technical resources. The implementation of the Occupational Specific Dispensation (OSD) presents a further challenge.

Theme 2: Cooperative Governance – Integrated Authorisations

The complexity and time constraints relating to approval processes and authorisations for developments, compounded by associated administrative costs, are of concern. The opportunity to develop Integrated River Management and Maintenance Plans, for example, has been identified as an intervention to be taken towards a more effective and collaborative authorisation process.

Theme 3: Enforcement and Legislation

There are overlaps in the various statutes and conflicting requirements within the regulation and enforcement of legislation. Conditions of authorisations are often impractical to monitor, and various Organs of State themselves are non-compliant. Conflicts exist in the wording of legislation and in the requirements of plans such as Water Service Development Plan, Environmental Management Plans, Industry Waste Management Plans, etc. Certain directives may instruct different activities, which in turn may have implications under other legislation. Furthermore, the penalties (fines) applicable within some statutes vary significantly for the same violations.

Theme 4: Water Conservation / Water Demand Management

Water Conservation / Water Demand Management (WC/WDM) in the Province holds significant opportunity to reduce water consumption, although the implementation and monitoring thereof, is lagging. Custodians responsible for its implementation must be identified, particularly within Municipalities and WUAs. Losses must be verified through appropriate metering to allow for accurate recording of water balances. The agricultural sector has made many strides to achieve high in-field irrigation efficiencies in this region.

Theme 5: Ecological Sustainability of Water Resources

An integrated approach to providing for the Ecological Reserve at a basin-wide scale, taking into account freshwater catchments and estuaries, is required (catchment to coast). This should account for the National Freshwater Ecosystem Priority Areas sites (NFEPAs) and Critical Biodiversity Areas (CBAs). The current Validation and Verification Process to confirm the extent of water over-allocation in the Province may ultimately require re-allocation of water from existing users to provide for the environment. This may likely be a lengthy and contentious process in terms of following the Compulsory Licensing process, and alternative initiatives (e.g. water trading, removal of invasive and alien plants, etc.) must be encouraged.

Theme 6: Water Scarcity

Increasing water requirements, provision for the Reserve and the anticipated impacts of climate change will place further stress on the water resources of the Province. Conventional interventions such as the Berg Water Project are limited. Alternative options on water demand and water supply are required.

Theme 7: Water Quality

Deterioration of the quality of water resources is a major threat to sustainably meeting the Province's growth and developmental needs. The causes are both natural (geology) and pollution related, which include non-point sources (e.g. irrigation return flows) and point sources (e.g. effluent discharge) of pollution. The economic threat relates to potentially not meeting the water quality standards required by export food markets. Effective monitoring and reporting of routine effluent discharge and short term, intensive pollution incidents, is critical.

Theme 8: Groundwater Use

More effective and comprehensive monitoring of groundwater is required as a matter of urgency, particularly on an aquifer basis. If this can be achieved then the utilization of the groundwater resource in the Province can be sustainably managed.

Theme 9: Allocation of Budget

Many of the gaps discussed in this report, and the potential solutions to address them are strongly dependent on the availability and allocation of budget, for which long-term committed provision poses a particular challenge. This is, for example, hampering the implementation of WC/WDM by local authorities, as it is viewed as an operational and maintenance investment, as opposed to a capital one. The aggressive targeting of Regional Bulk Infrastructure Grant funding for implementing WC/WDM is required.

Theme 10: Planning

Sustainable growth and development planning must recognise that water is a finite resource. There remains disparity in the Water Service Development Plans (WSDPs) developed by WSAs, despite clear guidelines available from DWA. A scorecard to monitor the implementation of WSDPs should be explored. Municipalities must implement risk reduction plans (such as Drought Management, Disaster Management and Flood Risk). Towns located within the Western Cape, but lying in WMAs largely outside the Province (e.g. Murraysburg) must not be "lost" in the various planning initiatives at WMA-wide and Municipal-wide scale.

Theme 11: Infrastructure Ownership

Significant opportunities to reduce water losses within reticulation systems exist. A particular challenge within water supply schemes, such as the Lower Olifants irrigation scheme (Clanwilliam) and the Kammannassie scheme (Klein Karoo) is the affordability thereof. Remedial measures are expensive, typically not affordable by the irrigation sector, to which the responsibility has been transferred. This limits the opportunity to implement WC/WDM options. Funding models should be amended to encourage private investment.

Theme 12: Information Management

Access to standardised information, policies, strategies, plans and reports via a centrally controlled data portal would provide a streamlined platform for access to information. Similarly, a centralised monitoring and evaluation system needs to be developed to track progress made against the objectives and targets set in the various planning initiatives. An integrated communications strategy needs to be developed to emphasize water scarcity and WC/WDM.

iv. THE WATER PLAN AND STRATEGIC PRIORITIES

a. Vision

"Sustainable water management for growth and development in the Western Cape, without compromising ecological integrity."

b. Strategic Goals

The Water Plan has the following 4 **Strategic Goals**, which collectively incorporates the 12 Themes identified during Phase I (Status Quo Assessment):

GOAL 1	Ensure effective co-operative governance and institutional planning for sustainable water management.
GOAL 2	Ensure the sustainability of water resources for growth and development.
GOAL 3	Ensure the integrity and sustainability of socio-ecological systems.
GOAL 4	Ensure effective and appropriate information management, reporting and awareness-raising of sustainable water management.

For each of the Strategic Goals, one or more Strategic **Objectives** were identified, while for each Strategic Objective, one or more **Targets**, including **Activities**, have been set. The Goals, Objectives and Targets addressed in the Water Plan are summarised Table (i) below. Prioritised Targets for immediate or short-terms implementation are shaded in Table (i). An extended version of the prioritised Targets is provided in **Annexure 2.**

c. Monitoring, Evaluation and Review

Monitoring of progress with regards to the implementation of the Water Plan is necessary in order to maintain and achieve the objectives that have been set. It is recommended that the PSO7 Steering Committee and Working Groups monitor progress and evaluate the implementation of the Water Plan, on a quarterly basis. The Indicators included in the Water Plan provide a reference for monitoring progress in its implementation.

This Water Plan will be reviewed and updated on a 5-year basis. The review period will be subject to funding, as well as implementation outcomes. This would be the responsibility of the Project Technical Committee and Stakeholders.

The Water Plan needs to be reviewed annually by the Provincial Departments so as to align the activities and targets to their Business Plans, and to the Provincial Strategic Plan of Action, and therefore, aligned to the Provincial address and the Annual Performance Plans of the various Departments.

Table (i): Summary of Goals, Objectives and Targets set in the Water Plan

GOAL 1: ENSURE EFFECTIVE CO-OPERATIVE GOVERNANCE AND INSTITUTIONAL PLANNING FOR SUSTAINABLE WATER MANAGEMENT	
	Target
Objective 1.1: Strengthen and build institutional capacity and integrate institutional structures and mechanisms	1.1.1. Catchment Management Agencies (CMAs) established and supported.
	1.1.2. Irrigation Boards transformed into Water User Associations (WUA)
	1.1.3. Government Notice GN 2834 Requirements expanded and updated
	1.1.4. WC/WDM included as a core function in the technical services of Municipalities or WUAs
	1.1.5. DWA Tariff Strategy revised, gazetted and implemented.
	1.1.6. Capacity building in water resource management, WC/WDM, water services and its compliance and enforcement
	1.1.7. Learnerships in water resource management
	1.1.8. Water-related EMI training for Municipal officials and WUAs
Objective 1.2: Adequate allocation of budget in all aspects of sustainable water management	1.2.1. Long-term planning of infrastructure and capacity building budgets
	1.2.2. Appropriate funding models and alternative funding sources for infrastructure and water services delivery, including water metering
Objective 1.3: Strengthen integration between sustainable water management, ecological sustainability and planning processes, and integrate these with water allocation reform and water reconciliation strategies.	1.3.1. Integrated Environmental Authorisation Application that includes sustainable water management options for new developments.
	1.3.2. By-laws and building codes revised to promote WC/WDM non-conventional sources (NCS)
	1.3.3. Relevant Sector Departments represented on the Western Cape Reconciliation Strategy Steering Committee
	1.3.4. Provincial EMP integrating sustainable water management and ecological sustainability into planning processes
	1.3.5. Strategy and Action Plan for NFEPAs and CBAs
	1.3.6. Preventative Maintenance Plans for water-Related infrastructure
	1.3.7. Guideline on Managing Agricultural Land in Urban Areas
	1.3.8. By-laws and building codes revised to promote WC/WDM non-conventional sources (NCS)

GOAL 2: ENSURE SUSTAINABLE WATER RESOURCES TO ACHIEVE GROWTH AND DEVELOPMENT	
	Target
Objective 2.1: Develop, promote and implement effective and efficient water conservation and water demand management	2.1.1. Municipal water services strategies and plans (WC/WDM strategies & implementation plans, SDIP, WSDPs and IDPs) include water metering, by-laws and stepped tariff structure
	2.1.2. Government buildings, schools and general facilities implemented water use efficiency options
	2.1.3. Non-conventional sources (NCS) of water used
	2.1.4. Tool to improve water use efficiency across the agricultural sector
	2.1.5. Water losses reduced from irrigation canals
	2.1.6. A matrix to advise farmers on growing appropriate crop types in their areas
	2.1.7. An early warning system for slow onset disasters, including climate and drought
Objective 2.2: Promote the sustainable use of groundwater	2.2.1. Groundwater included in WSDPs for its sustainable use
	2.2.2. Groundwater Reserves effectively monitored
	2.2.3. Groundwater Regulations gazetted
Objective 2.3: Effective monitoring, evaluating and reporting of water conservation and water demand management	2.3.1. Updated Municipal water services strategies and plans implemented, monitored and evaluated for WC/WDM

GOAL 3: ENSURE THE INTEGRITY AND SUSTAINABILITY OF SOCIO-ECOLOGICAL SYSTEMS	
	Target
Objective 3.1: Strengthen the monitoring and enforcement of compliance to water quality objectives	3.1.1. A Strategy on Compliance & Enforcement of Water Quality Objectives
	3.1.2. A Provincial Regulation / Protocol on holding Organs of State responsible for complying with water quality objectives
	3.1.3. Legal Review of the Status Quo Assessment for incorporation in the National Water Act Law Reform process
	3.1.4. Co-operative enforcement of water resource management by EMIs across all sectors
Objective 3.2: Ensure ecological sustainability	3.2.1. River Management and Maintenance Plans (RMMPs)
	3.2.2. Rivers impacted by land-based pollution sources rehabilitated, and linked to Adopt-A-River Programme
	3.2.3. Estuaries impacted by land-based pollution sources rehabilitated, and linked to National Programme of Action on reducing pollution to the Marine Environment (NPA)
	3.2.4. Ecological Reserve and compulsory licensing implemented in prioritised areas across of the Province
	3.2.5. Ecological integrity requirements of the Environmental Water Requirement (EWR) ensured
	3.2.6. Ecological sustainability integrated with other planning and development guidelines
	3.2.7. Provincial position paper on "fracking" for natural gas
Objective 3.3: Effective implementation of monitoring programmes to report on the status of water quality objectives.	3.3.1. Water quality monitoring data validated and integrated with the National Water Quality Monitoring Programme
	3.3.2. Pollution sources mapped and monitored water quality from catchment to coast
	3.3.3. Early warning system protocol for sewage leaks and pollution spills

GOAL 4: ENSURE EFFECTIVE AND APPROPRIATE INFORMATION MANAGEMENT, REPORTING AND AWARENESS-RAISING OF SUSTAINABLE WATER MANAGEMENT	
	Target
Objective 4.1: Raise awareness of sustainable water management and ecological systems	4.1.1. A Provincial Integrated Communication Strategy on Sustainable Water Management
	4.1.2. Awareness-raising on sustainable water management and ecological systems, WC/WDM options, water and health, etc., through various media
Objective 4.2: Effective and integrated management and reporting of water information	4.2.1. Centralized Environment & Water Information Portal (CEWIP)
	4.2.2. Provincial Liaison Committee on Water re-established to co-ordinate all existing water forums
	4.2.3. A Provincial Consultative Committee on Water and Health
	4.2.4. Sustainable Water Management Plan (the Water Plan) monitored and evaluated for progress made on its implementation

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

BITT	:	Built Infrastructure Task Team
CARA	:	Conservation of Agricultural Resources Act (Act 43 of 1983)
CBA	:	Critical Biodiversity Area
CoCT	:	City of Cape Town Metropolitan Municipality
CEWIP	:	Central Environment and Water Information Portal
CMA	:	Catchment Management Agency
CMF	:	Catchment Management Forum
DAFF	:	Department of Agriculture, Forestry and Fisheries
DCoGTA	:	Department of Cooperative Governance and Traditional Affairs
DEA	:	Department of Environmental Affairs
DEADP	:	Department of Environmental Affairs and Development Planning
DLG	:	Department of Local Government
DMR	:	Department of Mineral Resources (National)
DotP	:	Department of the Premier
DoH	:	Department of Health
DPSA	:	Department of Public Service and Administration
DWA	:	Department of Water Affairs
DWA-RO	:	Department of Water Affairs: Western Cape Regional Office
EMI	:	Environmental Management Inspector
EWR	:	Environmental Water Requirement
GNR.2834	:	Government Notice Regulation, of 27 December 1985 under NWA
IPWIS	:	Integrated Pollutant and Waste Information System
IWA	:	International Water Association
MFMA	:	Municipal Finance Management Act (Act 56 of 2003)
MSA	:	Municipal Systems Act (No.32 of 2000)
NEMA	:	National Environmental Management Act (Act 107 of 1998)

NFEPA	:	National Freshwater Ecosystem Priority Area
NSSD1	:	National Strategy for Sustainable Development and Action Plan
NWA	:	National Water Act (Act 36 of 1998)
NWRS	:	National Water Resources Strategy (2004)
PFMA	:	Public Finance Management Act (Act 1 of 1999)
PPPs	:	Public-Private Partnerships
RMMP	:	River Management and Maintenance Plan
SAHRA	:	South African Heritage Resource Agency
SALGA	:	South African Local Government Association
SANDF	:	South African National Defence Force
SAWS	:	South African Weather Services
SCC	:	Soil Conservation Committee
SDF	:	Spatial Development Framework
SDIP	:	Strategic Development and Implementation Plan
WCDoA	:	Western Cape Department of Agriculture
WCDoHS	:	Western Cape Department of Human Settlements
WCDTPW	:	Western Cape Department of Transport and Public Works
WCED	:	Western Cape Education Department
WC PSDF	:	Western Cape Provincial Spatial Development Framework
WC/WDM	:	Water Conservation and Water Demand Management
WESSA	:	Wildlife and Environmental Society of South Africa
WISA	:	Water Institute of South Africa
WMA	:	Water Management Area
WRC	:	Water Research Commission
WSA	:	Water Service Authorities
WSDP	:	Water Service Delivery Plan
WUA	:	Water Users Association
WTW	:	Water Treatment Works
WWTW	:	Wastewater Treatment Works

1. INTRODUCTION

1.1 BACKGROUND

The earth's climate systems have demonstrably changed on both global and regional scales since the pre-industrial era. There is strong evidence to suggest that most warming observed over the last 50 years is attributable to human activities. Climate change is predicted to manifest as, *inter alia*, more frequent and severe weather events, increases in temperature in many regions and resulting changes in precipitation patterns. Indeed, it has been estimated that by 2050, rainfall in the Western Cape is likely to have decreased by 30%. Although the Western Cape is arguably to be one of the most affected areas in terms of climate change and the impact thereof on water resources, it is also the quality of the water resource, as impacted on by human activities, that require immediate and urgent action.

Water is therefore a limiting factor in development in South Africa, and it is becoming increasingly important to manage and plan for water resources, particularly in the Western Cape, as the water requirements of the Province grow. The National, Provincial and Local spheres of Government have placed great emphasis on developing strategies to manage water resources over the past decade in the Province.

In this regard, the need for joint Government action towards sustainably managing the water resources in the Western Cape Province was identified during the Water INDABA in November 2009. In response, the governance structures developed a Sustainable Water Management Plan for the Western Cape Province (i.e. the Water Plan). Water resources management and water services delivery is a concurrent function of Local and National Government; while environmental management, of which water is a component, is a concurrent Provincial and National Government function. Therefore, the initiative was a co-operative Government interaction between the Provincial Departments of the Western Cape Government, Local Government and the National Department of Water Affairs (DWA).

1.2 STUDY AREA

The Water Plan covers four Water Management Areas (WMAs), *viz*. Olifants-Doorn, Berg, Breede-Overberg and Gouritz, and small section of the Fish to Tsitsikamma, as shown in **Figure 1.1**. The Fish to Tsitsikamma WMA is managed by the DWA Eastern Cape Regional Office; hence, only issues of concern have been raised for this WMA and included in the study area (e.g. where towns risk being excluded in water resource management and town planning, where the Provincial and WMA boundaries overlap).

The Western Cape Province has five (5) District Municipalities (*viz*. West Coast, Eden, Central Karoo, Cape Winelands and Overberg), as well as the City of Cape Town Metropolitan Municipality (CoCT). In total, there are 30 Municipalities across the Province.

Water resources management takes place at a catchment scale, *i.e.* per WMA; while actual water use (i.e. domestic and industrial use) is aligned according to municipal boundaries (which overlap WMAs). As a result, the Water Plan addresses identified institutional management matters, overlaps and gaps at regional, discrete catchment and / or District Municipal level, depending on which promotes water resource management best.

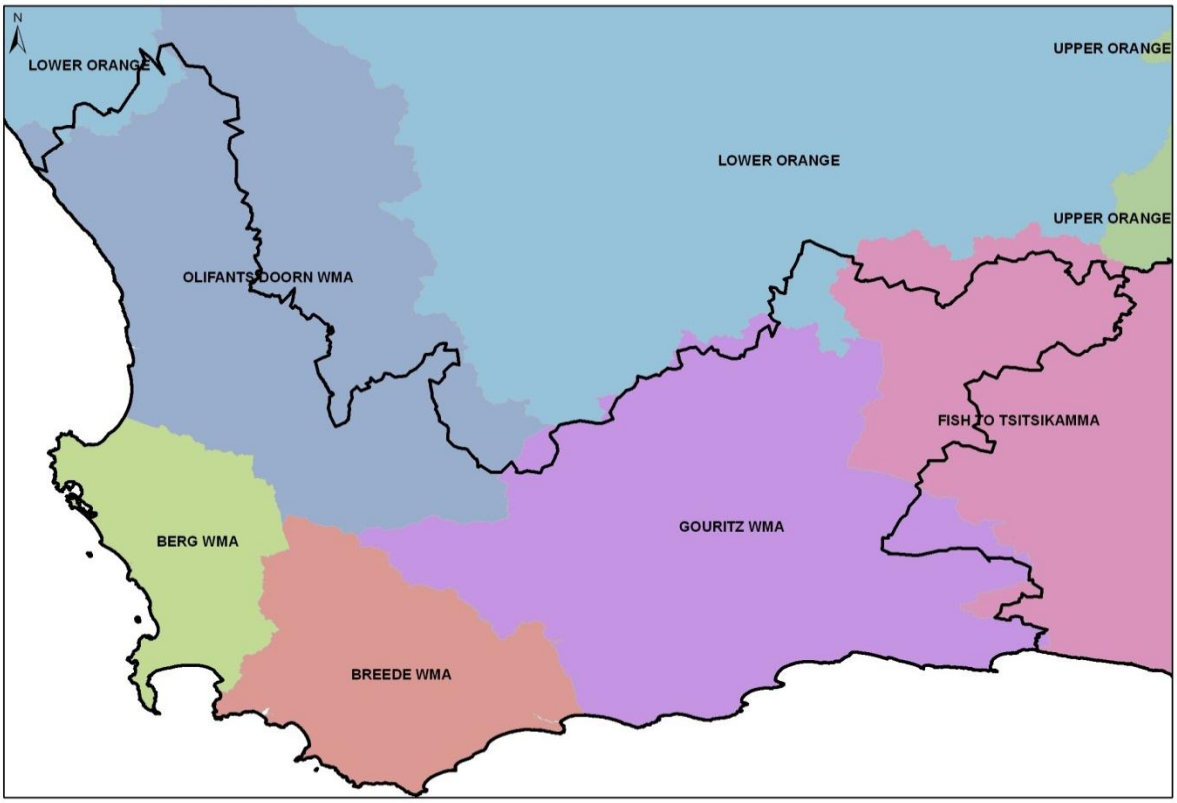

Figure 1.1: Water Management Areas of the Western Cape

1.3 PURPOSE OF THE WATER PLAN

The overall aim of the Water Plan is to guide sustainable water management in the Province, towards meeting the growth and development needs of the region, without compromising ecological integrity. The Water Plan therefore aims to protect water resources from environmental degradation, incorporate integrated planning processes, and promote efficient water utilisation in the Western Cape Province.

1.4 FROM VISION TO ACTION: THE PROCESS

The development of the Water Plan included the following process principles:

- Integration and Innovation;
- Consultation and Participation; and
- Phased Development and Implementation.

The Water Plan was developed during 2011 – 2012. Its development was undertaken in two Phases, *viz*.:

- **Phase I – 2011:** involved information gathering via public participation meetings and workshops held across the Province, culminating in the production of a Status Quo Assessment Report on Water Management in the Western Cape (DEADP, 2011). Public meetings were held in Worcester, Clanwilliam, Oudtshoorn, George and Bellville. In addition, a stakeholder meeting that involved Departments from all spheres of Government, i.e. National, Provincial and Local, was held in Cape Town.

During this process, existing strategies and plans were reviewed, and the gaps and problems indentified, with recommendations made towards achieving sustainable water management in the Western Cape. Where specific Provincial planning priorities were identified, particularly per District Municipality and / or Water Management Area, these have been included in the Status Quo Assessment Report (DEADP, 2011).

- **Phase II – 2011/2012**: involved development of the Water Plan. The Status Quo Assessment Report (DEADP, 2011) informed the development of the Vision, Strategic Goals, Objectives, and Actions of the Western Cape Sustainable Water Management Plan. Public meetings were held in George and Bellville, and included an extensive public commenting period.

  The Water Plan identifies short, medium and long term actions on Municipal, Provincial and National levels to guide implementation of projects/activities towards achieving integrated and sustainable water management in the Western Cape. The timeframes identified for implementation of the actions are as follows:
  - Short (1 – 5 years);
  - Medium (6 – 15 years); and
  - Long term (+16 years).

  A process to monitor, evaluate and review progress made towards implementing the Water Plan is included.

1.5 INTERFACING WITH CURRENT STRATEGIES / PLANNING INITIATIVES

The Water Plan links with the current strategies and planning initiatives of the country and the Western Cape, at National, Provincial and Regional levels. A summary of the key strategies and planning initiatives reviewed and taken into account during the development of the Water Plan is provided in **Annexure 1**.

2. SUMMARY: WESTERN CAPE STATUS QUO ASSESSMENT

The Status Quo Assessment Report (DEADP, 2011) emphasised the availability and need for implementing technical solutions towards sustainable water management, as well as the need for prioritising institutional management issues. A summary of the Water Use Efficiency and Alternative Augmentation Options, as well as the gaps and recommendations made in the Status Quo Assessment is provided below.

2.1 WATER USE EFFICIENCY & ALTERNATIVE AUGMENTATION OPTIONS

Historically, the management of water shortages or inadequate assurance of water supply was primarily driven by the development of new bulk water supply infrastructure (such as dams, water transfer schemes, groundwater development, etc.) These conventional sources are becoming few and far between. There are limited suitable dam sites remaining for development, and in some areas groundwater has been over-exploited. A strong shift in water resource management and planning is taking place in terms of addressing the water demand-side interventions. Reducing the volumes of water abstracted from rivers and aquifers results in a positive benefit, as well as makes provision towards meeting the Reserve, a requirement of the National Water Act (Act 36 of 1998).

The following water use efficiency and alternative augmentation options were explored during Phase I of the development of the Water Plan:

- Water conservation and water demand management (WC/WDM)
- Water re-use
- Desalination

A summary of the water use efficiency and alternative augmentation options to be considered for the Western Cape is provided below.

2.1.1 WATER CONSERVATION AND WATER DEMAND MANAGEMENT

National, Provincial and Local water resource planning places a strong focus on reducing the demand-side of the water reconciliation equation, through the implementation of water WC/WDM. Many planning studies have been undertaken and strategies developed to demonstrate the opportunities associated with WC/WDM. Significant strides have been made towards WC/WDM implementation in the Province, although at varying degrees of success.

Although Government plays a pivotal role, the implementation of WC/WDM is the responsibility of everyone. Municipalities are required to reprioritise their budgets to provide for the management of Municipal assets, operation and maintenance thereof, as well as the implementation of metering, billing and revenue collection; while the industrial and agricultural sectors, as well as domestic water users should implement water saving measures in their processes and daily activities.

The overall objective for successful WC/WDM must be to reduce water demand, through optimising the use of existing and new capital investments in water supply infrastructure. In the short, medium and long term, WC/WDM should be an approach towards achieving sustainable water management.

A brief summary of urban, rural and agricultural WC/WDM options and strategies is provided below.

2.1.1.1 Urban and Rural WC/WDM options and strategies

As populations grow and as migration from rural to urban centres increase, water demand will continue to increase, primarily within densely populated urban centres. Furthermore, as the level of water services to households improve, the per capita water requirements are also likely to increase. The development of conventional water supply sources (e.g. water supply schemes / dams) is also becoming less opportune, and the potential yields of such sources must first provide for the Reserve, therefore placing limits on the availability of water from such sources.

The WC/WDM options for use in the urban and rural sector, which Municipalities should take into consideration in their WC/WDM strategies, are listed in **Table 2.1**. In the Western Cape, draft WC/WDM strategies are currently available for 21 Local Municipalities and the City of Cape Town. Where master planning in Municipalities is not in place as yet, those Municipalities are required to develop their WC/WDM strategies. DWA is currently supporting Municipalities to update their WC/WDM strategies, where these are in place.

Table 2.1: WC/WDM options for consideration in Municipal strategies and plans

INFRASTRUCTURE	• Asset management and operation and maintenance of all municipal owned water supply infrastructure and networks; • Water Pressure Management; • Appropriate monitoring of bulk and reticulated water; • Appropriate IWA water balances and its monthly reporting, particularly in terms of system input volumes, water losses and non-revenue water reduction programmes.
ALTERNATIVE OPTIONS	• Grey-water re-use; • Installation of rainwater tanks; • Retro-fitting with water efficient fittings in commerce, domestic and state owned buildings; • Water re-use in industry.
POLICY / LEGISLATIVE OPTIONS	• By-laws to compel the use of water efficient fittings in new developments; • Appropriate zoning to water supply; • Appropriate tariff structures for water supply to encourage consumer behaviour; • Inefficient water fittings and appliances phase-out in the market; • Eradicate illegal connections and illegal water use.
AWARENESS RAISING	• Public education and awareness raising campaigns on water and ecosystem conservation; • Outreach to improve public attitudes towards municipal water revenue streams (e.g. metering, billing and revenue collection from all municipal water users, including indigents where more than the free water allocation is used).

2.1.1.2 Agricultural WC/WDM options and strategies

The following four factors significantly affect the efficiency of water use within the agricultural sector:

- assurance of water supply due to the particular hydrology in an area, as influenced by climatic, rainfall and catchment variables;
- losses in the conveyance system (river or dam to field edge);
- losses relating to the type of application method (e.g. flood irrigation, sprinkler etc.); and
- irrigation scheduling, according to monitored soil moisture content.

The assurance of agricultural water supply varies substantially in the Western Cape, and impacts directly on the suitability of agricultural irrigation technologies, and therefore water use efficiency. A high assurance of water availability justifies investment in perennial fruit crops and advanced irrigation technologies; while a low assurance of water availability allows for infrequent irrigation, and therefore the production of seasonal or annual crops of lower value (e.g. lucern). In these cases, less efficient irrigation methods are often justified by financial and practical considerations. Much effort has therefore been made towards implementing WC/WDM options, and optimizing water use efficiency (i.e. more crop per drop), in the agricultural sector.

The recovery of water lost during conveyance across long distances, through leaking pipelines and canals (up to 30% in some cases), offers significant WC/WDM opportunity. However, two recent studies in particular, *viz*. the Oudtshoorn Agricultural Feasibility Study

and the Clanwilliam Dam Refurbishment Feasibility Study, concluded that repair and new linings at this scale are expensive. Based on 2007 cost estimates, the refurbishment of the Stompdrif-Kammannassie canal systems (Oudtshoorn) was estimated at R7/m^3 of water recovered and almost R10/m^3 for lining of unlined canals. The DWA's Raw Water Pricing Strategy stipulates that the costs associated with water infrastructure development by commercial farmers must be borne by that sector.

Alternative WC/WDM options, similar to those listed in **Table 2.1**, are required for the agricultural sector. Irrigation scheduling, according to soil moisture content, as well as the type of irrigation method, needs to be explored as options for use by the agricultural sector.

2.1.2 WATER RE-USE

The Strategic Assessment of Water Re-use Potential to Augment the Western Cape Water Supply System (DWA, 2010) and the Reconciliation for All Towns in the Southern Planning Region (DWA, 2011a) places a significant focus on water re-use options within the Province.

There are various forms of water re-use options available in water resource management. These range from direct to indirect, potable to non-potable, and planned to unplanned water re-use. *Planned, direct water re-use* refers to treated effluent that is taken directly to the potable reticulation system for use as a potable water source (e.g Beaufort West during recent drought conditions). The negative perceptions of the public to this type of water re-use, however, has resulted in indirect water re-use being considered as the approach to be adopted in the planning of future water re-use options.

Globally, *unplanned, indirect potable re-use* is often the water supply option, where towns in the upper reaches of catchments discharge treated effluent into the river; while towns located downstream abstract water from those rivers, and supply it as potable water after treatment. In the Western Cape, the extent of such options is limited (and costly), as many wastewater treatment works discharge effluent into rivers at very short distances from the sea, with very few (if any) downstream opportunities for indirect water re-use.

A summary of the water re-use options in the District Municipal areas, and City of Cape Town Metropolitan area, is provided below.

2.1.2.1 District Municipal areas

The potential for water re-use is influenced by the type of treatment process, water quality of the treated effluent, demand for the water, availability of infrastructure to convey water in a separate piped system, and the potential to store water. Social perceptions, certain religious objections and international requirements for export products may also limit its potential. A total volume of treated effluent from all WWTWs in the Province, excluding the City of Cape Town, is in the order of *ca.* 74 million m^3/a (DWA, 2010). The potential for this water re-use in the District Municipal areas is shown in **Table 2.2**.

Table 2.2: Effluent water re-use opportunities per District Municipality

District Municipality	Main Towns for Re-use Opportunity	Volume (million m^3/a)
CAPE WINELANDS	Worcester, Paarl, Wellington, Stellenbosch	31.2
CENTRAL KAROO	Beaufort West, Prince Albert	1.7
EDEN	George, Knysna, Mossel Bay, Oudtshoorn	21.8
OVERBERG	Hermanus, Caledon, Swellendam	6.5
WEST COAST	Saldanha, St Helena Bay, Vredenburg, Malmesbury	12.9
TOTAL		**74.1**

Indirect, non-potable water re-use opportunities are currently being implemented to some degree in the various District Municipalities. These uses are typically for irrigation of golf courses, public open spaces, irrigation of recreational properties, and blending for further Municipal supply.

A summary of the current water re-use initiatives and the potential effluent volumes available for water re-use at each town in the District Municipalities of the Province, is provided in Part 2: Effluent Re-use Opportunities in the Western Cape (DEADP, 2012).

2.1.2.2 City of Cape Town Metropolitan area

The City of Cape Town has 22 WWTWs, as well as a number of marine outfalls. Approximately 218 million m^3/a treated effluent is discharged from the WWTWs, of which *ca.* 90% is discharged from the 8 largest WWTWs, *viz*. Cape Flats, Athlone, Zandvliet, Bellville, Mitchells Plain, Macassar, Potsdam, and Borcherds Quarry. Of this, *ca.* 50% of the effluent is treated at the two largest WWTWs, *viz*. Cape Flats and Athlone. The Western Cape Water Supply System Reconciliation Strategy Study considered the effluent discharged from these WWTWs for indirect water re-use at scale (DWA, 2011b). Although the potential thereof, including that of other scheme options, will be verified, updated and assessed by the City of Cape Town, currently *ca.* 21 million m^3/a (10%) of this treated effluent water is used, of which *ca.* 7 million m^3/a replaces potable water use, thus reducing conventional water demand. The City of Cape Town's Master Plan (CoCT, 2007) for treated effluent re-use has identified an additional 10 million m^3/a treated effluent.

The storage of treated effluent water for re-use at scale is a key limiting factor during winter when water requirements are low and rainfall/runoff feeding dams and recharging aquifers are high. "Carry-over" storage facilities to ensure water provision during summer, when water demands are high and conventional water supply sources are limited, are therefore required and should be considered.

2.1.3 DESALINATION

Desalination is well suited for consideration in the Western Cape, particularly where the water demand centres are located along the coast and where storage capacity in existing infrastructure is available to absorb the "product water". Supply to inland areas is possible, but is not as cost effective as options such as water re-use, local groundwater development and surface water supply schemes, due to the extensive conveyance infrastructure

(pipelines and pump stations) required. Reticulation of desalinated sea water to inland areas also requires extensive additional energy costs, over and above any energy-intensive treatment processes.

The cost of desalination has been estimated to range between R12-14/m^3. Such costs, however, need to be weighed up against the following:

(i) proposed increases in energy costs; and
(ii) infrastructure required to integrate product water into existing pipeline networks to the water demand centres.

As the parameters for desalination would vary from one location to another, alternative energy sources (e.g. wind and concentrated solar power) should be investigated to reduce reliance on the National electricity grid.

Desalination has been implemented to varying degrees in the Province (e.g. Bitterfontein on the West Coast; Sedgefield, Mossel Bay and Plettenberg Bay on the southern Cape Coast). The DWA's on-going Strategic Water Resource Planning process has also identified large scale desalination as a potential water source for Cape Town, and warrants a feasibility study to ascertain the timeframes and location of such options. The feasibility would, however, need to consider current surface water supply schemes, groundwater development from the Table Mountain Group Aquifer, water reclamation/re-use, and storage capacity for product water into the integrated Western Cape Water Supply System. This is all impacted by the long term spatial planning and anticipated growth nodes, as identified in the Reconciliation for All Towns in the Southern Planning Region (DWA, 2011a).

2.2 GAPS AND RECOMMENDATIONS

Various gaps were identified during Phase I, and from the current understanding of key projects within the water sector of the Province. Gaps were categorised into 12 Themes, and provides an overview of the overall status of water resource management in the Province.

The gaps informed the recommendations made towards ensuring that the sustainable resource management of water is effectively implemented and integrated into the growth and development initiatives of the Province, without compromising ecological integrity. Due to the inter-connectedness of water as a resource for growth and development in the Province, the identified gaps and recommendations are, however, multi-layered and overlapping across the Themes.

The gaps and recommendations were categorised into the following 12 Themes:

- Theme 1: Institutional Capacity
- Theme 2: Co-operative Governance – Integrated Authorisations
- Theme 3: Enforcement and Legislation
- Theme 4: Water Conservation / Water Demand Management
- Theme 5: Ecological Sustainability of Water Resources
- Theme 6: Water Scarcity
- Theme 7: Water Quality
- Theme 8: Groundwater Use
- Theme 9: Allocation of Budget
- Theme 10: Planning
- Theme 11: Infrastructure Ownership
- Theme 12: Information Management

A full description of the gaps and recommendations made in each Theme is provided in the Status Quo Assessment Report (DEADP, 2011). A brief summary of the status of each Theme is provided below.

2.2.1 INSTITUTIONAL CAPACITY

Departments and Municipalities often find themselves in the position where there is a break in the continuity of senior management, or that technical positions (supervisors, process controllers) are not appropriately filled. The perception of a limited career within Government Departments, specifically with respect to wastewater treatment and water treatment plant operators, contributes to technical positions not being filled. As such, the decision making processes and/or original focus on water services are often compromised or redirected to other priorities, thereby severely impacting on water resource management institutional functions. The fact that Government Notice Regulation GNR2834 of 27 December 1985, under the Water Act of 1956, has not been updated to account for changes in qualification requirements (i.e. NQF), and also allocates a lower weighting for experience and competency, presents a further challenge, as does the Occupational Specific Dispensation (OSD) as it is currently implemented.

2.2.2 CO-OPERATIVE GOVERNANCE: INTEGRATED AUTHORISATIONS

The complexity and time constraints associated with approval processes and authorisations for developments presents a challenge. Often also, the administrative costs outweigh the actual capital investment, as up to 11 different permits and authorisations may be required, depending on the type of development. Cooperative governance is necessary to address overlaps in the various statutes (e.g. Industry Waste Management Plans, Environmental Management Plans etc.), as well as in regulation and enforcement of the legislation, particularly where permits and authorisations may conflict or contradict each other. Similarly, an integrated approach is required for the authorisation of activities within the riparian zone (e.g. bank stabilisation, removing flood debris, etc.). Overall, a high level of co-operative governance between Departments can streamline these processes and result in the same objectives being achieved, but in a less costly and much shorter time-frame.

Other than authorisations, social upliftment projects in communities living in rural areas (e.g. LandCare Programme) require a co-operative governance approach between the three spheres of Government. This will ensure successful project implementation and indirectly contribute towards achieving the objectives of, amongst other, the National Planning Commission and the Western Cape Governments' Provincial Strategic Objectives.

2.2.3 ENFORCEMENT AND LEGISLATION

Compliance and enforcement capacity in all spheres of Government and of legislation is limited in terms of water resource management. Conditions of authorisations are often impractical to monitor, with various Organs of State themselves being non-compliant. The regulation of legislation and by-laws is also often carried out in isolated enforcement, and should ideally be integrated with environmental health and resource management.

The above is compounded by conflicts in National legislation where activities are either included or excluded from definitions in the Acts, e.g. groundwater is not specifically specified as a water resource in the NWA. Further, many Acts require the submission and authorising of plans where the content overlaps different legislation (e.g. Water Service Development Plans, Environmental Management Plans, Industry Waste Management Plans,

etc.). If such plans are not compiled, reviewed and authorised in an integrated and co-operative manner, the potential for conflict and uncertainty arises, thereby further limiting the monitoring of compliance.

Similarly, several directives as required by different legislation can be issued for the same offence. Such directives may instruct different activities, which in turn may have implications under other legislation (e.g. the NWA may require EIA authorisation in terms of NEMA, prior to mitigation being undertaken).

Penalties required by some statutes also vary in terms of the fines associated with it (e.g. NEMA: R10 million; NWA: R10 000; CARA: R500; or as per Municipal By-Laws) and may also be too lenient to deter illegal behaviour. Further, paying an Admission of Guilt fine is often regarded as less expensive than following the required, but often lengthy authorising process.

2.2.4 WATER CONSERVATION / WATER DEMAND MANAGEMENT (WC/WDM)

Despite the existence of WC/WDM strategies in numerous Municipalities in the Province, its implementation, monitoring and management have lagged behind, resulting in limited water savings or water use efficiency.

Although WC/CDM is a concurrent function of the National and Local spheres of Government, clarity is required in terms of their roles and responsibilities. The head of the institution (Municipality or WUA) is accountable for WC/WDM implementation. Therefore, the appointment of a WC/WDM co-ordinator at each institution is imperative when implementing WC/WDM. Further, their roles and responsibilities need to be included as part of their daily job descriptions.

Improved water metering and monitoring across all sectors is required if accurate water balances are to be maintained. Water losses from WSAs require verification, together with accurate records of bulk supply *versus* treated reticulation and sales. Although the agricultural sector has made significant strides in achieving high in-field irrigation efficiencies in the Western Cape, more accurate monitoring and measuring of water use is required. This is particularly true for storage dams, as evaporation losses can be significant, as well as losses from conveyance canals. Since irrigation accounts for *ca.* 43% of the available water resources in the Province, the effective and efficient management of such infrastructure plays a significant role in terms of reducing water demand.

2.2.5 ECOLOGICAL SUSTAINABILITY OF WATER RESOURCES

Environmental and ecological sustainability is a central focus of integrated management of water resources. The most direct implication is that provision for the Ecological Reserve needs to be prioritised and actioned, as a matter of urgency. The Ecological Reserve has the potential to affect water allocation and planning and development initiatives, if significant volumes of water are required.

Freshwater flow and quality are important drivers of estuary functioning and health. Therefore, more integrated management and / or modelling of the Ecological Reserve is required at Provincial and National level, particularly with regards to integrating water resource planning and management processes from catchment to coast. Implementation of the Western Cape Provincial Spatial Development Framework, PSDF (DEADP, 2005), which has sustainable development as a guiding principle, is important in this regard. The PSDF emphasises the inclusion of ecological integrity, as well as social justice and economic efficiency. Therefore, the National Freshwater Ecosystem Priority Areas (NFEPAs) sites and

Critical Biodiversity Areas (CBAs), as well as their support processes, should be considered in planning strategies. Priority estuary and marine areas have also been identified as part of the National prioritization process and need to be factored into water resource planning and management processes from catchment to coast.

The DWA is currently implementing a 'validation and verification process' to confirm and rectify the extent of water over allocation in the Province. The re-allocation of water from existing users (through compulsory licensing) may be required to meet the Ecological Reserve. Other initiatives include water-trading and targeted removal of invasive and alien plants, etc.

2.2.6 WATER SCARCITY

Water resources in the Western Cape are limited, and have become increasingly stressed due to a steady increase in water demand, as well as making provision for the Ecological Reserve. In addition, the effects of climate change will place even further stress on this limited resource.

Currently, the Berg WMA is the only one in the Province that has a water availability surplus, attributed mainly to the construction of the Berg River Dam. However, it is anticipated that this surplus will not exist by 2018. Increased awareness of this limited resource and alternative options such as WC/WDM, groundwater use, sea water desalination and water re-use are important in the Western Cape, and need to be addressed as indicated previously (see Theme 4: Water Conservation / Water Demand Management).

Water allocation reform is also underway, and needs to be approached in a co-ordinated manner between the relevant Departments, and needs to be aligned with the land reform process. Such reform needs to consider the Millennium Development Goal with regards to access to safe drinking water and basic sanitation.

2.2.7 WATER QUALITY

Satisfying the water needs of the Western Cape require that both the quantity of water is sufficient, as well as the quality of water is suitable for its users. The deterioration of water quality poses a major threat to the capability of water resources to provide sufficient water, of appropriate quality, to meet the growth and developmental needs (including economic and basic human needs, especially human health) of the Western Cape, whilst ensuring environmental sustainability.

Effluent discharge from non-compliant WWTWs, the return flows from intensive irrigation practices, and runoff from dense urban settlements and areas with inadequate sanitation services, apart from natural geology, all deteriorate the water quality of rivers in the Western Cape. Poor water quality impacts on human health (i.e. waterborne diseases) and has economic consequences if agricultural exports from the Province are banned, if such produce is grown in catchments where the water quality is significantly polluted or do not meet international standards (e.g. EUROCAP).

Municipal Environmental Health Inspectors monitor water quality in rivers; however, the allocated budgets limit the effectiveness of such monitoring programmes, particularly in terms of noting short term, intensive pollution incidents. The DWA is currently issuing directives in order to address water quality and pollution matters within some catchments, as well as engaging in civil society pollution action committees.

In terms of addressing water and health issues, a more unified system for monitoring and preventing water-borne diseases is needed, to ensure more effective co-operation between the Local, Provincial and National authorities, where required. Further, the public needs to be made aware of the link between adverse water quality and related health implications, and water quality, particularly *E. coli*, needs to be reported on regularly in the public domain.

2.2.8 GROUNDWATER

There is extensive potential for increased promotion and utilisation of groundwater as a water resource in the Western Cape. At the same time, more effective and comprehensive monitoring of groundwater (quantity and quality) is required on an aquifer basis, rather than on an individual borehole basis. This is especially true where aquifers are currently being over-utilised. The conjunctive use of surface water and groundwater is encouraged, as are interventions such as artificial aquifer recharge, provided that more stringent monitoring is in place.

2.2.9 ALLOCATION OF BUDGET

All aspects of sustainable water management and the provision of water services are affected by budget availability.

Limited budgets and resource constraints delay progress in implementing WC/WDM within Local Government. Challenges to overcome this include the prioritisation or ring-fencing of budgets for implementing WC/WDM options. As already indicated, WC/WDM implementation must be a Key Performance Indicator in the job descriptions of appointed co-ordinators, including the head of their respective institutions. Opportunities to acquire Regional Bulk Infrastructure Grant funding for implementing WC/WDM should follow an aggressive approach. Further, appropriate planning for drought preparedness and longer-term water resource planning by smaller Municipalities can prevent crisis situations. Metering, billing and revenue collection is also required for immediate implementation by all Municipalities. Moreover, a culture of payment for services, as well as conserving scarce water resources, is required where free basic supply allocations are exceeded.

The full implementation of the National Water Resources Strategy (DWA, 2004), both nationally and in the Western Cape, has been constrained by limited budgets. To date, only the Breede-Overberg CMA (BOCMA) has been established in the Western Cape. A verification and validation of water use process is currently underway in priority catchments, and DWA plans to initiate a water availability assessment study in the Breede WMA. However, the establishing of the remaining CMAs are critical in terms of achieving sustainable water management in the Western Cape – this process needs to be fast tracked by all spheres of Government.

2.2.10 PLANNING

Planning and development are integrally linked to sustainable water resource management, and must take into account that water supplies in the Western Cape are finite, and that sustainable growth and development will be limited by the availability of this resource. All strategies and plans in this regard must consider WC/WDM options; NFEPAs and CBAs; increased sanitation, commercial and production requirements; and improved levels of service, as part of the authorising processes for developments. Further, all new developments need to account for water availability and determine a water balance in terms of water supply *versus* water demand for that area.

Approval processes and authorisations for developments are often complex and should ideally be streamlined *via* an integrated application submitted to one authority for approval. Such integration is necessary and requires a high level of co-operative governance between Departments, as indicated in Theme 2: Co-operative Governance – Integrated Authorisations.

Municipal and Provincial boundaries also do not necessarily correspond with WMA boundaries, thus the disaggregation of water resource information to correspond with Municipal areas is not easily achieved. Focused planning initiatives are required for areas or towns that are located within the Western Cape, but lie in WMAs largely outside the boundaries of the Province (e.g. Murraysburg). Such towns are at risk of not being part of water resource management or town planning processes.

Where unavailable, WSAs may use the existing DWA guidelines to develop comprehensive WSDPs and a scorecard to monitor its implementation towards improving water resource management at the Local Authority level. Further, where Municipal WC/WDM Strategies and Plans and Drought Management Plans are lacking, these need to be developed for managing and monitoring the impacts of, amongst others, drought situations. Similarly, Disaster Management Plans that consider a risk reduction framework, particularly with regards to new developments (e.g. updating floodline estimates, when physical catchment conditions change) are also required. These aspects should be incorporated in local IDPs and SDPs, with support given to Local Municipalities who lack the capacity to draft and implement such plans.

Planning is also most impacted by a lack of credible data and information. The availability of credible Municipal SDFs, as well as credible data and information can only be achieved if these are developed and if effective databases in this regard, are monitored and managed. The DEADP is currently engaging with Local Authorities through the Built Environment Support Programme for Municipalities to develop credible Municipal SDFs.

2.2.11 INFRASTRUCTURE OWNERSHIP

The collapse of water resource infrastructure nullifies any sustainable water management for growth and development in the Western Cape.

The opportunity to significantly reduce water losses, to the order of 20 to 30%, and to improve water quality from effluent, exists if aging water resource infrastructure are refurbished or replaced. Owners of such infrastructure, particularly Municipalities and the agricultural / industrial sector, must plan for such refurbishment or replacement in order to avoid it from impacting negatively on water resources and water users. Financial planning and budgeting of all institutions is necessary for asset management, as well as the operation and maintenance of existing water resource infrastructure.

2.2.12 INFORMATION MANAGEMENT

There is a need for a clear, streamlined procedure for accessing information on water from various institutions. A Centralised Environment and Water Information Portal (CEWIP) can serve this purpose and needs to be established and housed in the Western Cape Government, with linkages to DWA. A CEWIP would ensure access to the most up to date policies, strategies, plans and reports on sustainable water management in the Western Cape. All data and information on water quality or rivers and their corresponding management objectives, as well as progress on the implementation on this Water Plan, should be submitted to such a portal; however, noting sensitive information.

As the quality of data varies considerably, and in some instances may be inadequate for use, standardised reporting formats, abbreviations and data validation processes, are required. Moreover, a Monitoring and Evaluation System needs to be developed to track progress made against the Water Plan.

An Integrated Communication Strategy to communicate progress made on the implementation of the Water Plan (i.e. sustainable water management, water scarcity issues and WC/WDM options, etc.) to all relevant water sectors and water users, including Government, is required.

3. THE WATER PLAN AND STRATEGIC PRIORITIES

3.1 VISION

"Sustainable water management for growth and development in the Western Cape, without compromising ecological integrity."

This will be achieved by the following Substantive Principles:

- Efficiency in water utilisation across all sectors;
- Ensuring a safe environment and clean water;
- Ensuring sustainable integrity of ecological diversity and systems.

3.2 STRATEGIC GOALS

The following four (4) ***Strategic Goals*** were identified as key to achieving the ***Vision*** of the Water Plan:

GOAL 1	Ensure effective co-operative governance and institutional planning for sustainable water management.
GOAL 2	Ensure the sustainability of water resources for growth and development.
GOAL 3	Ensure the integrity and sustainability of socio-ecological systems.
GOAL 4	Ensure effective and appropriate information management, reporting and awareness-raising of sustainable water management.

The 12 Themes that characterised the Gaps identified and Recommendations made during the Phase 1 Status Quo Assessment (DEADP, 2011), were integrated into the 4 ***Strategic Goals***, as presented in **Figure 3.1.**

Figure 3.1: The 12 Themes (outer circles) are integrated to inform the 4 Strategic Goals (inner rectangles) of the Water Plan, *viz*. Goal 1: *Themes 1, 2, 9, 10*; Goal 2: *Themes* 4, 6, 8, 11; Goal 3: *Themes 3, 5, 7*; Goal 4: *Theme 12*.

3.3 THE IMPLEMENTATION PLAN

The Water Plan is presented in **Table 3.1**. For each ***Strategic Goal***, similar / related activities were integrated into one or more ***Strategic Objectives***. ***Indicators*** were identified for each ***Activity***, against which to monitor progress made in implementing the Water Plan. ***Timeframes*** were set for implementing the activities, with ***Responsibilities*** assigned to key stakeholders in all three spheres of Government, as well for Interested and Affected Parties (I&APs).

The ***Targets*** that are regarded as highest priority for implementation towards achieving the ***Vision*** of the Water Plan are highlighted in Table 3.1, and summarized in **Annexure 2**. The prioritised ***Targets*** were selected for immediate implementation by all three spheres of Government and I&APs.

Table 3.1: The Western Cape Sustainable Water Management Plan – Implementation Plan, highlighting the Prioritised Targets (shaded rows)

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management								
Objective 1.1: Strengthen and build institutional capacity and integrate institutional structures and mechanisms								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
1.1.1 Catchment Management Agencies (CMAs) established and supported.	• Fast-track process to establish remaining CMAs. • Provide strategic support to existing CMAs. • Establish interim Catchment Management Forums, where CMAs do not exist. • Disseminate Guidelines on CMAs and CM Forum functioning (e.g. on central database).	• Number of stakeholder engagements to establish remaining CMAs • Number of strategic engagements with existing CMAs • Number of CM Forums in the Province • Number of CMAs in the Province • Number of stakeholder awareness raising interventions / engagements on the CMA process	Immediate	• DEADP to engage with DWA to fast-track CMA establishment • Sector Departments to provide inputs and support into the CMA processes (DLG, WCDoA, DEADP, CapeNature)	• **LEAD: DWA National** Drive CMA establishment process and provide necessary funding for process. • DWA-RO report on progress to PCF	• Participate in / provide inputs into the CMA processes in their regions	• Institutions e.g.: WUAs to participate in / provide inputs into the CMA processes	• Annual Budget • DWA funding (Note that this comes from National level)
1.1.2 Irrigation Boards transformed into Water User Associations (WUA)	• Prioritize the Irrigation Boards that are to be transformed into WUAs. • Transform Irrigation Boards to WUAs. • Ensure that WUAs remain effective structures responsible for the provision of water to, and compliance by, the agricultural sector.	• Prioritized list of Irrigation Boards. • Number of established WUAs. • Number of WUAs that effectively and efficiently provides water to the agricultural sector.	Short	• WCDoA to promote/ encourage conversion of Irrigation Boards to WUAs	• **LEAD: DWA-RO** Transform Irrigation Board into WUAs, and report on progress to PCF • DWA to encourage other users to join WUAs • DAFF provide input into the process	• Provide inputs into process, as required	Provide inputs into process, as required	Annual Budget
1.1.3 Government Notice Regulation GNR 2834 Requirements expanded and updated	• Determine areas where GNR 2834 type guidelines or standards are necessary. • Draft and develop necessary guideline standards for identified components of water services. • Update GN 2834, in terms of current operating requirements, training requirements and minimum education standards.	• Gazette the updated GNR 2834 Requirements • Developed guidelines for all components of water services (reservoirs, per 100km pipelines, pump stations, groundwater supply schemes, WC/WDM and aquatic specialists, etc.). • Improved human resource capacity and competency against the 2nd Order Assessment of WWTW and WTW human resources dated 2008.	Medium	• DLG to engage with DWA to update GN2834 • Sector Departments (D:LG; DEADP) to provide inputs to updating the GNR 2834	• **LEAD: DWA National** Update GN2834	• Provide inputs into process, as required	• Provide input into guidelines, as required	Annual Budget WRC WISA
1.1.4 WC/WDM included as a core function in the technical services of Municipalities or WUAs	• Review and update the technical services organogram to incorporate WC/WDM. • Link the updated organogram to a salary scale for positions and levels for all Municipalities. • Update the Water Services Act to include and identify the roles and responsibilities of a WC/WDM coordinator. • Appoint a WC/WDM co-ordinator in Municipalities or WUA. • Set KPIs for Municipal Managers and water managers on implementing WC/WDM.	• Updated technical services organogram and job description to include WC/WDM • Developed a salary scale for updated organogram • Amended WSA to reflect the WC/WDM coordination function. • Number of WC/WDM coordinators appointed at Municipalities and/or WUA. • Included and measured performance on WC/WDM in the KPIs of Municipal Managers and Water Managers.	Medium	• **LEAD: DLG** Provide guidance and support to municipalities to update organogram, job descriptions and appoint WC/WDM co-ordinators • D:CoGTA to provide inputs into processes • Sector Departments (DEADP, WCDoA) to provide inputs into process, particularly in determining the KPIs on water resource efficiency	• **LEAD: DWA-RO** Update Water Services Act • National Treasury to provide input into salary scale. • DWA to provide inputs in determining the KPIs on water resource efficiency	• Prioritize WC/WDM processes • Implement amended organogram • Appoint WC/WDM co-ordinator • Determine KPIs for water resource efficiency • Implement performance against KPIs	• **LEAD: SALGA** Implement and monitor performance against KPIs • DPSA to deploy engineers into positions until permanently filled • SALGA to encourage and support municipalities in the processes	Annual Budget SALGA

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management								
Objective 1.1: Strengthen and build institutional capacity and integrate institutional structures and mechanisms								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
1.1.5 DWA Tariff Strategy revised, gazetted and implemented.	• Gazette and implement the revised DWA tariff strategy. • Update the Norms and Standards for potable water tariffs, to reflect the real cost of water above the daily allowance. • Review and update municipal tariff structures in-line with Strategy.	• Revised DWA Tariff Strategy gazetted • Number of Municipalities that have successfully implemented the DWA Tariff Strategy.	Short	• All relevant Departments to provide inputs into process, as required	• **LEAD: DWA National** Gazette Tariff Strategy	• Municipalities to update municipal tariff structures.	-	Annual Budget
1.1.6 Capacity building in water resource management, WC/WDM, water services and its compliance and enforcement	• Develop accredited training programmes for Municipal and WUAs officials to ensure appropriate occupation skills and qualifications on: operating and maintaining schemes & WWTWs; aquifer & groundwater well-field management; basic water resource management & ecological sustainability; WC/WDM options & implementation. • Provide training on the accredited programmes to Municipal and WUAs officials. • Monitor, evaluate, audit and update the accredited training programmes.	• Developed accredited training courses for Municipal officials / WUAs • Number of officials who attended the accredited training programmes • Number of officials who have been awarded certification of the accredited training programmes • Monitored, evaluated and updated the accredited training programmes	Immediate	• DLG to engage with DWA-RO to develop accredited training programmes. • WCDoA to provide sector-specific course material and offer such training, as a component of the training programmes • DLG and WCDoA to promote training programmes to Municipalities	• **LEAD: DWA-RO** Develop, co-ordinate and promote accredited training courses in association with DWA National	• Municipal staff to attend training programmes	• SALGA to support and promote training. • Other institutions to be involved in contributing to course material and assisting with the actual training: Tertiary institutions CSIR WISA WRC D: Education Private Sector.	Annual Budget of DWA-RO / DWA with contribution from D:LG, DEADP & municipalities.
1.1.7 Learnerships in water resource management	• Provide water-related learnerships & mentoring programmes in all spheres of Government.	• Number of officials who participated in the water-related learnerships and mentoring programmes • Number of officials who successfully completed the water-related learnerships and mentoring programmes	Immediate	• **LEAD: DLG** Co-ordinate & promote learnerships and mentoring programmes. • All relevant Departments provide learnerships and mentoring opportunities	• DWA-RO provide learnerships and mentoring opportunities	• Municipal staff to participate in learnerships and mentoring programmes	• Private sector, CESA, WISA, other Department to provide support for mentoring programmes where applicable.	Annual Budget
1.1.8 Water-related EMI training for Municipal officials and WUAs	• Provide water-related (tailor-made) EMI training to Municipal officials and WUAs • Delegate functions of EMIs to Municipal level and amend MSA accordingly. • Encourage participation of Municipal officials in the Environmental Crime Forum.	• Number of Municipal or WUA EMIs trained in the Province • Number of Municipal or WUA EMIs designated in the Province • Amended NEMA and Municipal Structures Act to reflect Municipal powers on EMIs • Number of Municipal / WUA officials that attend the Environmental Crime Forums •	Immediate	• **LEAD: DEADP** Drive the Provincial Environmental Crime Forum • DLG to advocate that Municipalities to attend training. • Department of Justice and Constitutional Development to endorse capacity building of prosecutors	• **LEAD: DEA (National)** Design appropriate EMI training • DWA responsible for developing training programme • Relevant DWA:RO officials to attend training. • DWA-RO to attend Provincial Environmental Crime Forum	• Relevant Municipal officials to attend training. • Participate actively in the Provincial Environmental Crime Forum.	• Relevant WUAs staff to attend training. • All regulatory institutions to participate actively in the Provincial Environmental Crime Forum.	Annual Budget

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management								
Objective 1.2: Adequate allocation of budget in all aspects of sustainable water management								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
1.2.1.1 Long-term planning of infrastructure and capacity building budgets	• Ensure longer-term plans and budgets (10 and 25 years) in Municipal WSDPs. • Conduct infrastructure integrity audits and provide for its maintenance in budgets. • Ensure longer-term plans and budgets for water-related institutional capacity building and training, linked to Municipal Workplace Skill Plans.	• Municipal budgets adequately provide for: o water supply and services, and maintenance aspects, for long term planning horizons (10-25 year). o institutional capacity support and training, linked to Municipal Workplace Skills Plans.	Immediate	• **LEAD: Provincial Treasury** Review and assist with longer term budgets and present recommendations to the Economic Sector Committee and Budget Policy Committee. • Departments (DEADP, DLG, WCDoA) to provide inputs into process.	• DWA-RO to provide inputs into process.	• **LEAD: Municipalities** Provide for infrastructure integrity audits and maintenance, as well as institutional capacity building and training, for longer-terms in budgets.	-	Annual Budget
1.2.2. Appropriate funding models and alternative funding sources for infrastructure and water services delivery, including water metering.	• Investigate the potential for "ring-fencing" or formally secure funds for infrastructure maintenance and water services delivery, including water metering. • Implement Treasury guidelines on ring-fencing and develop a MoA for Municipalities.	• Number of Municipalities who applied for relevant funding. • Number Municipalities that have signed an MoA to secure relevant funding. • Number of Municipalities that have successfully implemented relevant projects, using the secured funding.	Short	• **LEAD: Provincial Treasury** Provide guidelines on ring-fencing or formal securing of funds for water service maintenance and investment. • DLG submit proposals for ring-fenced funding to Provincial Treasury.	• DWA-RO to provide inputs to process.	• Municipalities submit proposals for relevant funding and implement projects.	-	Ring-fenced Budget
	• Include WC/WDM options as a prerequisite to funding new schemes in the RBIG funding criteria.	• Number of WC/WDM project applications received from Municipalities for RBIG funding. • Number of WC/WDM projects in Municipalities that have secured RBIG funding. • Number of Municipalities that have successfully implemented WC/WDM projects, using RBIG funding.	Immediate	• DLG submit proposals for RBIG funding to DWA-RO. • Departments (DEADP, WCDoA) provide inputs to process.	• **LEAD: DWA-RO** Drive the process of RBIG funding and engage with National Treasury to include WC/WDM implementation as conditions for receiving RBIG funding.	• Municipalities submit proposals for RBIG funding and implement projects.	-	RBIG Budget
	• Investigate the potential for, and promote the establishment of Public-Private-Partnerships, PPP (section 120 of the MFMA) for delivering water and sanitation services.	• Number of applications received from businesses to establish PPPs. • Number of PPPs applications approved. • Number of PPPs established successfully.	Short	• **LEAD: Provincial Treasury** Review potential PPPs and present recommendations to Economic Sector Committee and Budget Policy Committee. • DLG approve proposals for PPPs in water services. • WCDoHS engage with National DoHS on PPPs in sanitation services. • Sector Departments (DEADP, WCDoA) provide inputs to process.	• National DoHS to investigate PPPs as an option in the Sanitation Programme. • DWA-RO to provide inputs to process.	• Municipalities to promote, receive and review applications to establish PPPs and submit successful applications to DLG.	• Relevant stakeholders submit proposals to Municipalities to establish PPP for delivering water and sanitation services.	PPP funding

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management								
Objective 1.3: Strengthen integration between sustainable water management, ecological sustainability and planning processes, and integrate these with water allocation reform and water reconciliation strategies.								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
1.3.1 Integrated Environmental Authorisation Application that includes sustainable water management options for new developments.	• Review and identify all overlapping environmental authorisation requirements of relevant regulations and statutes. • Develop an integrated environmental authorisation application that incorporates the overlapping requirements identified. • Develop a protocol to review, monitor and enforce integrated authorisation and appeals process. • Develop MoA for the issuing of integrated authorisations and the appeals process, by relevant Departments. • Review land use zoning / re-zoning requirements, and amend it to include sustainable water management options (water balances) in authorisation processes for new developments, as required. • Recommend legislative amendments for authorisations, where necessary.	• An integrated environmental authorisation application developed. • Successfully implemented protocols to review, monitor and enforce integrated authorisations and the appeals process. • MoA developed and signed between relevant Departments identified. • Number of Municipalities that integrate land-use zoning / rezoning and sustainable water management options (water balances) in authorisation processes for new developments. • Legislative amendments recommended to National DEA/DWA for authorisations.	Immediate	• **LEAD: DEADP** Review, identify and draft MOA and integrated authorisation, and engage with National DEA/DWA for legislative change to develop integrated authorisations. • Departments (DLG, WCDoA), DotP, CapeNature provide inputs into process.	• DWA-RO to provide inputs process. • DEA/DWA to drive process to make legislative amendments, and provide support via the Blue Drop and Green Drop assessments. • DEA:Oceans & Coast provide inputs, as required.	• Provide inputs into process and implement.	• SAHRA to provide inputs into process.	Operational funding
1.3.2 By-laws and building codes revised to promote WC/WDM non-conventional sources (NCS).	• Review existing building regulations and standards, as well as processes for new developments, e.g. Town Planning processes, to determine if it adequately included WC/WDM and NCS water. • Update existing building regulations and standards to include WC/WDM options and NCS water, where absent. • Investigate the possibility of a WC/WDM Compliance Certificate for the sale of properties (similar to an Electricity Compliance Certificate).	• Number of building regulations and standards that promote WC/WDM and NCS water. • Number of new building regulations and standards that promote WC/WDM and NCS. • Developed a WC/WDM Compliance Certificate for the sale of properties. • Number of WC/WDM Compliance Certificates issued.	Short	• DLG, DEADP, DTPW, WCDoHS to update requirements and processes.	• **LEAD: National Home Builders Registration Council** Drive process to revise and update the Building Regulations and standards, as well as the WC/WDM Compliance Certificate. • DWA, DPublic Works to provide input into process.	• Update processes and by-laws		Annual budget

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management								
Objective 1.3: Strengthen integration between sustainable water management, ecological sustainability and planning processes, and integrate these with water allocation reform and water reconciliation strategies.								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
1.3.3 Relevant Sector Departments represented on the Western Cape Reconciliation Strategy Steering Committee.	• Extend representation by identifying roles and responsibilities of relevant Sector Departments to participate in the Western Cape Reconciliation Strategy Steering Committee. • Sector Departments to appoint officials to represent their Departments on Steering Committee.	• Roles and responsibilities of relevant Sector Departments identified. • Sector Departments appointed officials to participate on Steering Committee. • Successful representation and participation of all relevant Sector Departments on the Steering Committee.	Immediate	• Relevant Departments to participate on Steering Committee.	• **LEAD: DWA-RO** Identify and include roles and responsibilities of Sector Departments on Steering Committee.	• SALGA to provide opportunity for DWA-RO to communicate Reconciliation Strategy matters to Municipalities.	• SANBI	Operational Budget
1.3.4 Provincial EMP integrating sustainable water management and ecological sustainability into planning processes.	• Draft a Provincial EMP (Section 11 of NEMA) to integrate sustainable water management and ecological sustainability into planning processes, making provision for protecting priority ecosystems, NFEPAs and CBAs that are likely to be impacted by proposed planning processes. • Incorporate the provisions of the EMP into Municipal IDPs. • List all existing growth and development strategies and plans, including sector plans, and update these to incorporate sustainable water management and ecological sustainability.	• Provincial EMP drafted and made available to relevant authorities, institutions and the public. • Number of Municipal IDPs that make provision for Provincial EMP provisions. • Number of plans, strategies, sector plans identified that incorporate and provide for sustainable water management and ecological sustainability.	Short	• **LEAD: DEADP** Draft Provincial EMP, and update all existing growth and development plans, strategies and sector plans. CapeNature to provide inputs into process and identify specific priority areas for incorporation into development plans, strategies and sector plans.	• DWA-RO and National DWA to update relevant sector plans.	-	• SANBI to provide inputs into review; identify specific priority areas for incorporation into development plans, strategies and sector plans.	Annual Budget
1.3.5 Strategy and Action Plan for NFEPAs and CBAs	• Develop and implement an integrated Strategy and Action Plan for NFEPAs and CBAs to restore or prevent its further degradation where it is impacted by land uses. • Identify NFEPA and CBAs that are impacted by land uses. • Implement actions to restore or prevent environmental degradation of NFEPAs and CBAs.	• Strategy and Action Plan developed. • Number of NFEPAs and CBAs that are impacted by land uses. • Number of NFEPAs and CBAs that have been restored or where environmental degradation was prevented.	Short	• **LEAD: CapeNature** Lead process to develop the Strategy and Action Plan. • DotP and Departments (DEADP, DLG, WCDoA) to provide input and support to process.	• DWA-RO provide input and support to process.	-	• SANBI to provide input and support to process.	Annual Budget
1.3.6 Preventative Maintenance Plans for water-Related infrastructure	• Revise WSDPs formats to include proactive and preventative maintenance plans for water-related infrastructure.	• Number of WSDPs that include proactive and preventative maintenance plans for water-related infrastructure.	Short	-	• **LEAD: DWA National** Develop template change for WSDPs • DWA-RO to review process and WSDPs	• Include information on plans in WSDPs.	-	Annual Budget

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management								
Objective 1.3: Strengthen integration between sustainable water management, ecological sustainability and planning processes, and integrate these with water allocation reform and water reconciliation strategies.								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
1.3.7 Guideline on Managing Agricultural Land in Urban Areas.	• Draft Guidelines on managing agricultural land in urban areas. • Identify areas of agricultural land in urban areas. • Investigate activities, jurisdictions and roles and responsibilities of authorities. • Draft MoA between DAFF, CoGTA and Municipalities.	• Guideline drafted. • Identified urban areas where agriculture takes place. • MoA signed between DAFF, CoGTA and Municipalities.	Medium	• DEADP provide input into process. • WCDoA assist in identifying areas and provide input.	• **LEAD: DAFF** Drive process. • DAFF and D:CoGTA identify areas.	• Municipalities provide input into processes.	-	Annual Budget
1.3.8 By-laws and building codes revised to promote WC/WDM non-conventional sources (NCS).	• Review existing building regulations and standards, as well as processes for new developments, e.g. Town Planning processes, to determine if it adequately included WC/WDM and NCS water. • Update existing building regulations and standards to include WC/WDM options and NCS water, where absent. • Investigate the possibility of a WC/WDM Compliance Certificate for the sale of properties (similar to an Electricity Compliance Certificate).	• Number of building regulations and standards that promote WC/WDM and NCS water. • Number of new building regulations and standards that promote WC/WDM and NCS. • Developed a WC/WDM Compliance Certificate for the sale of properties. • Number of WC/WDM Compliance Certificates issued.	Short	• DLG, DEADP, DTPW, WCDoHS to update requirements and processes.	• **LEAD: National Home Builders Registration Council** Drive process to revise and update the Building regulations and standards, as well as the WC/WDM Compliance Certificate. • DWA, DPublic Works to provide input into process.	• Update processes and by-laws		Annual budget

Goal 2: Ensure sustainable water resources to achieve growth and development								
Objective 2.1: Develop, promote and implement effective and efficient water conservation and water demand management								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
2.1.1. Municipal water services strategies and plans (WC/WDM strategies & implementation plans, SDIP, WSDPs and IDPs) include water metering, by-laws and stepped tariff structure.	• Gazette the draft Regulations on water efficiency and metering, applicable to all sectors (agriculture, mining, industry, electricity generation and domestic). • Revise all Municipal water services strategies and plans to include WC/WDM options, non-conventional water sources, water metering, by-laws and stepped tariff structure. • Revise WSDPs formats to include proactive and preventative maintenance plans for water-related infrastructure	• Regulations on water efficiency and metering for all water sectors gazetted. • All Municipal water services strategies and plans include water metering, by-laws and stepped tariff structures. • Number of WSDPs that include proactive and preventative maintenance plans for water-related infrastructure.	Short	• Provincial Treasury to ensure that WC/WDM is reflected in the SDIP through the LG MTEC3 process. • Departments (DLG, DEADP, WCDoA) to support processes.	• **LEAD: DWA & DWA-RO** Gazette existing Draft Regulations on water efficiency and metering for all water sectors. • DWA-RO to drive process.	• Develop or revise existing WC/WDM strategies and plans, and implement them. • Install water meters to determine water balances.	-	Annual budget
2.1.2. Government buildings, schools and general facilities implemented water use efficiency options.	• Identify and list all Government buildings, schools and general facilities where Programme will be implemented. • Appoint a Programme Co-ordinator in each Government building, school and general facility. • Implement water use efficiency options in buildings. • Prioritize and install water meters in buildings. • Government buildings to report on water use efficiency options implemented.	• Number of Government buildings, schools and general facilities identified in Programme. • Number of Programme Co-ordinators appointed. • Number of buildings where water meters has been installed. • Number of buildings that have successfully implemented efficient water use (e.g. water bills).	Medium	• **LEAD: DTPW** Lead process to install water meters in buildings, and provide water bills to track water use efficiency. • All Departments, Schools and General Facilities to ensure success of programme.	• DWA-RO provide input into process, as required.	-	-	Operational and Annual Budget
2.1.3. Non-conventional sources (NCS) of water used.	• Review requirements of legislation and amend it, where necessary, to support, facilitate and regulate NCS water use. • Approve the DWA policy on the utilization of NCS water. • Assist in the drafting of Best Practice guidelines for the installation, implementation, maintenance, funding, regulating, etc. of NCS water. • Municipalities to undertake feasibility studies and implementation of NCS water, considering the findings of the All Towns Study.	• NCS water policy adopted successfully for implementation. • Number of Municipalities with whom the Best Practice Guidelines were showcased. • Number of Municipalities that undertook feasibility studies for implementing NCS water utilisation. • Number of Municipalities that incorporated NCS water utilisation in their WSDPs.	Short	• DLG to engage with DWA National on the development of relevant strategies and its implementation. • Sector Departments (DEADP, WCDoA, DoH, WCDoHS, DLG) expedite NCS water use within the sphere of their mandates and implementing provincial projects.	• **LEAD: DWA National** Drive process to develop relevant strategies and its implementation.	• Undertake NCS feasibility studies and implement.	• Provide input into the process.	Annual budget

Goal 2: Ensure the sustainability of water resources for growth and development								
Objective 2.1: Develop, promote and implement effective and efficient water conservation and water demand management								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
2.1.4. Tool to improve water use efficiency across the agricultural sector.	• Update and implement tool towards improving water use efficiency in agricultural irrigation. • Identify agricultural areas where irrigation techniques can be improved. • Monitor, evaluate and report on the implementation of the tool in the agricultural sector.	• Updated tool to improve water use efficiency across the agricultural sector. • Number of agricultural water users who implemented the tool to improve water use efficiency in agricultural irrigation. • Number of agricultural water users who improved their water use efficiency in agricultural irrigation.	Immediate	• **LEAD: WCDoA** Drive process, implement, monitor, evaluate and report on the use of the tool in the agricultural sector. • Departments (DEADP, DLG) to provide inputs to process, as required.	• DWA-RO, DAFF provide input into the process.	• Provide input into process, as required.	• WUAs, Irrigation Boards, other stakeholders in the agricultural sector to be involved in the process.	Annual budget
2.1.5. Water losses reduced from irrigation canals.	• Conduct a cost-benefit analysis of the irrigation canals in the Province to determine the value of refurbishment versus the gains and who would benefit from the resultant water savings. • Make recommendations on which canals to refurbish and which to consider alternative options. • Implement recommendations and monitor and evaluate its success.	• Conducted a cost-benefit analysis and made recommendations to reduce water losses from irrigation canals. • Number of canals (measured as km of canals) successfully refurbished to reduce water losses. • Number of canals (measured as km of canals) where alternative options were implemented successfully to reduce water losses.	Short to Medium	• **LEAD: WCDoA** Conduct the cost-benefit analysis and make recommendations.	• DWA-RO provides input into process.	• Provide input into process, as required.	• WUAs, Irrigation Boards, other stakeholders in the agricultural sector to be involved in the process and implement recommendations.	Annual budget
2.1.6. A matrix to advise farmers on growing appropriate crop types in their areas.	• Review crop types currently grown by farmers. • Identify areas more suitable to different crop types. • Develop a Provincial Crop Growth Matrix of crop type versus suitability of area for crop growth, taking into account water efficient. • Advise farmers on crop types that are suitable and appropriate for growing in their specific areas.	• Developed a Matrix to aid farmers on crop types to grow in their areas. • Number of farmers who were exposed to the Matrix. • Number of farmers who have successfully adapted their farming practices to grow more suitable and appropriate crops for their areas.	Short	• **LEAD: WCDoA** Develop and implement the Matrix and advise farmers. • Sector Departments (DEADP, DLG) to provide input into process.	• DAFF to provide input into process.			Annual budget
2.1.7. An early warning system for slow onset disasters, including climate and drought.	• Investigate and develop indicators for slow onset drought, per Municipal Area. • Draft Slow Onset Disaster Management Plans for each Municipality.	• Number of Municipalities that have drafted Slow Onset Disaster Management Plans. • Number of Municipalities and other applicable Departments that are capacitated to implement the plans.	Short	• **LEAD: DLG** Drive the process, and assist and guide Municipalities. • DEADP and WCDoA to provide input into the process.	• DWA to address on a national scale. • DWA:RO to provide input into the process.	• Municipalities to be included in process and draft own Slow Onset Disaster Management Plants.	• SAWS to provide input	Annual Budget

Goal 2: Ensure the sustainability of water resources for growth and development								
Objective 2.2: Promote the sustainable use of groundwater								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
2.2.1. Groundwater included in WSDPs for its sustainable use.	• Include resource planning in both surface and groundwater supplies, and incorporate into WSDPs. • Investigate and implement aquifer recharge projects. • Promote conjunctive use of water, especially amongst sector specific users.	• Number of WSDPs that have included resource planning of both surface and groundwater supplies. • Number of additional aquifer recharge projects investigated and implemented. • Promoted the conjunctive use of groundwater.	1 year to implement current identified sources, and then on-going increased implementation	• DEADP to provide support, as required.	• DWA-RO to provide support.	• **LEAD: Municipalities** Identify suitable aquifers and include in WSDPs; and implement aquifer recharge projects.	• All institutions (education and resource management) to promote conjunctive use.	Annual Budget
2.2.2. Groundwater Reserves effectively monitored.	• Identify areas and opportunities for groundwater use, e.g. Table Mountain Group Aquifer. • Carry out groundwater Reserve determinations for each WMA.	• Feasibility studies completed to determine the utilisation of potential groundwater sources. • Groundwater Reserve determined for relevant aquifers.	In progress, Short	• Departments to provide inputs, as required.	• **LEAD: DWA National** Conduct Reserve determinations. • DWA-RO to provide inputs & implement.	• Implement potential groundwater sources	• CMAs to provide inputs and implement.	Annual Budget
2.2.3. Groundwater Regulations gazetted.	• Develop and gazette groundwater regulations. • Monitor compliance with Schedule 1 (NWA) i.e. borehole registration. • Promote voluntary borehole registration.	• Groundwater regulations gazetted. • Number of water users who have voluntarily registered their boreholes.	Short	• Departments to provide inputs, as required.	• **LEAD: DWA National** Develop regulations and gazette. • DWA-RO to promote proactive voluntary borehole registration and monitoring.	• Provide inputs, as required.	• WUAs and CMAs to promote proactive voluntary borehole registration and monitoring.	Annual Budget

Goal 2: Ensure the sustainability of water resources for growth and development								
Objective 2.3: Effective monitoring, evaluating and reporting of water conservation and water demand management								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
2.3.1. Updated Municipal water services strategies and plans implemented, monitored and evaluated for WC/WDM.	• Municipalities to implement WC/WDM options and ensure, as a minimum, that all water users (including municipalities and agriculture) have water meters in place to inform accurate water balances. • Develop minimum standards per sector for WC/WDM measures and acceptable losses. • Develop and implement a monitoring and evaluation (M&E) system for measuring progress made on WC/WDM targets, as set by Municipalities, WUAs. • Municipalities, WUAs to report on updated water balance estimates. • Monitor and enforce compliance with the DWA metering regulations, across all sectors. • Link information to DWA databases and CEWIP.	• Developed minimum standards per sector for WC/WDM measures and acceptable losses. • Developed an M&E system for measuring progress made on WC/WDM targets. • Number of Municipalities, WUAs who report progress made on WC/WDM implementation and water balance estimates. • Number of Municipalities, WUAs that have successfully implemented WC/WDM options. • Number of water users (per sector) who comply with the DWA metering regulations. • Number of Municipalities, WUAs who have updated and reliable water balance estimates by all water users. • Information linked to DWA databases and CEWIP.	Short	• Sector Departments (DEADP, DLG, WCDoA and WCDoHS) provide input to development of minimum standards per water sector, and link information to CEWIP and DWA databases.	• **LEAD: DWA** Draft minimum standards per water sector for WC/WDM measures and acceptable losses,. • **DWA-RO** Lead M&E development and monitoring progress on WC/WDM targets.	• Provide input to minimum standards per water sector. • Report routinely on updated and reliable water balance estimates. • Report annually on progress on WC/WDM targets.	• All water users to implement water meters to inform adequate water balances.	Annual budget

Goal 3: Ensure the integrity and sustainability of socio-ecological systems								
Objective 3.1: Strengthen the monitoring and enforcement of compliance to water quality objectives								
Strategic Priority	**Activities**	**Indicator**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other stakeholders**	**Funding sources**
3.1.1. A Strategy on Compliance & Enforcement of Water Quality Objectives.	• Develop and implement a Strategy on Compliance & Enforcement of Water Quality Objectives, including a Prosecution Guideline on offences linked to fines. • Identify and monitor priority water resources for complying with water quality objectives. • Enforce industry compliance to relevant water quality objectives.	• Developed and implemented a Strategy to enforce compliance to water quality objectives. • Number of water resources monitored for compliance to water quality objectives. • Number of water resources that comply with the applicable water quality objectives. • Number of enforcement actions where industries do not comply with water quality objectives.	Short	• Sector Departments (DEADP, DLG, WCDoA) provide input into process and support implementation of Strategy.	• **LEAD: DWA** • Develop Strategy on Compliance & Enforcement • Other National Departments (DoH, DAFF) to provide input in the process and support to implement the Strategy.	• Monitor compliance to water quality objectives, as per the Strategy.	• SALGA to provide input in the process and support implementation of Strategy.	Operational Funding
3.1.2. A Provincial Regulation / Protocol on holding Organs of State responsible for complying with water quality objectives.	• Review s49 NEMA, s151 NWA and Municipal By-laws to determine the legality of holding Organs of State responsible for complying with water quality objectives. • Draft a Provincial Regulation / Protocol on holding Organs of State responsible for complying with water quality objectives, if applicable. • Enforce compliance of Municipalities to relevant water quality objectives.	• Regulation / Protocol developed and implemented. • Number of Municipalities monitored for compliance to water quality objectives. • Number of Municipalities that comply with the applicable water quality objectives. • Number of enforcement actions where Municipalities do not comply with water quality objectives.	Short	• **LEAD: DEADP** Review and draft a Regulation / Protocol, if applicable. DotP and Sector Departments (DLG, WCDoA) provide input and support to process.	• National DEA provide input and support to process.	• Municipalities to provide input into process.	• SALGA provide input and support process.	Operational Funding
3.1.3. Legal Review of the Status Quo Assessment for incorporation in the National Water Act Law Reform process.	• Provide Legal Review of the Status Quo Assessment for incorporation in the National Water Act Law Reform process. • Review penalties in relevant environmental legislation and statutes. • Develop integrated fine structure, where appropriate. • Amend legislation to incorporate integrated fine structure, where appropriate.	• Recommendations of the legislative review considered in the NWA and WSA law reform process. • Penalties and fines have been increased appropriately in relevant statutes.	Short	• **LEAD: DEADP** Provide legislative review chapter to DWA National. • Sector Departments to provide inputs into process, as required.	• **LEAD: DWA** Lead review and update of NWA and WSA. • **LEAD: DAFF** Lead review and update of CARA. • Other National Departments to provide input.	• Provide inputs, as required.	-	Operational Funding Annual budget Donor funding
3.1.4. Co-operative enforcement of water resource management by EMIs across all sectors.	• Integrate EMIs from all sectors ("Green and "Blue Scorpions"; Municipal By-law and EHOss; DAFF) in the Environmental Crime Forum. • Develop co-operative enforcement protocols for EMIs across all sectors on operational issues (investigations and prosecutions), strategic enforcement, awareness and communication, etc. • Co-ordinate joint public awareness campaigns of EMIs from all sectors. • Co-ordinate joint investigations of EMIs across all sectors, particularly in terms of compliance to water quality objectives.	• An integrated and fully-functional Environmental Crime Forum that has EMI representation from all relevant sectors. • Number of EMIs from relevant sectors who attend the Environmental Crime Forum. • Number of EMIs from relevant sectors who use the co-operative enforcement protocols developed. • Number of joint EMI public awareness campaigns held. • Number of joint EMI investigations held.	Short	• **LEAD: DEADP** Lead Environment Crime Forum and processes, as well as ensure participation of all relevant sectors. • DotP and Sector Departments (DLG, WCDoA) provide input and support all processes.	• DWA, DoH, DAFF provide input and support all processes, as well as participate in Environmental Crime Forum.	• Provide input and support all processes, as well as participate in Environmental Crime Forum.	• SALGA encourage Municipalities to participate in EMI processes and forum.	Annual Funding

Goal 3: Ensure the integrity and sustainability of socio-ecological systems								
Objective 3.2: Ensure ecological sustainability								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
3.2.1. River Management and Maintenance Plans (RMMPs)	• Develop and implement minimum requirement guidelines for WUAs and public to compile RMMPs. • Develop and implement guidelines for authorities to issue an integrated authorisation on RMMPs. • Draft and sign an MOA for integrated authorisations on RMMPs.	• Guideline and integrated authorisation for RMMPs developed and disseminated. • Number of integrated authorisations on RMMP implemented.	Immediate	• **LEAD: CapeNature & WCDoA** Drive and facilitate the process. • DEADP develop a Guideline for RMMPs, and an integrated authorising process for government Departments.	• DWA-RO provide inputs into process.	• Develop RMPs for rivers in their areas of jurisdiction.	• WUAs develop River Management and Maintenance Plans. • WRC to develop guideline document.	Annual Budget WWF SA Table Mountain Fund WRC
3.2.2. Rivers impacted by land-based pollution sources rehabilitated, and linked to Adopt-A-River / River Health Programmes.	• Identify and prioritise rivers that are impacted by land-based pollution. • Develop a protocol to rehabilitate prioritised rivers. • Develop an M&E system to monitor progress made in rivers rehabilitated. • Implement protocol to rehabilitate prioritised rivers. • Link information to DWA Adopt-A-River Programme.	• Number of rivers prioritised for rehabilitation. • Number of rivers successfully rehabilitated. • Information linked to Adopt-A-River / River Health Programmes.	Immediate - Long	• DEADP, CapeNature to discuss and initiate rehabilitation of identified reaches in prioritised rivers.	• **LEAD: DWA-RO** Drive Adopt-A-River / River Health Programmes, and identify roles and responsibilities of Provincial Departments.	• Provide inputs to process.	• Provide inputs to process.	Annual Budget
3.2.3. Estuaries impacted by land-based pollution sources rehabilitated, and linked to National Programme of Action on reducing pollution to the Marine Environment (NPA).	• Identify and prioritise estuaries that are impacted by land-based pollution. • Develop a protocol to rehabilitate prioritised estuaries. • Develop an M&E system to monitor progress made in estuaries rehabilitated. • Implement protocol to rehabilitate prioritised estuaries. • Link information to DEA NPA.	• Number of estuaries prioritised for rehabilitation. • Number of estuaries successfully rehabilitated. • Information linked to DEA NPA.	Immediate - Long	• DEADP, CapeNature to discuss and initiate rehabilitation of prioritised estuaries.	• **DEA: Oceans&Coast** Drive NPA, and identify roles and responsibilities of Provincial Departments.	• Provide inputs to process.	• Provide inputs to process.	Annual Budget
3.2.4. Ecological Reserve and compulsory licensing implemented in prioritised areas across of the Province.	• Prioritise areas for implementation of the Ecological Reserve. • Carry out Water Resources Classifications in prioritised areas. • Implement verification and validation process in prioritised areas. • Implement compulsory licensing where necessary in prioritised areas. • Draft & implement operating rules to support the Ecological Reserve in prioritised areas.	• Number of Ecological Reserves implemented in prioritised areas. • Number of Water Resources Classifications completed, verified and validated for prioritised areas. • Number of compulsory licenses issued in prioritised areas.	Immediate - Medium	-	• **LEAD: DWA-RO** continue with reserve determines and eco-classifications.	-	• Other institutions to provide inputs where and when necessary.	Annual Budget

Goal 3: Ensure the integrity and sustainability of socio-ecological systems								
Objective 3.2: Ensure ecological sustainability								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
3.2.5. Ecological integrity requirements of the Environmental Water Requirement (EWR) ensured.	• Develop and implement a set of specific requirements to determine water requirements to support ecological integrity, biodiversity and estuarine requirements. • Verify that EWR is adequate for supporting ecological integrity, biodiversity and estuarine requirements. • Address difference in Reserve methodologies for freshwater and estuary Reserves. • Link catchment management to estuary management ito goods and services.	• Ecological integrity water requirements determined for CBAs and NFEPAs. • Number of estuaries with environmental water requirements to meet ecological integrity requirements. • Number of rivers with environmental water requirements to meet ecological integrity requirements.	Immediate - Medium	• **LEAD: CapeNature** Drive process for determining the ecological integrity water requirements.	• DWA to include ecological integrity requirements into Reserve Determinations	• Provide inputs to process, as required.	• Other institutions to provide inputs and include requirements in permitting/ licensing processes.	Annual Budget
3.2.6. Ecological sustainability integrated with other planning and development guidelines.	• Develop and implement Best Practice Guidelines for the sustainable management of ecological integrity in CBAs. • Communicate and circulate Guidelines to all involved stakeholders, municipalities, etc.	• Best Practice Guidelines for the sustainable management of ecological integrity in CBAs developed and distributed.	Immediate - Short	• **LEAD: DEADP and CapeNature** Develop Best Practice Guidelines, and roll out of the guidelines. • WCDoA to provide input into the process.	• DWA-RO to provide inputs to the process.	• Provide inputs to process, as required.	• Implement Guidelines in activities or decision-making that will affect CBAs. • WUAs provide input into the process.	Annual Budget
3.2.7. Provincial position paper on "fracking" for natural gas.	• Draft a Provincial Position Paper on the impacts of "fracking" for natural gas on the Province's natural resources.	• Position paper on "fracking" drafted and tabled.	Short	• **LEAD: DEADP** Draft Provincial Position Paper	• DWA-RO to provide inputs to process, as required.	• Central Karoo DM to participate in process.	-	DBSA DoE International donors

Goal 3: Ensure the integrity and sustainability of socio-ecological systems								
Objective 3.3: Effective implementation of monitoring programmes to report on the status of water quality objectives.								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
3.3.1. Water quality monitoring data validated and integrated with the National Water Quality Monitoring Programme.	• Review existing monitoring programs, parameters, objectives, to identify gaps and duplication, conflicting standards, etc. • Integrate existing information into a Standard Water Quality Monitoring Guideline (outlining standards, protocols, objectives, limits, etc.) to aid interrogation and validation of data, determine water quality index and provide trend analysis of monitoring information to inform management decisions and the public. • Determine limitations of laboratory analysis and accreditation of laboratories. • Develop a protocol to determine the macro- & micro-scale location of monitoring points and site-specific criteria, and monitor water quality in rivers and estuaries. • Develop a User-Friendly Guideline for Voluntary Water Quality Monitoring). • Link validated water quality monitoring data to National Water Quality Programme and CEWIP.	• Gaps and duplications in existing monitoring programmes used to develop a Standard Water Quality Monitoring Guideline. • Protocol on macro- & micro-scale monitoring site identification developed. • User friendly Guideline for Voluntary Water Quality Monitoring developed. • Water quality monitoring data validated and linked to National Water Quality Monitoring Programme and CEWIP.	Short - Medium	• DEADP provide inputs to process, and provide information and data to National Programme and CEWIP.	• **LEAD: DWA-RO** Drive process and develop guidelines. • Other relevant National Departments to provide input, as identified.	• Municipalities to provide input and implement protocol and guidelines.	• WUAs, CMAs, Research Institutes provide input and implement protocol and guidelines.	DBSA Department of HS Sanitation Programme Annual Budget
3.3.2. Pollution sources mapped and monitored water quality from catchment to coast.	• Spatially map the water quality monitoring points and sources of pollution identified. • Spatially map authorisations issued and permit conditions.	• Number of rivers or estuaries spatially mapped for pollution sources. • Authorisations and permit conditions mapped spatially.	Short - Medium	• **LEAD: DEADP** lead GIS spatial mapping • Departments (WCDoHS, WCDoH, DLG) provide input into process.	• DWA-RO provide spatial information on water quality monitoring points and authorisations issued.	• Municipalities to monitor and update spatial maps.	• Other institutions to provide necessary spatial information and permit conditions.	Annual budget
3.3.3. Early warning system protocol for sewage leaks and pollution spills.	• Develop an early warning system protocol to notify officials of broken pipes or leaks, toxic discharges (tanker spills) or intentional releases.	• An early warning system protocol developed and used by officials in the Province. • Pollution incidents immediately reported to officials.	Medium	• **LEAD: WCDoH** Drive process and develop early warning system protocol. • DEADP, DLG, Disaster Management to support process.	• **LEAD: DWA –RO** provide inputs into process.	• Municipalities to provide inputs and participate in early warning system and implement.	• DCoGTA to provide inputs and participate in early warning system and implement.	Annual Budget

Goal 4: Ensure effective and appropriate information management, reporting and awareness-raising of sustainable water management								
Objective 4.1: Raise awareness of sustainable water management and ecological systems								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other Stakeholders**	**Funding Sources**
4.1.1. A Provincial Integrated Communication Strategy on Sustainable Water Management.	• Develop a Provincial Integrated Communication Strategy on sustainable water management (water scarcity, WC/WDM and non-conventional water sources, etc.). • Workshop the Strategy with relevant institutions / industry to promote their responsibility towards the environment and water. • Host joint initiatives with Sector Departments to educate the public, politicians, water users and Ward Councillors on sustainable water management in the Province. • Link the Strategy to the CEWIP and DWA Communication Strategy on Water.	• Successfully linked the Provincial Integrated Communication Strategy developed to the CEWIP and DWA Communication Strategy on Water. • Number of joint initiatives hosted to implement the Strategy. • Number of individuals who attended the joint initiatives.	Short	• **LEAD: DEADP** Develop and implement the Strategy in consultation with relevant Departments and stakeholders, and link to CEWP and DWA website. • DLG, DEADP, WCED, WCDoHS, and WCDoA provide input and support process.	• DWA to participate and provide advice on linking the Strategy to the National DWA Communication Strategy on Water. • Other National Departments (Education, Human Settlements) provide input into process.	• Municipalities provide input and support process.	• SALGA provide input and support process. • Other institutions and business to provide input and implement strategy.	Annual budget
4.1.2. Awareness-raising on sustainable water management and ecological systems, WC/WDM options, water and health, etc., through various media.	• Develop materials on water availability, water supply, water efficiency measures, water quality matters, etc. through various media (newspapers, radio, websites, weather reports, sign boards, rates accounts). • Review and further develop IWRM in the school curriculum, e.g. DWA 20/20 Project. • Develop and promote campaign on IWRM, water scarcity and climate change. • Promote diarrhoeal disease campaign.	• Awareness raising information disseminated via various media forms. • IWRM included in the school curriculum, e.g. within the DWA 20/20 Project. • Number of media events held to raise awareness on water scarcity and climate change. • Campaigns successfully implemented.	Medium	• D LG, DoTP, DEADP to develop materials and raise awareness of water scarcity in the Province via various media. • WCED to develop curriculum material. • DEADP to assist with developing curriculum. • WCDoH to include other Departments (DEADP, DWA) to promote diarrhoeal disease campaign.	**LEAD: DWA-RO** Continue awareness-raising about water scarcity, and assist with curriculum development. • Other National Departments (e.g. DAFF) to assist with awareness-raising, where applicable.	• Municipalities to raise awareness in their jurisdiction.	• Chamber of Commerce	Annual Budget

Goal 4: Ensure effective and appropriate information management, reporting and awareness-raising of sustainable water management								
Objective 4.2: Effective and integrated management and reporting of water information								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other stakeholders**	**Funding sources**
4.2.1. Centralized Environment & Water Information Portal (CEWIP)	• Appoint a CEWIP Co-ordinator. • Establish a CEWIP at Provincial level. • CEWIP Co-ordinator to participate on the Provincial Liaison Committee on Water, and the Provincial Consultative Committee on Water and Health. • Update the CEWIP with water-related information received from relevant Committees and Institutions, Sector Departments and National Departments. • Link CEWIP to Provincial and DWA websites.	• A fully-functional CEWIP developed and implemented in the Province. • Water-related committees and institutions, National Departments and Sector Departments provide information to the CEWIP on a quarterly basis. • CEWIP is easily accessible to all users, including the public.	Immediate	• **LEAD: DEADP** Drive process to develop and implement the CEWIP • DotP to provide support and databases and links. • Sector Departments (DLG, WCDoH, WCDoA) to provide water-related information to CEWIP.	• DWA to provide links of existing water databases and website. • DAFF, DWA-RO provide input into process.	• Municipalities to provide input into the protocols	• All institutions to include link to portal from their websites. • SALGA, WUAs to provide input into process.	Annual Budget
4.2.2. Provincial Liaison Committee on Water re-established to co-ordinate all existing water forums.	• Undertake a review of all existing water forums. • Consolidate water forums, where possible, into the Provincial Liaison Committee on Water. • Identify the roles and responsibilities of Sector Departments on the Committee. • Sector Departments to nominate and appoint member(s) to participate on the Committee. • Sector Departments to ensure information transfer from the Committee to CEWIP. • Establish linkages with, and report to the PSO7.	• Provincial Liaison Committee on Water re-established and represented on PSO7. • Number of officials from Sector Departments who participate on the Committee. • Information from water forums and Provincial Liaison Committee on Water transferred to CEWIP.	Immediate	• Sector Departments (DEADP, DLG, WCDoA, WCDoH, WCDoHS and DoTP) to engage with DWA-RO to re-establish the Committee, and participate on Committee. • Sector Departments to provide relevant information to CEWIP.	• **LEAD: DWA:RO** Drive process and re-establish the Provincial Liaison Committee on Water, and provide relevant information to CEWIP. • Other National Departments (e.g. DMR, DAFF, DoH) to participate in process and on Committee.	• Participate on the Committee, as required.	• Participate on the Committee, as required.	Annual Budget
4.2.3. A Provincial Consultative Committee on Water and Health.	• Investigate changing the scope of the Provincial Diarrheal Committee to establish a Provincial Consultative Committee on Water and Health. • Establish linkages with, and report water and health information to the Provincial Liaison Committee on Water.	• Successful implementation of a Provincial Consultative Committee on Water and Health. • Provincial Consultative Committee: Water and Health linked, and information provided to the Provincial Liaison Committee on Water.	Immediate	• **LEAD: WCDoH** Drive the process and include relevant Sector Departments. • Sector Departments to attend Provincial Health Consultative Committee (DEADP; DLG; D: Human Settlements; Disaster Management)	• DWA:RO to participate in the Provincial Consultative Committee on Water and Health.	• Provide input, as required.	-	Annual Budget

Goal 4: Ensure effective and appropriate information management, reporting and awareness-raising of sustainable water management								
Objective 4.2: Effective and integrated management and reporting of water information								
Target	**Activities**	**Indicators**	**Timeframe**	**Provincial Government**	**National Government**	**Local Government**	**Other stakeholders**	**Funding sources**
4.2.4. Sustainable Water Management Plan (the Water Plan) monitored and evaluated for progress made on its implementation.	• Develop and roll-out the M&E scorecard to track progress on the implementation of the Sustainable Water Management Plan. • Develop Steering Committee and ToR to track progress on implementation of the Water Plan. • Hold progress meetings to review and assess the KPIs on plans / strategies / actions that link to the implementation of the Water Plan.	• Successful roll-out of the M&E scorecard to all relevant stakeholders to track progress made on the implementation of the Water Plan. • Number of meetings held to track progress on the implementation of the Water Plan. • Number of Departments who are represented and participate on the Steering Committee.	Medium	• **LEAD: DEADP** Drive process and track progress made on the implementation of the Water Plan. • DotP, Sector Departments (DLG, WCDoH, WCDoA, WCDoHS, WCED) and Provincial Treasury to participate in process.	• DWA to provide inputs towards the development of a scorecard and participate in the monitoring and evaluation of the Water Plan.	• Participate in process.	-	Annual Budget

3.4 MONITORING, EVALUATION & REVIEW

To obtain a Plan is a milestone in itself, but it is not an end. In order to ensure implementation, an effective monitoring, evaluation and review process must be adhered to. The following sets forth the monitoring, evaluation and review process for the Water Plan.

3.4.1 MONITORING

Monitoring of progress with regards to implementation of the Water Plan is necessary in order to maintain and achieve the objectives of the Water Plan and sustainable water resource management in general. It also provides an opportunity to update key stakeholders with regards to progress or obstacles. It is proposed that PSO7 Sustainable Resource Management Working Group monitor progress and evaluate the implementation of the Water Plan. The indicators included in the Water Plan provide a reference for monitoring progress of its implementation.

Responsibility	PSO7: Sustainable Resource Management Working Group
Method	Progress Meeting
Timeframe	1-3 months

3.4.2 EVALUATION & REVIEW

To achieve sustainable water resources management is not simply the construction of water related infrastructure alone, but of achieving an enabling environment, of which environmental sustainability (ecological integrity and biodiversity), institutional framework, management instruments, economic efficiency and social equity are the key components. The implementation and achievement of these key components may be more complex and time-demanding than infrastructure construction. To achieve sustainable management and development of water resources is a long term commitment and therefore the Water Plan should be seen as a revolving plan with features of evaluation and reformation at periodic intervals. It is recommended that this Plan be reviewed and updated on a 5-year basis. The review period will be subject to funding and political cycles, as well as implementation outcomes.

Responsibility	Project Technical Committee and Stakeholders
Method	Plan Review
Timeframe	5 years

The Water Plan needs to be reviewed annually by the Provincial Departments, so as to align the activities and targets with their Annual Performance Plans, and to the Provincial Strategic Plan of Action.

4. CONCLUDING REMARKS

Water, as a resource, is a fundamental requirement for all life on earth and all human activities. In the Western Cape, water is a vital factor in an economy where agriculture is a major economic driver.

The Western Cape receives a mean annual rainfall of between 450mm to 600mm per annum, and has a number of storage dams distributed throughout the Province. The Blue Drop (potable water) and the Green Drop (wastewater) Reports published by DWA provides an initial indication of the state of South Africa's water resource infrastructure, and it is evident that further actions are necessary to protect the sustainability of the resource and therefore to provide security of supply into the future.

The overall aim of the Water Plan is to guide activities towards meeting the growth and development needs of the region, as well as to protect water resources from environmental degradation. It is envisaged that the Water Plan will guide implementation of projects/activities towards achieving this growth and development in the Western Cape. Sustainable water management is the practice of making decisions and taking actions while considering multiple needs and viewpoints (through public participation) on how water should be managed. These decisions and actions relate to situations such as catchment planning, Reserve implementation, the organization of task teams, planning of new capital facilities, controlling reservoir releases, regulating floodplains, and developing new laws and regulations.

The complexity of sustainable water management, while not compromising ecological integrity, requires expertise and wisdom from different areas of knowledge and disciplines. Co-ordination, as an important integration tool, can address the sometimes conflicting objectives. A co-operative governance approach between authorities, or an informal approach such as local community groups voluntarily becoming involved, is required to manage our water sustainably, for today and tomorrow.

The four Strategic Goals identified during the process is the cornerstone of the Water Plan, and should be prioritised in order to achieve the Vision of ensuring *"sustainable water management for growth and development in the Western Cape, without compromising ecological integrity"*.

5. REFERENCES

CoCT, 2007. City of Cape Town. *Master Plan for Effluent Re-use.*

DEADP, 2011. Department of Environmental Affairs and Development Planning. *Western Cape Sustainable Water Management Plan – Status Quo Assessment.*

DEADP, 2012. Department of Environmental Affairs and Development Planning. *Western Cape Sustainable Water Management Plan - Part 2: Effluent Reuse Opportunities in the Western Cape.*

DWA, 2010. Department of Water Affairs. *Strategic Assessment of Water Re-use Potential to Augment the Western Cape Water Supply System. Final Report*, Feb 2010.

DWAF, 2011a. Department of Water Affairs. *Development of Reconciliation Strategies for All Towns in the Southern Planning Region. Provincial Summary Report. Western Cape. Final, November 2011.* DWA Report No: P RSA 000/00/15411.

DWAF, 2011b. Department of Water Affairs. *Western Cape Water Supply System Reconciliation Strategy: Progress Report of the Strategy Steering Committee. November 2011*.

APPENDIX 1 – INTERFACING WITH CURRENT STRATEGIES & PLANNING INITIATIVES

NATIONAL LEVEL

The Constitution of South Africa	**National Planning Commission (NPC) and Diagnostic Report**	**Government of South Africa: Strategic Outcome 10**	**National Water Act / National Water Resources Strategy**	**National Strategy for Sustainable Development (NSSD1)**
Section 24 of the Constitution of South Africa enshrines the right of every citizen to an environment that is not harmful to his or her health or well-being, and commits the country to conservation and sustainable management and use of our natural resources.	The NPC, in the Presidency, is mandated to set forward a long-term vision and strategic plan for the country. The NPC has released a Diagnostic Report in June 2011, which describes the achievements and challenges of South Africa, and further released a National Development Plan (NDP): Vision for 2030 on 11 November. In terms of water, the NPC has called for: "a review of the national water resource strategy by mid 2012; an investment program for water resource development and wastewater management for major centres by 2012; using regional utilities to deliver services where municipalities are weak; and reducing water demand in urban and rural areas".	The Government of South Africa has through Strategic Outcome 10, *viz*. "Protecting and enhancing environmental assets and natural resources", set a range of water-related targets to be addressed by 2014. These include: Improving water demand, water resource protection and the regulation of water quality.	Section 5(3) of the National Water Act, NWA (Act 36 of 1998) states that South Africa's water resources must be protected, used, developed, conserved, managed and controlled in accordance with the National Water Resources Strategy – NWRS. The NWA is therefore implemented through the NWRS, which provides a framework within which water resources are to be managed throughout the country.	The NSSD1 builds on the National Framework on Sustainable Development that was adopted in 2008. The Action Plan sets out strategic goals and interventions required for implementation. One of the goals of the NSSD1 is to "*develop and promote new social and economic goals based on ecological sustainability and build a culture that recognises that socio-economic systems are dependent on and embedded within ecosystems*", and linked to this is a key objective that relates to sustainable water management, *viz*. "*sustaining our ecosystems and using natural resources efficiently*".

PROVINCIAL / REGIONAL

Western Cape Government: Provincial Strategic Objectives (PSO)	**Bulk Infrastructure Task Team (BITT); Sanitation Backlog Study; Comprehensive Infrastructure Plan**	**All Towns Study; Western Cape Water Supply System Reconciliation Strategy**	**Western Cape Climate Change Response Strategy and Action Plan**	**Provincial Spatial Development Framework**
12 PSOs were adopted in order to stimulate growth led development in the Western Cape. PSO7, *viz*. "Mainstreaming Sustainability and Optimising Resource-use Efficiency", sets targets on sustainable resource management that includes increasing water saving measures (i.e. WC/WDM) and improving water quality from catchment to coast. Moreover, PSO11, *viz*. Increasing Opportunities for Growth and Development in Rural Areas" has five work groups that focus on agricultural production, market access, research and technology, rural development and extension revitalisation. Water forms an integral component of these work groups.	The Bulk Infrastructure Task Team was established to deal with bulk infrastructure challenges, and focuses primarily on interventions on water and sanitation; while the Sanitation Backlog Study and Comprehensive Infrastructure Plans of Municipalities indicates that considerable backlogs still exist, but that the status thereof is uncertain. The studies provide a range of interventions such as infrastructure improvements, WCDM measures and a list of "project-ready" interventions that could be used to access Municipal Infrastructure Grant (MIG) and RBIG funding.	The All Town Study is part of a DWA nationwide programme to develop water reconciliation strategies for all towns across the country. The study addresses water resources (surface and groundwater) in the four WMAs in the Western Cape and includes both water quantity and water quality. The study also aimed to provide adequate data to aid the alignment of municipal plans and policies including WSDPs, IDPs, and SDF's. The study provides a guide in terms of the available volumes of treated effluent at each WWTW in the Western Cape, excluding that of the CoCT. The on-going Western Cape Water Supply System Reconciliation Strategy is a strategic assessment of water reuse potential to augment the Western Cape water supply system, including WWTWs in the CoCT. Effluent volumes and the potential for implementing water re-use at scale were included.	The Climate Change Response Strategy and Action Plan aims to strengthen the Province's resilience to climate change and its adaptive capacity, particularly in vulnerable economic sectors and communities. It identifies water as a significant risk factor when considering climate change impacts, risk and vulnerability. Establishing a cohesive water supply and infrastructure management programme that integrates climate risks is a cornerstone of the strategy and action plan. In terms of water, it prioritises that "*An integrated water supply and infrastructure management programme that integrates climate impacts and risks*" is needed, which includes researching the cost benefit of irrigation, increasing water efficiency including through pricing strategies, establishing uninterrupted water conservancy targets, systems maintenance and repairs and establishing the ecological Reserve.	The PSDF is an integrated Provincial wide framework, which has changed our historical development trajectory of urban sprawl, environmental recklessness and inequality, to a path of sustainability and integrated human settlements. Its purpose is: • to be the spatial expression of the Provincial Growth and Development Strategy; • to guide Metropolitan, District and local Municipality IDPs and SDFs, as well as Provincial and Municipal framework plans (i.e. sub-SDF spatial plans); • to help prioritise and align investment & infrastructure plans of other Provincial and National Departments, as well as that of Parastatals in the Province; • to provide clear signals to the private sector about desired development directions; • to increase predictability in the development environment; and, • to redress the spatial legacy of apartheid. It therefore provides directives and guidelines to help decision-makers in the land use planning and environmental field to consider whether or not proposed development would be economically, socially and ecologically sustainable.

APPENDIX 2 – PRIORITISED TARGETS OF THE WATER PLAN

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management			
Objective 1.1: Strengthen and build institutional capacity and integrate institutional structures and mechanisms			
Target	**Activities**	**Indicators**	**Lead Authority**
1.1.1 Catchment Management Agencies (CMAs) established and supported.	• Fast-track process to establish remaining CMAs. • Provide strategic support to existing CMAs. • Establish interim Catchment Management Forums, where CMAs do not exist. • Disseminate Guidelines on CMAs and CM Forum functioning (e.g. on central database).	• Number of stakeholder engagements to establish remaining CMAs • Number of strategic engagements with existing CMAs • Number of CM Forums in the Province • Number of CMAs in the Province • Number of stakeholder awareness raising interventions / engagements on the CMA process	• **DWA National** Drive CMA establishment process and provide necessary funding for process.
1.1.6 Capacity building in water resource management, WC/WDM, water services and its compliance and enforcement	• Develop accredited training programmes for Municipal and WUAs officials to ensure appropriate occupation skills and qualifications on: operating and maintaining schemes & WWTWs; aquifer & groundwater well-field management; basic water resource management & ecological sustainability; WC/WDM options & implementation. • Provide training on the accredited programmes to Municipal and WUAs officials. • Monitor, evaluate, audit and update the accredited training programmes.	• Developed accredited training courses for Municipal officials / WUAs • Number of officials who attended the accredited training programmes • Number of officials who have been awarded certification of the accredited training programmes • Monitored, evaluated and updated the accredited training programmes	• **DWA-RO** Develop, co-ordinate and promote accredited training courses in association with DWA National
1.1.7 Learnerships in water resource management	• Provide water-related learnerships & mentoring programmes in all spheres of Government.	• Number of officials who participated in the water-related learnerships and mentoring programmes • Number of officials who successfully completed the water-related learnerships and mentoring programmes	• **DLG** Co-ordinate & promote learnerships and mentoring programmes.

Goal 1: Ensure effective co-operative governance and institutional planning for sustainable water management			
Objective 1.3: Strengthen integration between sustainable water management, ecological sustainability and planning processes, and integrate these with water allocation reform and water reconciliation strategies.			
Target	**Activities**	**Indicators**	**Lead Authority**
1.3.1 Integrated Environmental Authorisation Application that includes sustainable water management options for new developments.	• Review and identify all overlapping environmental authorisation requirements of relevant regulations and statutes. • Develop an integrated environmental authorisation application that incorporates the overlapping requirements identified. • Develop a protocol to review, monitor and enforce integrated authorisation and appeals process. • Develop MoA for the issuing of integrated authorisations and the appeals process, by relevant Departments. • Review land use zoning / re-zoning requirements, and amend it to include sustainable water management options (water balances) in authorisation processes for new developments, as required. • Recommend legislative amendments for authorisations, where necessary.	• An integrated environmental authorisation application developed. • Successfully implemented protocols to review, monitor and enforce integrated authorisations and the appeals process. • MoA developed and signed between relevant Departments identified. • Number of Municipalities that integrate land-use zoning / rezoning and sustainable water management options (water balances) in authorisation processes for new developments. • Legislative amendments recommended to National DEA/DWA for authorisations.	• **DEADP** Review, identify and draft MOA and integrated authorisation, and engage with National DEA/DWA for legislative change to develop integrated authorisations.

Goal 2: Ensure the sustainability of water resources for growth and development			
Objective 2.1: Develop, promote and implement effective and efficient water conservation and water demand management			
Target	**Activities**	**Indicators**	**Lead Authority**
2.1.1. Municipal water services strategies and plans (WC/WDM strategies & implementation plans, SDIP, WSDPs and IDPs) include water metering, by-laws and stepped tariff structure.	• Gazette the draft Regulations on water efficiency and metering, applicable to all sectors (agriculture, mining, industry, electricity generation and domestic). • Revise all Municipal water services strategies and plans to include WC/WDM options, non-conventional water sources, water metering, by-laws and stepped tariff structure. • Revise WSDPs formats to include proactive and preventative maintenance plans for water-related infrastructure	• Regulations on water efficiency and metering for all water sectors gazetted. • All Municipal water services strategies and plans include water metering, by-laws and stepped tariff structures. • Number of WSDPs that include proactive and preventative maintenance plans for water-related infrastructure.	• **DWA National & DWA-RO** Gazette existing Draft Regulations on water efficiency and metering for all water sectors. • DWA-RO to drive process.
2.1.4. Tool to improve water use efficiency across the agricultural sector.	• Update and implement tool towards improving water use efficiency in agricultural irrigation. • Identify agricultural areas where irrigation techniques can be improved. • Monitor, evaluate and report on the implementation of the tool in the agricultural sector.	• Updated tool to improve water use efficiency across the agricultural sector. • Number of agricultural water users who implemented the tool to improve water use efficiency in agricultural irrigation. • Number of agricultural water users who improved their water use efficiency in agricultural irrigation.	• **WCDoA** Drive process, implement, monitor, evaluate and report on the use of the tool in the agricultural sector.

Goal 2: Ensure the sustainability of water resources for growth and development			
Objective 2.3: Effective monitoring, evaluating and reporting of water conservation and water demand management			
Target	**Activities**	**Indicators**	**National Government**
2.3.1. Updated Municipal water services strategies and plans implemented, monitored and evaluated.	• Municipalities to implement WC/WDM options and ensure, as a minimum, that all water users (including municipalities and agriculture) have water meters in place to inform accurate water balances. • Develop minimum standards per sector for WC/WDM measures and acceptable losses. • Develop and implement a monitoring and evaluation (M&E) system for measuring progress made on WC/WDM targets, as set by Municipalities, WUAs. • Municipalities, WUAs to report on updated water balance estimates. • Monitor and enforce compliance with the DWA metering regulations, across all sectors. • Link information to DWA databases and Centralised Environment and Water Information Portal (CEWIP).	• Developed minimum standards per sector for WC/WDM measures and acceptable losses. • Developed an M&E system for measuring progress made on WC/WDM targets. • Number of Municipalities, WUAs who report progress made on WC/WDM implementation and water balance estimates. • Number of Municipalities, WUAs that have successfully implemented WC/WDM options. • Number of water users (per sector) who comply with the DWA metering regulations. • Number of Municipalities, WUAs who have updated and reliable water balance estimates by all water users. • Information linked to DWA databases and CEWIP.	• **DWA** Draft minimum standards per water sector for WC/WDM measures and acceptable losses,. • **DWA-RO** Lead M&E development and monitoring progress on WC/WDM targets.

Goal 3: Ensure the integrity and sustainability of socio-ecological systems			
Objective 3.2: Ensure ecological sustainability			
Target	**Activities**	**Indicators**	**Lead Authority**
3.2.1. River Management and Maintenance Plans (RMMPs)	• Develop and implement minimum requirement guidelines for WUAs and public to compile RMMPs. • Develop and implement guidelines for authorities to issue an integrated authorisation on RMMPs. • Draft and sign an MOA for integrated authorisations on RMMPs.	• Guideline and integrated authorisation for RMMPs developed and disseminated. • Number of integrated authorisations on RMMP implemented.	• **CapeNature & WCDoA** Drive and facilitate the process.
3.2.2. Rivers impacted by land-based pollution sources rehabilitated, and linked to Adopt-A-River Programme.	• Identify and prioritise rivers that are impacted by land-based pollution. • Develop a protocol to rehabilitate prioritised rivers. • Develop an M&E system to monitor progress made in rivers rehabilitated. • Implement protocol to rehabilitate prioritised rivers. • Link information to DWA Adopt-A-River Programme.	• Number of rivers prioritised for rehabilitation. • Number of rivers successfully rehabilitated. • Information linked to Adopt-A-River Programme.	• **DWA-RO** Drive Adopt-A-River, and identify roles and responsibilities of Provincial Departments.
3.2.3. Estuaries impacted by land-based pollution sources rehabilitated, and linked to National Programme of Action on reducing pollution to the Marine Environment (NPA).	• Identify and prioritise estuaries that are impacted by land-based pollution. • Develop a protocol to rehabilitate prioritised estuaries. • Develop an M&E system to monitor progress made in estuaries rehabilitated. • Implement protocol to rehabilitate prioritised estuaries. • Link information to DEA NPA.	• Number of estuaries prioritised for rehabilitation. • Number of estuaries successfully rehabilitated. • Information linked to DEA NPA.	• **DEA: Oceans & Coast** Drive NPA, and identify roles and responsibilities of Provincial Departments.
3.2.7. Provincial Position Paper on "fracking" for natural gas.	• Draft a Provincial Position Paper on the impacts of "fracking" for natural gas on the Province's natural resources.	• Position paper on "fracking" drafted and tabled.	• **DEADP** Draft Provincial Position Paper

Goal 4: Ensure effective and appropriate information management, reporting and awareness-raising of sustainable water management			
Objective 4.2: Effective and integrated management and reporting of water information			
Target	**Activities**	**Indicators**	**Lead Authority**
4.2.1. Centralized Environment & Water Information Portal (CEWIP)	• Appoint a CEWIP Co-ordinator. • Establish a CEWIP at Provincial level. • CEWIP Co-ordinator to participate on the Provincial Liaison Committee on Water, and the Provincial Consultative Committee on Water and Health. • Update the CEWIP with water-related information received from relevant Committees and Institutions, Sector Departments and National Departments. • Link CEWIP to Provincial and DWA websites.	• A fully-functional CEWIP developed and implemented in the Province. • Water-related committees and institutions, National Departments and Sector Departments provide information to the CEWIP on a quarterly basis. • CEWIP is easily accessible to all users, including the public.	• **DEADP** Drive process to develop and implement the CEWIP
4.2.2. Provincial Liaison Committee on Water re-established to co-ordinate all existing water forums.	• Undertake a review of all existing water forums. • Consolidate water forums, where possible, into the Provincial Liaison Committee on Water. • Identify the roles and responsibilities of Sector Departments on the Committee. • Sector Departments to nominate and appoint member(s) to participate on the Committee. • Sector Departments to ensure information transfer from the Committee to CEWIP. • Establish linkages with, and report to the PSO7.	• Provincial Liaison Committee on Water re-established and represented on PSO7. • Number of officials from Sector Departments who participate on the Committee. • Information from water forums and Provincial Liaison Committee on Water transferred to CEWIP.	• **DWA-RO** Drive process and re-establish the Provincial Liaison Committee on Water, and provide relevant information to CEWIP.