



**Western Cape
Government**

Environmental Affairs &
Development Planning



WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 — 2022

Towards a new norm for water resilience

March 2018

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN

2017 - 2022



Towards a new norm for water resilience
March 2018



**Western Cape
Government**
Environmental Affairs &
Development Planning

PROJECT TEAM

Project Managers	Wilna Kloppers & Catherine Bill, <i>Dept. of Environmental Affairs & Development Planning</i>
Primary Authors	Jonny Harris, <i>Isidima Design & Development</i> , (Project Leader) Faye Balfour, <i>Water Matters</i> Marijn Zwinkels, <i>Living Lands</i> Tiahnah Gobel, <i>Living Lands</i> Pieter van Heyningen, <i>SUSTNET</i> John Frame, <i>Amanzi Obom</i>
Contributing Authors	Debbie Harris, <i>Isidima Design & Development</i> Ncumisa Ncaweni, <i>Isidima Design & Development</i> Liezl le Roux, <i>Living Lands</i> Marko Petrik, <i>SUSTNET</i> Jean du Toit, <i>Ecoheat</i>

ACKNOWLEDGEMENTS

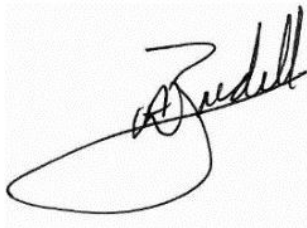
This update of the Sustainable Water Management Plan has only been possible through the hard work and dedication of the SWMP Steering Committee and broader Stakeholder group. Significant contributions have been made by individuals representing the Department of Water and Sanitation, Treasury, the Department of Environmental Affairs, and the Western Cape Government, specifically Environmental Affairs & Development Planning including CapeNature, Local Government, Agriculture and Transport & Public Works.

FOREWORD

The importance of water resilience has come sharply to the fore with the current drought. The Western Cape has a semi-arid climate and the predictions of climate change are that the province can expect further water stresses with increasing temperatures, increasing evaporation and increasing occurrence of extreme events such as droughts, fires and floods. The impacts of water scarcity require fundamental changes and adaptation across the whole of society. The drought has driven investment in water efficiency and alternative water supply from the private sector, which would have been hard to achieve only a few years ago.

The updated Sustainable Water Management Plan, whilst recognising the overall water management function of the national Department of Water and Sanitation, considers the mandate of all Western Cape Government departments as well as municipalities in achieving water resilience. It sets out a framework of strategic actions to be taken to achieve this. This framework requires further detailed action plans to be developed with budget commitment from all three spheres of government, together with private and civil society support, in order to be successful.

The revision of this plan has identified 4 goals and 16 strategic objectives aimed at improving water resilience across all sectors, that will be incrementally implemented over the short, medium and longer term. Whilst many of the proposed priority actions under these strategic objectives can be seen in the 2012 Plan, there is a stronger focus on the importance of protecting and restoring ecological infrastructure, diversifying water supply options, developing sustainable alternative financing mechanisms for water services, and stronger integration of development and water supply planning. Whilst the Western Cape Government has a Constitutional mandate in the environment, nature conservation, pollution control, development planning, and the support and monitoring of local government, many of the priority actions in the Plan will only be effectively addressed if all three spheres of government, together with all non-governmental stakeholders, ensure that they interact effectively to ensure proper planning and service delivery. Leadership, cooperation and collaboration will be the key to successful implementation of the updated Plan.



Anton Bredell: Western Cape MEC: Local Government, Environmental Affairs and Development Planning

EXECUTIVE SUMMARY

BACKGROUND

The Sustainable Water Management Plan (SWMP) for the Western Cape Province was developed, following the recommendations made at the National Water Indaba held in Cape Town during November 2009, whereby the then National Minister of Water Affairs and Forestry, Minister Sonjica, called on the Western Cape Government to develop such a plan. Its development was undertaken collaboratively by the Western Cape Government and the National Department of Water Affairs, leading to its publication in 2012. This document presents the updated plan that has emerged through a six-month engagement process with different spheres of government. This process included several stakeholder workshops, dialogue interviews, an evaluation questionnaire, and learning journeys to deepen a collective understanding of interventions at a local municipal level. The process has also included continuous engagement with the SWMP Steering Committee to present the development of the Plan, receive feedback and enable effective collaboration across government departments throughout the review process. This review process has continuously sought to strengthen the co-operative governance approach to all aspects of sustainable water management in the Province.

The National Water Resources Strategy, and the National Water Quality Management Policy provide a framework for water resources management for South Africa. The management of water resources is the mandate of the Department of Water and Sanitation, and yet there are many government departments whose mandates relate to water management, most significantly, the Departments of Environmental Affairs, Mineral Resources, Agriculture, Human Settlements, Co-operative Government and Traditional Affairs, Health, National Treasury, Trade and Industry, their provincial counterparts where relevant, and municipalities. Emerging policy recognises that a joint approach between these government departments, the private sector and civil society forms the basis of tackling the integrated water resource management challenges facing the country.

The Western Cape Government has a Constitutional legislative mandate, concurrent with national government, on the environmental, nature conservation, pollution control and regional planning and development; The Constitution give powers to the Province to “supervise”, “monitor, and “support” local government. These provide significant additional relevance to the protection and conservation of nature and environmental resources - especially the ecosystem services.

The framework for DEA&DP to fulfil their Constitutional planning mandate is found primarily in the National Environmental Act (Act 97 of 1998; NEMA), National Development Plan 2030 (2012), and the Spatial Planning and Land Use Management Act (Act no 16 of 2013; SPLUMA). SPLUMA changed the mandate of DEA&DP from regulator of land use management to “support and monitor” municipal planning performance as well as to enable regional and provincial development. Now the Department has a direct role in ensuring that all municipal IDPs (and other planning documents) take the national and provincial strategic plans/objectives into account.

With increased urbanisation and the observed impact of climate change, the Western Cape needs to deal with the dual issue of rising water demand and increasing climate uncertainty which heightens the risk of water scarcity due to prolonged droughts but also heightens the risk of flooding from severe weather events. This new normal together with the policy shift in the last few years requires the updated Sustainable Water Management Plan to align with the

Provincial Government's role to support and enable improved resilience in the face of increasing climate uncertainty and the impact this will have on water resilience. The emerging Plan defines the pathway towards good governance for water resilience in the Western Cape for the next 5 years (2017-2022).

A STRATEGIC APPROACH FOR SUSTAINABLE WATER MANAGEMENT

The updated plan defines a strategic and incremental approach towards the sustainable management of water in the Western Cape. Aligning goals and objectives with the natural cycle of water, the updated Plan takes a systems approach to water security, promoting good water management practice from source to sea. This has led to the development of 16 Strategic Objectives that map the incremental steps towards improved water resilience.





ACHIEVING THE GOAL OF SUSTAINABLE WATER MANAGEMENT

It is critical that the progress of the Sustainable Water Management Plan is measured in relation to achieving the goal of water resilience. The Plan promotes the monitoring of key outcome indicators related to the high level goals, together with monitoring outputs associated with the progress toward the Strategic Objectives and associated focus areas. This allows on-going measurement of progress towards Sustainable Water Management as a complete system without getting distracted by the 'noise' that can arise from too much data or task specific measurables.

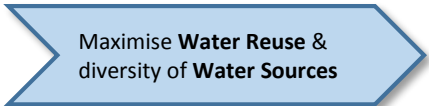
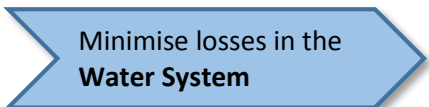
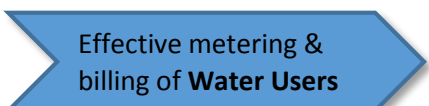



Wetlands below the Berg River Dam

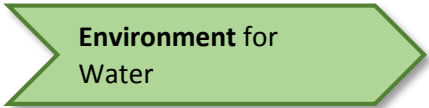
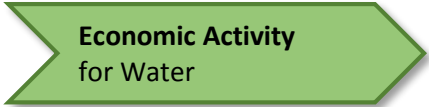


GOAL 1: ENABLE EFFECTIVE CO-OPERATIVE GOVERNANCE & INSTITUTIONAL PLANNING FOR SUSTAINABLE WATER MANAGEMENT

Strategic Objective	Focus
 Align Leadership	<i>Establishing a shared responsibility for a co-ordinated approach to sustainable water management across government departments</i>
 Engage Stakeholders	<i>Establish effective working relationships throughout Provincial Government and between spheres of government, research institutions and the private sector</i>
 Empower Institutions	<i>Support and enable institutions to jointly plan, budget, implement, operate and maintain the services and infrastructure required for sustainable and resilient water management</i>
 Embed New Practices	<i>Establish effective integrated governance structures, organisational processes and incentives to enable timeous and informed engagement and implementation on core activities in the SWMP</i>

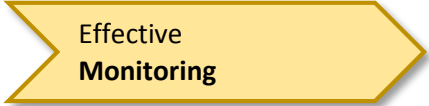
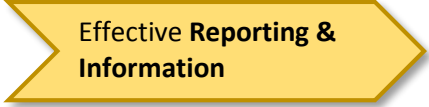


GOAL 2: ENABLE SUSTAINABLE WATER RESOURCES FOR GROWTH AND DEVELOPMENT

Strategic Objective	Focus
 Maximise Water Reuse & diversity of Water Sources	<i>water resilience through sustainable abstraction from a diversity of water sources, (including rivers, dams, groundwater and re-use and desalination where appropriate)</i>
 Minimise losses in the Water System	<i>Prevent leakage throughout the bulk and reticulation pipe network through pressure management and effective maintenance of assets</i>
 Effective metering & billing of Water Users	<i>Ensure all water users (raw water, potable, groundwater, re-use) are metered, billed and/or incentivised according to their water use</i>
 Minimise Water Consumption	<i>Promote water saving and re-use by driving behaviour change, and promoting innovation and the uptake of water saving technologies.</i>

GOAL 3: ENABLE THE INTEGRITY AND SUSTAINABILITY OF SOCIO-ECOLOGICAL SYSTEMS FOR CLIMATE CHANGE RESILIENCE

Strategic Objective	Focus
 Environment for Water	<i>Protect and restore the ecology and health of river catchments and groundwater resources through a broad range of activities within the water bodies and their catchments.</i>
 Economic Activity for Water	<i>Promote the establishment of water-efficient agriculture and industry sectors, which drive innovation and contribute to improved water security, within the context of population and economic growth</i>
 Infrastructure. & Built Environment for Water	<i>Minimise impact of towns and cities on water resources through a Water Sensitive Design approach and the adoption of effective early warning systems</i>
 People for Water	<i>Develop good water stewardship practice - by individuals and as a collective society - to minimise pollution events, utilise less water per capita and promote restoration.</i>

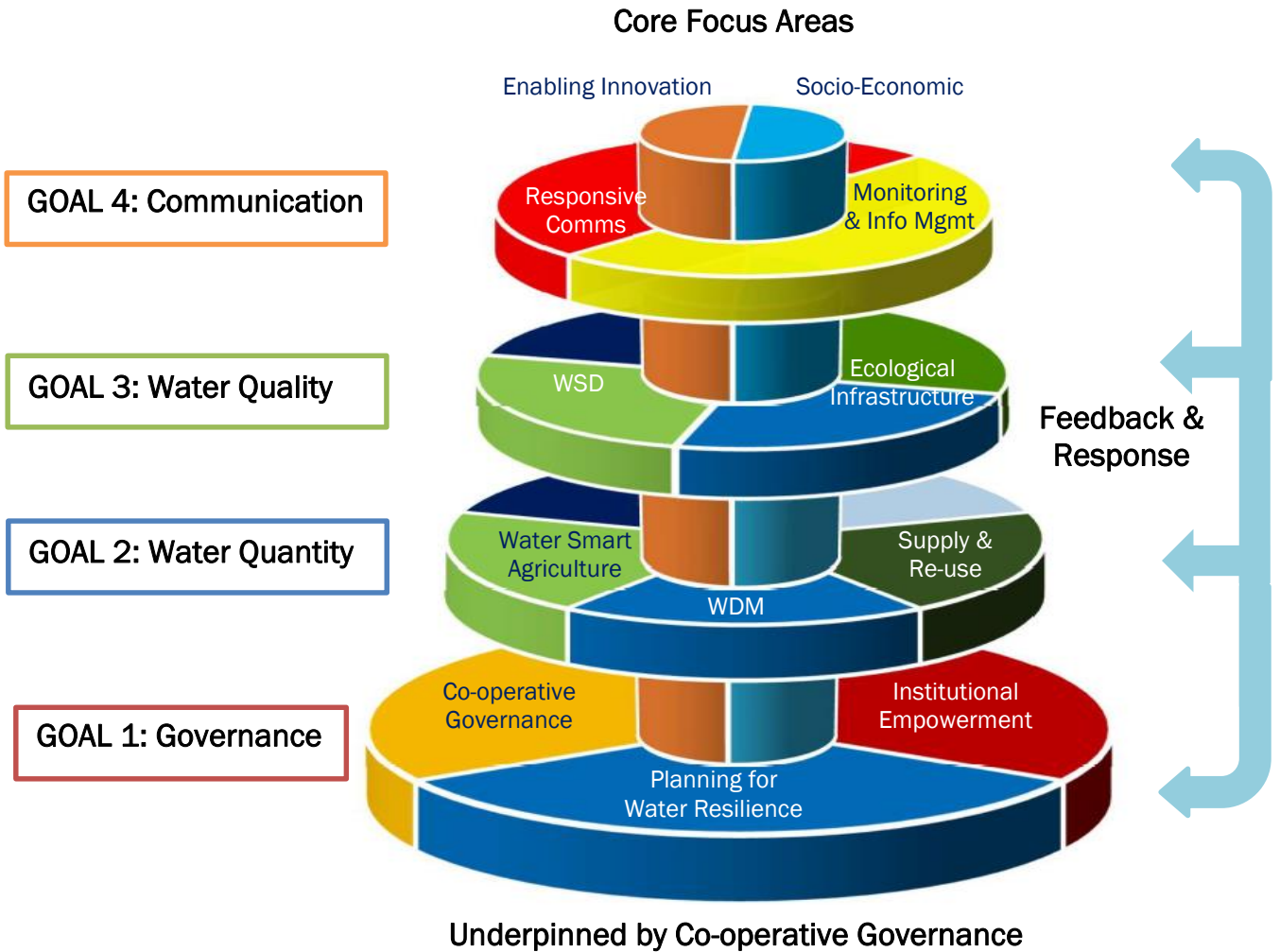
GOAL 4: ENABLE EFFECTIVE & APPROPRIATE INFORMATION MANAGEMENT, REPORTING & AWARENESS-RAISING

Strategic Objective	Focus
 Effective Monitoring	<i>Enable co-ordinated & consistent monitoring of governance, water quantity, water quality and communication objectives</i>
 Effective Reporting & Information	<i>Ensure simple and informative reporting processes of accurate information and data & maintain a collective, accessible knowledge library and data repository for analysis and modelling.</i>
 Effective Communication	<i>Promote knowledge transfer, increased awareness and behaviour change through a consistent and co-ordinated communication strategy</i>
 Effective Action	<i>Enable a timeous and informed response to events identified through the monitoring and evaluation programme</i>

FOCUS AREAS

The updated plan has identified 12 focus areas that together will address the core goals and all of the strategic objectives. The success of the Focus Areas is underpinned by effective co-operative governance, while innovation and socio economic consideration are core Focus Areas which should run throughout the proposed activities. The plan captures a framework of high level actions in Table 9.1. It is envisaged that these should be further refined into detailed action plans with annual deliverables, by the stakeholders working in each focus area.

Alignment of the Focus Areas and SWMP Goals



Contents

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022	1
“Towards a new norm for water resilience”	1
PROJECT TEAM	i
ACKNOWLEDGEMENTS	i
FOREWORD	ii
EXECUTIVE SUMMARY	iii
ABBREVIATIONS AND ACRONYMS	x
1 Introduction	1
1.1 Plan Background	1
1.2 Western Cape Context	2
2 Core Principles of the SWMP	4
2.1 Introduction	4
2.2 Water is Finite	4
2.3 Water is Valuable	6
2.4 Water is a Shared Resource	7
2.5 Sustainable and Efficient Water Use Requires Innovation	7
3 Policy Framework for Sustainable Water Management	9
3.1 The Sustainable Development Goals	9
3.2 Global Water Crises	10
3.3 Integrated Water Resources Management in South Africa	12
3.4 Sustainable Development in the Western Cape	16
3.5 Integration with local government	19
4 Strategic Elements of the SWMP	22
4.1 Redefining the Strategy for Sustainable Water Management	22
4.2 Strategic Goals	23
4.3 Strategic Objectives	23
4.4 Strategic Monitoring	24
4.5 Strategic Activities	25
4.6 Strategic Co-ordination	26
5 GOAL 1: Enable Effective Co-operative Governance and Institutional Planning for Sustainable Water Management	27
5.1 Effective Governance:	28
5.2 Strategic Objective 1a: Align Leadership	28
5.3 Strategic Objective 1b: Engage Stakeholders	29

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

5.3.1	Inter-governmental Relations	29
5.3.2	Catchment Management Committees	30
5.3.3	Disaster Management Forums	30
5.4	Strategic Objective 1c: Empower Institutions	30
5.5	Strategic Objective 1d: Embed New Practices	31
6	Goal 2: Enable the Sustainability of Water Resources for Growth and Development	32
6.1	Strategic Objective 2a: Maximise Water Reuse & Diversity of Water Sources	33
6.2	Strategic Objective 2b: Minimise Losses in the Water System	34
6.3	Strategic Objective 2c: Effective Metering and Billing of water Users.....	35
6.4	Strategic Objective 2d: Minimise Water Consumption.....	35
7	Goal 3: Enable Integrity and Sustainability of socio-ecological systems for climate change resilience	36
7.1	Strategic Objective 3a: Environment for Water	37
7.2	Strategic Objective 3b: Economic Activity for Water	39
7.3	Strategic Objective 3c: Infrastructure and the Built Environment for Water.....	41
7.4	Strategic Objective 3d: People for Water	41
8	Goal 4: Enable Effective and Appropriate Information Management, Reporting and Awareness-raising of Sustainable Water Management	42
8.1	Introduction	43
8.2	Strategic Objective 4a: Effective Monitoring.....	43
8.3	Strategic Objective 4b: Effective Information Management & Reporting.....	44
8.4	Strategic Goal 4c: Effective Communication	45
8.5	Strategic Goal 4d: Effective Action	46
9	Focus Areas.....	47
10	Recommendations & Next Steps.....	57
10.1	Institutional Structure	57
10.2	Strategic Effort.....	58
10.3	Efficient Financing	58
10.4	Implementation Plan	59

ABBREVIATIONS AND ACRONYMS

CBA	:	Critical Biodiversity Area
CBD	:	Convention on Biological Diversity
CIP	:	Consolidated Implementation Plan
CoCT	:	City of Cape Town Metropolitan Municipality
CEWIP	:	Central Environment and Water Information Portal
CHEC	:	Cape Higher Education Consortium
CMA	:	Catchment Management Agency
CMF	:	Catchment Management Forum
CSIR	:	Council for Scientific and Industrial Research
DAFF	:	Department of Agriculture, Forestry and Fisheries
DBSA	:	Development Bank of South Africa
DCoGTA	:	Department of Cooperative Governance and Traditional Affairs
DEA	:	Department of Environmental Affairs
DEA&DP	:	Department of Environmental Affairs and Development Planning
DLG	:	Department of Local Government
DMR	:	Department of Mineral Resources (National)
DotP	:	Department of the Premier
DTP	:	Department: The Presidency
DoH	:	Department of Health
DST	:	Department of Science and Technology
DTi	:	Department of Trade and Industry
DWS	:	Department of Water and Sanitation
EIIF	:	Ecological Infrastructure Investment Framework
EMI	:	Environmental Management Inspector
EWR	:	Environmental Water Requirement
EWSETA	:	Energy and Water Sector Education and Training Authority
ICLEI	:	International Council for Local Environmental Initiatives
IDP	:	Integrated Development Plan
IMESA	:	Institute of Municipal Engineering of Southern Africa
IWA	:	International Water Association
LBSAPs	:	Local Biodiversity Strategies and Action Plans
MFMA	:	Municipal Finance Management Act (Act 56 of 2003)
MIG	:	Municipal Infrastructure Grant
MSA	:	Municipal Systems Act (No.32 of 2000)
MUCPs	:	Management Unit Clearing Plans
NBSAP	:	National biodiversity Strategy and Action Plan

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

NDP	:	National Development Plan
NEMA	:	National Environmental Management Act (Act 107 of 1998)
NFEPA	:	National Freshwater Ecosystem Priority Area
NRF	:	National Research Foundation
NWA	:	National Water Act (Act 36 of 1998)
NWQMP	:	National Water Quality Management Plan
NWQMS	:	National Water Quality Management Strategy
NWRP	:	National Water Resources Management Plan
NWRS2	:	National Water Resources Strategy 2
NWSMP	:	National Water and Sanitation Master Plan
PBES	:	Provincial Biodiversity Economy Strategy
PBSAP	:	The Provincial Biodiversity Strategy and Action Plan
PPPs	:	Public-Private Partnerships
RBIG	:	Regional Bulk Infrastructure Grant
SALGA	:	South African Local Government Association
SANDF	:	South African National Defence Force
SDF	:	Spatial Development Framework
SDG	:	Sustainable Development Goals
SDIP	:	Strategic Development and Implementation Plan
SPLUMA	:	Spatial Planning and Land Use Management Act
WCCCRS	:	Western Cape Climate Change Response Strategy
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 PBSP	:	Western Cape Provincial Biodiversity Spatial Plan
WC PSDF	:	Western Cape Provincial Spatial Development Framework
WC/WDM	:	Water Conservation and Water Demand Management
WISA	:	Water Institute of Southern Africa
WRC	:	Water Research Commission
WSA	:	Water Service Authorities
WSD	:	Water Sensitive Design
WSDP	:	Water Service Delivery Plan
WUA	:	Water Users Association
WTW	:	Water Treatment Works
WWTW	:	Wastewater Treatment Works

1 Introduction

1.1 Plan Background

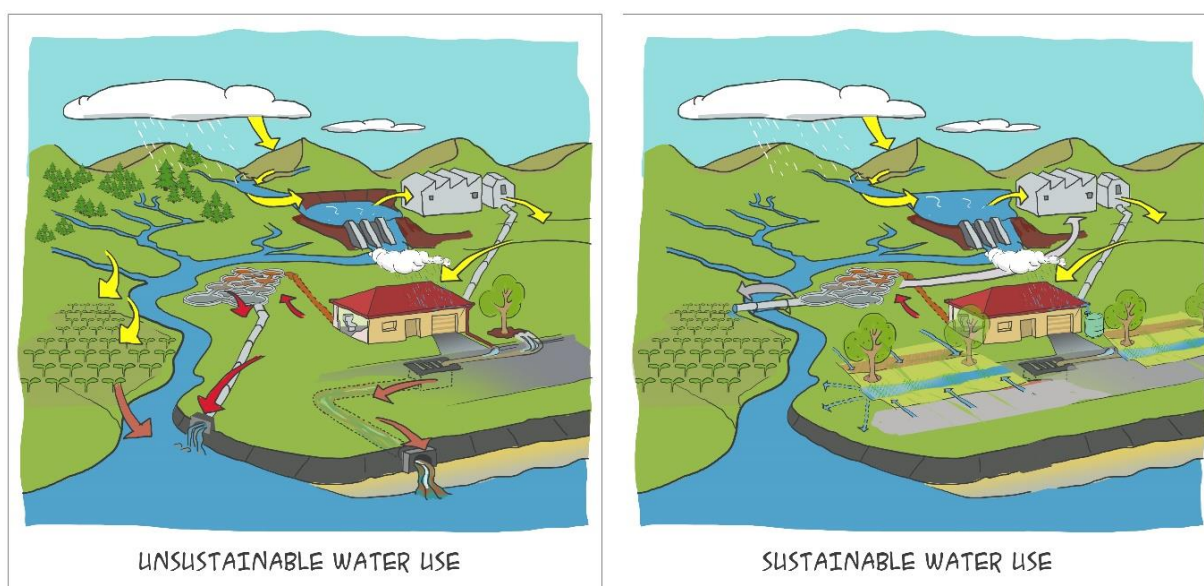
The first Sustainable Water Management Plan (SWMP) for the Western Cape Province was developed, following recommendations made at the National Water Indaba in Cape Town during November 2009. Its development was undertaken collaboratively by the Western Cape Government and the National Department of Water Affairs. Activities were prioritised, to move towards achieving integrated and sustainable management of water in the Western Cape with the overall aim to guide sustainable water management towards meeting the growth and development needs of the region.

The Plan was published in 2012 and endorsed by the Western Cape Government (WCG), and underwent a comprehensive review in 2017. The purpose of this review was to evaluate the impact of the Sustainable Water Management Plan and update the Plan to enable alignment with the local, provincial and national policy that has emerged in the last five years. This emerging policy recognises that a joint approach between government departments, the private sector and civil society forms the basis of tackling the water security challenges facing the country. The updated Sustainable Water Management Plan provides the framework for improved co-operative governance to strengthen a collaborative approach to the management of the Western Cape's water resources.

With increased urbanisation and the observed impact of climate change, the Western Cape needs to deal with the dual issue of rising water demand and increasing climate uncertainty which heightens the risk of water scarcity due to prolonged droughts but also heightens the risk of flooding from severe weather events. This 'new normal', together with policy shifts in the last few years, requires the updated Sustainable Water Management Plan to align with the Provincial Government's role to support and enable **improved resilience in the face of increasing water scarcity and climate uncertainty**. The emerging Plan defines the pathway towards good governance for water resilience in the Western Cape for the next 5 years (2017-2022).

The updated plan has emerged through an in-depth engagement process with different spheres of government. This revision reflects the changing economic, social, institutional, political and environmental landscapes within which the Sustainable Water Management Plan operates.

The updated SWMP outlines a strategic approach to enable sustainable water use throughout the province. With reference to Figure 1.1, this includes; the protection and restoration of our catchments from source to sea, and the promotion of water sensitive design approaches which includes water re-use, aquifer recharge through sustainable drainage systems, and the diversification of water sources to improve resilience.

Figure 1.1: Transitioning towards Sustainable Water Use

Source: Isidima Design and Development 2017

1.2 Western Cape Context

The Western Cape province is semi-arid with an annual average rainfall of 450mm although this varies greatly across the province, with Cape Town receiving 515mm¹, George receiving 715mm², Saldanha Bay receiving 272mm³ and Beaufort West receiving 225mm⁴. It has a total land area of 129,462km² and a growing population of approximately 6 million people residing within 24 Local Municipalities, 5 District Municipalities and one Metro. The population of the Western Cape has grown at an average rate of 1.88% per annum between 2011 and 2017 compared to the latest estimate of 1.61% for the country from 2016 to 2017. This is due to a net in-migration of people to the province⁵. The Western Cape produces between 55% and 60% of South Africa's agricultural exports. The Western Cape also contributes approximately 20% towards South Africa's total agricultural production.⁶

The Western Cape is dominated by two water management areas (WMA), namely Breede-Gouritz and Berg-Olifants. The Breede-Gouritz catchment supplies 59% of the Cape Town Supply while the Berg-Olifants WMA supplies 41%. These catchments are also used extensively for irrigation.

¹<https://web.archive.org/web/20110314111749/http://old.weathersa.co.za/Climat/Climstats/CapeTownStats.jsp>

² https://en.wikipedia.org/wiki/George,_Western_Cape#Climate

³ <https://en.climate-data.org/location/9529/>

⁴ <https://en.climate-data.org/location/8470/>

⁵ StatsSA, 2017

⁶ WRC, 2014

Figure 1.2: Western Cape Catchment Areas

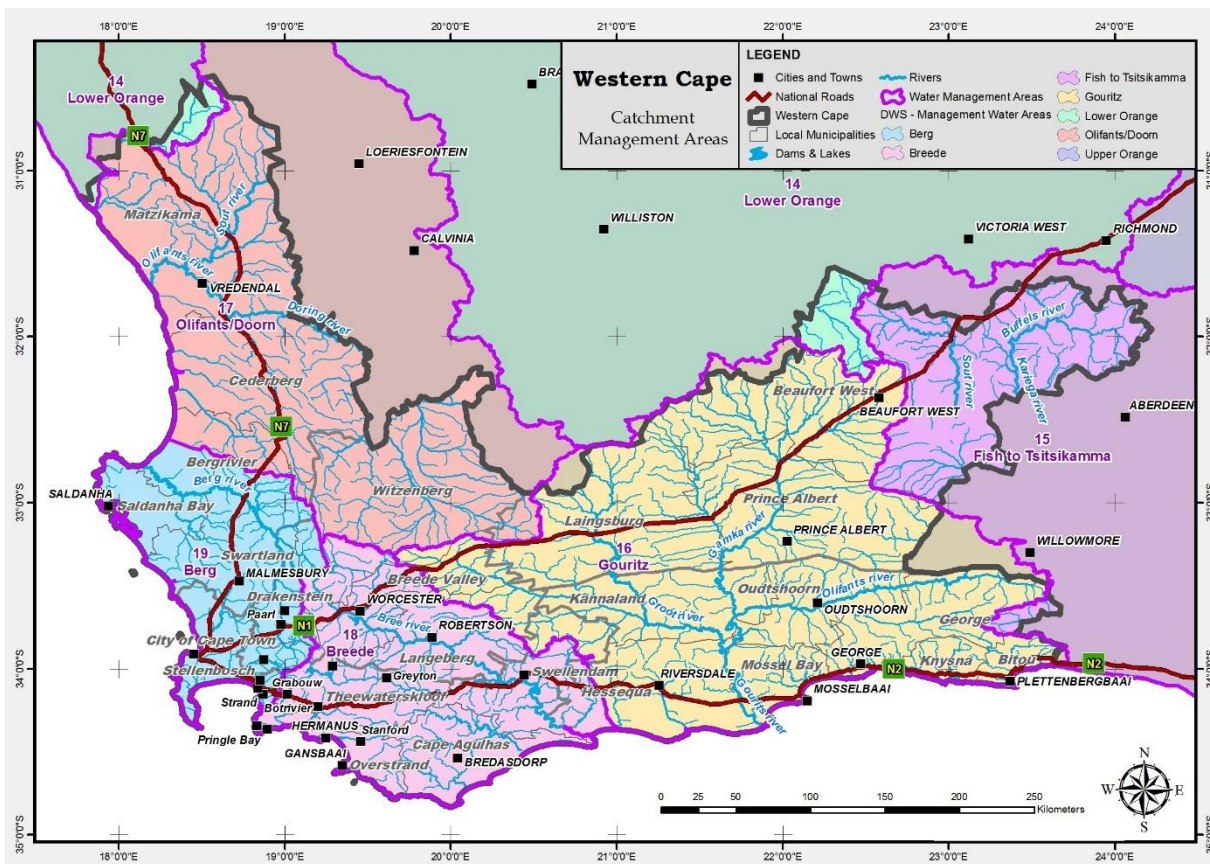
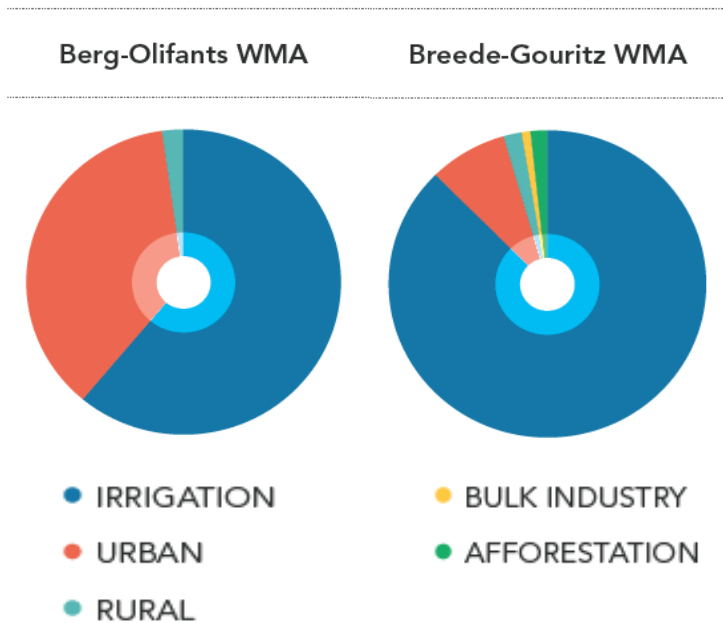


Figure 1.3: Western Cape Typical Water Use by Catchment



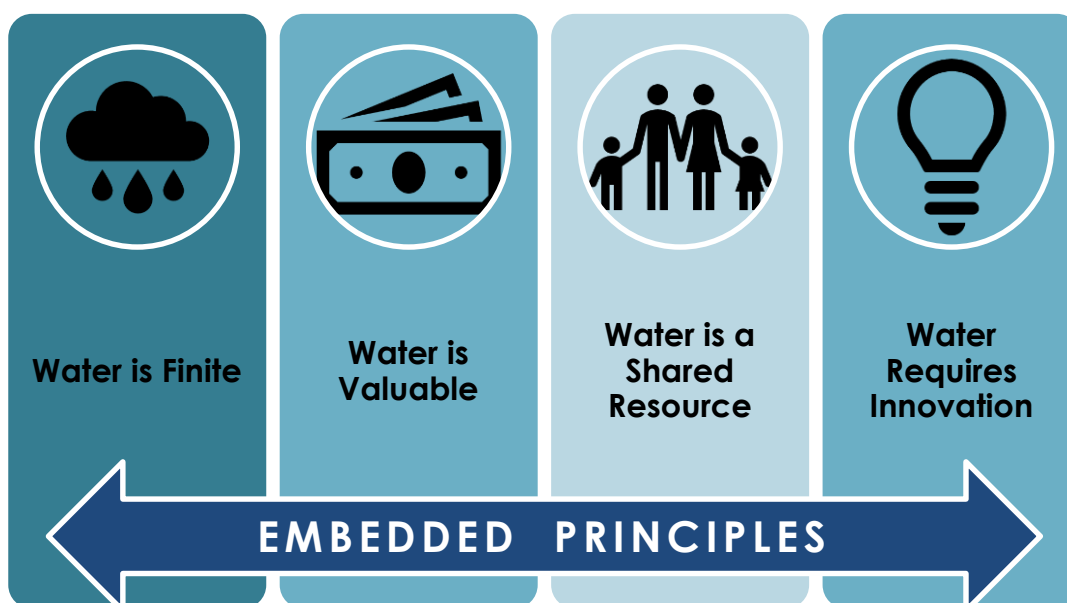
Source: Green Cape, 2017

2 Core Principles of the SWMP

2.1 Introduction

The updated SWMP is based on four core principles that are embedded throughout the Plan. All activities emerging from the Plan must take cognisance of the principle that water is a valuable, finite resource that requires innovation and effective collaboration to achieve thriving development and a healthy environment in the midst of population growth and increased water scarcity.

Figure 2.1: Core Principles of the SWMP



2.2 Water is Finite

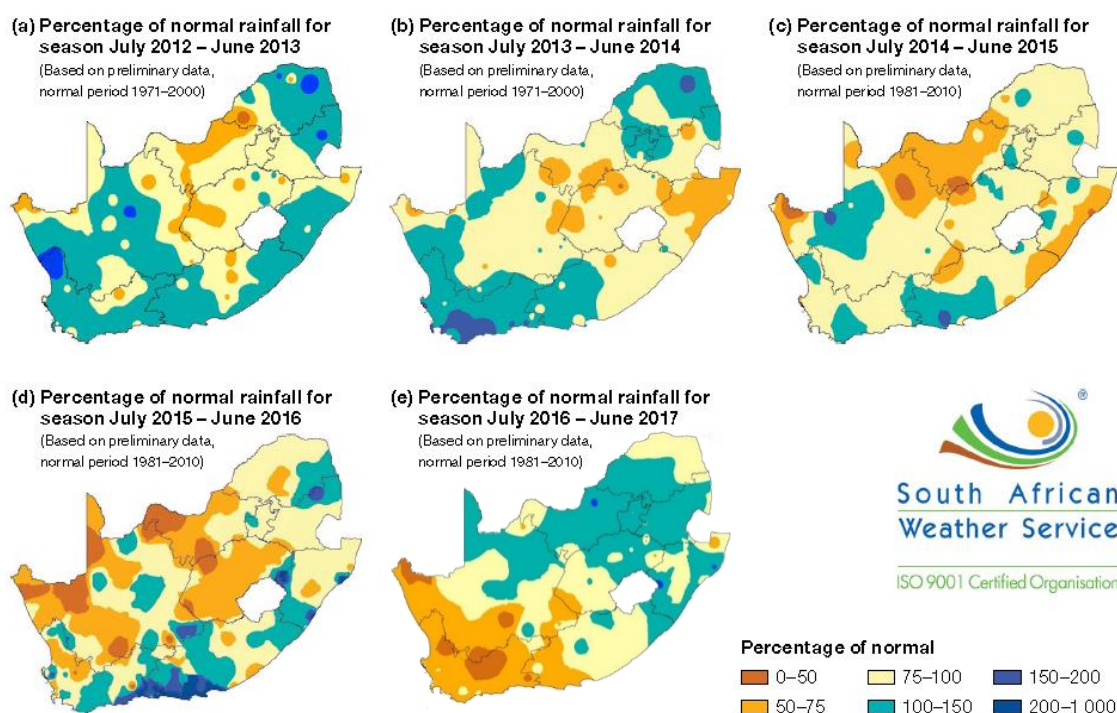
Although water is renewed through the water cycle, there is also a limit to how much water is available within a catchment for socio-economic development and environmental sustainability. Based on the current reliance on surface water sources, the availability of water also varies annually with precipitation. With an average annual rainfall of 450mm in the Western Cape, compounded by the impact of climate change, water scarcity can have disastrous consequences on the availability of fresh water. The 2016/2017 severe drought in the Western Cape has changed the way in which we value water. Rainfall across many parts of the Western Cape has been below normal since winter 2014, with July 2016 through to July 2017 being significantly below the norm. The Province is now in what has been touted as the worst drought since 1904⁷, and was declared a provincial disaster area on 24 May 2017.

The disaster means that not only legislative, but also financial mechanisms are put in place to mitigate the situation. This reflects that, **on a national and municipal government level, the way**

⁷ <https://www.westerncape.gov.za/general-publication/provincial-disaster-declaration>

in which water is valued has changed with the imposition of punitive drought charges as well as an increase in the price of water for urban areas. Prior to the drought the Western Cape Climate Change Response Strategy (2014) (WCCCRS) was developed which is a coordinated climate change response that guides the collective implementation of innovative projects to increase climate resilience, enhance ecosystems and promote economic growth and job creation. The Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector' (commonly referred to as the SmartAgri Plan) falls under the umbrella of the WCCCRS and its Implementation Framework, and is the first sector specific plan on climate change for the province under the WCCCRS. SmartAgri presents the 'road map' for the agricultural sector in the province to travel towards a more productive and sustainable future, despite the uncertainties around specific climate projections.

Figure 2.2: the onset of the Drought



SAWS seasonal rainfall records from July 2012- June 2017
(<http://www.weathersa.co.za/climate/historical-rain-maps>)

The drought has had a drastic impact on the amount of freshwater available to citizens of the Western Cape Province, as well as agriculture and regional industries. The diminishing dam levels and strict water restrictions has brought about the realisation that **water is a finite resource**, and has encouraged discussion around the true value of this precious commodity. A phrase that has recently been coined is – 'This is the **new normal**' – in reference to the drought and the predicted impacts of climate change. It is important to understand that the "new normal" refers to climate uncertainty and the higher likelihood and frequency of extreme weather events, from both droughts to floods.

The updated Plan outlines a strategic approach towards sustainable water management in the Western Cape which considers both the supply and demand of this precious resource. The 'new normal' must consider the political, economic, social, technological, environmental, political and legal drivers for sustainable water management in the province. Reliable access

to water which is fit-for-purpose is fundamental to the health of the environment and the economy and is therefore a key driver for development, growth and the future sustainability of the Province.

2.3 Water is Valuable

Water is appropriately identified as a core driver for development, and is central to the health of the environment, the economy and the citizens of the Western Cape. The value of water is commonly reduced to a block tariff that is carefully aligned with the willingness to pay for the volume of water a user wishes to 'consume', balanced against the required revenue to operate and maintain infrastructure. **This conventional approach assumes an abundance of water (or at least sufficient water), where the combined water requirement of the environment, the economy and potable water use can be sustained.** However, with the growing population and the impacts of climate change, this cannot continue to be assumed and the pricing of water should drive efficiency. At the same time, water pricing needs to take into account both basic human needs as well as the socio-economic benefits and potential trade-offs of different water uses.

The long term prospect of degraded eco-systems that cannot sustain current agricultural activity or does not ensure sufficient drinking water, will far outweigh any financial burdens in the shorter term. The drought which started in 2015, is already predicted to cost the agriculture sector in excess of R500m due to reduced yields. "The Western Cape has the biggest agricultural workforce in South Africa at 24,5%. The drought will have a major impact on seasonal employment in the fruit industry, as possible lower production [will result in fewer] seasonal workers being employed,"⁸

In the midst of continued water scarcity and increased stress on our limited water resources, it is critical that the whole catchment is considered to be an integral component of the water supply infrastructure. The Western Cape Government Green Economy Strategy Framework aims to establish the Western Cape as the leading green economic hub of the African continent, recognising the linkage between the environment and resilient infrastructure.

However, the loss of water due to the neglect of eco-systems and catchment areas goes beyond any financial equation. **A clear water management strategy that increases the security of water supply into the catchment through "investment into ecological infrastructure" while minimising the water demand is essential to ensure that the Province can enjoy equitable access to water for a sustainable environment and sustainable economic growth.** To this end, various national strategies and plans promote ecological infrastructure restoration and protection including the National Water Resource Strategy 2 (NWRS2), the National Development Plan 2030 (NDP), and the draft National Water and Sanitation Master Plan. At a provincial level, the Provincial Biodiversity Strategy and Action Plan (2016) is the strategic framework for the long term conservation of biodiversity and priority ecosystems (supported by the Biodiversity Spatial Plan), whilst the EIF is the alien invasive species strategy and framework to proactively protect priority water resources.

⁸<http://www.farmersweekly.co.za/agri-news/south-africa/western-cape-droughts-knock-effect-sa-economy/>

2.4 Water is a Shared Resource

Given that water is an essential need, the National Water Act (NWA) recognises that water belongs to all people. As such, national government is the public trustee to ensure that water is allocated equitably and used beneficially in the public interest, including protecting water resources for the environment.

Besides lack of access to potable water having considerable negative health consequences, a lack of access to water also has an effect on social unrest and conflict. The 2016 World Economic Forum Report for instance, ranked water crises as the 3rd most impactful threat to peace⁹. Access to potable water is a basic human right. While the majority of the Western Cape benefits from access to potable water, rapid urbanisation and the prevalence of informal settlements means that we continue to strive for equitable access to water services.

The finite water resource must be shared between all users i.e. the environment, economic activity (such as agriculture and industry), and residential uses. The collective need for water should be mirrored by a collective stewardship to use water sustainably, efficiently and to avoid pollution of our natural resources. This requires collaboration across all sectors (government, industry, agriculture, land owners and society) to minimise wastage from leaking infrastructure, inefficient processes, or negligent human behaviour.

2.5 Sustainable and Efficient Water Use Requires Innovation

The concept of innovation is today a widely used term, with a variety of meaning and significance. In the context of the Sustainable Water Management Plan (SWMP), it can be narrowed or defined as:

“New approaches, processes, methodologies and/or technologies that may improve the supply of water, reduce demand and enhance responsible water use and re-use.”

Innovation can and should be seen as a system, and includes processes of improvement or change that are both social and technological. Furthermore, innovation within the SWMP of the Western Cape, should be understood at different levels of governance, and within different contexts. The social and institutional focus of innovation is often overlooked, with over-emphasis on technological innovation which is more common.

Social innovation, in the context of this plan, could be defined as:

“New ways of understanding how society values water, and in return finding new ways in which to preserve, conserve and use water efficiently and effectively within a socio-economic, environmental and geo-spatial context [i.e. regions, cities, towns]”

Institutional innovation relates to the manner in which water systems are managed and governed, and the different approaches to doing so. The article below shows a clear paradigm shift within water research (and innovation) over the last thirty years.

⁹ Green Cape, 2017

Two major paradigm approaches were observed in the analysis of water research publications along with one significant transition period. The first set of paradigms, from 1977 to 1991, emphasises the hydraulic mission in which research and implementation aimed to secure supply and understand basic natural systems. This period is dominated by engineering and laboratory-related disciplines. The 'getting more' and 'supply management' paradigms are characterised by efforts to ensure water supply, drainage and the development of the seweraged city – mainly engineering and biological related research efforts.

In the following 10 years (1992–2001), there is a transition in which quality constraints and fields of management and planning become prominent. This paradigm is in response to changes in water deficits and a focus on end-use efficiency.

A second transition occurs with a new social contract around water at a time when the new political regime enters government in a period of democratic transition, growing environmentalism and a rise of civil society activism. The need to plan, model catchments and include other disciplines becomes evident in the research environment.¹⁰

Innovation within the current context of the Western Cape, should promote an integrated approach to innovation to improve water supply, water quality and demand-management within an increasingly water scarce province. In addition to strengthening co-operative governance, a multi sectoral approach to innovation is required which taps into the Cape Higher Education Consortium (CHEC) and WRC to be the interlocutor between research, government, civil society and industry needs. Innovation should extend to the business sector and institutional structures, and should explore models for public private partnerships and stewardship programmes to improve service delivery and leverage alternative financing models. The Strategic Water Partnership Network is of relevance in this regard. There is also a role for citizen science to enhance monitoring and reporting. Additional background to the role of innovation is included in Annexure C.

¹⁰ Siebrits R, Winter K, Jacobs I. Water research paradigm shifts in South Africa. *S Afr J Sci.* 2014;110(5/6), Art. #2013-0296, 9 pages

3 Policy Framework for Sustainable Water Management

The Sustainable Water Management Plan should not be implemented in isolation, but rather be a local expression of the “sustainable water management” context globally, and nationally. As such, it should fall within the framework of the global goals for sustainable development, and best practice for water resources management; as well as the strategic direction of our country, South Africa.

There have been significant developments in international, national and provincial policy and strategy in the last five years. This requires a re-alignment of the SWMP priorities, and gives clarity on the roles of the different stakeholders for whom this plan has been drafted. This section provides a summary of the key policy and strategy documents, pertinent to the context of the Western Cape Sustainable Water Management Plan.

3.1 The Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a set of 17 ‘Global Goals’ spearheaded by the United Nations (Figure 3.1). The goals define the 2030 Agenda for Sustainable Development and are contained in paragraph 54 United Nations Resolution A/RES/70/1 of 25 September 2015. Goal 6 is explicitly focussed on the provision of water in a sustainable manner, but in reality, water is an implicit factor in achieving each of the goals. Goal 6 and Goal 13 are also closely linked as water security is dependent on actions to mitigate and adapt to climate change. It is thus essential that the Sustainable Water Management Plan aligns with the SDGs. In addition to meeting the requirements of the UN Resolution, clear alignment with the SDGs is important to leverage access to international funds which are specifically allocated to the delivery of the SDGs

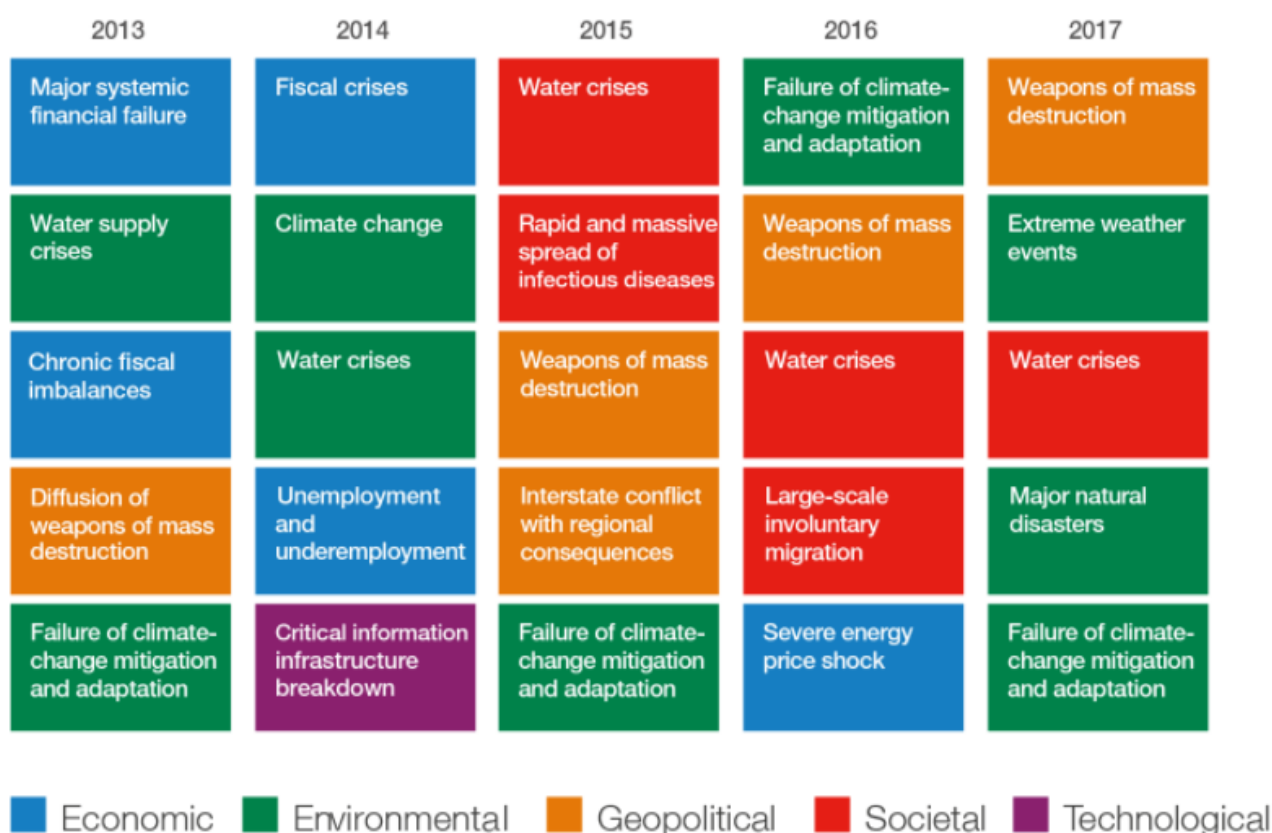
Figure 3.1 – The Sustainable Development Goals



3.2 Global Water Crises

Water has increasingly moved to the forefront of global economic issues. The World Economic Forum Annual Global Risk Report has had “water crises” in the top 5 global risks in terms of impact for the past 5 years (Figure 3.2). Significantly, it has also moved from being viewed as an Environmental Risk, to a Societal Risk. The 2017 top impacts show a shift to the Environmental issues being the driver of much economic uncertainty; this is interdependent on water management. The water crises are driven by two underlying factors of climate change and population growth, of which the latter is not made explicit in this analysis. However, there is no doubt that population growth places an ever increasing demand on water as a finite resource in the context of an uneven spatial distribution of water resources. Climate change is also the underlying factor for extreme weather events that consequently present a risk to water security, through both droughts and floods.

Figure 3.2 – Water as a Global Risk



Source: World Economic Forum, Global Risk Report 2017

This context shows the shift in thinking by the public and private sector, which is explained in a very recent report (18 July 2017) published by the International Water Association (IWA) titled "Framing a multi-sector approach to water security" (Hearn, D and Orams P, 2017):

"What role do corporate actors have in tackling water security issues and working towards the global development agenda more broadly? The question is no longer if corporate actors have a role, but what this role looks like, and how public organisations, the private sector and local communities can best work together to achieve shared development goals".

"As we begin to formulate solutions and systems to tackle water insecurity and work towards meeting the Sustainable Development Goals (SDGs) the need for a framework that champions multi-stakeholder solutions to complex water challenges becomes necessary. Water Stewardship offers such a framework and can provide the transparency, accountability and evaluative systems required for these challenges at both the site- and catchment-level".

The International Water Association, IWA, has developed the 'Principles for Water-Wise Cities' to assist leaders to develop and implement their vision for sustainable urban water, beyond equitable universal access to safe drinking water and sanitation. The Principles underlie resilient planning and design in cities. The ultimate goal of these Principles is to encourage collaborative action, underpinned by a shared vision, so that local governments, urban professionals, and individuals actively engage in addressing and finding solutions for managing all waters of the city. However, this visioning and value setting needs to be effected through strategies, plans and implementation. The following sections outline the strategies and plans that guide integrated water management in the South African and Western Cape context.

Figure 3.3 – The “Principles for Water-Wise Cities” Framework: [Source: IWA, 2016}



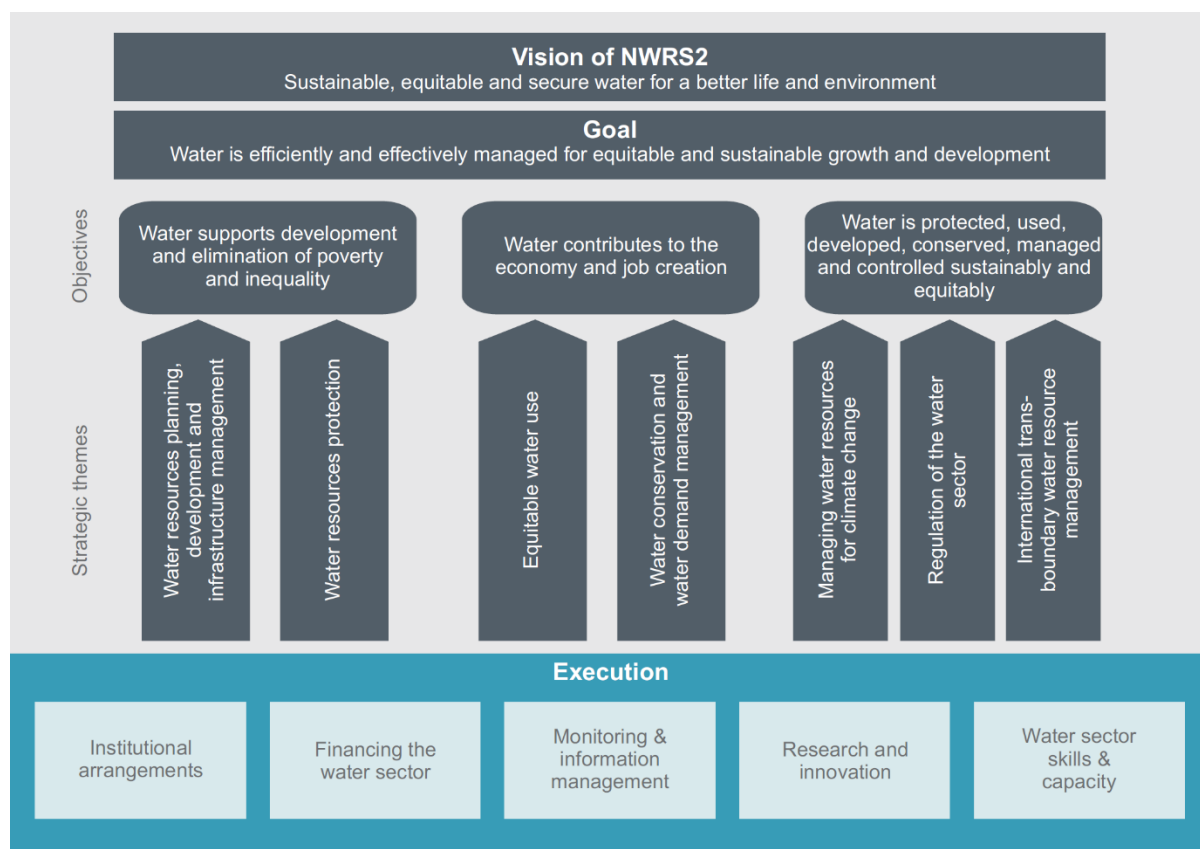
3.3 Integrated Water Resources Management in South Africa

The vision for an integrated approach to water resource management was clearly laid out in the 1997 Water Policy and the 1998 NWA. South Africa was the envy of many countries with their forward thinking, best practice legal framework. Nearly two decades on, implementation of the vision has proved to be very challenging, despite earnest attempts by DWS to provide the enabling environment to do so. However, our legal framework is *still* best practice, and *still* provides the structure on which to build good water stewardship.

As the strategic vision for the country, the NDP recognises the essential role of water in reaching social and development goals. It recognises the need to protect the environment for future generations and to mitigate against the effects of climate change. The NDP notes that capital investment in water infrastructure has fallen dramatically, from 30% of GDP in the 1980s to approximately 16% in the early 2000s. It advocates that by 2030 the effective management

of water and the services derived from it will support a strong economy and a healthy environment. Further it is envisioned that the country's development will reflect an understanding of available water resources and effective water planning that cuts across different economic sectors and spheres of government. In terms of the NDP, the reduction in demand is a key water management strategy which, through improvements in use efficiency and alternative water supply and use, can be achieved as part of developing a water sensitive city. The NDP sets a target of 15% reduction in water demand in urban areas below the business-as-usual scenario by 2030) From the perspective of transforming human settlements, the NDP sets out to achieve spatial sustainability, resilience and quality. In response to these, the underlying principles of and the transition towards a water sensitive city has embedded within it the objectives of environmental preservation, resource efficiency and increased liveability respectively. This is further relevant when considering the need for the transformation to sustainable infrastructure delivery in securing urban futures, as noted within the NDP (DTP, 2012).

Figure 3.4 – The Strategic Approach to the National Water Resources Strategy (NWRS2)



The National Water Resources Strategy 2013 (NWRS2) provides a framework for the regulation of water resources in South Africa. The Strategy focusses on equitable and sustainable access and use of water by all, whilst ensuring the water resource is protected. In March 2018, the National Water and Sanitation Master Plan (NWSMP) was published for consultation, setting out a schedule of prioritised actions for the period to 2030 that will create a water and sanitation sector that can meet the objectives identified in the NDP and the SDGs. The NWSMP recognises that water security is one of the biggest challenges facing South Africa and that

the projected deficit by 2030 will be 17% of available surface and ground water if substantive actions are not taken to balance supply and demand. It also recognises the need to protect and restore ecological infrastructure due to climate change, pollution and poor land use practices and degradation. It further recognises the need to reduce water demand, ensure equitable access to water, diversify water supply, create a financially sustainable water sector, build effective water sector institutions, and improve data and information management (DWS, 2018).

More recently, the Integrated Water Quality Management Policy Edition 2 and Strategy was drafted (2017). This set of documents takes a new turn in the approach to water resources management in South Africa. This emerging policy recognises that a joint approach between government departments, the private sector and civil society forms the basis of tackling the water quality challenges facing the country:

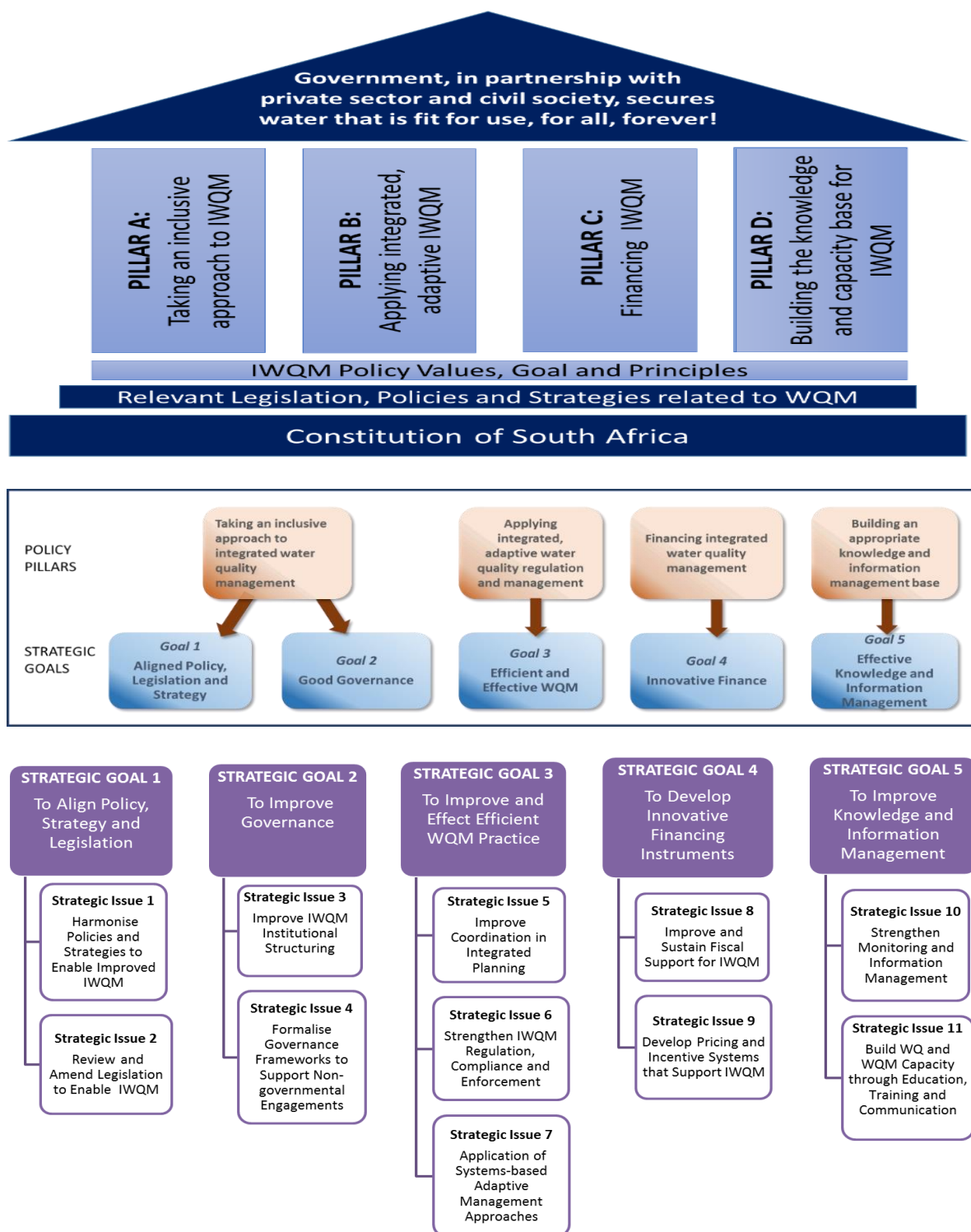
“Historically, water quality management has been the mandate of the Department of Water and Sanitation alone, and yet there are many government departments whose mandates impact profoundly on water quality.... A joint approach between these government departments, private sector and civil society forms the basis of tackling the water quality challenges facing the country”.

The Integrated Water Quality Management Policy (IWQMP) aims to take an integrated approach to the management of water quality, enabling government to work with civil society and the private sector to bring the improvement needed. In essence, the policy recognises a water stewardship approach in line with the Alliance for Water Stewardship Standard. This aligns with the global trend described in the previous section.

Following the development of the IWQMP, was the development of a Strategy that looked at the short term implementation priorities for 2017-2022. This IWQM Strategy (2017) repeatedly highlights the complex nature of water quality management, and calls for a “systems-based, adaptive management approach”, with the need for “relevant stakeholders from government, civil society and the private sector to develop a common vision for water quality management, and to develop joint approaches to solving the complex problems facing the catchment” (DWS, 2017 page 19).

The IWQM Strategy developed five goals from the IWQMP, and then identified eleven strategic issues, as summarised in Figure 3.5 below.

Figure 3.5 – The 11 Strategic Issues of the IWQMS¹¹



¹¹ DWS, 2017

3.4 Sustainable Development in the Western Cape

The Western Cape Government has a Constitutional legislative mandate, concurrent with national government, on the environmental, nature conservation, pollution control and regional planning and development; The Constitution give powers to the Province to “supervise”, “monitor, and “support” local government. These provide significant additional relevance to the protection and conservation of nature and environmental resources - especially the ecosystem services. The framework for the Province to fulfil their Constitutional mandate is found primarily in the National Environmental Management Act (Act 97 of 1998; NEMA), National Development Plan 2030 (2012), and the Spatial Planning and Land Use Management Act (Act no 16 of 2013; SPLUMA).

NEMA incorporates sustainable development as one of its core principles, and outlines these principles in Chapter 2 of the Act. In addition, in Chapter 3 of NEMA, Environmental Implementation Plans (EIP) are explained as a core mechanism for co-operative governance to enable a co-ordinated approach to “monitor the achievement, promotion and protection of a sustainable environment”.

In terms of the National Development Plan roll out, the Western Cape Government developed its provincial vision and strategic plans in the form of the:

- OneCape2040 (2013)
- Provincial Strategic Plan for 2014-2019

The Provincial Strategic Plan for 2014-2019 sets out five strategic goals. These goals underpin the 2014 Vision for a highly-skilled, innovation-driven, resource efficient, connected, high opportunity society for all. All provincial departments must align with these goals, but departments are given the responsibility to lead specific goals.

Figure 3.6: Strategic Goals of the Provincial Strategic Plan 2014-2019¹²



¹² WCG, 2014

Provincial Strategic Goal 4 has identified water as a provincial risk. The key factors contributing to this risk include increased urbanisation, climate change, failing infrastructure and irresponsible consumer behaviour. Insufficient water quantity and poor water quality will have a negative impact on individual livelihoods and the broader economy and poses a direct threat to growth and development, agriculture (and food security), health and ecological infrastructure.

The nexus between water and land use planning is an important issue given both the demand for water services for improving quality of life and new developments, and the need to protect the catchment from pollution and degradation. SPLUMA changed the mandate of the Province from regulation of land use management to “support and monitor” municipal planning performance as well as to enable regional and provincial development. Therefore, the Province has a direct role in ensuring that all municipal IDPs (and other planning documents) take the national and provincial strategic plans/objectives into account. In 2014, in response to SPLUMA, the Provincial Spatial Development Framework was finalised, providing the context for the integration of national, provincial, and municipal planning. All planning in the public and private sector needs to align with the PSDF (WCG, 2014).

The Western Cape Government: Department of Environmental Affairs and Development Planning (DEA&DP) is the provincial department responsible for administering environmental, planning, conservation, and biodiversity legislation in the Province.

The DEA&DP gazetted their Environmental Implementation Plan (EIP) in October 2015 as per the requirements of NEMA (WCG, 2015). In this it explains the programmes, targets etc for the DEA&DP to meet their obligations for environmental and planning in the province. The DEA&DP is responsible for ensuring that all municipalities comply with this EIP in their preparation of any plans, policies or programmes. This is done through monitoring the compliance of municipal Integrated Development Plans to all legislated requirements.

The Provincial Biodiversity Strategy and Action Plan (PBSAP) (WCG, 2016) is a biodiversity and ecological infrastructure policy and strategic plan also focussing on Western Cape's water security, economic growth and development. In light of the dependencies between biodiversity and the people of the province and development pressures as well as the province's responsibility to respond to national and global biodiversity obligations in this regard, the need was identified to develop a Western Cape PBSAP and this was completed in March 2016.

The PBSAP is a ten-year strategy that aligns with the National and Provincial Medium Term Strategic Frameworks 2014 – 2019 as well as the National Biodiversity Strategy and Action Plan (NBSAP), 2015 – 2025. It integrates South Africa's obligations under the Convention on Biological Diversity (CBD) into the provincial context. It takes into account Local Biodiversity Strategies and Action Plans (LBSAPs) and further provides the framework for implementation of a number of subsidiary plans and strategies including, the Western Cape Protected Area Expansion Strategy (2016) and the Western Cape Biodiversity Spatial Plan. A further outflow of the PBSAP is several strategic interventions aimed at water security and the Provincial Biodiversity Economy Strategy (PBES).

The DEA&DP Directorate: Biodiversity and Coastal Management, together with relevant stakeholders like Department of Water and Sanitation, CapeNature, DEA Natural Resources Management Programmes, the Department of Agriculture, the Department of Economic Development and Tourism and other relevant stakeholders, intends to develop a strategic approach to water security, alien invasive species and ecological infrastructure management.

It was deemed imperative to develop a provincial strategy that recognises key water supply areas, associated risks and where work should be focussed to get maximum return for ecological infrastructure returns.

The need was therefore identified to develop an alien invasive species strategy and ecological infrastructure Investment framework (EIIIF) for the Western Cape Province. Together with this the province also embarked during 2017 to test the Water Fund concept for the Atlantis aquifer and to then scale it up for the Breede River catchment. It will be essential for the private sector to take on some of the responsibility for investing and maintaining in ecological infrastructure particularly where this is under their control. The DEA&DP Directorate: Biodiversity and Coastal Management, together with SALGA have embarked on focussed support for municipalities that do not have approved invasive species clearing plans. Workshops are held with such municipalities in order to assist them to develop Management Unit Clearing Plans (MUCPs) which is then submitted to DEA for approval.

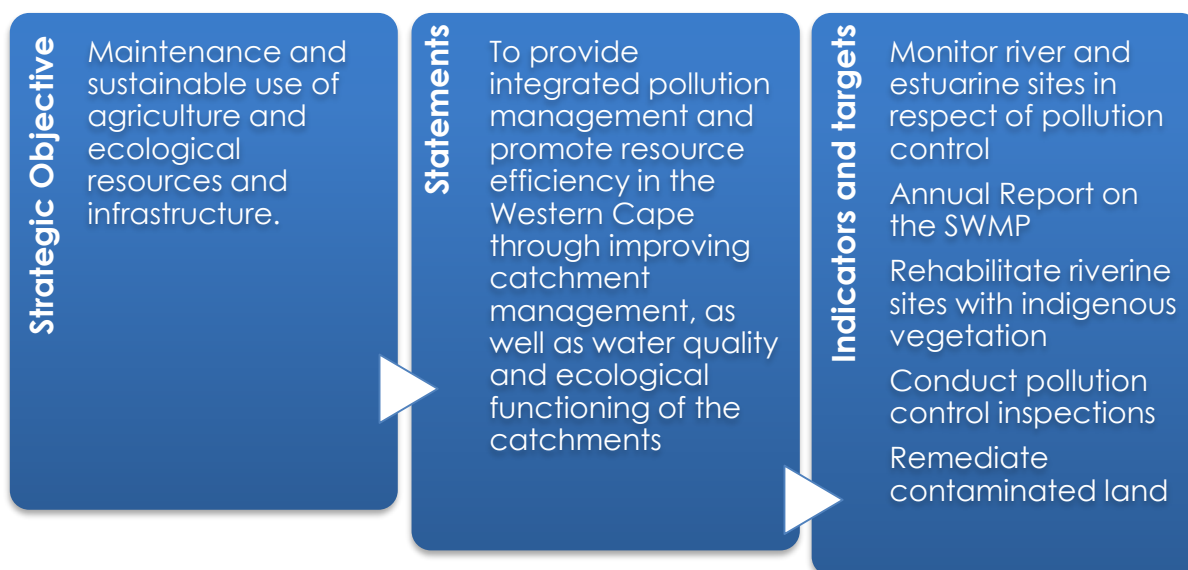
The EIIIF is an alien invasive species strategy and ecological infrastructure investment framework aiming to proactively protect priority water resources using existing legal mechanisms in water, land use, agriculture and biodiversity legislation and planning processes. The strategy and framework will address threats to water resources from unsustainable use (over abstraction), transformation (loss of watershed priority areas through inappropriately sited and illegal agriculture) and urban development and infrastructure and land degradation as well as invasive alien species. The strategy will allow alien invasive species to be managed in a co-ordinated manner, which will benefit all stakeholders involved in alien invasive management in the broader landscape. It will also promote the active rehabilitation of degraded wetlands, rivers, aquifer recharge and riparian areas on a prioritised basis

The DEA&DP are the lead on Provincial Strategic Goal 4 (PSG4) of the Provincial Strategic Plan (2014-2019). Both water and climate change have been identified as provincial risks under PSG4. The Sustainable Water Management Plan (SWMP) is one of the plans under Strategic Goal 4 to help achieve its objectives, as is the WCCCRS which supports all sectors to reduce water security risks.

The DEA&DP have also developed a Strategic Plan for 2015-2020 that details their core implementation focus of the Provincial Strategic Plan under PSG4. The DEA&DP Strategic Plan has four goals:

- **Goal 1:** Sustaining the Ecological and Agricultural Resource-bases
- **Goal 2:** Sustainable and Integrated Urban and Rural Settlements
- **Goal 3:** Good Governance and Integrated Management
- **Goal 4:** Increased Economic Opportunity through Low-Carbon Development, Resource Efficiency while maintaining Biodiversity

The Sustainable Water Management Plan is one of the links to Goal 1: *Sustaining the Ecological and Agricultural Resources bases*, and forms part of Programme 4 of the accompanying strategic objectives:

Figure 3.7: How the SWMP fits into the DEA&DP Strategic Plan 2015-2019 ¹³

The SWMP activities are to contribute to the strategic objective by increasing water conservation, water demand management, and improving catchment management (WCG, 2015).

It is key that the 2017 update of the SWMP incorporates these related goals, objectives, indicators and targets of the WCG Provincial Strategic Plan 2014-2019, and the DEA&DP Strategic Plan 2015-2019. It should be the mechanism that details the DEA&DPs "monitoring and support" role in terms of water in the province. From the above summaries, it is clear that the areas of focus are:

- Improving governance
- Improving water conservation and demand management (WCWDM)
- Innovations in water technology (especially for WCWDM)
- Improving catchment management (including water quality monitoring, rehabilitation, and remediation).

3.5 Integration with local government

As mentioned in the section above, the DEA&DP has a direct role in monitoring the performance of each municipality's Integrated Development Plan (IDP) in the province. This requirement is incorporated into a comprehensive process in the 2015 DEA&DP EIP.

The in-depth involvement in municipal planning processes is an excellent mechanism for the DEA&DP to ensure that the goals, objectives and targets of the Provincial Strategic Goals (and the SWMP) that have a local government link are in fact planned and budgeted for.

The water services development plan (WSDP) of a local government water services authority is a subset of the IDP (see Water Services Act, 1997 Chapter 3), and thus the legislated contents of the WSDP forms the basis for the water services section in the IDP. The DEA&DP can therefore

¹³ WCG, 2015

monitor the contents of each IDP (where the municipality is the Water Services Authority) to ensure that the prescribed elements of the WSDP have been carried through to the IDP.

It should be noted that the Department of Water and Sanitation has the official regulatory role to review the contents and annual progress of all WSDPs. However, there is a historical disparity between what is in the WSDP, and what is included in the IDP. In this way DWS and the Western Cape Government, especially the Department of Local Government (DLG) and DEA&DP, must work hand in hand to ensure alignment of these planning documents.

DEA&DP cannot fulfil the mandate of DWS, National Treasury, Co-operative Governance and Transitional Affairs (COGTA) or DLG by enforcing a particular stance within an IDP. However, it can more strictly review the content of IDPs to ensure all the key status quo and planning elements are explicit in the IDP, and that they align with other provincial legislation, as well as national legislation like the Municipal Finance Management Act (MFMA), the Municipal Systems Act (MSA), the Spatial Planning and Land Use Management Act (SPLUMA), the Water Services Act (WSA), and the NWA and that they enable a sustainable and healthy environment.

The 2017 Water Indaba gathered local, provincial and national government to consider water security in the Western Cape– 2020 and Beyond. The indaba led to the development of three Water Security Declarations, for local government, agriculture and the economic sector.

The local government declaration was signed on 27 June 2017 by the mayors of municipalities, the Premier and the Minister of Environmental Affairs, Development Planning and Local Government. This focus on co-operative governance is central to the updated SWMP. The individual actions which are incorporated in the declaration are incorporated into the Focus Areas of the Plan to ensure that progress is made towards these pledges.

Local Government Declaration on Water Security for the Western Cape, May 2017

The attainment of a resilient, sustainable, quality and inclusive living environment, hinges on progress made on the ensuring availability and sustainable management of water for all.

We, elected and mandated leaders, recognise and advocate urgent and collective action on:

- 1. Enhancing Water Conservation and Demand Management (WC&DM) efforts including adopting Water Sensitive Urban Design planning principles to permanently reduce the per capita demand on our water resources.*
- 2. Concentrating resources and effort on the reduction of water leakages and non-revenue water losses within our reticulation systems.*
- 3. Recognising the need to manage groundwater resources wisely for the ongoing protection of this resource. We commit to ensuring adequate expertise and support for the protection and wise use of this resource in our area.*
- 4. Undertaking necessary steps to institutionalise appropriate diversity of supply options from alternative technologies and sources including all practical direct and indirect water reuse options.*
- 5. Adopting appropriate up-to-date bylaws & regulation to ensure resource efficiency in new buildings and infrastructure, drought restrictions and realistic water costing, water quality and appropriate payment for water catchment management services.*
- 6. Building strong leadership, enhancing public awareness and community participation to collectively and inclusively design our common future and water security.*

We endorse this declaration and commit to institutionalising and monitoring progress on these commitments

We confirm that this Declaration represents the commitment to accelerate local action towards integrated and sustainable water service delivery in the Western Cape by local government leaders, local government networks and partners

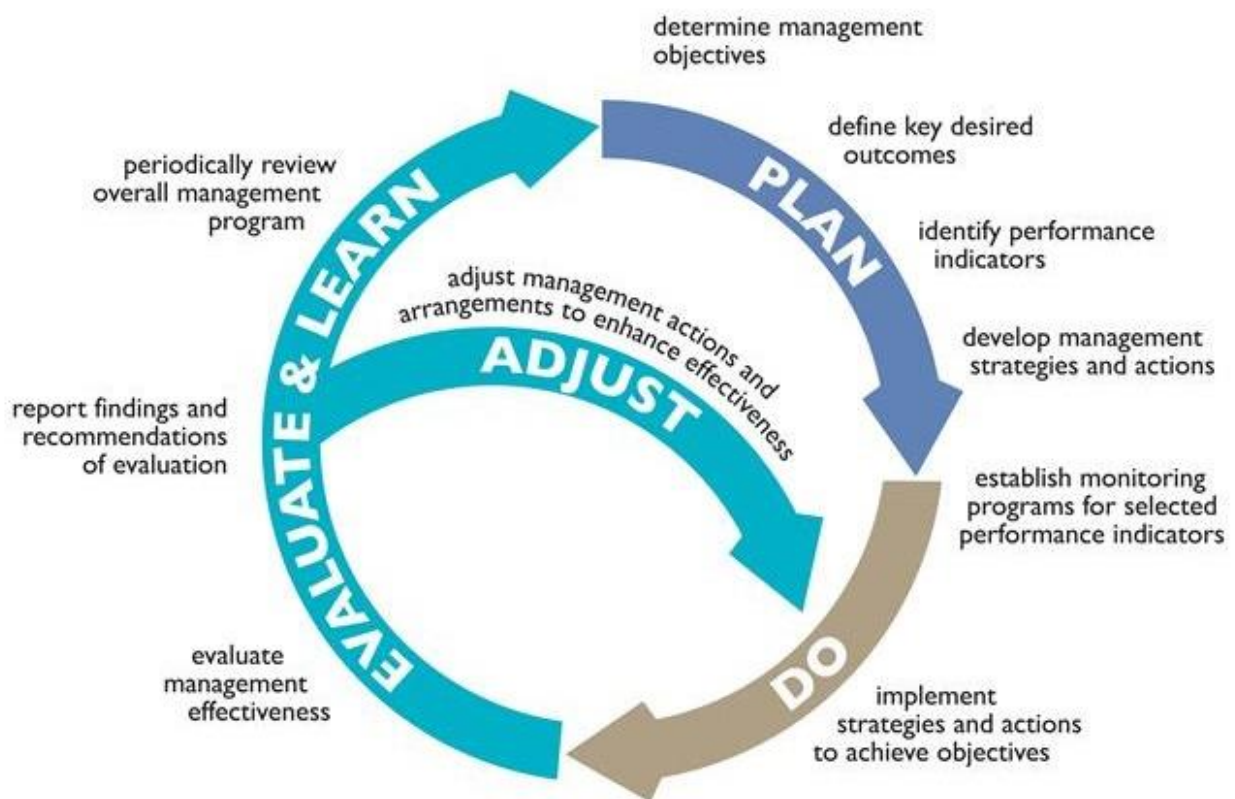
4 Strategic Elements of the SWMP

4.1 Redefining the Strategy for Sustainable Water Management

By aligning the goals and objectives with an incremental approach to water management, the plan takes a holistic approach to sustainable water management to ensure that there are no gaps in the delivery that would weaken its impact. This incremental approach considers the natural cycle of water from catchment to coast and considers the institutional structure that must be in place for effective governance of our water resources.

The Plan recognises the interdependence between activities and the need for effective feedback processes to continually monitor and adapt activities to ensure that they continually build towards achieving the overall goal of sustainable water management in the Province. The strategic adaptive management cycle, illustrated in Figure 4.1 provides a framework for the continual progression of the SWMP.

Figure 4.1: The Strategic Adaptive Management Cycle¹⁴

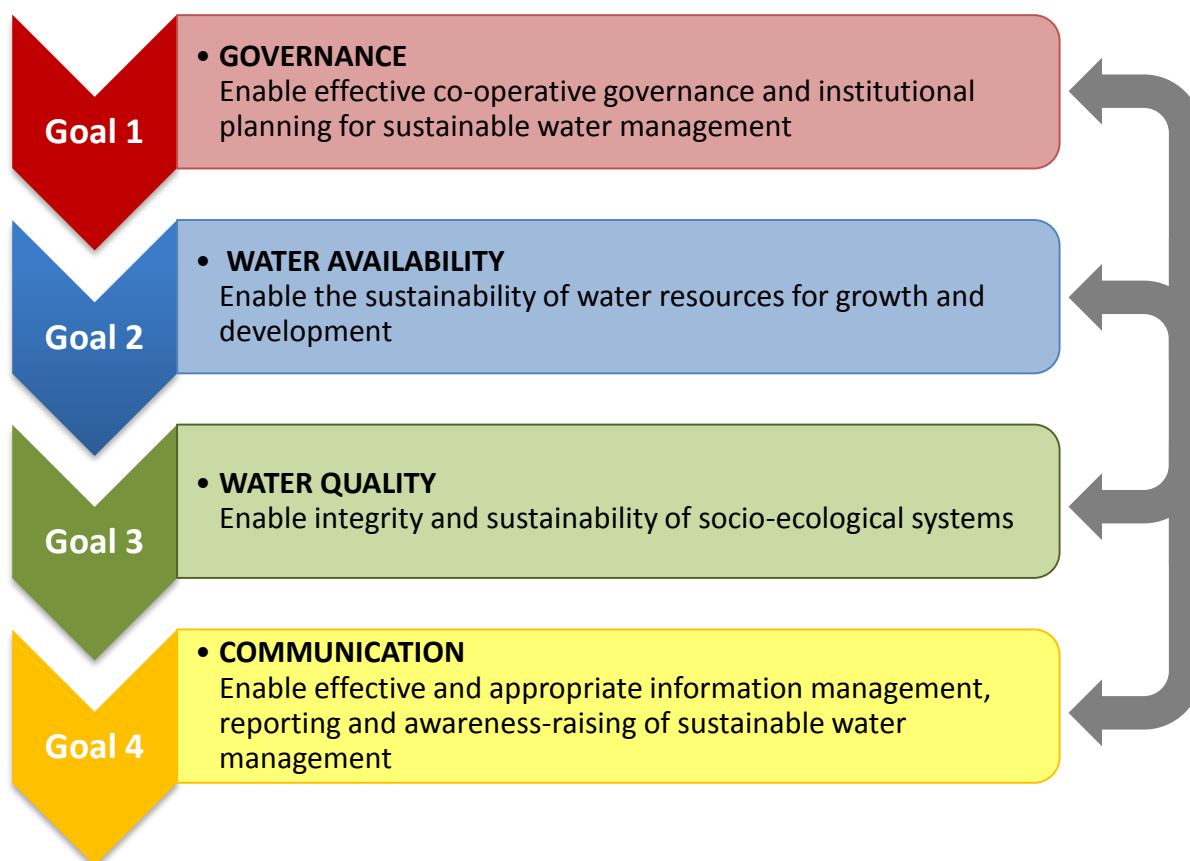


¹⁴ DPPWE, 2014 after Jones 2005,2009

4.2 Strategic Goals

The Plan is critically aligned with national, provincial and local policy to enable effective collaboration across government departments and all stakeholders who have a shared responsibility for achieving sustainable water management in the Western Cape. To achieve this, the Plan is underpinned by the four goals that remain from the previous SWMP. The SWMP provides the platform to enable effective collaboration for improved water security as a fundamental first step to enable effective co-operative governance for our water resources.

Figure 4.2: SWMP Strategic Goals

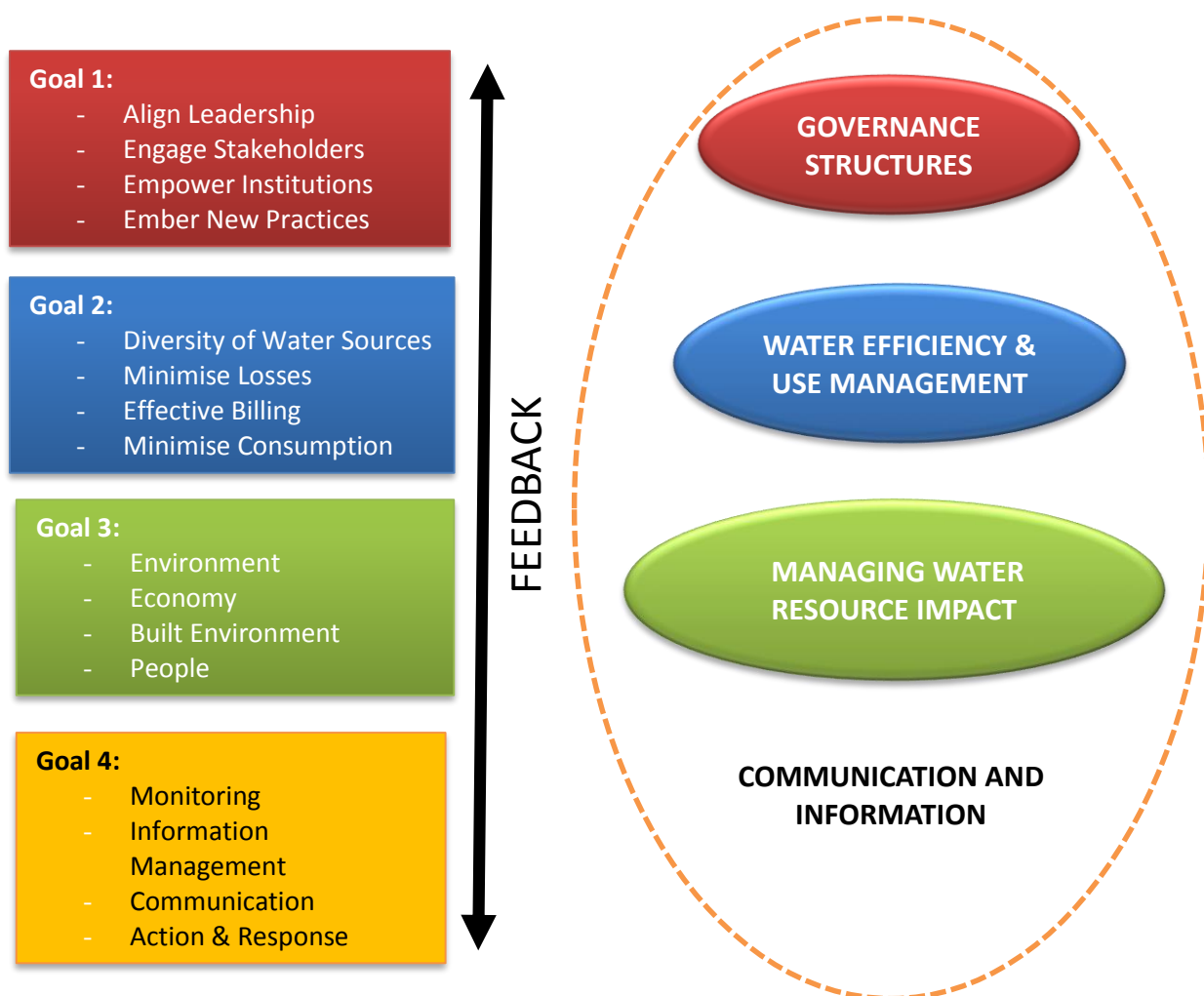


4.3 Strategic Objectives

The updated Plan defines a strategic and incremental approach towards the sustainable management of water in the Western Cape. By aligning goals and objectives with the natural cycle of water, the Plan takes a systems approach to water security, promoting good water management practice from catchment to coast.

Recognising the scarcity of water, the SWMP strives for effective management of water throughout the natural and urban water cycles. This has led to the development of **16 Strategic Objectives** that map the incremental steps towards improved water resilience. These are summarised in Figure 4.3 with full detail of these objectives provided in Sections 5 to 8 of this report.

Figure 4.3: SWMP Strategic Objectives



4.4 Strategic Monitoring

The Plan promotes the monitoring of key 'outcomes' related to specific Strategic Objectives. This allows on-going measurement of progress towards Sustainable Water Management as a complete system without getting distracted by the 'noise' that can arise from too much data or task specific measurables. The 'outputs' from individual activities can be measured to evaluate their effectiveness in contributing to improved performance of the measured outcomes. This can inform prioritisation of future activities.

The strategic monitoring framework requires reliable monitoring data to build realistic predictive models for water delivery and water demand under various scenarios of climate change, invasive alien infestation, user restriction levels etc. is required. This will allow the province to be constantly well informed of current situations and to be able to plan ahead on a very responsive and flexible basis as driven by data-driven decisions. This will entail building a comprehensive water management system. This should be as simple as possible and only complex as necessary.

4.5 Strategic Activities

The updated Plan identifies 12 Focus Areas that collectively address the Strategic Objectives. The Focus Areas presented in Figure 4.4 provide a logical structure through which the Plan can be implemented. Further details of the priority activities and core members of the Focus Areas are included in Section 9.

Figure 4.4 – Alignment of Focus Areas with Strategic Objectives

Focus Areas	GOAL 1				GOAL 2				GOAL 3				GOAL 4			
	1a Align leadership	1b Engage stakeholders	1c Empower stakeholders	1d Embed new practices	2a Diversify water sources	2b Minimise water losses	2c Effective metering & billing	2d Minimise water consumption	3a Environment for Water	3b Economy for water	3c Built environment for water	3d People for water	4a Monitoring	4b Information Management	4c Communication	4d Action & Response
Co-operative Governance	■															
Institutional Empowerment		■	■	■												
Sustainable Supply & Re-use					■											
Water Demand Management						■	■	■								
Ecological Infrastructure									■							
Water Sensitive Design					■			■		■	■					
Monitoring & Information Management	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Responsive Communication	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Planning for Water Resilience			■	■	■				■	■	■					
Water Smart Agriculture					■	■			■	■						
Enabling Innovation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Socio-Economic Drivers	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

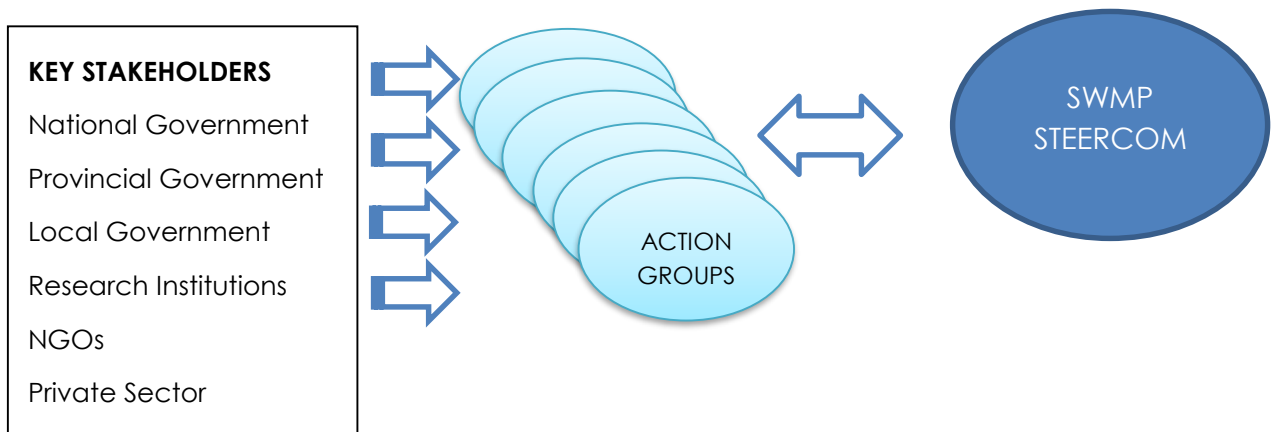
4.6 Strategic Co-ordination

The progression of a particular Focus Area will be driven by representatives of the key stakeholders who are engaged in related activities and will be co-ordinated by an agreed champion. Where possible the Focus Areas will build on existing forums to minimise duplication of effort and to embed the SWMP Activities within these current structures. The purpose will be to promote collaboration and joint action between all stakeholders including government departments, research institutions, NGO's and the private sector.

The proposed institutional structure will be framed around the Focus Areas who will agree the most effective way for the group to engage and co-ordinate their activities. The Focus Areas should include representatives from provincial, local and national government as well as other relevant stakeholders who will be asked to commit to engaging with the group for at least a 12-month cycle in line with the annual review period of the SWMP.

The group leaders or their representative should also utilise the established forums where possible and relevant to disseminate the group activities and enable effective engagement with stakeholders. This Focus Group structure will enable efficient and focused co-ordination of the Plan, with Focus Group Leaders providing feedback to the SWMP Steering Committee. The Focus Groups will develop over time depending on the identified priority areas and the capacity of stakeholders.





Figure 4.5 – SWMP Co-ordination Structure



5 GOAL 1: Enable Effective Co-operative Governance and Institutional Planning for Sustainable Water Management

Strategic Planning Alignment of Goal 1
<p>THE INTEGRATED WATER QUALITY MANAGEMENT STRATEGY 2017-2022 GOAL 2: GOOD GOVERNANCE.</p>
<p>THE WESTERN CAPE PROVINCIAL STRATEGIC PLAN 2014-2019 GOAL 5: EMBED GOOD GOVERNANCE AND INTEGRATED SERVICES DELIVERY THROUGH PARTNERSHIPS AND SPATIAL ALIGNMENT.</p>
<p>DEA&DP STRATEGIC PLAN 2015-2020 GOAL 3: GOOD GOVERNANCE AND INTEGRATED MANAGEMENT.</p>

Table 5.1: Strategic Objectives and Planned Outcomes of Goal 1.

Strategic Objective	Outcome	Proposed Indicator
	<p><i>Establishing a shared responsibility for a co-ordinated approach to sustainable water management across government departments</i></p>	
	<p><i>Establish effective working relationships throughout Provincial Government and between spheres of government, research institutions and the private sector</i></p>	<p>No. of joint planning and implementation actions between different</p>
	<p><i>Support and enable institutions to plan, budget, implement, operate and maintain the services and infrastructure required for sustainable water management</i></p>	<p>spheres of government in connection with the SWMP</p>
	<p><i>Establish effective governance structures, organisational processes and incentives to enable timeous and informed engagement on core activities in the SWMP</i></p>	

5.1 Effective Governance:

The key role of good governance, as an underpinning factor in the success of most other strategic objectives in the water management arena, is recognised by all. The SWMP Goal 1, places the emphasis on all stakeholders contributing to the goal of sustainable water management in the Western Cape, with the DEA&DP playing a crucial co-ordinating role.

The Integrated Water Quality Management Policy and the accompanying Strategy have the strong message that water quality challenges in South Africa are very complex, and cut across a range of government institutions. It concludes that “The future management of these water quality challenges will need strategic regulatory collaboration and partnerships between DWS and various other state institutions across all three tiers of government, the CMAs, water boards, the private sector and organised civil society” (DWS, 2017, pg 7). **The institutional arrangements required to implement this “require a systems-based approach, coupled with adaptive management techniques, and supported by strong partnerships between government, civil society, and the private sector”.** This same co-operative governance approach applies to all aspects of water security and water management as echoed in other guiding documents

The IWQMP calls for more than just co-operative governance, it points to a true collaborative network of government departments, and other key stakeholders. This is much like the contemporary “network organisational design”, which is increasingly being adopted globally in both corporate and government sectors, due to significant improvements in effectiveness being realised. The model centres around a co-ordinating body that sets up network processes, memoranda of understanding, strategy, vision, and cross-team communication structures. Integral to an effective network of teams is to define the mission of each team clearly, delegate responsibility, assign strong team leadership, and build a shared culture and set of information and communication tools that help teams align with each other (Deloitte University Press, 2016).

The DEA&DP has a responsibility to co-ordinate planning across the Province, and support the other spheres of government so that they can effectively perform their mandates. The DEA&DP can be viewed as a “collaboration hub” where information (in its broadest sense) from all network partners is stored in a transparent manner that allows information sharing between partners, and the best possible knowledge-base for all. **A live system which can capture input from various departments is required.** This should be integrated with information systems managed by other departments (such as DLG). This network model for co-operative governance and integrated planning will help to align leadership, engage stakeholders, empower institutions, and embed new practices.

5.2 Strategic Objective 1a: Align Leadership

The DEA&DP are the lead organisation in the co-ordination, monitoring, and reporting of the outcomes of the SWMP. However, they have a limited mandate in terms of the actual implementation of sustainable water management practices in the Western Cape. Thus, a crucial objective of the SWMP is the alignment of the leadership of various departments and institutions to get buy in from top management to adopt the SWMP, and put measures in place to fulfil their implementation roles.

The DEA&DP need to communicate the roles and responsibilities of the various government departments, and get the Plan signed off by each.

The sign off then needs to translate into the incorporation of applicable objectives into departmental work plans, and individual performance agreements of senior managers.

5.3 Strategic Objective 1b: Engage Stakeholders

The DEA&DP need to identify existing networks and forums that have a role to play in the SWMP implementation. It is key to remember that “water is everybody’s business”, and the focus should not be limited to forums that specifically deal with water related issues, but rather an approach that includes stakeholders in all parts of the water value chain. Where appropriate the SWMP could be a standing issue on the agenda, and issues, challenges and successes can be reported. It is essential that there be forums where civil society, business, industry, and academia are all included (not necessarily all in one forum). For example:

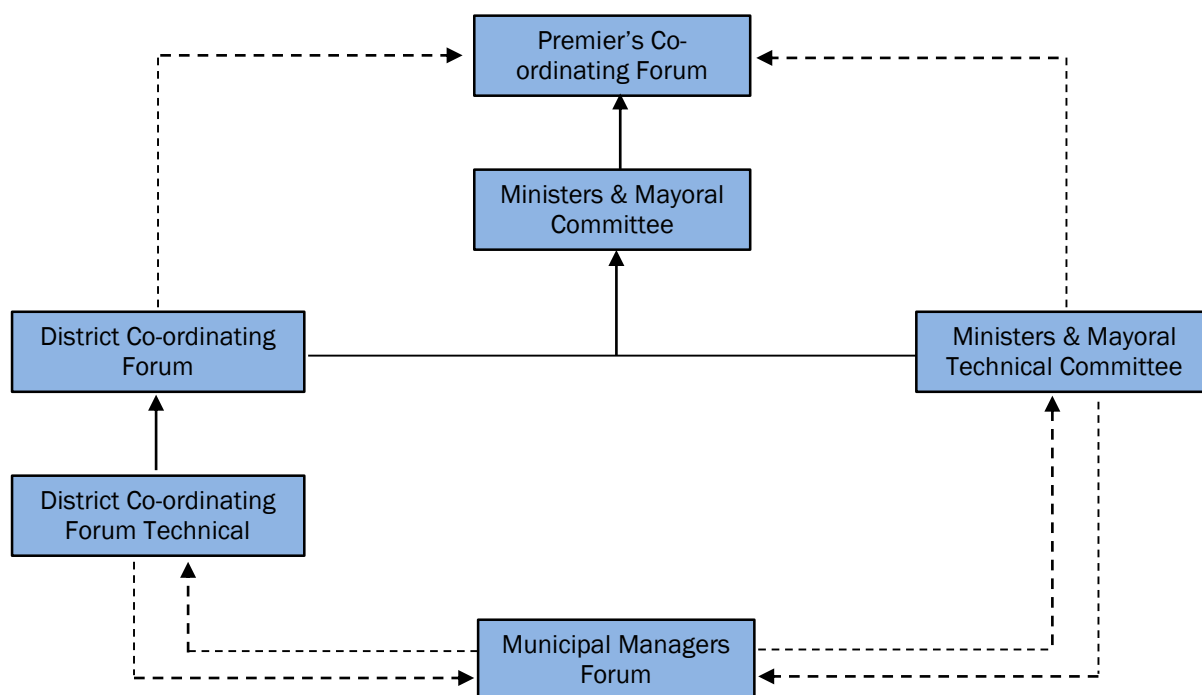
- the Premier's Co-ordinating Forum, and the various associated committees for local government senior officials, and political leadership
- The catchment-based forums in the region have representation from water user groups, civil society, and government
- The Cape Chamber of Commerce and Industry for business leaders in the Province
- The evolving EIF community of practice which includes the key role players in water security including DEA&DP, CapeNature, biosphere reserves and landscape initiatives, DoA, DEDAT, CSIR, DEA (NRM), DWS, NGO's and private landowners.

All the objectives of the SWMP should first look to being co-ordinated, implemented, and monitored through existing institutional mechanisms, but ensuring representation from all relevant roleplayers.

5.3.1 Inter-governmental Relations

As per the requirements of the Intergovernmental Relations Framework Act (IGRFA), (Act 13 of 2005), inter-governmental forums are in place to link all spheres of government, including national, provincial and local government, to improve governance, planning and management. It is proposed that a process be undertaken to not only improve the governance of the implementation of the plan but also to align and mobilize the leadership in the three spheres of government so that they work together more effectively. It is envisaged that this would impact, and also be impacted by, other initiatives with the same objective to improve cooperative governance. The process would be intentionally developmental to enable the implementers of the plan in all spheres to learn and adopt better practices within, and between, the entities. The Economic Development Partnership's approach to developing partnering solutions is useful to improve integrated planning and joint implementation.

Figure 5.1: Established Provincial Governance Structure



5.3.2 Catchment Management Committees

There are several legislated committee structures for Catchment Management Agencies (CMAs) that include broad representation of water users. These committees have got influence over water resources management in the catchment, and are essential for river basin governance. These committees should be supported by all spheres of governmental and assistance offered to DWS to actively promote water stewardship initiatives across all stakeholders. It is at these committees where both incentives for better performance can be presented, as well as solutions to challenges can be debated and resolved. Transparency and information sharing is key.

5.3.3 Disaster Management Forums

The SWMP Steering Committee and its representatives must be engaged with the disaster management forums related to the provincial water risks. In the context of the current disaster management declaration associated with the drought crisis, the aims of the SWMP should be embedded in the emergency response and assist effective collaboration between stakeholders. Furthermore, the medium and long terms objectives of the SWMP seek to mitigate the water risk and therefore the lessons learnt through the disaster response efforts should continually feed back into the SWMP to inform future activities and achieve improved water resilience across the province.

5.4 Strategic Objective 1c: Empower Institutions

The role of the Western Cape Government to support other players in the Province is critical if there is to be the sustainable management of water in the region; especially key support to local government in executing their role as water services authorities (WSA) and providers. The WSAs have extensive responsibilities that they have to implement with limited budget, and limited capacity. Capacity building of staff, and the application of efficiencies in service provision are two key aspects that DEA&DP could focus on, in collaboration with other

Provincial departments such as DLG, DEDAT and DoA. This should be done in partnership with DWS Regional Office, and the Catchment Management Agencies, who also share the responsibility to empower water management institutions. There is also expertise and experience in water use sector organisations (agriculture, industry, energy etc) that could provide knowledge, training, and shared goals. The formalisation of empowerment partnerships and programmes, with measurable outcomes is important.

5.5 Strategic Objective 1d: Embed New Practices

The “new normal” that is continually referred to in terms of the water status in the Western Cape, needs to be translated into a “new normal” in all institutions in planning for climate uncertainty. Water is a cross cutting issue in many of the WCG programmes detailed in the Strategic Plan and Environmental Implementation Plan, but is often not explicitly measured in terms of key performance indicators. The implicit role of sustainable water management needs to be identified in the different programmes and indicators, and it must be ensured that there are specific targets put in place, which will all work together to meeting the goals of the SWMP.

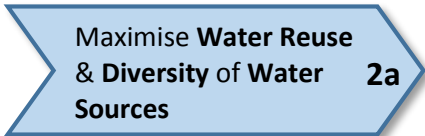
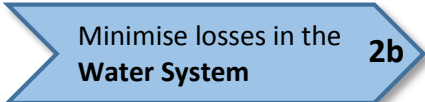
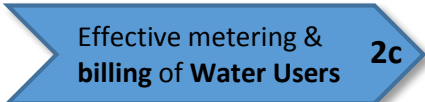

In addition, the key role of IDP monitoring and support has been under-realised, with input being limited. Instead, proactive interaction, guidance and capacity building throughout the IDP and WSDP drafting process needs to be formally put in place, with consequences clearly stated should the IDPs of municipalities not align with provincial plans and strategies. This will have the dual role of embedding new practices at both provincial, and local government level.

The Greater Cape Town Water Fund project is piloting the “Water Fund” concept for the Atlantis Aquifer and scaling up the model for application to the Berg and Breede catchments. The Water Fund approach builds the business case and partnerships to leverage investment from the private sector into the management of priority ecological infrastructure.

6 Goal 2: Enable the Sustainability of Water Resources for Growth and Development

Strategic Planning Alignment of Goal 2
<p>THE WESTERN CAPE PROVINCIAL STRATEGIC PLAN 2014-2019 GOAL 1: CREATE OPPORTUNITIES FOR GROWTH AND JOBS</p> <p>PROVINCIAL 'GAME CHANGER': WATER FOR SUSTAINABLE GROWTH AND DEVELOPMENT</p> <p>DEA&DP STRATEGIC PLAN 2015-2020</p> <p>GOAL 2: SUSTAINABLE AND INTEGRATED URBAN AND RURAL SETTLEMENTS</p> <p>GOAL 4: INCREASED ECONOMIC OPPORTUNITY THROUGH LOW-CARBON DEVELOPMENT, RESOURCE EFFICIENCY AND THE BIODIVERSITY ECONOMY</p>

Table 6.1: Strategic Objectives and Planned Outcomes of Goal 2.

Strategic Objective	Outcome	Proposed Indicator
	<p><i>Enable water resilience through the sustainable abstraction from a diversity of water sources, (including rivers, dams, groundwater and re-use of treated wastewater plus desalination where appropriate)</i></p>	
	<p><i>Prevent leakage throughout the bulk and reticulation pipe network through pressure management and effective maintenance of assets</i></p>	<p>Municipal water balance to trace per capita consumption and non-revenue water</p>
	<p><i>Ensure all water users (raw water, potable, groundwater, re-use) are metered, billed and/or incentivised according to their water use</i></p>	
	<p><i>Promote water saving and re-use through behaviour change, and innovation and the uptake of water saving technologies.</i></p>	

6.1 Strategic Objective 2a: Maximise Water Reuse & Diversity of Water Sources

Under the Western Cape Provincial Strategic Plan 2014-2019, water is identified as a key enabler for sustainable development. Reliable access to water for fit for purpose use is fundamental to the future growth and development of the Province. Inadequate and ailing infrastructure needs to be addressed as a priority to reduce water losses before developing new water resources, in line with the principle of water use efficiency. Water resources must also be managed strictly according to operating rules. Thereafter, reliable access requires a diversity of water sources to transition dependence from a single source of water, such as surface water. The DWS completed reconciliation strategies for all towns in the Western Cape in 2011 (DWS, 2011). These strategies identified a range of water sources, as well as emphasising the need for water demand management, for development. However, implementation of these has been slow with reliance on surface water mainly due to the lower cost of development.

Alternative sources of water include rainwater and stormwater harvesting, process water and greywater re-use, direct potable re-use of treated effluent and groundwater and desalination. There are opportunities and challenges related to each one of these options and these need to be considered before a decision is made as to the most appropriate augmentation option for a specific location. Furthermore, different infrastructure may be required to separate some of these alternative sources and this can be driven through varying building requirements for new versus existing buildings.

Consideration of the quality of water is critical to the selection of a water source and the associated purification measures. Proactive planning to prevent pollution should be a key focus. Where practical, water use should be based on the principle that the water is fit for the intended use. Potable consumption, toilet flushing, agriculture, construction or various industrial and processing applications will all have different water quality requirements which requiring greater or lesser treatment. All levels of treatment must take a risk based approach to the health and operational impacts of the water quality in use.

The focus of this Strategic Objective is to enable water resilience through the sustainable abstraction from a diversity of water sources. Over-dependency on a single water source presents a high risk to water security. The 2016-2017 drought in Cape Town highlighted this risk, following a trend of below average rainfall means that surface water availability declined to the point of being declared a disaster.

Through diversification of water sources water resilience can be increased. Groundwater has a longer term recharge cycle and is less vulnerable to short term climatic variations associated with a drought. Nevertheless, climate change brings uncertainty to the recharge rate of groundwater. Climate change scenarios predict both prolonged droughts; more intense rainfall events over a shorter period which will increase run-off and reduce infiltration; as well as increasing average temperatures which may reduce the amount of snowfall in the mountain catchments. All of these scenarios will reduce the recharge rate. For this reason, groundwater should not be seen as an infinitely renewable supply as it will require good monitoring and strict management (such as shut off at set thresholds) in order not to be overdrawn. Additionally, there needs to be a significant drive towards a Water Sensitive Design (WSD) approach which prioritises the re-use of water for both potable and non-potable uses. WSD can be applied at single site, local or regional scale to achieve resilient, water sensitive

cities. By considering the urban water cycle within a development water use can be cascaded to enable the convenient re-use of water that is fit for a specific purpose. The WSD approach will also incorporate rainwater harvesting, sustainable drainage and aquifer recharge to ensure that the development does not have a negative impact on the natural water cycle. Surplus water arising from the development of hard surfaces or wastewater discharge from the site is considered as a valuable resource that should be integrated with the water management strategy of the development.

Historically regarded as an unfavourable/challenging option due to the 'yuck factor'; direct potable re-use of wastewater has been proven in Beaufort West (and elsewhere such as Windhoek, George etc.) and is now generally regarded as not only a viable option, but an acceptable one that is essential for our water security.

“Water sensitive cities are envisioned to be resilient, liveable, productive and sustainable. They efficiently use the diversity of water resources available within its boundaries, enhance and protect the health of urban waterways and wetlands, and mitigate against flood risk and damage. They also create public spaces that harvest, clean and recycle water, increase biodiversity and reduce urban heat island effects. To achieve this, we require a step change in innovation across the sector.

There is general consensus that existing water services and planning processes are poorly equipped to support projected population growth and are slow to respond to economic and/or climatic uncertainty. In essence, we have been trying to meet 21st century challenges by re-investing in 19th century strategies and infrastructures. For example, it is increasingly difficult and inappropriate to adopt a traditional economic-risk management approach to infrastructure development when we are now planning for climatic occurrences for which probabilistic profiles may simply not exist. There are really two components that I believe are essential in generating this paradigm shift and delivering water sensitive cities:

- 1) Excellence in research (knowledge generation); and*
- 2) Innovation in practice (application/adaptation of knowledge to deliver context-specific solutions).”*

Tony Wong, 2016

6.2 Strategic Objective 2b: Minimise Losses in the Water System

In recognition of the scarcity of water, it is essential to minimise leakage throughout the water supply infrastructure. Inadequate and ailing infrastructure must be addressed to maximise the use of existing water resources; and municipalities must follow operating rules in order to maximise water supply. Non-revenue water (NRW) considers the percentage of water that enters a distribution network which is not billed by the water service provider (WSP) and therefore does not generate revenue for the ongoing maintenance of this service. This loss of revenue will have a negative impact on the financial sustainability of water services, since the WSP has incurred the cost of purifying and delivering the potable water into the bulk network.

Non-revenue water includes real losses due to leakage or operational activities but also apparent losses associate with water that is supplied to a user and not billed. Reducing the apparent losses is addressed through Strategic Objectives 2c and 2d.

The maintenance of bulk water infrastructure mostly falls under the mandate of DWS (for raw water) and the local municipality or metro (for the distribution of potable water). The SWMP promotes the establishment of a community of practice to share knowledge and best practice. This could be through existing forums such as the District Co-ordinating Forum technical meetings. Through this forum, the business case for effective maintenance should be developed to establish provincial water loss benchmarks to ensure that leakage is curtailed to reasonable levels and the maintenance activity provides a cost-effective strategy for the long term operation of the water distribution network.

Consideration should also be given to addressing evaporation losses from dams, which becomes more significant during drought periods.

The DLG has also produced operation and maintenance plans for all wastewater treatment works in the Berg River catchment in 2017 (DLG, 2017). The improvement of wastewater quality through proper operation and maintenance of treatment works is key to ensuring that treated effluent can be re-used.

6.3 Strategic Objective 2c: Effective Metering and Billing of water Users

In order to promote efficient water use and to maximise revenue streams it is critical that all users are metered and billed according to their use. This includes metering of raw water users (including agriculture), potable water, groundwater and the non-potable reuse of treated effluent. A review of the water pricing strategy throughout the province should consider the real value of water for potable and productive uses and the willingness to pay for this water. An appropriate billing structure will promote improved water efficiency and revenue for the maintenance of services. In addition, the billing process can be used to leverage financing for broader activities central to the implementation of the Sustainable Water Management Plan.

6.4 Strategic Objective 2d: Minimise Water Consumption

With effective metering in place, users will be informed about their own usage. However, this will only translate to reduced water consumption if this knowledge results in behaviour change and the uptake of water saving technologies. There has been extensive international research into behaviour change strategies that consider the linkage with the communication strategy and block tariff structures or pre-determined water allocations. In the wake of the drought, it is important to develop an effective communication strategy which encourages long term behaviour change in the new-normal of water scarcity. There have been extensive behavioural economics studies at UCT in relation to informative billing processes to ensure that the water user is informed of their water consumption in relation to their allocation and average consumption in their area.

As part of the drought response, a template for standardised water restrictions was developed. Local municipalities were directed to provide the relevant information in order to implement such standardised water restrictions. These kind of interventions and lessons learnt need to be taken into the longer term planning and implementation for improved water management and resilience in future.

It is also essential to look at regulatory reform with respect to product design to improve water efficiency.

7 Goal 3: Enable Integrity and Sustainability of socio-ecological systems for climate change resilience

Strategic Planning Alignment of Goal 3	
THE INTEGRATED WATER QUALITY MANAGEMENT STRATEGY 2017-2022	GOAL 3: IMPROVED, EFFECTIVE AND EFFICIENT WQM PRACTICES
THE WESTERN CAPE PROVINCIAL STRATEGIC PLAN 2014-2019	GOAL 4: ENABLE A RESILIENT, SUSTAINABLE, QUALITY AND INCLUSIVE LIVING ENVIRONMENT
DEA&DP STRATEGIC PLAN 2015-2020	GOAL 1: SUSTAINING THE ECOLOGICAL AND AGRICULTURAL RESOURCE BASES
	GOAL 2: SUSTAINABLE AND INTEGRATED URBAN AND RURAL SETTLEMENTS

Table 7.1: Strategic Objectives and Planned Outcomes of Goal 3.

Strategic Objective	Outcomes	Proposed Indicator
	<p>Protect and restore the ecology and health of river catchments and groundwater resources through a broad range of activities within the water bodies and their catchments.</p>	.
	<p>Promote the establishment of a water-wise Agriculture and Industry sector which drives innovation and contributes to improved water security</p>	River, Estuary and Groundwater quality monitoring
	<p>Minimise Impact of towns and cities on water resources through a Water Sensitive Design approach and the adoption of effective early warning systems</p>	
	<p>Develop good water stewardship practice by individuals and as a collective society to minimise pollution events and promote restoration</p>	

7.1 Strategic Objective 3a: Environment for Water

Rapid urbanization places huge demands on natural ecosystems and their services. Damaged ecosystems have major impacts on human wellbeing. Acknowledging natural ecosystems and associated ecological infrastructure as vital aspects of conservation and climate change mitigation is necessary. Maintaining the Ecological Reserve ensuring that these ecological baseflows are released is essential to keep rivers alive.

Ecological infrastructure is defined as naturally functioning ecosystems e.g. mountain catchments, rivers, wetlands, coastal dunes, estuaries, nodes and corridors of natural habitat that deliver valuable services to people, such as water security, food security (including fisheries), climate adaptation and disaster risk reduction. Allowing ecological infrastructure to degrade increases the vulnerability of built infrastructure in the event of extreme events such as floods or droughts. This then adds to maintenance costs. Water security can be supported through contributing to healthy ecological infrastructure like riparian vegetation. If our ecosystem services function in a healthy way, they are able to support necessary human needs.

The Western Cape Biodiversity Spatial Plan (2016) provides the spatial representation of the prioritised biodiversity and ecosystems for protection and management. Its associated Handbook provides for the land use and environmental planning, decision-making and management response that will enable the long-term resilience of these systems.

The spatial component of the EIF will identify the priority areas based on risk (water, fire and geotechnical failure/erosion) for investment in ecosystem services. It will also link to more detailed plans (Management Unit Clearing Plans) for priority catchments in the Province.

Well managed ecological infrastructure can buffer human settlements and built infrastructure against extreme events like floods and droughts, playing a crucial and cost-effective role in disaster risk reduction. A healthy landscape includes healthy mountain catchments, rivers and wetlands. Rehabilitating degraded landscapes has proven to be a long term and cost-effective way of contributing to soil formation and disaster risk reduction. Some critical elements that contribute to ecological infrastructure rehabilitation include the following:

Invasive plant clearing:

It is essential to remove invasive species from catchments, particularly from environmentally sensitive areas, along rivers and in water scarce areas. Such methods need to be accompanied by accurate data collection in order to advance the understanding of their impacts on water and other ecological areas. If not achieved then these species will corrode our natural capital, economic productivity and ecosystem stability.

The CSIR has undertaken extensive research focusing on the linkages between biodiversity, ecosystem services and land-use. This includes extensive research on the impacts of invasion on surface water run-off and groundwater in the strategic water source areas of the Western Cape. Through his research it has been estimated that if invasions of woody species are not managed, the Western Cape Water Supply System yield will be reduced by 23% i.e. ± 130 million m³/a (David Le Maitre, 2017). Management of the catchments require well planned and supported investments in ecological infrastructure. This is linked to the stewardship model under section 3d which also requires application of the payment for ecosystem services model to fund such interventions.

The EIF is an alien invasive species strategy and ecological infrastructure investment framework aiming to proactively protect priority water resources using existing legal mechanisms in water, land use, agriculture and biodiversity legislation and planning processes. The strategy and framework addresses threats to water resources from unsustainable use (over abstraction), transformation (loss of watershed priority areas through inappropriately sited and illegal agriculture) and urban development and infrastructure and land degradation as well as invasive alien species. The strategy will allow alien invasive species to be managed in a co-ordinated manner, which will benefit all stakeholders involved in alien invasive management in the broader landscape. It will also promote the active rehabilitation of degraded wetlands, rivers, aquifer recharge and riparian areas on a prioritised basis.

Wetlands:

As described by the Millennium Ecosystem Assessment of 2005 these are areas of “marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters”. Protecting wetlands allows for long-term rehabilitation and ecosystem functioning. Wetlands provide numerous services to humans such as water supply and purification; climate regulation; flood regulation; and recreational activities to name but a few. Wetlands are experiencing the most rapid degradation compared to other ecosystems due to mainly population growth and economic developments. It is necessary for adequate considerations to take place when comparing increased water access to the harmful trade-offs it may have on wetlands. Incorporating the value received from wetlands into our economic systems would significantly aid in their protection. The DWS is in the process of developing a wetlands policy.

Riparian zones:

These natural environments have benefits that impact rural and urban areas through ecosystem infrastructure that adds to economic benefits such as aesthetics, wildlife, water purification and protection of landscapes from flood damage. These important natural corridors act as spaces for soil retention and formation, nutrient regulation and disturbance prevention etc.

Estuaries:

The health of the estuarine system is critically dependent on the health of the upstream catchment, poor management of this catchment leads to high sediment transport into the estuaries, degraded water quality and an abundant seed bank of alien vegetation. The environmental requirements of the estuaries should influence the upstream management activity. The ecological reserve is a critical aspect of estuary management (including bio-physical and social aspects), and the provision of adequate flow will enable ecological and physical functioning of the estuarine systems. In particular, prioritisation of the ecological reserve for estuarine health will inform effective management for that catchment as a whole. Insufficient water flow/allocation can result in an increase in disaster risk for communities living along estuaries, through increased sedimentation, raising of bed levels and exacerbating flooding. Reduced flows could also affect the natural opening and closing of estuary mouths, and could influence fish recruitment as well as increase risk of flooding. Fish mortalities occur when water quality deteriorates. Catchment management actions are critical to prevent the introduction of pollutants e.g. agricultural runoff, poor quality storm water, WWTW effluent, septic tanks, manure from cattle in the estuarine functional zone.

Investing in ecological infrastructure is in fact investment in our own livelihoods and wellbeing as healthy ecosystems are critical to the success of the human species. Reconnecting people to the landscape and considering the complexity of our natural systems will benefit the landscape and ourselves in the long run.

As indicated by the recent Stockholm Statement of 2016, environmental stability needs to be a central objective to policymaking.

"income growth in isolation can create a false indicator of wellbeing and progress. Mitigation efforts must be pursued first and foremost at a global level, while adaptation policies require active intervention and support at national and local levels"

Stockholm Statement, 2016

7.2 Strategic Objective 3b: Economic Activity for Water

Agriculture and industry are central to the economy of the Western Cape, creating employment and generating significant revenue. Large sections of the catchment are utilised for agriculture and consequently, effective land management is required to secure the socio-ecological condition of these catchments. Related industries such as agri-processing and other commercial activities also depend on water for production. The conventional approach is to focus on the availability of water to enable this economic activity, however with consideration of the water cycle it is critical that agriculture and industry do not have an unreasonably negative impact on both the quantity and quality of our water resources. The focus needs to shift towards economic activities which support the security of our water resources.

Economic activity requires the efficient use of water within the permissible allocation to ensure that the ecological reserve of water within a water resource is met. However, in terms of agriculture, this also requires effective management of the agricultural processes to prevent the leaching of chemicals or discharge of sediments and pollution into our water resources, taking cognisance of the connection between surface and groundwater.

Water is a resource, together with land, energy and financial and human capital which needs to be used optimally to ensure economic growth for the benefit of the people of the country, while avoiding environmental degradation and ensuring sustainability for the community.

Protection of riparian zones and removing alien vegetation should be embedded as good practice for land owners to enable the natural functioning of the catchment. To ensure that economic activity does not have an unduly negative impact on natural water resources, the sector must promote the establishment of a water-wise agriculture and industry sector which drives innovation and contributes to improved water security.

The Western Cape departments of Agriculture and of Environmental Affairs & Development Planning have developed 'The Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector' (commonly referred to as the SmartAgri Plan) which falls under the umbrella of the WCCCRS and its Implementation framework, and is the first sector specific plan on climate change for the province under the WCCCRS. The SmartAgri Plan proposes the following four strategic focus areas (SFAs): i) Promote a climate-resilient low-carbon production system that is productive, competitive, equitable, and ecologically

sustainable across the value chain; ii) strengthen effective climate disaster risk reduction and management for agriculture; iii) strengthen monitoring, data and knowledge management and sharing, and lead strategic research for climate change and agriculture, iv) ensure good co-operative governance and institutional planning for effective climate change response implementation for agriculture. The SmartAgri implementation Plan has a short-term/immediate focus on the following priority projects, these are: i) Conservation agriculture for all commodities and farming systems; ii) restored ecological infrastructure for increased landscape productivity, socio-ecological resilience and soil carbon sequestration; collaborative integrated catchment management for improved water security (quality and quantity) and job creation; iv) energy efficiency and renewable energy case studies to inspire the transition to low-carbon agriculture; v) climate proofing the growth of the agri-processing in the Western Cape; vi) integrated knowledge system for climate smart agricultural extension.

CASE STUDY – The Water Fund Concept (The Nature Conservancy)

The principle of a water fund is that it is cheaper to prevent water loss/degradation at the source than it is to address it further downstream. In a water scarce nation, it is necessary to prevent leakage at all points on the supply system, including the water catchment.

Numerous organizations, industries, communities, government departments (at all three tiers of government) are already working together to secure water for future generations in the Western Cape with varying levels of success and too often failure. Integrated Water Resource Management (IRWM) although intended to integrate actions fail to consider both ecological (green) and grey (hard) infrastructure. Water Funds provide the unique opportunity of bringing experiences of over 30 Global Water Funds and almost 20 years' experience to South Africa as catalysts for bringing different stakeholders together to protect water resources to benefit both nature and people. Water funds are innovative funding, governance and catchment management mechanisms aimed at strengthening and aligning current efforts and not at duplicating, replacing or competing. It is therefore important for those involved in Water Funds to understand who the current role-players are, what their objectives are and where they are working to align efforts and thereby securing water.

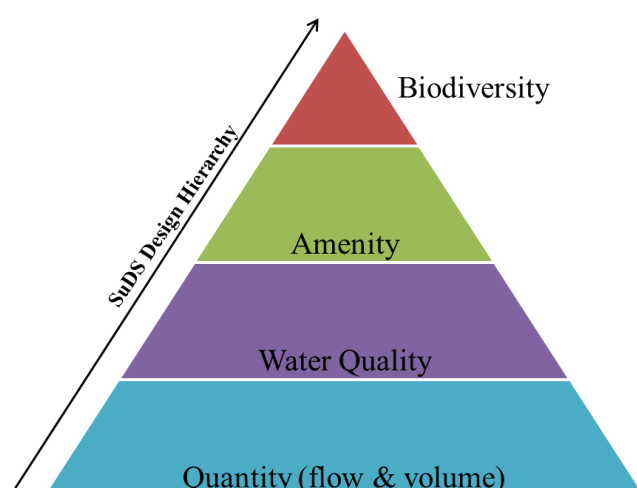
Natural infrastructure solutions such as protecting and restoring forests, wetlands and grasslands, and reducing agricultural runoff in source watersheds have been demonstrated as effective alternatives to these conventional solutions that create 'win-wins' for people and nature. The Nature Conservancy has developed an innovative and replicable financial and governance model – Water Funds – that allows water users to invest collectively in the conservation of key upstream lands and is now piloting a Water fund in the Cape Town Catchments.



7.3 Strategic Objective 3c: Infrastructure and the Built Environment for Water

This objective considers the impact of urbanisation and the built environment on the security of our water resources, to allow for local stormwater capture, improve groundwater infiltration, and minimise the risk of pollution arising from sewer flooding or contamination of stormwater. With increasing climate uncertainty, this approach becomes even more important to improve water security and protect water resources. Through a Water Sensitive Design approach and the incorporation of Sustainable Urban Drainage Systems (SuDS), infrastructure can be developed to promote infiltration of stormwater, rainwater harvesting and enable the catchment to function in a more natural state. Figure 7.1 considers the potential benefit of SuDS on the flow and quality of receiving water resources, but also considers the biodiversity benefit that can be provided by SuDS. A well designed SuDS scheme will seek to maintain the natural water cycle through promoting infiltration and attenuation and natural (cost-effective) water filtering on the site in accordance with the natural condition. Through an effective landscape design, the SuDS can incorporate public open space and indigenous vegetation which will create a healthy local eco system.

Figure 7.1: SuDS Design Hierarchy



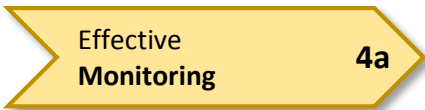



7.4 Strategic Objective 3d: People for Water

The focus of this strategic objective is to prevent negligent behaviour that pollutes water resources and to develop good water stewardship practice by individuals and as a collective society to minimise pollution events and promote restoration. As discussed in Section 6.5, there have been extensive behavioural economics studies at UCT in relation to informative billing processes, whereby water users are presented with comparative information on their water use in relation to other users and are provided with ideas to reduce consumption. This strategy should be coupled with a broader awareness and capacity building campaign to inform users about their broader impact on water resources, in addition to efficient water use, this should include an awareness campaign related to the connection between stormwater drainage and our river systems to promote good stewardship and the prevention of point source pollution.

8 Goal 4: Enable Effective and Appropriate Information Management, Reporting and Awareness-raising of Sustainable Water Management

Strategic Planning Alignment of Goal 4
<p>THE INTEGRATED WATER QUALITY MANAGEMENT STRATEGY 2017-2022 GOAL 5: IMPROVED KNOWLEDGE AND INFORMATION MANAGEMENT</p> <p>DEA&DP STRATEGIC PLAN 2015-2020 GOAL 5: EMBED GOOD GOVERNANCE AND INTEGRATED SERVICES DELIVERY THROUGH PARTNERSHIPS AND SPATIAL ALIGNMENT</p>

Table 8.1: Strategic Objectives and Planned Outcomes of Goal 4.

Strategic Objective	Outcome	Proposed Indicator
	<p><i>Enable co-ordinated & consistent monitoring of governance, water quantity, water quality and communication objectives</i></p>	
	<p><i>Promote simple, informative and accurate reporting processes & maintain a collective, accessible knowledge library and data repository of information central to the monitoring of the SWMP</i></p>	<p>Measurement of impact of provincial communication and reporting through monitoring of related responses on social media threads and timeous response to enforcement activities</p>
	<p><i>Promote knowledge transfer, increased awareness and behaviour change through a consistent and co-ordinated communication strategy</i></p>	
	<p><i>Enable a timeous and informed response to events identified through the monitoring and evaluation programme and ensure that the SWMP progresses with maximum impact</i></p>	

8.1 Introduction

One of the key goals of the SWMP, is to enable effective communication and information management. The outcomes of the SWMP review suggested considerable work is required to enhance effective communication.

What was clear was that management of data, and information is often done independently without integration across departments, and there is a need to better translate the information into actionable responses. A large part of this was/ is due to capacity issues, however, much can be done to improve communication at different levels between government, and between stakeholders. Furthermore, greater emphasis needs to be placed on water auditing (footprinting) across business, industry and agriculture so that it can be managed and incorporated as an enterprise risk and appropriate incentives/disincentives brought into effect.

Communication, in short, can be divided into intergovernmental internal communication, and communication externally to various stakeholders. Both forms of communication are important, but may require completely different strategies. The one is to improve internal processes and effectiveness in management and implementation, the other is possible awareness and behaviour change. Providing accurate information and consistent messaging, is key to behaviour change and bringing stakeholders on board, especially during times of drought.

Previous forms of communication, such as developing an online 'knowledge hub' were not seen as effective, because people were not using it. Other forms of communication, above and beyond digital sharing of information are therefore required. This should be regarded as of central importance to the role of the Western Cape provincial government and departments, since they play an intermediary role between national government and its implementation at the municipal level. National government's role includes implementation of programmes, financing (to some degree) and generation of legislation/policy.

8.2 Strategic Objective 4a: Effective Monitoring,

To enable the on-going health of the ecosystem and effective performance of infrastructure, a consistent and effective monitoring programme is required to track the performance of a system. This monitoring should extend to the operation and maintenance procedures and other corrective activities. In the context of the SWMP this monitoring will focus on the high-level outcomes to track the long-term trends associated with the core goals of the Sustainable Water Management Plan. This could include the following:

- Goal 1:** Measurement of the co-operative governance engagements.
- Goal 2:** Municipal or catchment-level water balance to trace per capita consumption and non-revenue water.
- Goal 3:** River, Estuary and Groundwater quality monitoring.
- Goal 4:** Measurement of impact of provincial communication and reporting through monitoring of related responses on social media threads, information portals and timeous response to enforcement activities.

The water balance and water quality monitoring is already undertaken by different spheres of government. **A clear understanding of this monitoring data is central to understanding the sustainability of water resources within the province. Where this information is not readily**

accessible a concerted effort to co-ordinate data collection and reporting should be prioritised as part of the co-operative governance aims of the SWMP.

The information that needs to be communicated should be accurate, and must be directed to the correct stakeholders. Monitoring and Evaluation (M&E), is a very important part of ensuring that information is accurate. However, there should also be a limit to the extent of M&E, so that it does not hamper the process or that is being monitored. Too much M&E may stifle the innovation process, and may also result in far too many resources and efforts being allocated towards something that may not result in the greatest impacts in the end.

What is more important than M&E, is the ability for learning to take place within government, and within governance of systems of implementation. There should thus be a fine balance between M&E and practice, to ensure the systems in place are effective and are going in the right direction.

From the workshop, it was clear that more regular discussions on what should be monitored and evaluated is required. There should be flexibility in what is monitored, as the measurement itself drives expectations and performance criteria for officials. The measurement and reporting process should give due consideration of the activity being monitored such that the monitoring process is not unduly onerous.

Furthermore, it was suggested that data that is captured, is dealt with appropriately, so that it can be translated into action. Data can and should also be used for short, medium and long-term planning, and to aid in allocating the correct budgets. Business processes were seen as important, in ensuring that the information received is processed accordingly, and with strategic intent.

Finally, an important point that was raised concerns the question about how information can be generated so that it is more relevant, and makes sense to policy makers and implementers. Information must therefore be clear, simple and accurate.

8.3 Strategic Objective 4b: Effective Information Management & Reporting

Reporting is a key part of communication. However, if the information that is generated is not seen as accurate, relevant or making sense – reporting becomes fruitless. Reporting does not need to involve tedious, long-winded and bureaucratic processes and actual reports. Its purpose in essence is to share information to the relevant parties for improved integrated planning and decision making and therefore management (of systems).

While there was a general disdain for an online platform, this was probably due to the information on it not being useful enough, or outdated. Online platforms are tools that can and should be able to share information effectively and efficiently – but have to be managed extremely well (possibly by a service provider as opposed to internally). In addition, online platforms to share information often don't work if they are not coupled to real-world events, efforts or collaboration.

Therefore, an important and effective form of reporting, and thus communication would be to couple real-world activities and knowledge exchanges with online tools. However, to ensure effective usage of such a system, it would require enduring and effective information. Such information may be a database of best practices in a format that is user-friendly and easily accessible. The sharing and spatial overlay of key data from different authorities should also be investigated to support integrated planning.

8.4 Strategic Goal 4c: Effective Communication

Another key element of communication, is ensuring who leads and who follows. In other words, it is about ensuring that roles and responsibilities are clearly spelled out, and understood.

Communication, also involves ensuring that different information is provided to different levels of governance in the system. For example, municipalities may lead on the micro-level, and in implementation of certain projects such as water demand management.

In addition, there are two primary communication objectives that could be considered most important. These relate to strategic objectives and operational objectives. The first relates to institutional mandates, community information, and a variety of other data. The latter, relates to more technical information and data to ensure effective technical management of systems.

An important part of communication, again, is to instil learning within and between institutions and organizations (like government). An important part of this is to ensure both successes and failures are communicated effectively, and on an ongoing basis.

The reporting and communication process should inform stakeholders and citizens of the current status of sustainable water management in the province so that they can take knowledgeable action and make appropriate behavioural change responses to support the sustainability of our water resources.

I propose that some editor out there rolls up his or her sleeves, assembles the best weather forecasters and climatologists in Cape Town and asks them to give us their best range of estimates for the next twelve months and the longer term. This should be done every week in a drought bulletin. Running probabilities should be attached to the (different climatic) scenarios...This in turn will depend on the rainfall that has occurred during the previous week as well as that which is expected in the next fourteen days.

This will allow ordinary people and communities to make sensible decisions about what their most reasonable options are, bearing in mind the relative cost of say putting in a tank or sinking a borehole. It will also act as a much better inducement to **people to cut consumption by having some knowledge of the big picture**, as opposed to being given a single figure for dam levels accompanied by a daily consumption target.

*In addition, we obviously need to be **kept up to date on a regular basis** with the big projects underway to alleviate the situation, whether they are about new supply from desalination and underground aquifers, recycling, smarter water management techniques in agriculture and industry or any other innovative measures.*

Finally, we also need some idea of what a comprehensive disaster plan entails should the taps literally run dry or nearly so. Nobody at the moment knows where the water collection points would be, the times of day to arrive to avoid the long queues if at all possible and how to help those in real distress.

Clem Sunter, 2017

8.5 Strategic Goal 4d: Effective Action

Finally, and most importantly, is what is done with the information at hand. If no action is taken, it renders the efforts of communication invaluable. Therefore, a feedback loop is required, and should be built into the communication system. Monitoring and evaluation should thus include, how information flows are tracked, and lead to implementation.

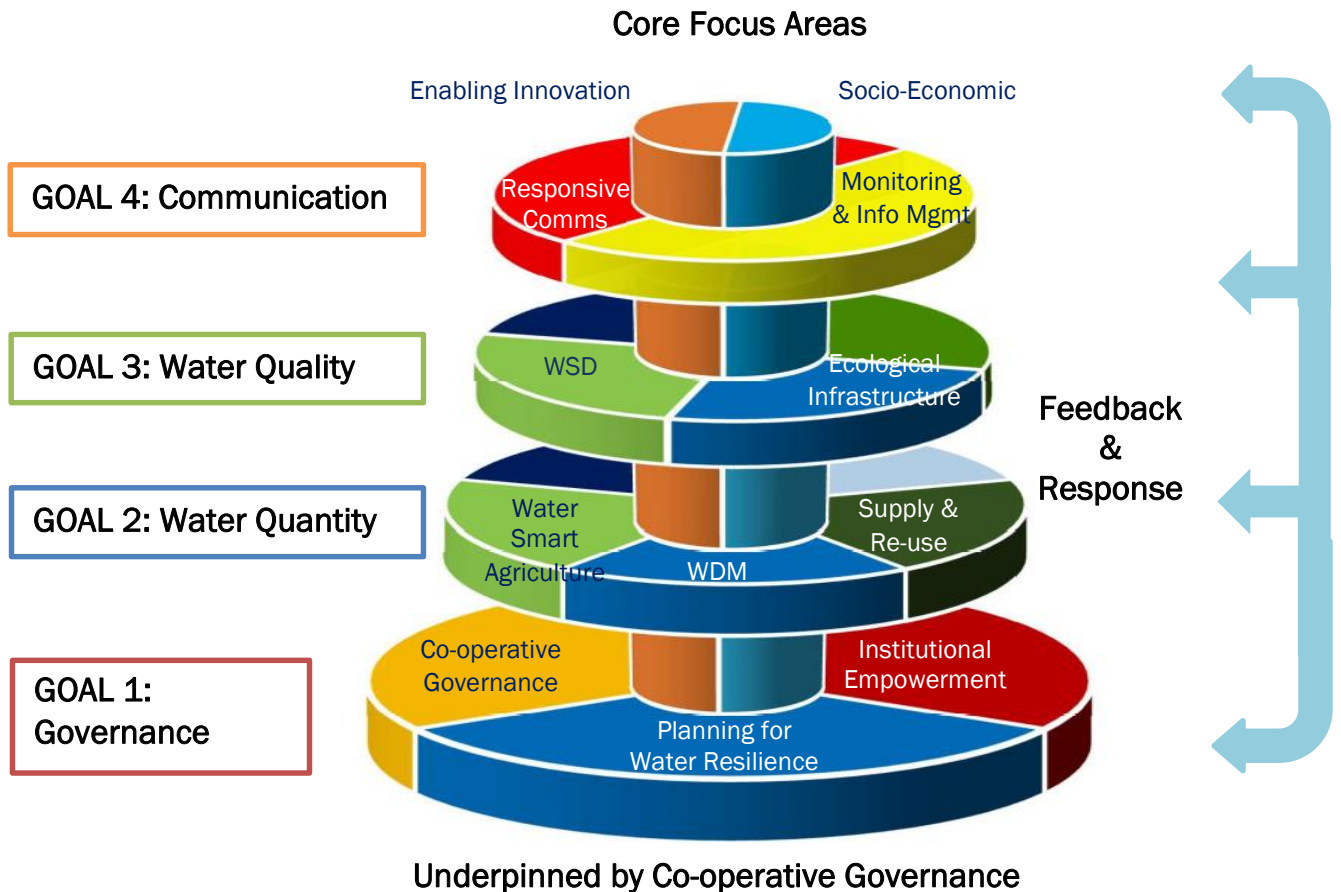
If there is not an adequate response to information that is accurate, valid and useful it may signal an issue with the implementation approach. This could be a lack of skills, or a lack of capacity for implementation. In this case, innovation becomes key to maximising impact with minimal budget; tapping into alternative financing structures or public private partnerships. Beneficiation of waste products, such as biogas production, from alien vegetation biomass can subsidise the cost of long-term environmental management activities thereby increasing the delivery and footprint of these programmes. Further details on possible financing structures is discussed in Section 10.3.

9 Focus Areas

The Focus Areas are the key mechanism through which the updated Sustainable Water Management Plan is implemented. As discussed in Section 4, the Focus Areas encompass all aspect of the strategic objectives and can provide the forums through which key stakeholders can collaborate around a common area of interest to collectively work towards the delivery of key activities. The Focus Areas align with the roles of different stakeholders and their individual representatives and therefore seek to promote the delivery of the SWMP goals without adding unnecessary burden to the governance structure.

The success of the Focus Areas is underpinned by effective co-operative governance, while innovation and socio economic consideration are core Focus Areas which should run throughout the proposed activities. Feedback and reporting from the communications strategy should cascade down through the different activities to enable a responsive adjustment of activities to maximise the ongoing impact of the SWMP.

Figure 9.1: Alignment of the Focus Areas and SWMP Goals



Some of the Focus Areas, such as ‘Enabling Innovation’ and ‘Socio-Economic Drivers’ cut across all areas of the Plan, while others have a more specific focus on an individual Strategic Objective. The twelve Focus Areas provide a long-term framework to ensure that ongoing progress is made on all aspects of the Sustainable Water Management Plan. This approach ensures the holistic progression of the SWMP, and is designed to mitigate the risk to long term sustainable water management that could occur if key components of the Plan are not progressed.

The Focus Areas define the long-term strategy to ensure sustained progression towards the desired outcome of improved water resilience. An annual review of the Focus Areas will identify the priority activities and key stakeholders for the year ahead. Table 9.1 provides a summary of the twelve Focus Areas and the initial activities that have been identified through the SWMP review process. It is proposed that there is at least one dedicated provincial representative in each of the groups to convene, co-ordinate and then support the progression of the individual Focus Area. Each group will establish their modus operandi to enable alignment with existing forums and the prioritisation of suitable activities.

An annual (and ongoing) review of each Focus Area should follow the strategic adaptive management cycle that was discussed in Section 4 and is presented again in Figure 9.2 for reference. The process to **evaluate, plan and implement** activities will ensure longevity of the Plan and enable the periodic adjustment of activities to enhance the effectiveness of the group.

Figure 9.2: Strategic Adaptive Management Cycle for review of the Focus Areas

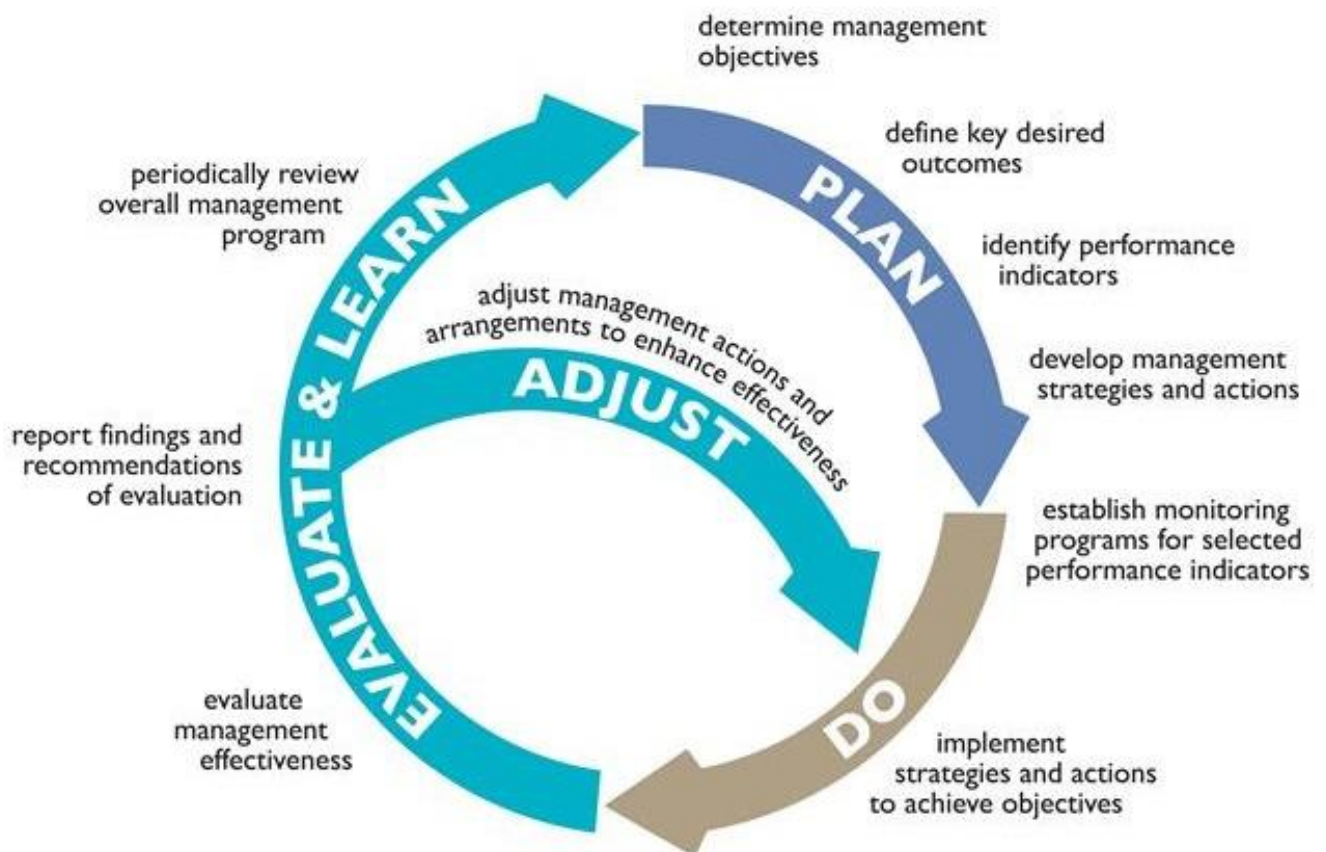


Table 9.1: Focus Area Summary

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
Co-operative Governance	Committed collaboration to work towards the common mandate of achieving sustainable and equitable water security.	1a. Align Leadership	<i>HoD / Directors</i>	1. Principal buy-in, sign off and adoption of the Plan across Nat. and Prov. departments	2017	No. of HoD's Agreed to SWMP
		1b. Engage Stakeholders	DEA&DP DWS DLG LM's DoA DEA DEDAT DotP Treasury	2. Map and understand purpose of current water related forums and active institutional forums for strengthening of the SWMP	2017	Forum Map
				3. Identify required information flow between departments in connection with the SWMP and best forum / mechanism to enable regular feedback	2018	Information Flow Diagram
				4. SWMP progress and needs reported through identified forums and feedback given to stakeholder groups	Quarterly	SWMP items highlighted in minutes of relevant forums
				5. All Provincial departments to develop SWMP response Plans	2019	No. of Departments with SWMP Response plans
Institutional Empowerment	Pro-active engagement between critical water institutions (LM's, DWS etc.) to develop skills and capacity for effective water governance.	1b. Engage Stakeholders	DLG SALGA DEA&DP	1. Dissemination of SWMP across all Sectors (Local Gov. CHEC and Private Sector)	2017	No. of Stakeholders attending knowledge dissemination events
		1c. Empower Institutions	DWS LM's Prov. Treasury	2. Collate and maintain central database of key contacts across departments (LM, DWS, Prov.)	2017	No. of departments and individuals represented on the database.
		1d. Embed New Practices	DoA	3. Ensure representation at SWMP related forums and Steercom	Ongoing	

¹⁵ Bold refers to the proposed lead authorities based on their mandate

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
				<p>4. Support effectiveness of SWMP collaboration through implementation of a Strategic Adaptive Management process across spheres of Government.</p> <p>5. Identify skills/needs at local municipal level. Identify and implement support programmes.</p>	<p>2018</p> <p>2018</p>	<p>No. of Stakeholders represented at SWMP related forums.</p> <p>No. of stakeholders and individuals engaged in the SAM process</p> <p>Reach of programme and progress against skills/needs assessment</p>
Sustainable Water Supply & Re-use	Diversified, sustainable water resources, including the large scale re-use of water	2a. Maximise Water Re-use & Diversity of Water Sources	DEA&DP DWS DLG DBSA LM's DoA	<p>1. Investigate case studies and practical options for 'fit for purpose' water re-use across different sectors.</p> <p>2. Establish Community of Practice for alternative water use in the province.</p> <p>3. Develop a guideline for the protection, recharge, use and monitoring of Groundwater.</p> <p>4. Develop explicit targets for alternative water uses (groundwater, re-use, rainwater harvesting etc.) across different sectors.</p> <p>5. Investigation into funding models for alternative and innovative water infrastructure.</p>	<p>2017</p> <p>2018</p> <p>2018</p> <p>Ongoing</p> <p>2018</p>	<p>Presentation of case studies</p> <p>Clarification of re-use options</p> <p>No. of participants in COP</p> <p>Preparation of guideline</p> <p>% change/shift of water supply to more diverse sources per municipality</p> <p>Incorporation of alternative funding models into budgeting process.</p>

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
Water Demand Management	Water supply exceeds water demand through reducing per capita water use and minimising unaccounted for water losses.	2b. Minimise Losses in the Water System 2c. Effective Metering & Billing of Water Users 2d. Minimise Water Consumption	DLG LM's DWS DEA&DP DoE DoH DoA DTPW Green Cape DEADT DTI Treasury	1. Develop guideline / regulatory tools for household water saving devices and promote their widespread uptake.	2017	Guideline / regulatory reform on water saving devices
				2. Document lessons from 2017 City of Cape Town Pressure Management effort (including the impact of household and bulk interventions).	2017	No. of retail partners promoting guide
				3. Develop the business case for improved water efficiency across sectors to inform water tariff structures.	2018	Preparation of Case Study No. of stakeholders engaged with findings.
				4. Develop a behaviour change strategy to sustain good water stewardship practice.	2018	Preparation of business case No. of LM's incorporating findings into tariff structure.
				5. Minimise Non Revenue Water (including improvements in ailing infrastructure)	Ongoing	Preparation of strategy No. of people engaging with strategy.
				6. Incorporate standardised water restrictions into regulatory processes for drought situations.	Ongoing	No. of people engaging with strategy.
					2018	% NRW per municipality WSDP includes strategy for reducing NRW Standardised water restrictions across the province.
Ecological Infrastructure	Protect and restore the ecology and health of river catchments, groundwater resources and estuaries through effective	3a. Environment for Water	DEA&DP Cape Nature DEA (Working for) DoA (Landcare) DWS	1. Promote appropriate discharge of treated wastewater into natural water bodies. 2. Implementation of the Ecological Infrastructure Investment Framework. 3. Integration and co-ordination of the Working for programmes with all other similar initiatives to prioritise improved water resilience.	Ongoing Ongoing to 2019/20 2018	WWTW performance (Green Drop) No. River Maintenance & Mgmt. plans

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
	management of alien vegetation and riparian restoration Appropriate ecological water allocation to enable the sustainability of ecological infrastructure services.			4. Ensure Estuary Management Plans take cognisance of climate Change	Ongoing	Length of river located within key water source areas under active management Estuary Management Plans
Water Sensitive Design	Principles of Water Sensitive Design are integrated into Urban Development Planning requirements (EIA, Urban, land-use planning) Technological advancements through research innovation lead to the uptake and application WSD	2a. Maximise Water Re-use & Diversity of Water Sources 2d. Minimise Water Consumption 3b. Economic Activity for Water 3c. Infrastructure and Built Environment for Water	DEA&DP DLG SALGA DST CHEC	1. Develop WSD implementation strategy 2. Provide support to provincial departments & local municipalities to adopt WSD strategy – linked to climate change adaptation measures 3. Public awareness campaign to educate and increase WSD literacy 4. Include requirements in web based screening EIA tool. 5. Develop Water Sensitive City transition and Benchmarking tool 6. Establish widespread adoption of SuDS through the development of a Provincial SuDS guideline and Policy Dialogue	2018 2018 2018 2019 2019 2019	Strategy and Benchmarking tool No. of LM's engaged with WSD strategy Launch of Campaign No. of interactions with campaign Web Tool developed Number of municipalities evaluated using the benchmarking tool. SuDS Strategies adopted by Municipalities. No. of SuDS initiatives implemented

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
Monitoring & Information Management	Simple, informative and accurate reporting processes & maintain a collective, accessible knowledge library and data repository.	4a. Effective Monitoring	DEA&DP DWS DLG LM's DoA CHEC	1. Identify priority data requirements in connection with SWMP indicators and other monitoring programmes.	2017	Data requirements confirmed and agreed with Steercom
		4b. Effective Reporting & Information Management		2. Review existing monitoring programmes across, government, private and research institutions (water quality, groundwater, quantity)	2018	Database of relevant monitoring activity
				3. Develop integrated monitoring strategy to co-ordinate monitoring programmes and ensure standardisation of methods and quality of data.	2018	Strategy produced and approved by Steercom
				4. Develop, populate and maintain a centralised data repository for public and private access.	2019	
				5. Promote water footprinting in business, industry and agriculture to drive water efficiency.	2019	No. of records in the library No. of users Voluntary water footprint reporting within industry, agriculture and business.
Responsive Communication	Knowledge transfer, increased awareness and behaviour change through a consistent and co-ordinated communication strategy. Leading to a water aware and water-saving public and economy	3d. People for Water	DotP DLG DEA&DP DEDAT DoA SALGA DTPW	1. Develop a Provincial integrated communication strategy and public awareness campaign on sustainable water management to ensure effective knowledge transfer across government and to the public.	2017	Strategy produced
		4c. Effective Communication		2. Departments to submit water efficiency plans to curb waste of water and move towards increased water resilience	2018	No. of plans received
		4d. Effective Action		3. Release a regular SWMP Bulletin to report ongoing status of water resilience across the province.	Ongoing	No. of Bulletins published No. of subscribers
					Ongoing	

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
				4. Implement Informative Billing to water users 5. Develop informative guideline on water efficient devices 6. Review and revise the school curriculum to address water scarcity, climate change and resilience and water sensitive approaches.	2018 2018	No. of Municipalities using informative Billing Completion and circulation of guideline Update of primary and secondary school curriculum
Planning for Water Resilience	Effective, intelligent and timeous engagement with LM's to strengthen capacity and enable integrated planning processes to enable improved water resilience	1c. Empower Institutions 1d. Embed New Practices 2a. Maximise Water Re-use & Diversity of Water Sources 2b. Minimise Losses 3a. Environment for water 3b. Economic Activity 3c. Infrastructure and Built Environment	DLG LM's DEA&DP DWS DEA Treasury	1. Undertake review of IDP engagement process and develop a protocol the enables efficient, intelligent and timeous engagement between DWS, DEA&DP, DLG & LM's. 2. Develop provincial strategy for diversification of water sources (including groundwater and effluent re-use) 3. Establish process to enable each municipality to have a disaster risk reduction plan (drought, floods, fires and pollution) 4. Develop a Provincial enforcement strategy to hold Organs of State responsible for complying with water quality objectives	2017 2018 2018 2018	Review of current processes and forums Protocol for efficient engagement No. LM's actively engaged regarding IDP Water source diversification strategy % Alternative water sources in use DRRP support process in place No. of LM's with effective DRRP in place Enforcement strategy in place

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
Water Smart Agriculture	A water-wise Agriculture sector that promotes sustainable and optimal agricultural production and contributes to improved water security.	2a. Maximise Water Re-use & Diversity of Water Sources 2b. Minimise Losses in the Water System 3b. Economic Activity for Water	DoA Green Cape DEDAT DEA&DP DWS CHEC	1. Implement priorities of the SmartAgri Plan relating to water resilience, including conservation agriculture and measures to protect groundwater from pollution. 2. Continue progress with Fruitlook, using satellite imagery to enable improved water efficiency 3. Finalise research on climate resilient and alternative crops and livestock applicable to the Western Cape and disseminate findings. 4. Review impact of 2017 drought on W Cape agriculture yields and related economy to inform future allocations for agriculture.	Ongoing Ongoing 2017 2018	Progress with implementation of the SmartAgri Plan. No. of Fruitlook subscribers Report published No. of Agriculture stakeholders responding to report Review documented Incorporated into Disaster planning
Enabling Innovation	Improved water resilience through technological advancement and unlocking innovative approaches to management, financing, and business.	<i>Cross-cutting all objectives</i>	DEA&DP CHEC DEDAT Green Cape DST WRC CSIR	1. Strengthen linkages with CHEC and WRC to promote innovation across the SWMP 2. Establish the Water Hub as the vehicle for collaborative research, demonstration and training of innovative technologies. 3. Identify key research areas within the SWMP 4. Undertake collaborative research to embed innovative approaches for improved water resilience. 5. Feasibility assessment of benefits of smart metering.	2017 Ongoing 2017 2018 - Ongoing 2018	Establishment of Innovation Forum with CHEC (and WRC) No. of research projects at the Hub No. of Technologies demonstrated No. of visitors to the Water Hub Research projects identified No. of research projects

WESTERN CAPE SUSTAINABLE WATER MANAGEMENT PLAN 2017 - 2022

Focus Area	Desired Outcome	Strategic Objectives	Key Stakeholders ¹⁵	Proposed Priority Activities	Timeframes	Proposed Indicators
						Report Complete Uptake of Smart Metering
Socio-Economic Drivers	Water is appropriately valued for its impact on growth and development within the province. Appropriate financing available which recognises this value and enables the progression of the SWMP.	<i>Cross-cutting all objectives</i>	DEA&DP GTAC DLG DEDAT Treasury DEA DWS	<ol style="list-style-type: none"> 1. Collate current research related to the socio-economic impact of water scarcity in the Western Cape (Agriculture, Industry, Saldanha IDZ, etc.) 2. Convene Infrastructure Dialogue Workshop on Funding Models. 3. Develop funding strategy for the delivery of the aims of the SWMP and related activity (Including Treasury, tariff structures, private sector and donor funding). 4. Development of river caminos to promote river restoration, protection and socio-economic benefit through tourism. 6. Cost-benefit analysis of specific water use charges versus specific socio-economic benefits. 	<p>2017</p> <p>2018</p> <p>2018</p> <p>2020</p> <p>2018</p>	<p>Summary Report</p> <p>No. of Stakeholders attending workshops</p> <p>Funding Strategy Relevant items included in MTEF</p> <p>No. of camino routes developed</p> <p>Proportion of water tariff directly contributing to water management and to ecological infrastructure per se.</p> <p>Cost-benefit per sector.</p>

10 Recommendations & Next Steps

10.1 Institutional Structure

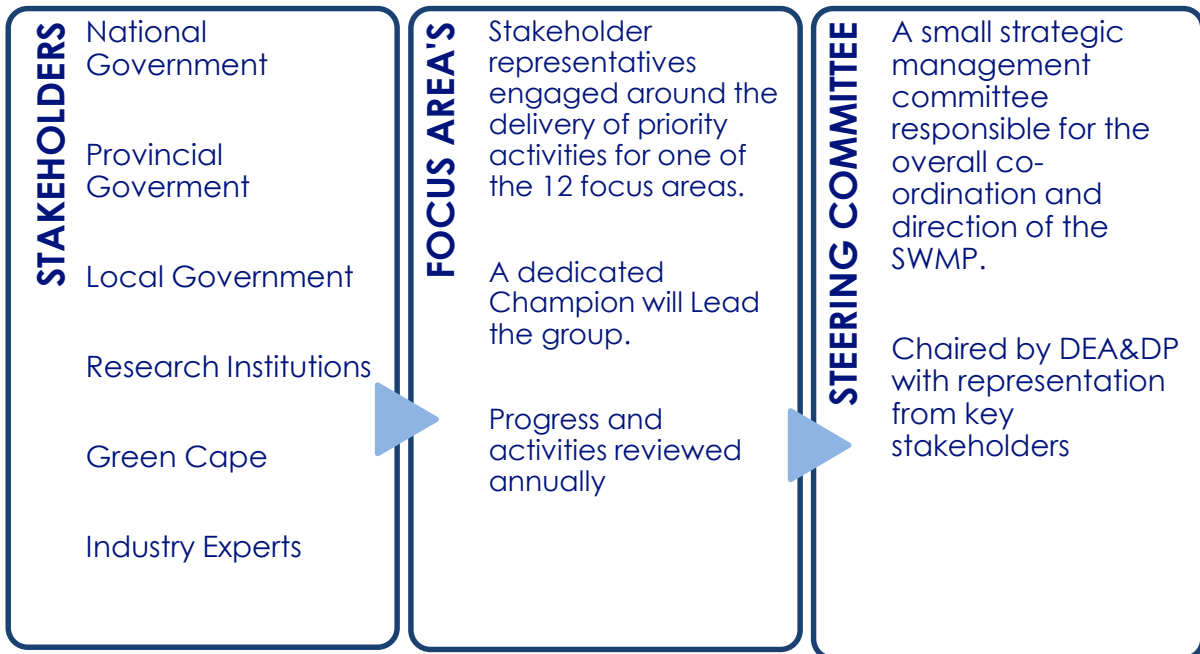
With a strategic focus of ensuring sustainable water management as an enabler for Growth and Development, DEA&DP have overall responsibility for the co-ordination, support and monitoring of the Plan. However, the delivery of the Plan requires effective collaboration between all spheres of government, together with research institutions.

The Quarterly Steering committee will be chaired by DEA&DP but will have representation from key Government departments, including DWS, DLG, DEDAT, DoP and DEA.

The Focus Areas are designed to deliver priority activities in a related area of interest. Where possible these Focus Area's may be incorporated within existing forum structures (Such as CHEC or Smart Agri). Stakeholder will be asked to commit to regular engagement for a one-year cycle, after which progress is reviewed and new priorities set. The Champions of a particular Focus Area will attend the Steering Committee meetings as required to give feedback.

It is proposed to hold an Annual SWMP Progress meeting where a larger stakeholder group is gathered to engage with the overall progress of the SWMP.

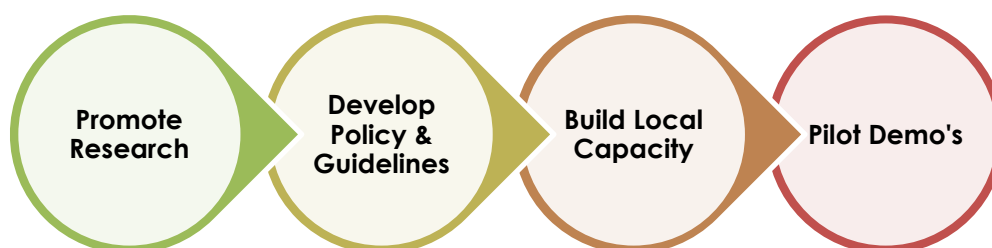
Figure 10.1: Institutional Structure



10.2 Strategic Effort

Due to budget and resource restraints, it is critical that strategic effort is made for the efficient delivery of the SWMP. This requires targeted input at key points in the project cycle to enable the timeous and intelligent support. Activities should focus on maximising the return on budget expenditure by acting as a catalyst for a more widespread impact. As presented in Figure 10.2, sound knowledge and scientific research should form the foundation of all interventions. From this, policy and guidelines should be developed to instil best practice. Capacity building across departments and supporting the planning process within Local Government who are primarily responsible for the implementation and management of water services. Small scale demonstrations of technologies, businesses and alternative management approaches will enable the advancement of innovation.

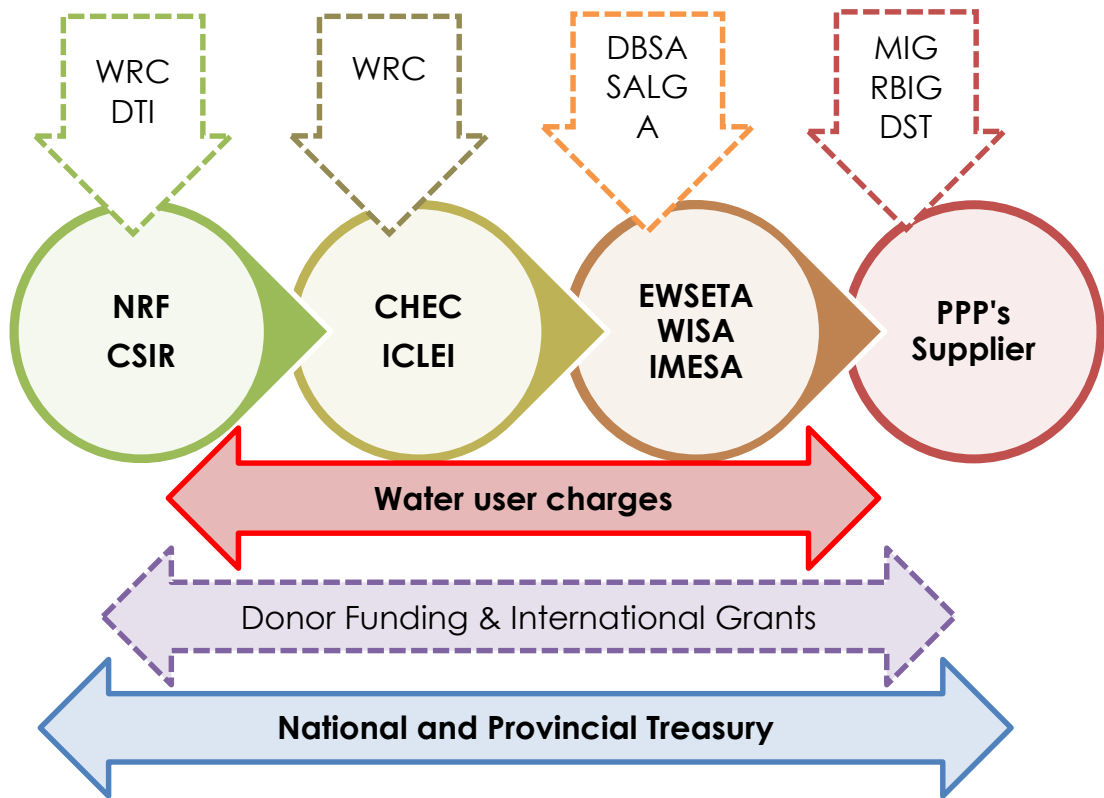
Figure 10.2: Phased Intervention



10.3 Efficient Financing

The delivery of the SWMP with limited government funding requires effective collaboration across government departments and consideration of alternative funding sources to subsidise costs. Figure 10.3 illustrates how different funding sources could be utilised to finance different activities.

Figure 10.3: Potential Funding Sources



10.4 Implementation Plan

The updated SWMP sets out a strategic approach to achieving improved water resilience in the Western Cape. The updated Plan aligns with emerging policy and gives clarity to the role of the different stakeholders. Through the review process, there has been a concerted effort to engage with stakeholders and strengthen the co-operative governance for the SWMP.

To ensure that the update Plan becomes embedded across government departments, the proposed implementation timeline in Table 10.1 identifies the initial activities required to establish the new Plan.

Table 10.1: Proposed Implementation Timeline of updated SWMP

Activity	Description	Target Date
1. Identify Focus Area Champions	Individual champions to be identified to lead the progression of a particular Focus Area	May 2018
2. Presentation of updated SWMP to Stakeholders	The final updated SWMP to be presented to Provincial, National and Local Government, this is likely to require presentation at regional centres.	November 2017
3. Identify individual representatives for Focus Areas	Representative from key stakeholders to support the progress of priority activities	May 2018
4. Intergovernmental Agreement	Senior Management agreement and sign off of the Plan	June 2018
5. Finalise Year 1 Priority Activities	The group engaged with a particular Focus Area to finalise the priority activities for the first year	June 2018
6. Incorporate activities into Annual Performance Plan	Activities to be embedded into APP process to incentivise progress	February each year
7. Establish Budget Requirements / Funding Sources	Budget estimates and possible funding sources identified. Budget captured on MTEF as appropriate.	February each year
8. Progress Focus Areas	Ongoing progress towards the Focus Areas. Groups will meet as required to progress activities.	Ongoing as per annual workplans
9. Feedback to Steercom	Individual representatives to feedback to Steercom for ongoing coordination	Quarterly
10. Identify Year 2 Priority Activities	Identify priority activities and draft budget for 2019	October each year
11. Annual review of Focus Areas and appoint new champions and representatives (as required)	Larger Annual review meeting to evaluate progress of SWMP and enable co-ordination for the year ahead.	December each year

References

Department: The Presidency (DTP), National Planning Commission. 2012. *Executive Summary - National Development Plan 2030: Our Future, Make it Work*. Pretoria, South Africa

Department of Water Affairs. 2011. *Development of Reconciliation Strategies for all towns in the Southern Planning Region: Provincial Summary Report, Western Cape, November 2011*. Pretoria, South Africa

Department of Water and Sanitation (DWS). 2016. *Water Quality Management Policies and Strategies for South Africa. Report No. 2.1. WQM Policy – Edition 2*. Water Resource Planning Systems Series, DWS Report No.: 000/00/21715/12. Pretoria, South Africa

Department of Water and Sanitation (DWS). 2017. *Water Quality Management Policies and Strategies for South Africa. Report No. 3.2. Integrated Water Quality Management Strategy*. Water Resource Planning Systems Series, DWS Report No.: 000/00/21715/16. Pretoria, South Africa

Department of Water Affairs (DWA). 2013. *National Water Resources Strategy – 2nd Edition*. Pretoria, South Africa

Department of Water and Sanitation (DWS). 2015. *National Water Resources Strategy Comprehensive Implementation Plan*. Pretoria, South Africa

Department of Water and Sanitation (DWS) 2018. *Draft National Water and Sanitation Master Plan, Vol. 2: Comprehensive Action Plan, Version 3 (13 March 2018)*.

Green Cape, 2017:18, (Source: <http://greencape.co.za/assets/Uploads/GreenCape-Water-MIR-2017-electronic-FINAL-v1.pdf>)

Hlomendlini, H. 2017:2 Source: <https://www.agrisa.co.za/wpcontent/uploads/2017/06/2017-June-GPD-growth-2017-Q1.pdf>

Le Maitre, 2017. Presentation entitled: *Protecting the Strategic Water Resources of the Breede River for water security under climate change*.

Statistics South Africa, 2017. Statistical release P0302. *Mid-year population estimates 2017*. Pretoria, South Africa.

Western Cape Government, Department of Environmental Affairs & Development Planning. 2014. *Western Cape Provincial Spatial Development Framework, March 2014*. Cape Town, South Africa

Western Cape Government, Department of Environmental Affairs & Development Planning. 2015. *Western Cape Environmental Implementation Plan 2015 – 2020*. P.N. 332/2015, Provincial Gazette Extraordinary 7502, 2 October 2015.

Western Cape Government, Department of Environmental Affairs & Development Planning. 2016. *Western Cape Provincial Biodiversity Strategy and Action Plan 2015 - 2025*.

Western Cape Governance, Department of Local Government (DLG). 2017. *Draft Final Report: Development of new or improvement of existing Operation and Maintenance Plans at Wastewater Treatment Plants affecting the Berg River*, unpublished report, Project FIN-LG 167-2016-2017. Cape Town, South Africa

Western Cape Government, 2017 Source: <https://www.westerncape.gov.za/general-publication/latest-western-cape-dam-levels>

Directorate: Pollution & Chemicals Management
Western Cape Department of Environmental Affairs and Development Planning
4th floor, Utilitas Building, 1 Dorp Street, Cape Town, 8001
Private Bag X9086, Cape Town, 8000
Tel: 021 483 2970 **Fax:** 021 483 3186
www.westerncape.gov.za/eadp

Email: Catherine.Bill@westerncape.gov.za

Cover image: Kogelberg Nature Reserve © Scott N Ramsay



**Western Cape
Government**
Environmental Affairs &
Development Planning