Integrated Water Quality Management
POLICIES AND STRATEGIES FOR SOUTH AFRICA

3.3 STRATEGY SUMMARY

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation
Department:
Water & Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

FOREWORD

How are we moving towards implementation?

The development of an IWQM Policy and Strategy is a response to the many water quality challenges that South Africa is facing. There are already concerns with regards to the significant issues of eutrophication, salinization, acid mine drainage and other wide spread water quality challenges. There are also a number of emerging water quality issues which we need to research, monitor and address with time. We, therefore, need an IWQM strategy that takes immediate action, but also has a longer term strategic intent to progressively improve and strengthen our ability to manage water quality.

It is not possible to address the many water quality challenges simultaneously; human and financial resources as well as information and systems constraints will inhibit this.

Therefore, the focus of this strategy is on delivering change for prioritised challenges. The development of an implementation plan, which will be renewed and improved through different phases, will support and guide the implementation of this strategy.

This will be supported by a monitoring and evaluation framework that will enable the DWS to monitor and report on progress. It is equally important that as we implement, as we learn, that we review how we work best to manage water quality. Over time, this will change how we organise ourselves, how we manage the various IWQM processes, how we share information and report on progress, and how we respond adaptively to shifting environmental and socio-economic contexts.

Water management is one of the 21st Century's most critical challenges on a world scale, with pollution of surface and underground water resources in particular being a global concern. As nations make efforts to correct abuses to their water resources, there is a need to determine the causes of water quality degradation and to set forth holistic and integrated strategies to address these challenges.

Improving water quality though an inclusive and integrated approach is a priority objective which is why we have developed a strategy which translates our commitments as a concerned and engaged sector into actions. Together these actions aim to ensure that Government, in partnership with private sector and civil society, secure water that is fit for use, for all, forever.

This is a task that must be addressed with urgency, and with commitment. The strategy describes how, under the leadership of my department, other relevant organs of state will work together and within their own mandates, to achieve our joint vision for the improvement of the quality of water in our rivers, estuaries, dams, wetlands and aquifers across the country. It describes what is expected of a responsible private sector, and the critical role that civil society should be playing, at all levels.

I call on all South Africans, in all walks of life and in all areas of the country, to play their part in cleaning up and protecting our precious, and scarce water resources. Your health and well-being depends on it, as does the well-being and prosperity of future generations. This strategy sets out the path by which we are going to achieve a better future for all.

MRS N P MOKONYANE
MINISTER OF WATER AND SANITATION

FOREWORD

South Africa is a water scarce country and this reality is further compounded by the deterioration of water quality. The issue of water quantity and quality has a massive impact on sustainable economic growth, social development and the protection of the environment. As a country, we need to work very hard to ensure continued supply of water in all communities.

In pursuing our joint efforts in water conservation and demand management and water quality management, we need to work very closely with sectors such as the formal and informal industry working with breeding and caring for farm animals, the fruit and beverage industry and the municipal waste water organisations. These institutions in the world over use large amounts of water which can be collected and also treated for safe use in other industries.

Water pollution is today one of the major problems and is among the leading causes for disease and death worldwide. Most of the victims of this wide spread phenomenon are the poor and the marginalised communities.

Lagoons, large dams, rivers, water streams, water canals and water wells can be affected by pollution. With the contamination of water communities can experience bad odours arising from harmful water that disposed of in water sources and can be exposed to waterborne diseases coming from water that is not treated for social use.

The Department, through this strategy, needs to ensure continuous tests with the latest technology of all water sources to determine who the main culprits of pollution are. We also need to educate communities and all water users that water quality and quantity must be understood as two sides of the same coin.

The implementation of this Strategy must serve to enhance our economic development, social upliftment and environmental protection. This strategy should reduce the costs of water for agriculture, mining, manufacturing purposes, and general use by municipalities for household usage.

We must indeed, as guided by our Bill of Rights and the Constitution which explicitly provides for the right of every citizen to a healthy life, access to food and water and to have the environment protected, work together towards a sustainable environment and a developing society

MRS P TSHWETE, MP
DEPUTY MINISTER OF WATER AND SANITATION

FOREWORD

This Integrated Water Quality Management Strategy sets out for the Department of Water and Sanitation the clear challenge of leading a government wide programme, which also involves the private sector and civil society, to clean up the nation's water resources. The task is much bigger than one department, but it remains the task of my department to put in place the necessary leadership, planning and inter-departmental structures to ensure that this strategy is implemented.

Turning around the current situation is going to take time, dedication and resources. The Department of Water and Sanitation commits to leading this process, working closely with other relevant departments, the private sector and civil society to make this happen. We commit to ensuring that this strategy is implemented, and that we report, annually, to the presidency and to the people of South Africa, on our progress in this critical task.

MR D M G MASHITISHO
DIRECTOR GENERAL OF WATER AND SANITATION

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Acronyms

Abbreviation	Meaning
CMA	Catchment Management Agency
COGTA	Cooperative Governance and Tradition Affairs
DEA	Department of Environmental Affairs
DAFF	Department of Agriculture, Fisheries and Forestry
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
IWQM	Integrated Water Quality Management
M&E	Monitoring and Evaluation
NDP	National Development Plan
NWA	National Water Act, 1998 (Act 36 of 1998)
NWRS	National Water Resource Strategy
SA	Strategic Action
SI	Strategic Issue
SO	Strategic Objective
WQM	Water Quality Management

Contents

Executive Summary

Managing water quality requires integrating a wide range of knowledge in a structured process that allows co-learning, co-creation, and co-adaptation as our society and economy develops. With this in mind, the responsibility for managing water quality cannot be that of the Department of Water and Sanitation alone. In effect, t**here is a significant array of Government Departments that oversee sectors that impact upon land and water use.** Whilst the Department of Water and Sanitation will continue to lead the water sector, the challenge of ensuring sustainable water use will require a more holistic response from broader Government, the private sector and civil society.

The necessary tools and knowledge to affect significant change exists and are sufficient to turn the situation around. The challenge lies in co-ordinated and effective action from government, civil society and the private sector. In light of the above, the Department embarked on a comprehensive journey to revise, update and consolidate its policies and strategies for managing the country's resource water quality, resulting in the publication of the **Integrated Water Quality Management (IWQM) Policy** and its companion IWQM Strategy. The complete version of both these publications are available for download at www.dws.gov.za.

The IWQM strategy, therefore, forms a call to action for government, civil society and the private sector, to change the way that water quality challenges are addressed, and to bring about a measurable improvement in the quality of raw water across the country.

The IWQM Strategy will form an integral part of the National Development Part (NDP) and inform the next revision of the National Water Resources Strategy (NWRS), both documents note that a paradigm shift in sustainable resource development is needed in order to support inclusive growth. Water quality, is articulated throughout the NWRS as a core element of the strategy, but the role of water quality is not fully distilled and, therefore, this IWQM Strategy provides the strategic intent required to ensure that WQM supports the implementation of the NWRS.

Aligned to the vision of the NWRS, the vision for IWQM, as defined in the IWQM Policy, is:

"Government, in partnership with private sector and civil society, secures water that is fit for use, for all, forever!"

This IWQM Vision is brought to life through 5 core mission statements of intent, namely:

- To support a consistent inter-departmental approach to how water quality is managed
- To foster and support cooperative and integrated approaches to IWQM across sectors, including the private sector and civil society.
- To adopt an adaptive management approach in which co-creation and co-learning by key players is entrenched and supported by the exchange of data and information.
- To drive programmes to build capacity for longer-term improvement in water quality.
- To undertake initiatives to progressively realise improvements in water quality in key systems with the intention of redressing priority water quality issues and showing that, as a country, we can halt the deterioration of our water resources.

In responding to the Vision and Mission for IWQM, this Strategy is based upon five Strategic Goals, which derive from the four IWQM Policy Pillars (Figure E-1).

Figure E-1: Policy Pillars and Strategic Goals

During the Assessment and Policy development phases, a large number of issues were identified. These were collated into clusters, taking into consideration the policy responses, resulting in eleven Strategic Issue areas. These align with the IWQM Strategic Goals as in the figure below.

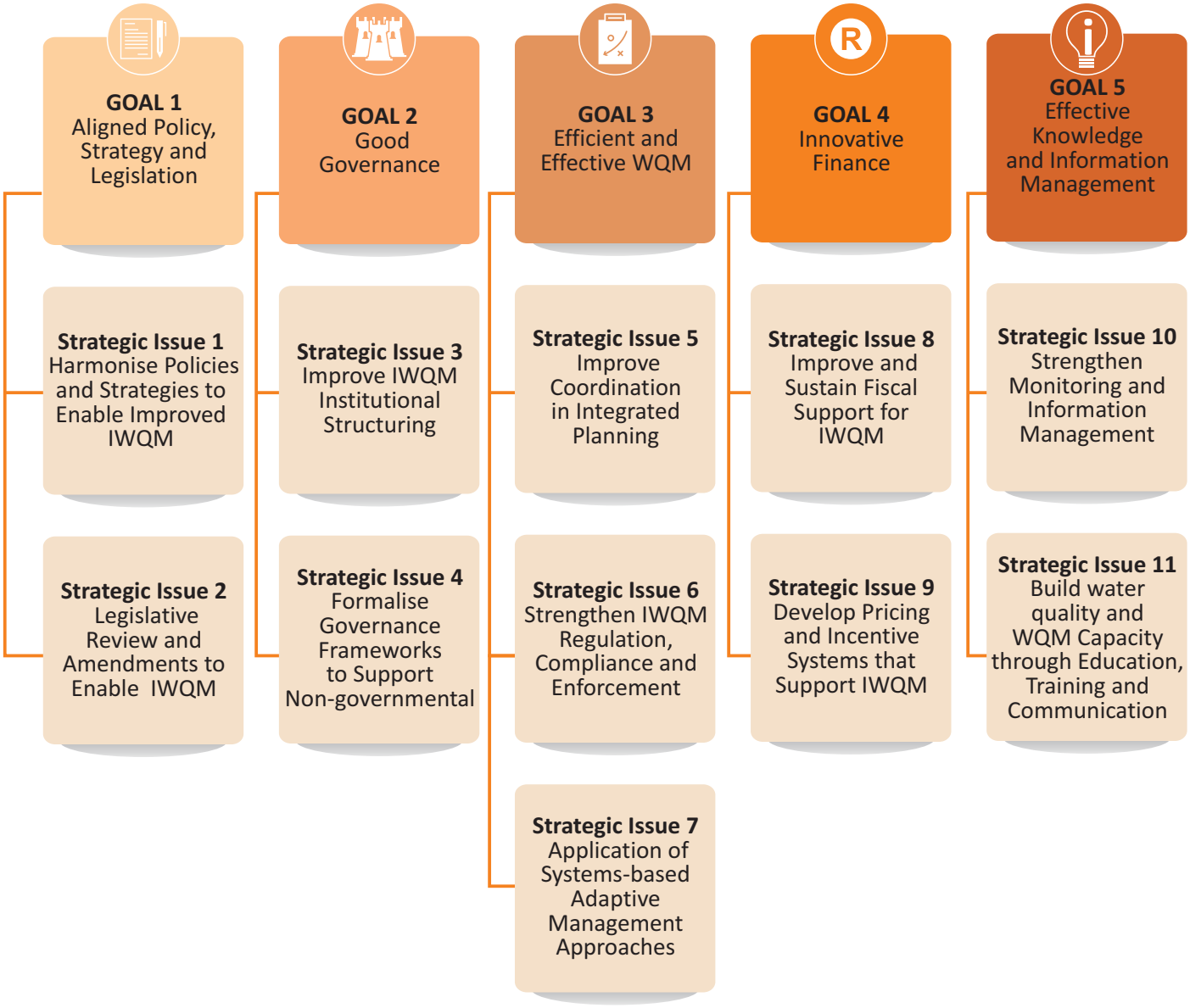


Figure E-2: Relationship between the Strategic Goals and the Strategic Issues

Key Strategic Objectives (SO) and Strategic Actions (SA) have been identified for each of these Strategic Issues.

Introduction

The Department of Water and Sanitation (DWS) is responsible for not only **ensuring the equitable distribution of water to all South Africans, but also protecting the water resource for future generations**. Critical to this is managing the water quality of the resource and controlling the inputs from the sources of pollution (Figure 1). Water quality management (WQM) requires balancing protection of the water resource with the need for development and growth in South Africa. Successful Integrated Water Quality Management (IWQM) calls for an inclusive approach of all key role players, that is, Government in partnership with private sector and civil society.

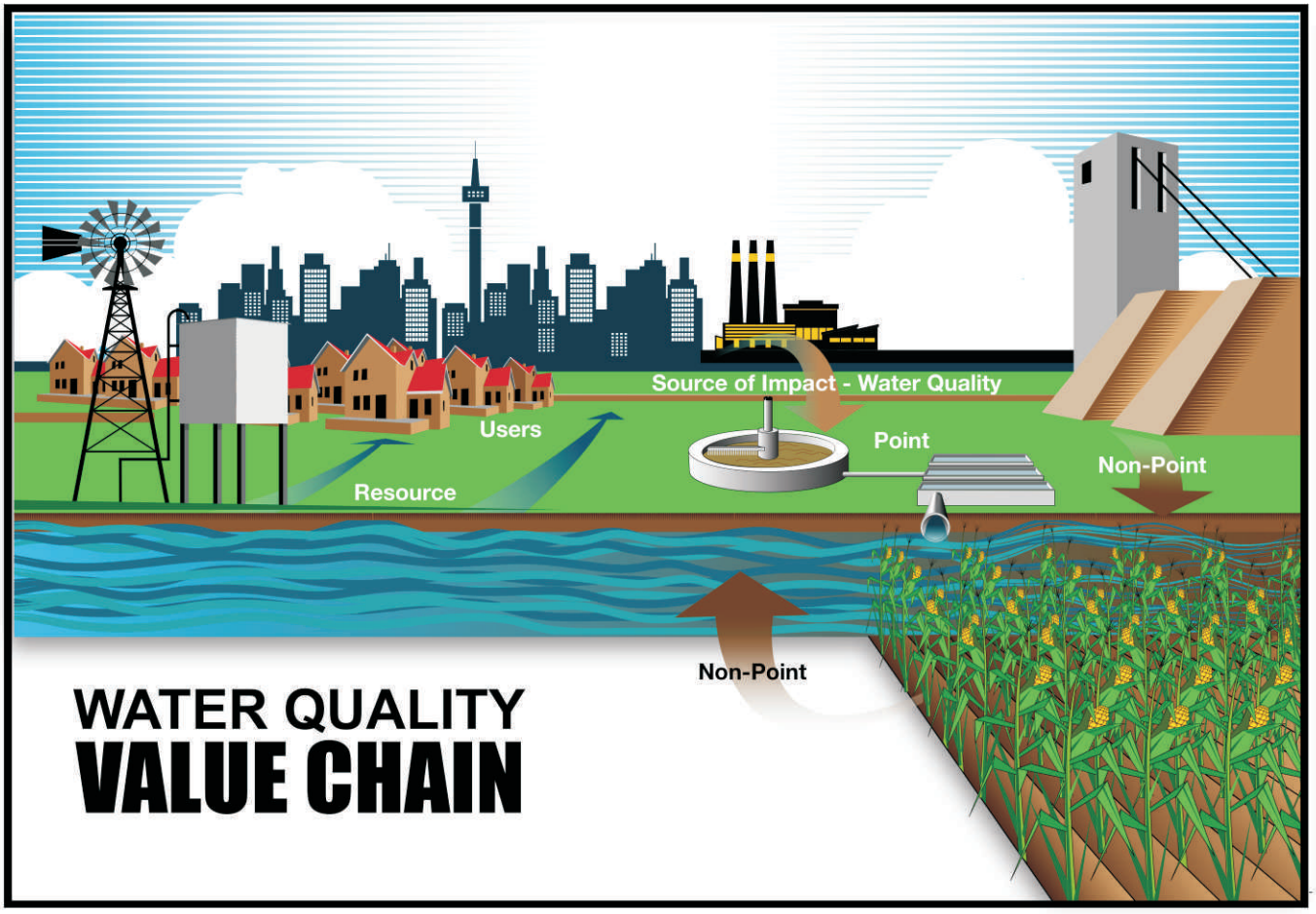


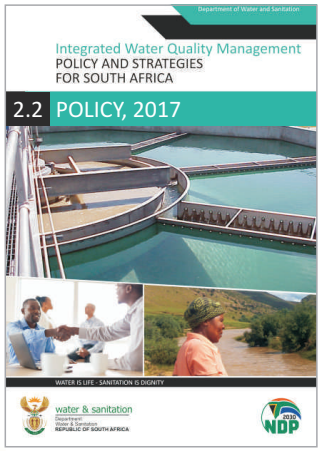
Figure 1: Water Quality Value Chain

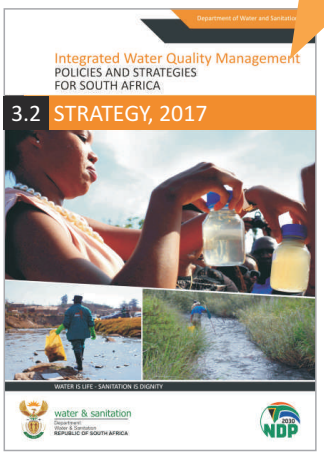
Broader engagement that moves roles and relationships beyond that of user, stakeholder, policy-maker and regulator, towards one of cooperation, partnership and stewardship is key and will require the development of robust and pragmatic management instruments, supported by effective communication and capacity building, both internally to the Department and externally.

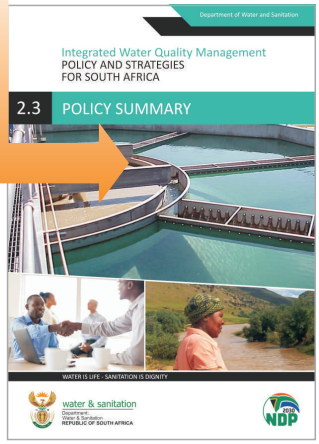
In light of the above, the Department embarked on a comprehensive journey to revise, update and consolidate its policies and strategies for managing the country's resource water quality, resulting in the publication of the **Integrated Water Quality Management (IWQM) Policy** and its companion **IWQM Strategy.** The complete version of both these publications are available for download at www.dws.gov.za.

The **IWQM Policy** is a national document, that defines the GOAL of IWQM in South Africa, based on a set of 17 POLICY PRINCIPLES and 8 VALUES upon which 4 key PILLARS rest that must guide decisions aimed at improving the management and status of water quality in the water resources of the country.

The **IWQM Strategy** translates the goal of the IWQM Policy into strategic objectives and actions which form a call to action for government, civil society and the private sector, to change the management of water quality and to bring about a measurable improvement in the quality of raw water across the country through the implementation of a pragmatic, prioritised programme over the short, medium and long-term.







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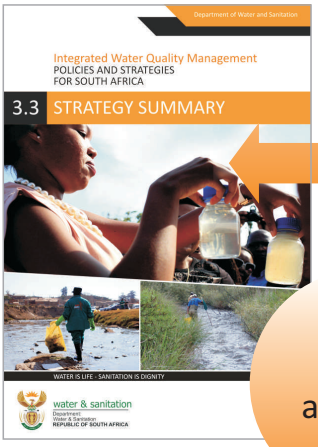

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Who should read the IWQM Strategy?

The **IWQM Strategy** is meant for anyone in South Africa who is involved in socioeconomic initiatives, from planning to implementation. The IWQM Strategy is not an "environmental sector" policy. The IWQM Strategy is a document for every individual or institution or organization that impacts or is impacted by water quality and has a stake in the country's future.

Purpose

The IWQM Strategy is a national strategy and reflects the urgency to change the approach to WQM to ensure that the trajectory of declining water resource quality is checked, and that we create the right capacity to strengthen our management of water resources whilst working towards a longer-term vision of on-going IWQM that is supported and enabled through adaptive management approaches.
This strategy considers the short, medium and long-term actions, and outlines the actions and interventions that need to be implemented to move the country forward towards achieving the IWQM Policy and improving water quality.

The Imperative To Act

There is a clear legal requirement, starting with both the Constitution of South Africa as well as compelling socio-political, economic and environmental arguments to be made for addressing the country's declining water resources.

Status Quo of Water Quality in South Africa

South Africa is experiencing the negative impacts of poor water quality, and without swift and concerted action, this is likely worsen over time. Currently, the overall trends show a decline in the country's river health (Figure 2).

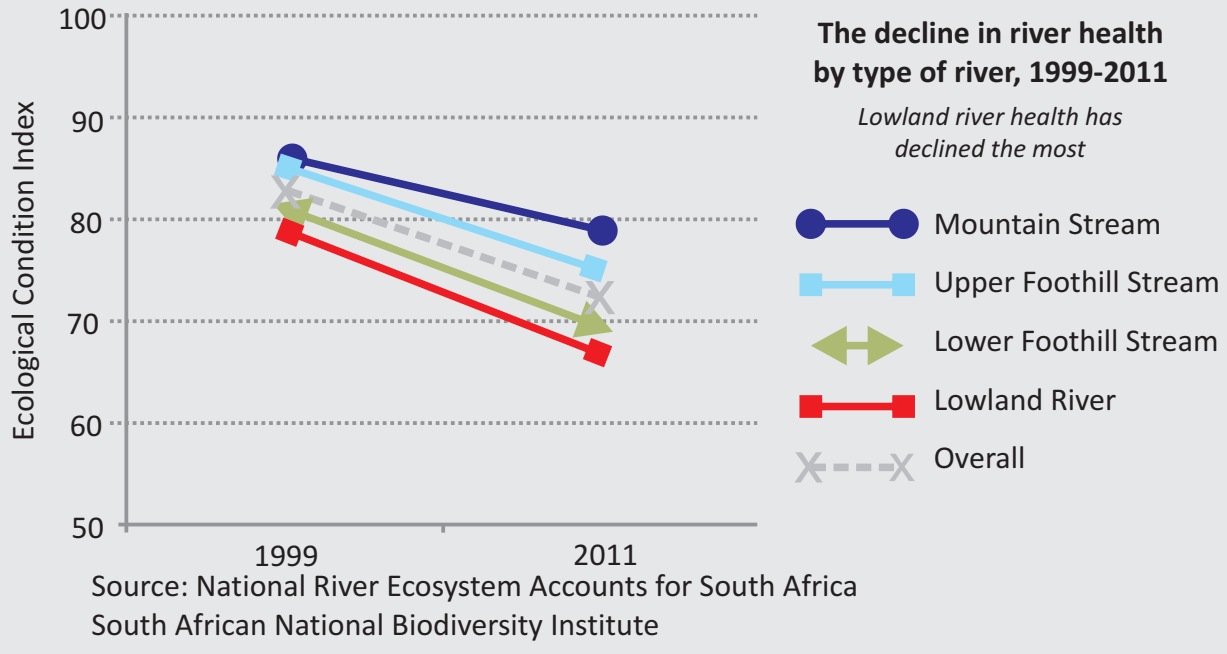


Figure 2: Status of River Health

Deterioration in water quality is an economic and developmental issue: -

- it **reduces the amount of water available** for use as more water must be retained in our river systems to assimilate to acceptable standards;
- it **increases the costs of doing business** as many enterprises are forced to treat water before being able to use it in their industrial processes and the cost of municipal water treatment increases;
- it **reduces economic productivity** as an increased number of work days are lost due to water-related illnesses and as poor water quality reduces productivity in certain sectors;
- it **threatens human health and livelihoods** where people are exposed to poor water quality for consumptive or domestic usage; and
- it **has environmental implications** where biological and chemical contamination of water can impact on important aquatic species and sustainable functioning of eco-systems.

The impacts and subsequent deterioration of water quality in our water resources is due to effluent discharges and run-off from urban and industrial areas, seepage and discharges from areas that support mining, and pollution from atmospheric fallout, waste disposal and diffuse components of agriculture and other industries.

Water quality and water quantity issues are inextricably linked. One of the elements of WQM is recognising that water resources have a certain assimilative capacity which can dilute pollution to acceptable levels. Increased abstraction of water from our water resources has two impacts on water quality:

- firstly, it decreases the amount of water available in the water resources, resulting in reduced assimilative capacity and increased concentrations of pollutants; and
- secondly, a portion of the abstracted water is usually returned to the water resources at the tail end of the use processes, usually in a worse quality than when abstracted.

Thus, the management of water quality in South Africa cannot be done in isolation from the **management of abstraction, storage and use.**

The prevalence and/or severity of impact of particular water quality issues vary markedly from river system to river system and between water management areas (Figure 3).

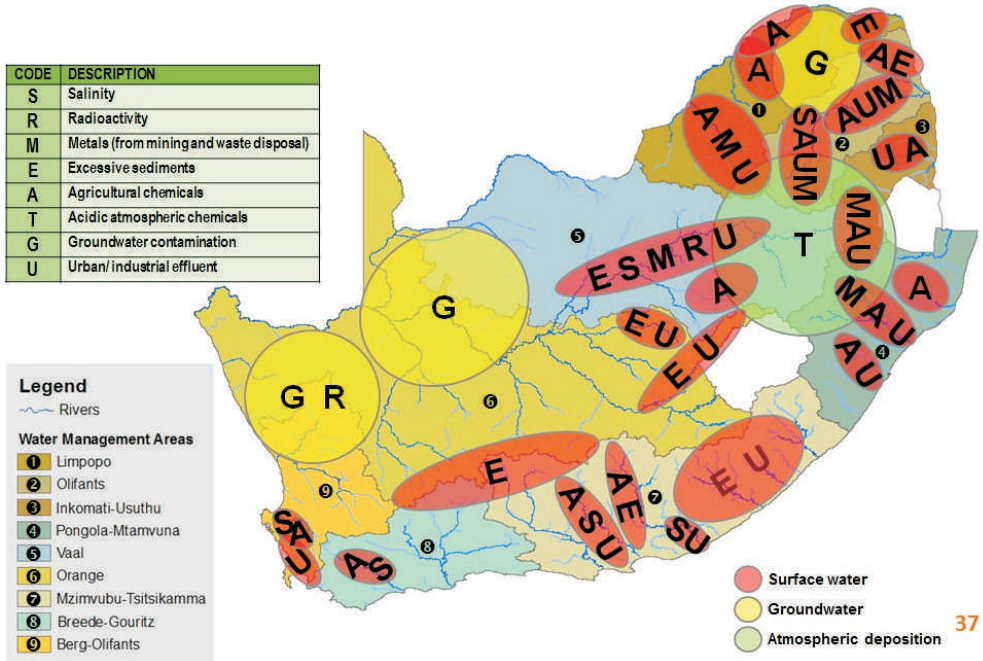


Figure 3: Different types of water quality problems across South Africa (DWS, 2016a)

The "Water Quality and WQM Challenges in South Africa" outlines 13 water issues as illustrated in the figure below.

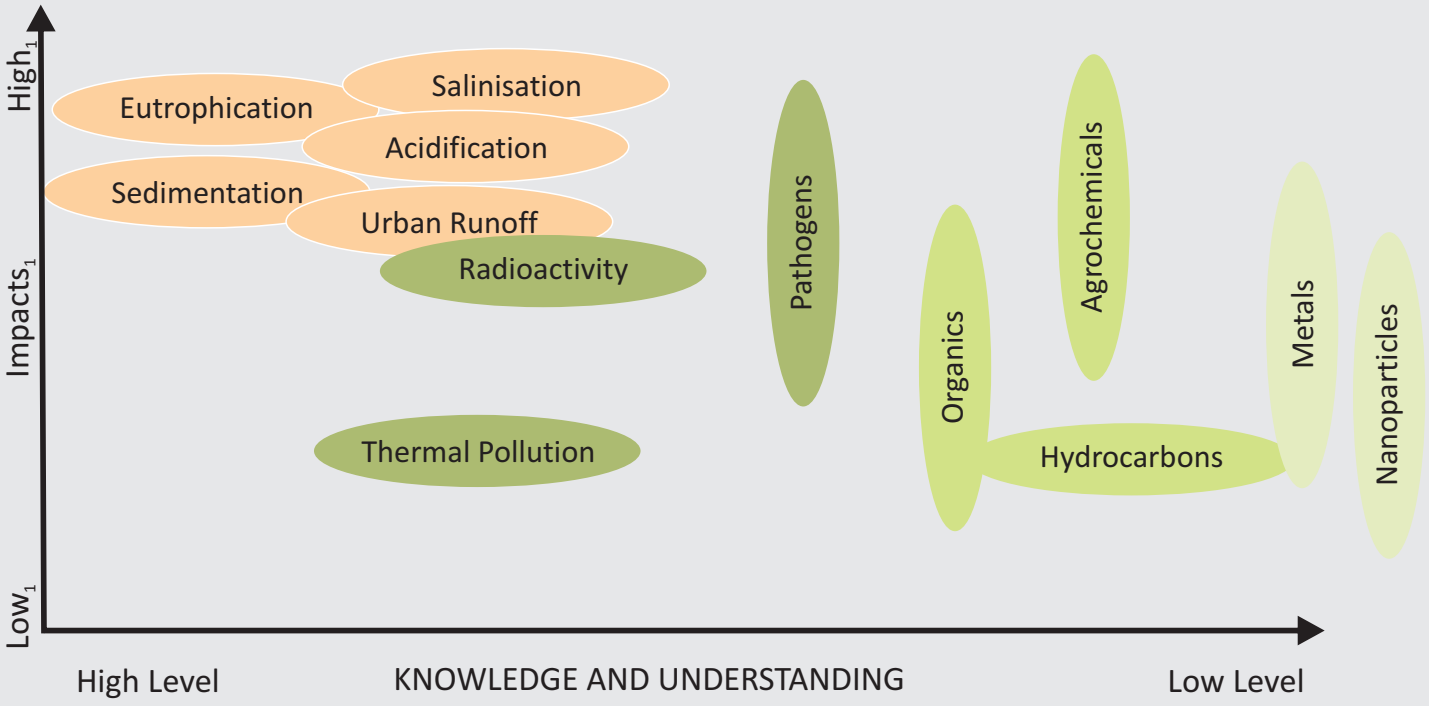


Figure 4: Water quality issues mapped against impacts and knowledge/understanding

Individually, these 13 issues differ in terms of the following characteristics:

- the geographical extent of their impact;
- the cumulative severity of their impacts on the fitness-for-use of the resource, on water users' health, on the local and regional economy, and on local and downstream ecosystems;
- the extent to which they have been/are being monitored; and
- levels of technical/scientific knowledge and understanding of the above impacts, their temporal patterns and geographic prevalence.

Based on the above analysis five issues stand out, around which there is considerable knowledge for action, and the impacts are recognised as being highly significant. Each of these five issues emanates from various sources (Table 1) and have a range of factors that exacerbate their impact. **These are significant issues in terms of societal and economic impact and require a strategic, adaptive and action oriented approach, as such, will be prioritised for action in this Strategy.**

Many of the other sources of pollution display localised effects (e.g. radio-activity and thermal pollution) or the level of knowledge, understanding or impact (e.g. nanoparticles, hydrocarbons) were too low to make informed decisions around their management, some of the remaining water quality issues, such as microbial (pathogen), agrochemical and metals pollution, are known to be potentially harmful, but due to inadequate monitoring and their geographical prevalence not being known, challenges exist in effectively managing these types of pollution. Monitoring to improve our understanding of these pollutants and their impacts will be strategically critical (DWS, 2016a).

Table 1: Prioritised water quality issue and source of pollution

 Eutrophication	 Salinisation	 Acidification/ Alkalinisation	 Urban Pollution	 Sedimentation
• Agricultural sources • Domestic wastewater • Urban stormwater runoff • Diffuse sources	• Natural sources • Agricultural sources • Industrial sources • Domestic wastewater • Diffuse sources	• Mining sources • Industrial sources and emissions	• Microbial pollution • Solid waste • Hydrocarbon sources • Sedimentation • Nutrient enrichment • Stormwater runoff	• Natural runoff • Agricultural sources • Urban runoff

As the economy develops, more pressure will be placed upon our water resources. In order to improve the management of these resources, it is crucial to have a full understanding of the root causes of these water quality challenges and the way they are currently managed.

The five primary water quality challenges outlined above all have multi-sectoral characteristics and speak to the overlapping or adjacent mandates of a range of government institutions. For that reason, the requisite future management responses to these challenges will need to go well beyond the statutory and regulatory mandate, measures, controls, instruments and processes of DWS alone. Without a change in how land and water resources are managed, worsening water quality will continue to decrease the socio-economic benefits from, and increase the costs associated with, the use of the country's water resources. The necessary tools and knowledge to affect significant change exists and is sufficient to turn the situation around, however, **the challenge lies in integrated, co-ordinated, adaptive and effective action from Government, civil society and the private sector working in collaboration.**

Key Challenges in Water Quality Management in South Africa

The management of water quality is complex and has several unique challenges, with varying levels of societal and economic impacts. **Water quality and water quantity issues are inextricably linked.** The management of water quality in South Africa therefore cannot be undertaken in isolation from the management of abstraction, storage and use.

At the catchment scale, both human and bio-physical systems interact to create significant degrees of complexity. Whilst any suite of interventions can result in different outcomes, there is an increasing requirement to ensure that we strengthen our coordination and adapt as conditions change. **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.**

Managing water quality therefore requires **integrating a wide range of knowledge** in a structured process that allows **co-learning, co-creation, and co-adaptation as our society and economy develops.**

The provision and implementation of clear policies, strategies and plans, which provide the necessary direction to the Department as well as the larger water sector, for the effective, equitable, sustainable and integrated management of South Africa's surface and ground water quality is paramount for the management of the resources. Currently, water quality is managed and controlled by the Department through the application of a suite of management instruments, as illustrated below:

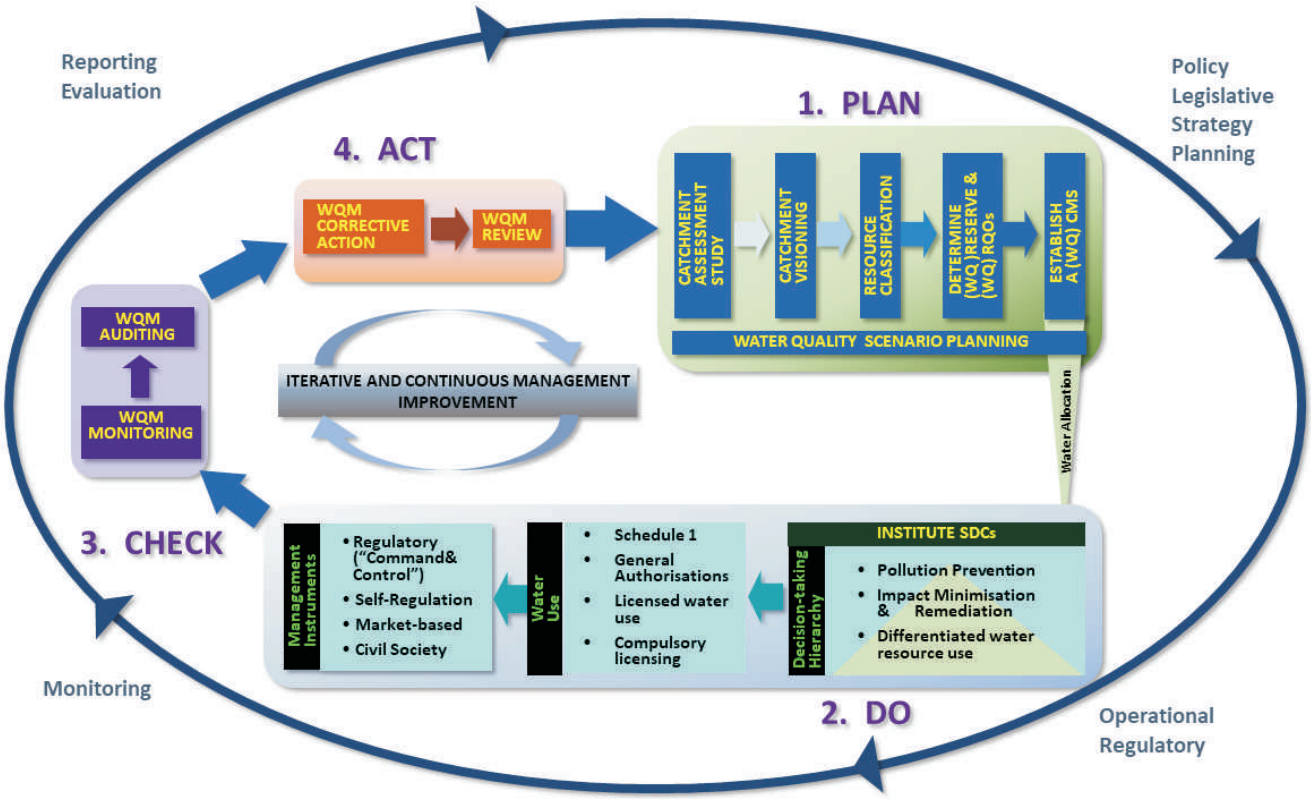


Figure 5: Prioritised water quality issue and source of pollution

Despite considerable attention being paid to WQM over the years by government, the current state of the country's water resources indicates that the management of water quality has not been as effective as required to ensure that water resources are sustainably used.

The key issue is due to a number of complex and inter-connected challenges such as balancing of socio-economic development needs, on-going uncertainties in governance, challenges with appropriate technical capacity and impacts of global shocks like climate change and disasters (Figure 6).

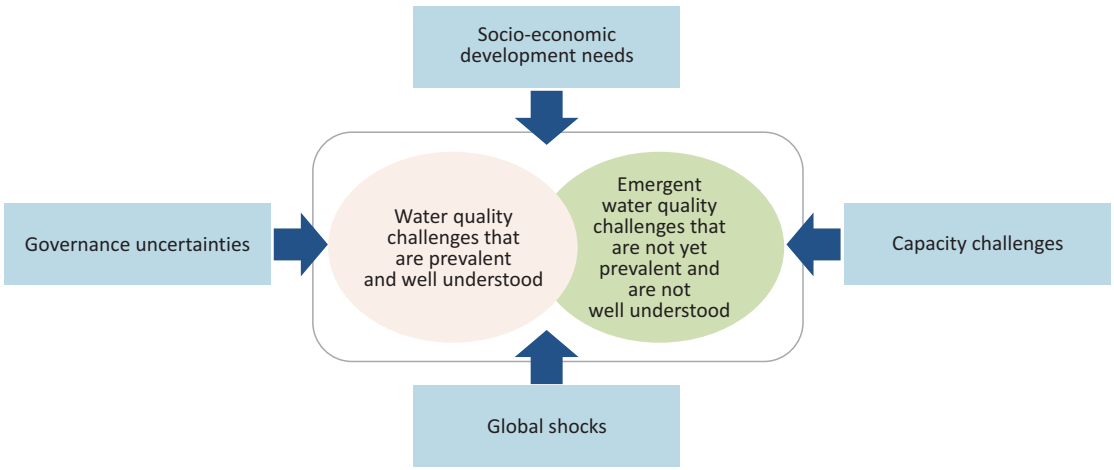


Figure 6: The complex nature of water quality management

Broadly, the challenges can be split into 4 categories: (i) Non-aligned policy, legislative and governance frameworks, (ii) Inappropriate practices, (iii) Insufficient finances and (iv) ineffective knowledge and information management.
These challenges are coupled with uncertainties that arise from the new technologies and resource development opportunities, which will continue to abound and influence management approaches for the future. For example, there are several emerging trends which already are, or can be expected to unfold in South Africa over the next few decades, which may lead to new or accelerated water quality impacts in many locations across the country, such as:

- changes in rainfall patterns due to climate change;
- increases in water demand and changes in the rate of biogeochemical and ecological processes that determine water quality due to higher temperatures;
- increases in unconventional oil and gas extraction in the form of hydraulic fracturing;
- increases in population growth and urbanisation resulting in increases in growth of inadequately serviced, densely populated settlements;
- increases in industrialisation; and
- increases in water demand due to the water-food-energy nexus.

Therefore, it is important that the IWQM Strategy is robust, holistic and progressive.

Shifting Gears

This strategy is aimed at short term responses that build towards a longer-term objective. This means strategizing into an uncertain future. Both in South Africa and globally it has been recognised that managing water quality requires **a systems-based approach, coupled with adaptive management techniques, and supported by strong partnerships between government, civil society and the private sector.**

To move forward, South Africa thus needs the following:

- a change in direction by benefiting from national and international experience and insights;
- an increase in speed by capitalising on the existing strengths in managing water quality; and
- an increase in momentum by seizing and employing new opportunities that present themselves.

The **systems-based, adaptive management approach** adopted in this strategy, such as water use authorisation and land use, is supported by a suite of tools ranging from conventional command and control tools, to innovative approaches. These must be coupled with a number of existing Government initiatives that support good WQM (such as existing policy and governance frameworks, regulatory and financing instruments, and Monitoring and Evaluation (M&E) which should be built upon in conjunction with seizing opportunities that will allow for signifcant improvements in the way water quality is managed. These opportunities include:

- Elevating water quality and WQM in policy review processes;
- Renewing the focus on cooperative governance and partnerships;
- Supporting integrated planning processes;
- Exploring innovative/green funding options; and
- Strengthening WQM capacity (both internally within Government structures and externally among other public and private sector entities).

Placing the IWQM Strategy in Context

Given the array of guiding policies, protocols, research literature and development agendas, the **IWQM Strategy does not, and cannot be seen to sit in isolation;** instead it both informs and is informed by various other international, regional, national, sectoral and local frameworks.

Critical to the success of this strategy is clear alignment not only with the strategic objectives of the IWQM policy, but also consistency and cohesion with the Country's broader water and development agendas. This strategy unlocks key actions and aligns with the Constitution, the strategic objectives of the IWQM Policy, local and international obligations, the global sustainable agenda, the current (and future) editions of the NWRS and consequently with the NDP.

The Constitutional Imperative

The Constitution places a duty on the national Government, in co-operation with the other spheres of government, to make sure that our limited water resources are used to improve the quality of life of all South Africans. The legal and policy framework for water resources protection begins with relevant provisions in the Constitution of South Africa (1996), and cascades down through national policy to legislation and regulations. The Constitution creates concurrent national and provincial competence in the realm of pollution control, allocates storm-water management, water supply and sanitation to municipalities, and allocates water resources management (which includes management of water quality) to national government.

Current practice suggests that water pollution control has not been dealt with in a sufficiently inclusive and integrated manner, and that improvements in this regard are required to obtain improved effectiveness and efficiency with limited state resources. To this end, the IWQM Policy calls for an inclusive and integrated approach to managing the country's water quality, where cooperative governance is essential.

The Sustainable Development Goals (SDGs)

The SDGs illuminate the link that a healthy water resource is required from both a security and development point of view, and South Africa, as a signatory to the SDGs, must therefore strive to meet these targets. Water quality has a direct bearing on our ability to meet the goals of ending poverty, ending hunger and achieving food security, ensuring healthy lives and promoting sustainable economic growth – particularly in relation to Goal 6: *Ensure availability and sustainable management of water and sanitation for all, water quality is particularly relevant.* **It is precisely for this reason, that the IWQM Policy, and subsequent IWQM Strategy, seeks to redress and elevate WQM to not only a water quality issue, but a development and socio-economic issue as well.**

The National Development Plan

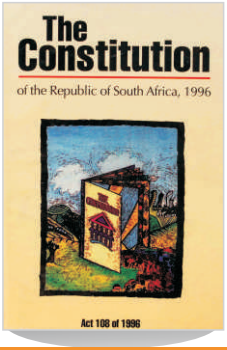
The National Development Plan (NDP), supported by the NWRS, is the key driver for the IWQM Strategy over the next 5 to 10 years. It is undertaken within the international context of the sustainable development agenda as well as Agenda 2063, which are both aimed at ensuring inclusive growth and sustainable development.

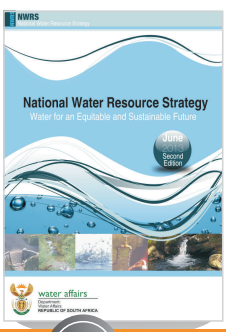
The NDP recognises the importance of shifts in the global economy, rural-to-urban economic migration, increased urbanisation, gender equality, climate change, and the continent's economic growth, to try and understand the resources and capabilities required to address these shifts. **The NDP adopts a cross-sectoral approach with a joint vision, whereby active citizenry, together with effective government and strong leadership are all key drivers of the country's development and support towards social cohesion.** This is an important centrality that takes South Africa away from a more programmatic approach towards one of recognising that integrated action is essential.

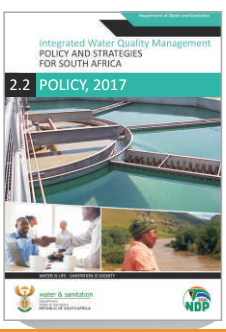
The National Water Resource Strategy

The NWRS, aims to *"ensure that national water resources are managed towards achieving South Africa's growth, development and socio-economic priorities in an equitable and sustainable manner over the next five to 10 years."* It responds to the priorities set by government in the NDP and National Water Act, 1998 (Act 36 of 1998) (NWA) imperatives that support sustainable development and incorporate aspects of the National Climate Change Response White Paper (the short-term response to climate change) and the Water for Growth and Development Framework (the medium to long-term responses to water resource management).

Whilst water quality issues are illuminated in the NWRS, it lacks the appropriate strategy to deal with both the water quality issues, as well as issues around WQM. **It is this very lack of approach to WQM, that initiated the development of the IWQM Policy and Strategy to support future revisions of the NWRS.**







From Policy Framework To Strategic Response

How does the 2017 IWQM Strategy fit with the 2017 IWQM Policy?

Vision:
Government, in partnership with private sector and civil society, secures water that is fit for use, for all, forever!

IWQM Policy Values, Goal and Principles

Relevant Legislation, Policies and Strategies related to WQM

Constitution of South Africa

PILLAR A Taking an inclusive approach to IWQM

PILLAR B Applying integrated, adaptive IWQM

PILLAR C Financing IWQM

PILLAR D Building the knowledge and capacity base for IWQM

GOAL 1 Aligned Policy, Strategy and Legislation

GOAL 2 Good Governance

GOAL 3 Efficient and Effective WQM

GOAL 4 Innovative Finance

GOAL 5 Effective Knowledge and Information Management

5 Strategic Goals

Strategic Issue 1 Harmonise Policies and Strategies to Enable Improved IWQM

Strategic Issue 3 Improve IWQM Institutional Structuring

Strategic Issue 5 Improve Coordination in Integrated Planning

Strategic Issue 8 Improve and Sustain Fiscal Support for IWQM

Strategic Issue 10 Strengthen Monitoring and Information Management

11 Strategic Issues

Strategic Issue 2 Legislative Review and Amendments to Enable IWQM

Strategic Issue 4 Formalise Governance Frameworks to Support Non-governmental

Strategic Issue 6 Strengthen IWQM Regulation, Compliance and Enforcement

Strategic Issue 9 Develop Pricing and Incentive Systems that Support IWQM

Strategic Issue 11 Build water quality and WQM Capacity through Education, Training and Communication

21 Strategic Objectives

Strategic Issue 7 Application of Systems-based Adaptive Management Approaches

62 Strategic Actions

Figure 7: From Policy to Strategy

The Policy Framework

IWQM policy brings together the best elements of existing WQM policy. These operational policies have been developed over time and include the 1991 Water Quality Management Polices and Strategies, the 2006 Resource Directed Management of Water Quality, the draft policy on Mine-Water Management Policy, and the principles of the NWRS. These instruments remain to provide insightful guidance on day-to-day operational approaches.

Managing water quality requires the compilation and integration of this wide range of knowledge in a structured process, and while this is a government-wide task under the leadership of the DWS, the private sector and civil society must play a key role. In order to be effective, the management of water quality also needs to be forward thinking, to address future trends and potential issues.

The Vision and Mission

Aligned to the vision of the NWRS, the vision for IWQM in South Africa is:

"Government, in partnership with private sector and civil society, secures water that is fit for use, for all, forever!"

Did you know?

Water is critical for sustainable development, including environmental integrity and the alleviation of poverty and hunger, and is indispensable for human health and well-being." - United Nations

This IWQM Vision is brought to life through 5 core mission statements of intent, namely:

- To support a consistent inter-departmental approach to how water quality is managed in our country.
- To foster and support cooperative and integrated approaches to IWQM across sectors, including the private sector and civil society.
- To adopt an adaptive management approach in which co-creation and co-learning by key players is entrenched and supported by the exchange of data and information.
- To drive programmes to build capacity for longer-term improvement in water quality.
- To undertake initiatives to progressively realise improvements in water quality in key systems with the intention of redressing priority water quality issues and showing that, as a country, we can halt the deterioration of our water resources.

About the five Strategic Goals

Goal 1: Aligned Policy, Legislation and Strategy

In order to support the drive towards a more inclusive approach to IWQM, there is a need to find ways to improve the alignment between policy and legislative instruments, as well as in strategic approaches. This will take time and considerable effort, but will prove critical.

Goal 2: Good Governance

An inclusive approach will require that means are found to improve functional roles and responsibilities. This will require innovative approaches to the way approaches both within Government and externally with non-Governmental actors is structured.

Goal 3: Efficient and Effective WQM Practice

The need for more adaptive responses to WQM will require increasingly efficient and effective practices within catchments. This will mean critical review of these processes and practices at various levels within the WQM system.

Goal 4: Innovative finance

To date there has been too much dependence upon funds from the national fiscus to support WQM. Noting that financial resources are limited, there will be a need to be more innovative in generating the funds required to support more effective IWQM.

Goal 5: Effective Knowledge and Information Management

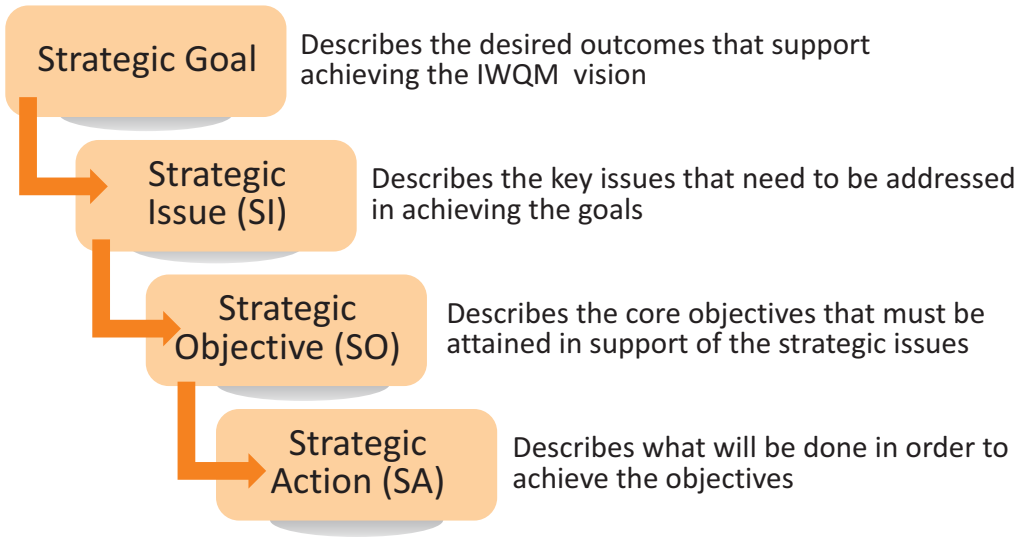
Strengthening the knowledge base through active training and capacity building. A renewed and strengthened drive to improve than monitoring networks and to strengthen and consolidate information management systems is needed. The adaptive management approach is based upon the support of these networks and systems.

Did you know?

The 5 national key water quality challenges are

- *Eutrophication*
- *Salinisation*
- *Acid mine drainage & acidification*
- *Sedimentation*
- *Urban runoff pollution*

IWQM Strategic Issues, Objectives And Actions



Strategic planning requires that we develop a broad coherent medium-term set of priorities, objectives, strategic actions (typically for five to ten years), that contribute towards achieving the vision under varying conditions and available capacity. To be implemented, the strategy must be translated into specific measurable strategic objectives and actions that are achievable with the available resources in a given time frame.

When considering the key role of DWS, this does also imply and include the important role of water management institutions

Strategic Goal 1: Aligned Policy, Legislation and Strategy

Implementing effective IWQM requires a coherent cross-sectoral approach, which aims to increase and ensure the efficient use of limited resources (human, financial). We also need to make sure that IWQM is realized as a government-wide challenge and that as a collective, government needs to ensure water resource use is sustainable. The policies, legislation and strategies across sectors and departments need to support this intent.

Table 2: Strategic Action for Goal 1

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 1: Harmonization of Policies and Strategies to enable improved WQM	
SO1a: Policies and Strategies impacting upon IWQM are harmonized	**SA1:** DWS to ensure that policy and strategy development and refinement within DWS addresses WQM **SA2:** Sector departments to harmonise policies and strategies to support IWQM **SA3:** DWS to finalise and implement non-point source pollution strategy
STRATEGIC ISSUE 2: Legislative review and amendments to enable IWQM	
SO2a: IWQM is effectively supported by the National Water Act (NWA) and Water Services Act (WSA)	**SA4:** DWS to amend NWA and WSA to provide effective support to IWQM **SA5:** DWS to develop guidelines and protocols on the effective use of instruments
SO2b: IWQM is effectively supported by other legislation	**SA6:** National Treasury and DWS to promulgate a Money Bill for the Waste Discharge Levy **SA7:** Government to identify and amend relevant legislation to strengthen IWQM

Strategic Goal 2: Good Governance

An inter-departmental approach which supports appropriate, clearly defined institutional arrangements, which includes resolving operational and functional challenges, clarifies structural and organisational issues, improves the internal systems and procedures for IWQM in relevant departments and organs of state, establishes effective inter-departmental co-ordinating structures and ensures that regulatory bodies are effectively mandated and resourced to perform their IWQM functions, is required.

Active engagement and partnerships with the private sector and civil society can substantially contribute to the management of water quality. Engaging these players brings greater knowledge to the table, and engages a wider range of individuals and organisations that can support actions by government in IWQM.

Table 3: Strategic Action for Goal 2

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 3: Improved WQM related governance	
SO3a: IWQM is supported by effective DWS departmental arrangements	**SA8:** DWS to reconfigure the departmental WQM function as needed to ensure efficiency and effectiveness **SA9:** DWS to identify a strategic water quality management champion that will drive and monitor the implementation of the IWQM Policy and Strategy
SO3b: Inter-sector departmental structures established to support IWQM	**SA10:** Establish inter-governmental WQM structures at trans-boundary basin, national and provincial levels to ensure coordination and joint action supported by regular reporting **SA11:** Government departments to develop sector WQM plans and report annually on progress
STRATEGIC ISSUE 4: Formalise governance frameworks to support non-governmental engagements	
SO4a: Partnerships/stewardships established and maintained	**SA12:** Government to develop a partnership framework that is fair and equitable **SA13:** Government to develop and foster strategic sector partnerships
SO4b: Governance framework for active citizenry formalized	**SA14:** DWS with DEA and CMAs to develop an engagement framework that enables more active participation of civil society at transboundary, national and catchment levels **SA15:** DWS, DEA and CMAs to support and drive functional platforms for the engagement of civil society nationally and within catchments

Strategic Goal 3: Efficient and Effective WQM

There is a need to strengthen our abilities with regards to the day-to-day processes and procedures that underpin WQM. Pro-active and integrated planning to timeously address future water resource challenges is essential to maintaining water security. The development and roll-out of integrated plans that address the specific water quality issues in catchments will inform appropriate responses from a range of government, private sector and civil society actors.

Strengthening regulation and enforcement is just as important in ensuring that we protect water quality with the most effective use of limited state resources. This will entail strengthening the water use authorisation processes as well as improving the approach to compliance monitoring and enforcement.

While there is a need to develop a more rigorous and integrated command and control approach to the enforcement of authorisations, there is also a need to develop partnerships across sectors and between users to develop improved approaches that incentivise lawful and sustainable water use, self-regulation and citizen based approaches.

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 5: Improved coordination in integrated planning	
SO5a: Integrated sectoral planning approach is adopted at transboundary and national level	**SA16:** DWS to lead the development of an IWQM plan for national priority catchments, ensuring consideration of transboundary water quality concerns **SA17:** DWS, with NT, SALGA and COGTA to develop a strategic action plan for the financing, rehabilitation and upgrade of prioritized WWTWs **SA18:** DWS, with DMR and DEA, to develop a strategic action plan for the implementation of the mine-water management **policy** **SA19:** DWS/DAFF/DMR/DEA/DRDLR/COGTA to develop strategic action plans to reduce non-point source pollution **SA20:** DWS, DEA, SALGA and COGTA to develop a protocol for the management of industrial discharge within the municipal environment
SO5b: Integrated sectoral planning approach adopted in catchment/regional plans	**SA 21:** CMAs to develop an IWQM plan for each water management area as part of the CMS **SA22:** DWS, DEA and DMR to integrate IWQM and water resource planning with Regional Mining Plans in priority areas **SA23:** DWS and COGTA to ensure that WSDPs, IDPs and SDFs reflect WQM priorities and management responses
STRATEGIC ISSUE 6: Strengthen IWQM Regulation, Compliance and Enforcement	
SO6a: Licencing processes streamlined	**SA24:** DWS to address the backlog of WUL applications urgently and to meet stipulated timeframes for new licence applications. **SA25:** DWS to categorise risk-based protocols for determining water use authorization **SA26:** DWS/CMAs to develop protocols for CMA engagement in IWUL applications and approval processes **SA27:** DWS, DEA DMR publish its own the licencing regulation and adhere to the regulations. Need to cooperatively manage things with DAFF **SA28:** DWS, DEA, DAFF and DMR to develop information management systems to support the integrated licensing approach
SO6b: Targeted/strengthened compliance monitoring and enforcement of key polluting sectors	**SA29:** DWS, DEA, COGTA, Department of Human Settlements, DRDLR to develop improved regulatory approaches to manage water quality pollution from land-based and in-stream activities **SA30:** DWS, DEA, CMAs to develop a targeted approach for the enforcement of regulation **SA31:** DWS, DEA to assess gaps in regulatory frameworks and instruments and develop revised approaches and instruments as necessary **SA32:** DWS, DEA, CMAs to develop approaches to strengthen operational CME and the EMI network

Table 4: Strategic Action for Goal 3

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 7: Application of Systems-based Adaptive Management Approaches	
SO7a: Adaptive systems-based management is applied at catchment level	**SA33:** CMAs to develop localised programmatic monitoring and reporting of actions and outcomes **SA34:** CMAs to lead process with other relevant government departments and agencies, and stakeholders, to review, identify and address priority water quality challenges at regular intervals **SA35:** DWS and CMAs to develop protocols for systems-based adaptive management for IWQM.

Strategic Goal 4: Innovative Financing

Improving our resource water quality to achieve sustainable, inclusive economic growth requires reliable, sufficient and sustained financing. Currently the government budget allocation is insufficient to address all water quality issues that require redress. Alternative sources of funding will need to support turnaround in the way that water quality is managed.

The development of a complete water quality management investment framework will be an important step in understanding the financial injections that are required; notably funding of WQM initiatives should not be limited to DWS, but must include other relevant government departments and public entities.

Appropriate pricing and economic incentives have been shown, globally, to result in behavioural change while also raising revenue for water management interventions. **Government is highly resource constrained, and innovative financing and incentive mechanisms can increase the financial resources available for integrated WQM** – directly contributing to the efforts and actions under Strategic Issue 8.

Table 5: Strategic Action for Goal 4

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 8: Fiscal support for integrated WQM	
SO8a: WQM interventions are financially supported by the fiscus	**SA37:** DWS/WRC to support research into the socio-economic-environmental and management costs of poor WQ **SA38:** Government to develop an investment framework including innovative mechanisms to mobilise funding for sustained support to IWQM **SA39:** DWS, with NT, COGTA, SALGA, to review municipal conditional grants **SA40:** DWS to develop and implement a protocol for extending the financial provisioning clause to all industries that are deemed "high-risk" polluters.
Strategic Issue 9: Develop Pricing and Incentive Mechanisms that Support IWQM	
SO9a: The Waste Discharge Charge System is implemented	**SA41:** DWS, with CMAs, to implement the WDCS in priority catchments **SA42:** DWS, with CMAs, to develop an action plan to support the phased implementation of the WDCS across the country **SA43:** DWS/DEA/WRC to explore innovative financing mechanisms for incentivising good IWQM practice
SO9b: Mechanisms for incentivising good practice developed	**SA44:** DWS and NT to determine financial incentives for water-reuse (AMD, other) **SA45:** Government to develop the legal and institutional mechanisms for introducing administrative penalties for environmental non-compliance including water pollution.

Strategic Goal 5: Effective Knowledge and Information Management

Good water quality monitoring enables effective water quality planning, regulation and communication.

Updating of the monitoring network and monitoring services enables effective water quality planning, improved enforcement and compliance of laws and regulation *(Strategic Issue 6)* and supports a systems-based adaptive management approach *(Strategic Issue 7).*

Improvement in our ability to monitor and manage water quality is not only about monitoring for water quality variables alone. Improvement in our monitoring of rainfall and hydrological flow id equally important to IWQM.

Strengthening the capacity of DWS and its sector partners towards improving and aligning internal structures and systems will support effective and efficient management of water quality. This requires the urgent development of a toolkit for the "business of WQM" which covers issues such as translating Resource Quality Objectives in to licence conditions and understanding how to adaptively manage water quality.

Holding national, provincial and local government departments to account for their roles in managing water quality is important. Establishing institutional structures to enable interaction and integration between levels of government, as well as the provision of support to develop a governmental reporting framework will be critical.

The building and maintaining of WQM capacity in DWS and its sector partners, including civil society, through education, training, research and communication is crucial in supporting the inclusive approach towards ensuring effective WQM.

Table 6: Strategic Action for Goal 5

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 10: Strengthen Monitoring and Information Management	
SO10a: An integrated and functioning water quality monitoring network **SO10b:** Information systems that are current and accessible to support adaptive WQM	**SA46:** DWS/CMAs to strengthen national and catchment water quality monitoring networks through spatial expansion and identification of priority constituents for catchment-specific monitoring **SA47:** DWS to support the network expansion with an initiative to ensure that accessible accredited laboratories are available to ensure efficient and effective analyses
	SA48: DWS, with the WRC and CMAs, to lead the development of a programme to create and support citizen-based monitoring programmes **SA49:** Government to ensure the harmonisation of data and information systems pertaining to resource water quality **SA50:** Government to ensure the harmonisation of data and information systems pertaining to source water quality **SA51:** Government to develop systems to enable data and information access by stakeholders/ public

Table 7: Strategic Action for Goal 5

STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 11: Build water quality and WQM Capacity through Education, Training and Communication	
SO11a: Sustained capacity for Government /CMA/sector to effectively manage and support WQM through improved education and training	**SA53:** DWS/WRC to develop and implement a capacity building programme for officials in DWS, CMA and other sector departments in systems-based, adaptive IWQM **SA54:** DWS/CMAs to expand capacity-building initiatives to civil society and private sector **SA55:** DWS to develop regulations to ensure the professionalization of key water services functions **SA56:** DWS/private sector to provide bursaries/learnerships pertaining to WQM at tertiary institutions
SO11b: WQM decisions are underpinned by best practice, research and innovation	**SA57:** DWS, with the WRC, to investigate the options provided by recent innovative developments to improve water quality **SA 58:** WRC to lead the sector in innovation, research and development for IWQM
SO11c: A well informed and actively engaged South Africa	**SA59:** DWS to report annually on the state of water quality in the country **SA60:** DWS/WRC to develop online tools for easy access to water quality and WQM related information **SA61:** DWS/DEA/DAFF/DMR/CMAs to develop and maintain multi-sector stakeholder platforms for sharing information **SA62:** DWS, with other Departments and sector institutions, to lead and roll-out awareness creation campaigns

It is critical to focus our efforts to ensure that we make an impact in improving water resource quality, whilst creating the platform for future improvements in approach to IWQM.

Towards Implementation

The progressive development of the WQM function over the course of a century has taken place in parallel to the socio-economic development of South Africa. With this, comes a growing pressure upon the Country's water resources and an array of challenges associated with declining quantity and quality of supply. In the current context of increasing complexity, it is realised that the approaches are predominantly regulatory nature, whilst still important, can no longer be the backbone of an approach to managing water quality. This will require a more integrated and adaptive approach driven by near real-time decision making, supported by engaged stakeholders.

Clearly the current strategies are either not being implemented (due to limited resources) or are not effectively dealing with the increasing water quality challenges arising from, amongst other things, socio-economic growth, historical legacies, and aging infrastructure.

The development of an IWQM Policy and Strategy is a response to these challenges and complexities. **They have been structured around a fundamental shift in approach that enables sector-wide engagement through more active partnerships with Government Departments and institutions, as well as with the private sector and civil society.**

It is not possible to address the many water quality challenges simultaneously; human and financial resources as well as information and systems constraints will inhibit this. Therefore, **the focus of this strategy is on delivering change for prioritised challenges.** The bulk of the resources of the state, supplemented by the support of the private sector and civil society will need to be focused on key priorities for water quality management. This does not mean that work on other areas pertinent to water quality will not continue, but it serves to guide the allocation of human and financial resources for the short to medium term of the strategy, with the objective of building capacity towards longer term improvements.

The process of prioritisation involved inputs from a wide range of stakeholders, National and Provincial DWS, other government departments, targeted provincial stakeholders. Ultimately, the prioritisation was a balance of objectives with the broader national objectives.

From Policy to Strategy to Implementation

The development of an implementation plan, to support this strategy provides the opportunity to articulate in a structured way, how this strategy can be pragmatically implemented (see 5). This will be supported by a monitoring and evaluation framework that will enable the DWS to monitor and report on progress; this will be carried out in parallel with the DWS undertaking a review of the existing organisational structure (including roles and responsibilities) which will assist in enabling implementation.

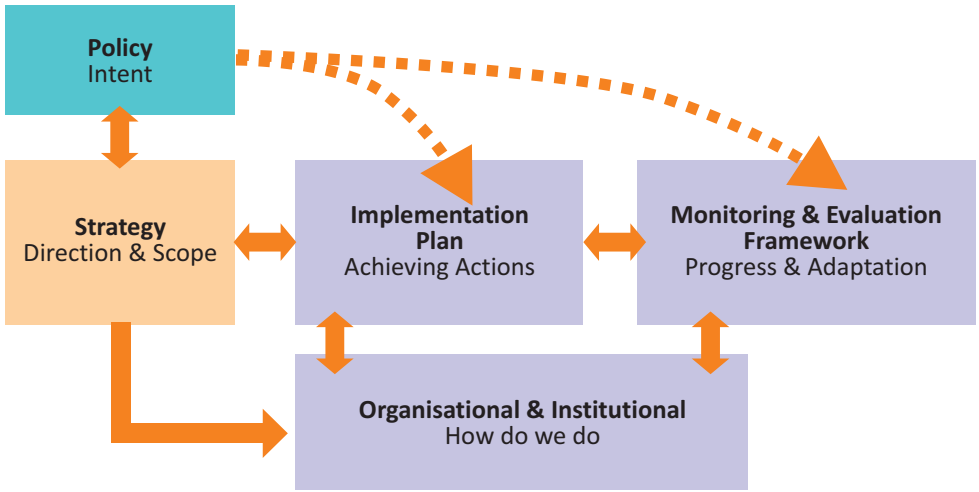


Figure 8: From policy to strategy to implementation

Core considerations for the formulation of the implementation plan include:

- **Focus on short to medium term timeframes, while building a platform for future** strategies in line with the policy and visions for water quality management
- **Prioritising critical concerns,** while ensuring that other issues are addressed through on-going management or monitoring for future prioritisation and action
- **Relevance at national, catchment and local scales**, while ensuring horizontal alignment across sectors and institutions at each scale
- **Provide the strategic intent and framework for actions** to be described in the implementation plans
- **Enable adaptive response** to changing circumstances and achievements based on effective on-going monitoring and evaluation.

An Implementation Approach

The IWQM Strategy articulates the need to show success and so it is important to be able to reflect that our efforts mus improve the status of water quality in identified catchments and not be theoretical or academic exercises. Therefore, in the implementation of the strategy key systemic and institutional issues will need to be addressed, whilst reflecting the need to be rooted in our catchments and show positive impact. In light of this, the focus on the business of WQM in this first period of implementation will be towards:

- **Strengthening the water quality management function by strengthening DWS leadership and identifying WQM Champions**
- **Mobilising the sector by establishing the "Community of Practice" across the sector to initiate and maintain sector wide engagement.**
- **Improving our information management by strengthening the data and information systems**
- **Fast-track improvements in water quality by initiating processes to address core issues of eutrophication, salinization, urban pollution, sedimentation, and acidity/alkalinisation. The development of IWQM plans will be a priority in supporting this drive.**

Ultimately, the Strategy reflects the urgency to change the approach to WQM to ensure that the trajectory of declining water resource quality is checked, that we start to create the right capacity to strengthen our management of water resources whilst working towards a longer-term, cross-sectoral vision of on-going IWQM that is supported and enabled through adaptive management approaches.

Appendix A: Summary Table of Strategic Issues, Objectives and Actions

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 1: Harmonization of Policies and Strategies to enable improved WQM	**SO1a:** Policies and Strategies impacting upon IWQM are harmonized	**SA1:** DWS to ensure that policy and strategy development and refinement within DWS addresses WQM **SA2:** Sector departments to harmonise policies and strategies to support IWQM **SA3:** DWS to finalise and implement non-point source pollution strategy
STRATEGIC ISSUE 2: Legislative review and amendments to enable IWQM	**SO2a:** IWQM is effectively supported by the NWA/WSA	**SA4:** DWS to amend NWA and WSA to provide effective support to IWQM **SA5:** DWS to develop guidelines and protocols on the effective use of instruments
	SO2b: IWQM is effectively supported by other legislation	**SA6:** National Treasury and DWS to promulgate a Money Bill for the Waste Discharge Levy **SA7:** Government to identify and amend relevant legislation to strengthen IWQM, including efficient by-laws for WQM
STRATEGIC ISSUE 3: Improved WQM related governance	**SO3a:** IWQM is supported by effective DWS departmental arrangements	**SA8:** DWS to reconfigure the departmental WQM function as needed to ensure efficiency and effectiveness **SA9:** DWS to identify a strategic water quality management champion that will drive and monitor the implementation of the IWQM Policy and Strategy
	SO3b: Inter-sector departmental structures established to support integrated WQM	**SA10:** Establish inter-governmental WQM structures at trans-boundary basin, national and provincial levels to ensure coordination and joint action supported by regular reporting **SA11:** Government departments to develop sector WQM plans and report annually on progress
STRATEGIC ISSUE 4: Formalise governance frameworks to support non-governmental engagements	**SO4a:** Partnerships/stewardships established and maintained	**SA12:** Government to develop a partnership framework that is fair and equitable **SA13:** Government to develop and foster strategic sector partnerships

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 4: Formalise governance frameworks to support non-governmental engagements	**SO4b:** Governance framework for active citizenry formalized	**SA14:** DWS with DEA and CMAs to develop an engagement framework that enables more active participation of civil society at transboundary, national and catchment levels
		SA15: DWS, DEA and CMAs to support and drive functional platforms for the engagement of civil society nationally and within catchments
STRATEGIC ISSUE 5: Improved coordination in integrated planning	**SO5a:** Integrated sectoral planning approach is adopted at transboundary and national level	**SA16:** DWS to lead the development of an IWQM plan for national priority catchments, ensuring consideration of transboundary water quality concerns
		SA17: DWS, with NT, SALGA and COGTA to develop a strategic action plan for the financing, rehabilitation and upgrade of prioritized WWTWs
		SA18: DWS, with DMR and DEA, to develop a strategic action plan for the implementation of the mine-water management policy
		SA19: DWS/DAFF/DMR/DEA/DRDLR/COGTA to develop strategic action plans to reduce non-point source pollution
		SA20: DWS, DEA, SALGA and COGTA to develop a protocol for the management of industrial discharge within the municipal environment
	SO5b: Integrated sectoral planning approach adopted in catchment/regional plans	**SA21:** CMAs to develop an IWQM plan for each water management area as part of the CMS
		SA22: DWS, DEA and DMR to integrate IWQM and water resource planning with Regional Mining Plans in priority areas
		SA23: DWS and COGTA to ensure that WSDPs, IDPs and SDFs reflect WQM priorities and management responses

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 6: Strengthen IWQM Regulation, Compliance and Enforcement	**SO6a:** Licencing processes streamlined	**SA24:** DWS to address the backlog of WUL applications urgently and to meet stipulated timeframes for new licence applications.
		SA25: DWS to categorise risk-based protocols for determining water use authorization
		SA26: DWS/CMAs to develop protocols for CMA engagement in IWUL applications and approval processes
		SA27: DWS, DEA DMR publish its own the licencing regulation and adhere to the regulations. Need to cooperatively manage things with DAFF
		SA28: DWS, DEA, DAFF and DMR to develop information management systems to support the integrated licensing approach
	SO6b: Targeted/strengthened compliance monitoring and enforcement of key polluting sectors	**SA29:** DWS, DEA, COGTA, Department of Human Settlements, DRDLR to develop improved regulatory approaches to manage water quality pollution from land-based and in-stream activities
		SA30: DWS, DEA, CMAs to develop a targeted approach for the enforcement of regulation
		SA31: DWS, DEA to assess gaps in regulatory frameworks and instruments and develop revised approaches and instruments as necessary
		SA32: DWS, DEA, CMAs to develop approaches to strengthen operational CME and the EMI network
STRATEGIC ISSUE 7: Application of Systems-based Adaptive Management Approaches	**SO7a:** Adaptive systems-based management is applied at catchment level	**SA33:** CMAs to develop localised programmatic monitoring and reporting of actions and outcomes
		SA34: CMAs to lead process with other relevant government departments and agencies, and stakeholders, to review, identify and address priority water quality challenges at regular intervals
		SA35: DWS and CMAs to develop protocols for systems-based adaptive management for IWQM.
		SA36: DWS to determine RQOs for SA

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 8: Fiscal support for integrated WQM	**SO8a:** WQM interventions are financially supported by the fiscus	**SA37:** DWS/WRC to support research into the socio-economic-environmental and management costs of poor WQ
		SA38: Government to develop an investment framework including innovative mechanisms to mobilise funding for sustained support to IWQM
		SA39: DWS, with NT, COGTA, SALGA, to review municipal conditional grants
		SA40: DWS to develop and implement a protocol for extending the financial provisioning clause to all industries that are deemed "high-risk" polluters.
STRATEGIC ISSUE 9: Develop pricing and incentives that support integrated WQM	**SO9a:** The Waste Discharge Charge System is implemented	**SA41:** DWS, with CMAs, to implement the WDCS in priority catchments
		SA42: DWS, with CMAs, to develop an action plan to support the phased implementation of the WDCS across the country
	SO9b: Mechanisms for incentivising good practice developed	**SA43:** DWS/DEA/WRC to explore innovative financing mechanisms for incentivising good IWQM practice
		SA44: DWS and NT to determine financial incentives for water-reuse (AMD, other)
		SA45: Government to develop the legal and institutional mechanisms for introducing administrative penalties for environmental non-compliance including water pollution.
STRATEGIC ISSUE 10: Strengthen Monitoring and Information Management	**SO10a:** An integrated and functioning water quality monitoring network	**SA46:** DWS/CMAs to strengthen national and catchment water quality monitoring networks through spatial expansion and identification of priority constituents for catchment-specific monitoring
		SA47: DWS to support the network expansion with an initiative to ensure that accessible accredited laboratories are available to ensure efficient and effective analyses

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 10: Strengthen Monitoring and Information Management	**SO10b:** Information systems that are current and accessible to support adaptive WQM	**SA48:** DWS, with the WRC and CMAs, to lead the development of a programme to create and support citizen-based monitoring programmes
		SA49: Government to ensure the harmonisation of data and information systems pertaining to resource water quality
		SA50: Government to ensure the harmonisation of data and information systems pertaining to source water quality
		SA51: Government to develop systems to enable data and information access by stakeholders/ public
	SO10c: Routine assessments inform adaptive WQM	**SA52:** DWS/DEA/CMAs to develop protocols and systems to ensure M&E and new information inform adaptive management decisions for IWQM
STRATEGIC ISSUE 11: Build water quality and WQM Capacity through Education, Training and Communication	**SO11a:** Sustained capacity for Government /CMA/sector to effectively manage and support WQM through improved education and training	**SA53:** DWS/WRC to develop and implement a capacity building programme for officials in DWS, CMA and other sector departments in systems-based, adaptive IWQM
		SA54: DWS/CMAs to expand capacity-building initiatives to civil society and private sector
		SA55: DWS to develop regulations to ensure the professionalization of key water services functions
		SA56: DWS/private sector to provide bursaries/learnerships pertaining to WQM at tertiary institutions

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 11: Build water quality and WQM Capacity through Education, Training and Communication	**SO11b:** WQM decisions are underpinned by best practice, research and innovation	**SA57:** DWS, with the WRC, to investigate the options provided by recent innovative developments to improve water quality **SA58:** WRC to lead the sector in innovation, research and development for IWQM **SA59:** DWS to report annually on the state of water quality in the country
	SO11c: A well informed and actively engaged South Africa	**SA60:** DWS/WRC to develop online tools for easy access to water quality and WQM related information **SA61:** DWS/DEA/DAFF/DMR/CMAs to develop and maintain multi-sector stakeholder platforms for sharing information **SA62:** DWS, with other Departments and sector institutions, to lead and roll-out awareness creation campaigns

Appendix B: Government Interfaces with IWQM

Government Departments	National / Provincial / Local	Concern	Interfaces	Strategic Objectives
Water Quality Impacting Sectors				
Agriculture, Fisheries and Forestry	N / P	• Water quality for irrigated agriculture • Impacts upon water and agricultural resources	• Policy • Planning • Regulation • Adaptive management • Monitoring and information • Capacity building	• SO1a • SO5a-b • SO6a-b • SO7a • SO10a-c • SO11a-c
Cooperative Governance and Traditional Affairs	N / P	• Support inter-governmental cooperation • Oversight of municipal services	• Policy • Planning • Regulation • Monitoring and information • Building capacity	• SO1a • SO5a-b • SO6a-b • SO10a-c • SO11a-c
Energy	N	• Water quality of water used in power generation i.e. largely for cooling purposes	• Planning • Regulation	• SO5a-bb • SO6a-b
Environmental Affairs	N / P	• Environmental impact assessments • Protection of specific sites of importance • Compliance with SEMA legislation	• Policy • Planning • Regulation	• SO1a • SO5a • SO6a-b

Government Departments	National / Provincial / Local	Concern	Interfaces	Strategic Objectives
Health	N / P	• Water quality of domestic supplies (urban and rural supplies)	• Planning • Regulation • Monitoring and information • Build capacity	• SO6a-b • SO10a-c • SO11a-c
Human Settlements	N / P / L	• Water quality of domestic supplies • Sanitation	• Planning • Regulation	• SO5a • SO6a-b
Mineral Resources	N / P	• Planning mining developments • Impact of mining developments	• Planning • Regulation • Adaptive management • Monitoring and information	• SO5a-b • SO6a-b • SO7a • SO10a-c
Municipalities	L	• Bylaws • Water quality from industrial discharges • Stormwater runoff • Municipal discharges from WWTW	• Policy • Planning • Regulation • Adaptive management • Monitoring and information	• SO1a • SO5a-b • SO6a-b • SO7a • SO10a-c
Public Enterprises	N	• Oversight of Public Entities adherence to environmental policy and regulation	• Regulation • Monitoring and information	• SO6a-b • SO10a-c
Rural Development and Land Reform	N	• Water quality for irrigated agriculture	• Policy • Planning	• SO1a • SO5a-b
Tourism	N / P / L	• Water quality of domestic supplies • Environmental health	• Planning • Regulation	• SO5a • SO6a-b
Trade and Industry	N / P / L	• Water quality for industrial use purposes • Water quality of industrial discharges	• Policy • Planning	• SO1a • SO5a-b
Water and Sanitation	N	• Sustainable water use management and development • Sector coordination • Sector development	• Policy • Governance • Structuring • Planning • Regulation • Adaptive management • Financial support • Monitoring and information • Building sector capacity	• All SOs

Government Departments	National / Provincial / Local	Concern	Interfaces	Strategic Objectives
Enabling Improved Water Quality				
Basic Education	N / P	• Broader societal awareness • Early career guidance	• Building sector capacity	• SO11a-c
Communications	N / P	• Broader societal awareness	• Building sector capacity	• SO11a-c
Higher Education	N / P	• Technical career guidance	• Building sector capacity	• SO11a-c
National Treasury	N / P	• Good governance • Financial resources to support IWQM	• Policy • Governance • Structuring • Financial management	• SO1a • SO3a-b • SO5a-b • SO8a • SO9a-b
Planning, Monitoring and Evaluation	N	• Oversight of strategic sector achievements	• Policy • Governance • Structuring • Financial management	• SO1a • SO3a-b • SO5a-b • SO6a-b • SO8a • SO9a-b
Science and Technology	N	• Support water research and technology development	• Cross cutting projects that touch all aspects	• All SOs

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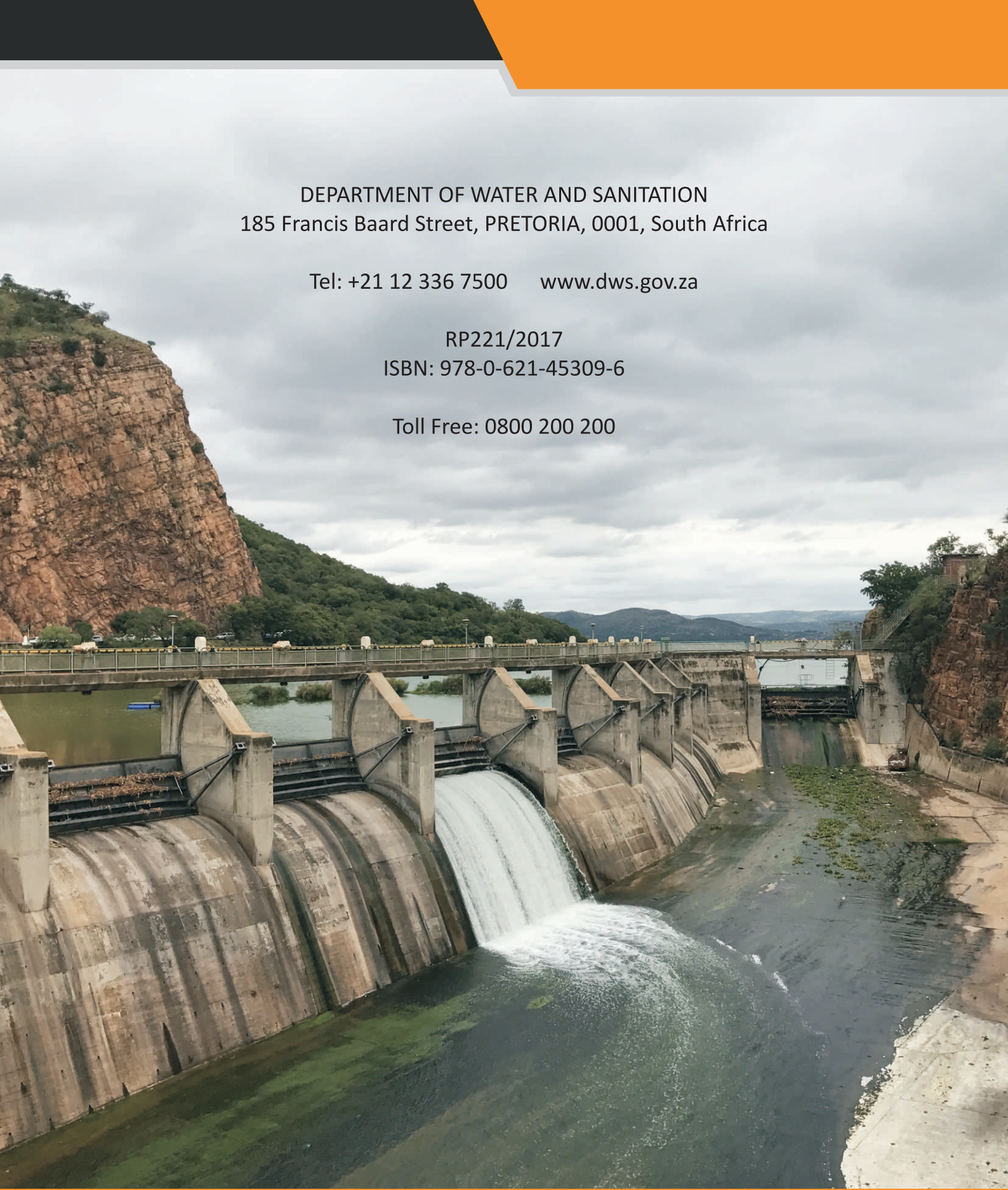

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