Department of Water and Sanitation

EDITION 1

Integrated Water Quality Management POLICIES AND STRATEGIES FOR SOUTH AFRICA

4.3 MONITORING AND EVALUATION FRAMEWORK



WATER IS LIFE - SANITATION IS DIGNITY



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Department: Water and Sanitation **REPUBLIC OF SOUTH AFRICA**



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WATER QUALITY MANAGEMENT POLICIES AND STRATEGIES FOR SOUTH AFRICA

MONITORING AND EVALUATION FRAMEWORK

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PREFACE

Background

South Africa is facing a multi-faceted water challenge, which, if not addressed effectively, has the potential to significantly limit the economic growth potential of the country, especially considering the levels of water scarcity, with frequent droughts, increasing water demands, and deteriorating resource water quality.

The deterioration in water quality is a factor of growing concern. Importantly, **deteriorating water quality is an economic and developmental issue**, and should be addressed as such. Without a change in how water resources are managed, worsening resource water quality will continue to erode the socio-economic benefits from, and increase the costs associated with, the use of the country's water resources.

Considering the above, the Department of Water and Sanitation (DWS) embarked on a journey to revise, update and consolidate its policies and strategies for managing the quality of the water in the Country's water resources and to develop a pragmatic plan for the conversion of the Integrated Water Quality Management (IWQM) Policy and Strategy into practice.

Integrated Water Quality Management Policy and Strategy

Since the inception of this initiative, several supporting documents were developed that aimed to establish the status quo with respect to water quality, its management practices and instruments, the challenges in South Africa and the institutional arrangements. A review of existing policies, strategies, and other relevant documents, both locally and internationally was used to i) analyse the root cause of the water quality issues; ii) determine the gaps in the IWQM approaches that have been used; iii) understand impacts that emerging trends may have on water quality (e.g. climate change, unconventional gas exploration, amongst others) and iv) look for innovative practices for IWQM.

Based on these learning's, the **IWQM Policy** sought to amalgamate and describe an integrated, inclusive and adaptive approach to IWQM, that built on the tenets of sustainable development coupled with addressing the identified gaps in the policy framework. The IWQM Policy sets out the vision, goal, values, underlying principles and policy responses for managing the quality of our water in our surface and underground water resources.

The **IWQM Strategy** sets out those strategic actions which are required to be undertaken in order to realise the vision and goals for water quality in South Africa. It articulates the broader process of Integrated Water Quality Management and provides the prioritised strategic actions that need to take place over a short to medium term.

The Implementation Plan outlines the pragmatic approach to strategic implementation and clearly articulates roles and responsibilities for the implementation of key activities and provides the linkages and dependencies between these activities.

The Monitoring and Evaluation Framework articulates the indicators to be monitored to determine the progress of the actions to be implemented and provide the foundation required to manage water quality adaptively. It also outlines the reporting structures and processes to be followed.



Figure P-1: Relationship between Policy, Strategy, and Implementation

The Literature Reviews inform all three of the areas reflected above.

Stakeholder Engagement

Given that the management of water quality constitutes an effort that is serviced and maintained by various role-players, a key element of the development of the IWQM Policy, Strategy and Implementation Plan is the involvement of relevant role-players, at a level where they may provide strategic and operational direction in the conceptualisation and finalisation of key areas and outputs. Consequently, a Stakeholder Consultation and Communication Strategy was developed to inform, consult, involve, collaborate and where possible empower the relevant key players by providing a strategic framework to: -

- Engage in policy and strategy development processes of the key issues, priorities, guiding principles, and approaches regarding the IWQM Policy and Strategy.
- Enhance the product through inputs from stakeholders;
- **Establish Ownership and buy-in** of both the process and outcomes to ensure that stakeholders can relate and identify with the IWQM Policy and Strategy;
- Facilitate Implementation: a key result under this objective is the implementation of the Policy and Strategy. This will involve iterative process of learning-by-doing approach so that the implementation of the Policy and Strategy can serve as both a refining process and a learning curve;
- Provide capacity development and support through strategic collaborative efforts. This ensures that the necessary skills and capacities are shared between and among stakeholders;
- **Create awareness** and enhance the level of understanding on issues about the IWQM Policy and Strategy, in order to improve and strengthen active stakeholders' participation in WQM;
- **Consider appropriate mechanisms** for communication and publicising of the IWQM Policy and Strategy.

Since IWQM has environmental and social impacts, among others, it was imperative that consultation not be a single conversation but a series of opportunities to create an understanding about WQM amongst those it will likely affect or interest, and to learn how these internal and external parties view the initiative and its associated risks, impacts, opportunities, and mitigation measures. Listening to and incorporating stakeholder concerns and feedback is highly considered as a valuable source of information that can improve the design and outcomes of policy and strategy and help identify and control external risks. It is envisaged that the consultations done during this initiative form the basis for future collaboration and partnerships.

The Stakeholder Consultation and Communication Strategy focussed internally to relevant Government Departments and externally to targeted stakeholders.

- Internal to Government The purpose of targeting members within the Government Departments and its institutions (CMAs, Water Boards and other water management institutions) was to ensure that there was holistic preparation of staff at all levels. These staff have a range of interests that function at differing strategic levels within the Government and as such have different capacity building requirements.
- External to Government There are a range of stakeholders that are interested and affected by the IWQM Policy, Strategy and Implementation Plan. These include the private sector, research and academia, civil society including NGOs, umbrella organisations such as the South African Local Government Association (SALGA), the South African Cities Network (SACN), the Chemical and Allied Industries Association (CAIA), Business Unity South Africa (BUSA), AgriSA, the Chamber of Mines, amongst others. The purpose of targeting these stakeholders was to solicit their input, create awareness and guide external stakeholders on water quality management issues, strengthen the understanding of the policy, and strategy

and their implications, and strengthen collaborative systems. Moreover, it is important for the successful implementation of the policy and strategy that external stakeholders become more engaged in both developing the policy and strategy as well as through the implementation of the policy and strategy.

Way Forward

As sector lead, the Department understands that the management of water resources requires a sector-wide approach and this is a central theme to the implementation of the National Water Resources Strategy. Similarly, the management of water quality requires a broader engagement that moves roles and relationships beyond that of user, stakeholder, Policy-maker and regulator, but towards one of cooperation, partnership and stewardship. This necessitates the development of robust and pragmatic management instruments, supported by effective communication and capacity building, both internally to the Department and externally to the larger sector

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Afred Nzo District Municipality Afri Forum African Rainbow Minerals Agri Eastern Cape Agri Kwa-Zulu Natal (Kwanalu Initiative) Agri Northern Kaap Agri SA Agri Western Cape Agricultural Research Council Alliance for Water Stewardship Amatola Water Anglo American AquaEco ASA Metals Association of Cementitious Material Producers Award Bloem Water **Bosch Capital** Breede-Gouritz Catchment Management Agency Buffalo City Metropolitan Municipality Centre for Environmental Rights Chamber of Mines Chemical and Allied Industries' Association Chris Hani District Municipality City of Cape Town Metropolitan Municipality City of Johannesburg Metropolitan Municipality City of uMhlathuze Clean Stream Environmental Consulting Council for Geoscience (CGS) Council of Scientific and Industrial Research Crocodile River Irrigation Board De Beers Department of Cooperative Governance and Traditional Affairs Department of Energy Department of Environmental Affairs Department of Health Department of Higher Education and Training Department of Human Settlement

Department of International Relations and Cooperation Department of Mineral Resources Department of National Treasury Department of Planning, Monitoring and Evaluation Department of Public Enterprises Department of Rural Development and Land Reform Department of Science and Technology Department of Tourism Department of Trade and Industry Department of Water and Sanitation DH Environmental Consulting (Pty) Ltd **Digby Wells** East Rand Water Care Company Eco Monitor Eco- Owl Consulting **Emifula Riverine Consultants** Endangered Wildlife Trust EOH Coastal and Environmental Services Eskom Ethekwini Metropolitan Municipality Exova BM TRADA Exxaro Federation for a Sustainable Environment Federation of Southern African Gem and Mineralogical Societies. Fezile Dabi District Municipality Frances Baard District Municipality Free State Department of Agriculture and Rural Development Free State Department of Health Fresh Produce Exporters Forum Freshwater Consulting cc Galago Environmental Gamtoos Irrigation Board Gauteng Deptartment of Health Geo Arc Glencore Goadex Engineering and Water Science Consultants **Golder Associates** Goldfields

Govan Mbeki Municipality Marico River Conservation Association Green Cape Sector Development Agency Masilonyana Municipality Harmony Mines MBB Consulting Services Ikamva Merafong City Local Municipality Midvaal Water Company Iliso Consulting Impala Platinum Modikwa Platinum Mine Inkomati Usuthu Catchment Management Agency Mogalakwena Local Municipality International Water Management Institute Mogalakwena Mine iSAT Moses Kotane Local Municipality Mpumalanga Water Caucas Isigalo Cooperative Jaco Consulting Municipal Infrastructure Support Agent Jantech Mzimvubu -Tsitsikamma Proto-Catchment Management Agency JCP Steel Nala local municipality JG Afrika Naledi Local Municipality Joe Gqabi District Municipality Naledzi Environmental Consulting National African Farmers' Union Johannesburg Water Joint Water Forum National Business Initiative Jones & Wagener Nepad Business Foundation Kaap River Irrigation Board New World Water Sanitation North West Department of Rural, Environment and Agricultural Kakamas Water User Association Development Komati Basin Water Authority North West University Komati River Irrigation Board Northern Cape Department of Agriculture and Land Reform Kumkani FM Northern Cape Department of Environment and Nature Conservation KwaDukuza Local Municipality Northern Cape Provincial Government Kwa-Zulu Natal Agricultural Union Ntuzuma Enviro Cooperative La Brie Estate **OR Tambo District Municipality** Land bank Orange Proto-Catchment Management Agency Lebalelo Water User Association Oranje-Riet Water User Association Lemogang womens health **Overstrand Municipality** Lepelle Northern Water Palabora Copper Lephalale Local Municipality Petra Diamonds Letaba Water User Association Phumelela Local Municipality Letsemeng Local Municipality **Pilanesberg Platinum Mines** Liberty NPO **Pioneer Foods** LIM 368 (Mookgophong LM and Modimolle LM) Platmines SA Limpopo Department of Agriculture and Rural Development Polokwane Local Municipality Limpopo Department of Economic Development, Environment and Tourism Pongolo-Umzimkhulu Proto-Catchment Management Agency Limpopo Proto-Catchment Management Agency **PPC** Cement Living Lands Prime Africa I onmin Prop 5 Corporation Madibeng Local Municipality Randwater Magalies Water **RE-Solve** Makane Local Municipality Rhodes University (Institute for Water Research) Maluti Water **Rhovan Operations** Mangaung Metropolitan Municipality **Rockwell Diamonds** Manten Marina

Rowing SA Royal Bofokeng Platinum Royal Haskin Samancor Chrome Limited SANParks Sasol Save the Vaal Scherman Colloty & Associates Sedibeng Water SeeSaw SEMBCORP Silulumanzi Sephaka Cement Sibanye Gold Sidebelo Platinum Mines Softchem Source Point South African Logal Government Association South African National Biodiversity Institute South African Sugar Association SRK Consulting Stellenbosch Municipality Stellenbosch University Stellvine Strategic Water Partners Network Swartland Municipality T Squared Corporate Solutions **Tlokwe Local Municipality Tlou Consulting** ToxSolutions Trans Caledon Tunnel Authority Transnet Tshegofents Facilities and Engineering Tshwane Local Municipality **Tsogang Local Municipality** TTM Water Quality Engineering Umfula Wempilo Consulting Umgeni water board Umzinyathi District Municipality University of Cape Town University of Fort Hare University of Johannesburg University of KwaZulu-Natal University of Pretoria University of the Free State University of Venda University of Witwatersrand

Usapho Consulting Vaal Catchment Management Agency Vele Colliery Vhembe Water User Associations Vin Pro Vunene Mining Water Institute of South Africa Water Research Commission Western Cape Department of Agriculture Western Cape Department of Environmental Affairs and **Development Planning** Western Cape Government White River Valley Conservation Board Wildlands Wildlife and Environment Society of South Africa WineTech World Wildlife Fund **Xylem Water Solutions** Water Research Commission Western Cape Department of Agriculture Western Cape Department of Environmental Affairs and **Development Planning** Western Cape Government White River Valley Conservation Board Wildlands Wildlife and Environment Society of South Africa WineTech World Wildlife Fund **Xylem Water Solutions**

EXECUTIVE SUMMARY

Noting that we live in a rapidly changing world, because of significant technological developments, the pressure upon our natural resources will only increase. This will require more adaptive policy approaches and an increasing awareness of the uncertainties involved in policy making and long-term planning. This also means that our perceptions of policy success will need to shift and accept the fact that policy failure, in some instances will provide the guidance for the next iteration of policy development.

Within this context, adaptive approaches enable us to manage these uncertainties and dynamics in a complex and changing world. Adaptation should therefore be triggered in part by on-going learning through the systematic monitoring and evaluation (M&E) of the performance of policy and strategy under implementation. Such M&E enables the development of causal connections between policy priorities, the resourcing of these policy objectives, the programmes designed to implement these, the services delivered and the ultimate impacts.

The IWQM Strategy articulates the need to show success, hence it is important to be able to reflect that efforts that can improve the status of water quality in identified catchments and not be purely theoretical or academic exercises. Therefore, the implementation plan proposes a suite of turnaround actions needed to deal with the key governance and systemic issues, whilst reflecting the need to be rooted in our catchments and show impact. It should be noted that whilst some actions are initiated in the short-term and have immediate impact, other actions are required to lay the foundation for more longer-term impact and should, therefore, also be initiated as quickly as possible.

This M&E framework provides the tools to monitor progress and ultimately measure impact. This is aimed at supporting more adaptive responses as we progress and this key theme for the IWQM strategy does need to be underpinned by the implementation plan and this M&E framework. Inadequate M&E has two consequences, namely:

- Learning opportunities are potentially lost or minimalised and misses the chance to reflect on a project's progress, opportunities and problems that may support corrective action, and hence may lead to sub-optimal impact on the water resource; and
- **impact performance** may not be sufficiently assessed, impeding the ability to account for project progress towards achieving objectives, goals and impact.

This focus of this first phase of implementation is to strengthen the internal functioning of the Department whilst building up towards an integrated inter-departmental and inter-sectoral approach. This will not happen overnight and will require dedicated effort. Likewise, to start building a more integrated monitoring and evaluation process, focused in on IWQM, is going to be iterative and will require the lead of the IWQM champion.

However, it is also critical in this first phase to start the strengthening of the broader community of practice. Therefore, it will be essential for national, provincial and local government to engage in the management of water resources within catchments. DAFF,

DMR, DEA, DTI, DoH and other Departments must start to engage with the realities of managing water quality in catchments. Noting that different Government Departments and sectors have quite different interfaces with water resources, there is a need for a differentiated approach to this mobilisation and to determine how best to work together towards IWQM and to report effectively on progress to this end.

The development of the IWQM implementation plan will be fed into an **IWQM business plan**. This plan will be led and managed by the National Water Quality Functional Management Committee (NWQFMC) and will be supported in its development by inputs from Directorate Annual Performance Plans (APPs) as well as the Provincial Offices APPs through the Provincial Water Quality Functional Management Committee. Directorate and Provincial Offices will report on a monthly basis on their APP progress through the DWS Project Management Unit (PMU). The PMU will play a key role in facilitating the sharing of information from the APPs, but the NWQFMC will also set up arrangements for feedback from Directorates and Provincial Offices. The nature of these discussions at these meetings will be empowering and will create the milieu where reporting becomes an integral part of the adaptive management cycle.

It is critical to note that the IWQM business plan will support the implementation of the IWQM Strategy. Not everything in the IWQM business plan for the year will necessarily be in the APPs of the various Directorates and Provincial Offices.

The IWQM business plan will be tracked by the NWQFMC and this will provide the monitoring and reporting to support the development of the IWQM Annual Report as well as an end-ofphase evaluation that will inform the development of the Phase 2 implementation plan. These will support the development of the DWS Strategic plan as well as the next edition of the NWRS and the National Water and Sanitation Masterplan.

During the process to engage with the development of the IWQM business plan it will be imperative to finalise the baselines for the indicators, to support effective and ongoing evaluation.

The importance of the end of phase evaluation cannot be underestimated and needs to objectively review the achievement of the programme through the lenses of effectiveness, efficiency and appropriateness, and based on lessons learned, this will then inform the development of the approach to Phase 2 implementation.

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LIST OF ACRONYMS

Abbreviation	Meaning
APP	Annual Performance Plan
СМА	Catchment Management Agency
CMS	Catchment Management Strategy
DCEC	Department of Climate and Environmental Change (Australia)
DPLG	Department of Provincial and Local Government
DPME	Department of Planning, Monitoring and Evaluation
DWS	Department of Water and Sanitation
IFAD	International Fund for Agricultural Development
IWQM	Integrated Water Quality Management
IWRM	Integrated Water Resource Management
M&E	Monitoring and Evaluation
MTR	Mid-Term Review
NWA	National Water Act, 1998 (Act 36 of 1998)
NWRS	National Water Resource Strategy
OECD	Organisation for Economic Co-operation and Development
PFMA	Public Finance Management Act, 1999 (Act 1 of 1999)
PSC	Public Service Commission
RC	Results Chain
SDG	Sustainable Development Goals
ТоС	Theory of Change
UNSD	United Nations Statistical Division
WQM	Water Quality Management
WRM	Water Resource Management

1. INTRODUCTION

1.1 Background

South Africa faces a complex water resource management challenge, which, if not addressed effectively or efficiently, has the potential to limit the growth potential of the country. Considering that South Africa is a water scarce country, compounded by frequent droughts and intermittent flooding, increasing water demands will result in increasing abstractive water use as well as discharge of effluent into water resources. These extreme events can have varying water quality impacts, that can result in the significant deterioration of water resource quality as well as providing threats to the health of people and environment. Hence, deteriorating water quality is a key element of the water resource management and development challenge. Despite considerable attention paid to Water Quality Management (WQM) over the years by the Department of Water and Sanitation (DWS), the current state of the country's water resources illuminates a number of challenges confronting the water sector.

Whilst, there is only limited and anecdotal evidence of the levels of impact that water quality degradation has upon economic development, the National Water Resource Strategy (NWRS) provides a clear direction for the country in the need for strengthened WQM.

Nonetheless, **WQM** is a complex and confounding challenge to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise. Often, there are a multitude of interacting factors, including incomplete information, and changes outside the control of managers. The multi-sectoral nature of WQM requires an understanding of complex water use requirements that underpin economic growth and development. As such, the requirement to support national (and indeed regional) growth is a core thematic of the NWRS and requires not only strengthened polices and strategies, but also improved monitoring and information systems, adaptive management and regulation, all driven by innovative institutions.

Unfortunately, it is an operational reality, that the WQM approach used to date in South Africa has not managed to address this 'wicked problem' effectively. Insufficient data and monitoring has been central to this challenge. Knowing that "you cannot manage what you don't measure", means that generating an understanding of whether water quality is improving or deteriorating is difficult.

In addition to the most significant water quality challenges, there are also concerning trends that will have increasing levels of impact upon water resources. These include issues such as climate change, population growth, rapid urbanisation and increased and changing industrialisation. There are also emergent issues that will require improved monitoring and research to better understand the brevity and spatial importance of these new issues. These include such issues as unconventional oil and gas exploration, as well as the presence of constituents such as nanoparticles, hormone disrupting chemicals, persistent organic pesticides and various metals.

The pressures being placed upon our water resources will increasingly require adaptive management approaches that will ensure sustainable development. Noting that adaptive responses need to be based upon a series of indicators, thresholds and triggers, a robust monitoring and evaluation (M&E) system is required to underpin and guide decision making processes.

1.2 Policy and Strategy in Uncertainty

Noting that we live in a rapidly changing world, because of significant technological developments, the pressure upon our natural resources will only increase. This will require more adaptive policy approaches and an increasing awareness of the uncertainties involved in policy making and long-term planning. This also means that our perceptions of policy success will need to shift and accept the fact that policy failure, in some instances will provide the guidance for the next iteration of policy development.

Within this context, adaptive approaches enable us to manage these uncertainties and dynamics in a complex and changing world. Adaptation should therefore be triggered in part by on-going learning through the systematic M&E of the performance of policy and strategy under implementation. Such M&E enables the development of causal connections between policy priorities, the resourcing of these policy objectives, the programmes designed to implement these, the services delivered and the ultimate impacts (See Figure 1). Notably, M&E provides an evidence base for public resource allocation decisions, helps to identify how challenges should be addressed and how success can be replicated.





In the face of uncertainties and dynamics, the design of a tailor-made and future-proof monitoring programme is complicated and must be anchored in policies and strategies, whilst getting the support and buy-in of the key stakeholders. The reality is that implementation requires passive or active support from various actors, with different actors having different views, perceptions and opinions, and indeed interests. In a multi-actor situation M&E can present challenges. So, for example, when different actors are involved in policy processes and implementation, it is not always clear who should take the lead in M&E at a programmatic level. Hence, the focus of M&E could be different as diverse actors are interested in different impacts, systems components and may assume different causal links within the policy cycle.

From the depiction of the cycle in Figure 1 the evaluation of the success of policy and the reasons for success or failure, are critical parts of the process (PSC, 2008). Often the assumed causal links between policy interventions and impacts are not straightforward and understanding cause and effect is not necessarily easy.

Besides deliberate interventions contained in the strategy and implementation plan, policy implementation will in effect be influenced by an array of processes. Having located M&E in the policy cycle, it is also necessary to explain where it fits into the more formal planning and implementation processes of government departments.

1.3 Developmental State and Government-wide M&E

In 2007, Cabinet mandated the Governance and Administration Cluster of the Forum of South Africa's Directors-General to construct an overarching Government-wide Monitoring and Evaluation System (Presidency, 2007). This was consolidated over time via the "Policy Framework on Performance Monitoring and Evaluation - Our Approach" document and the "Revised Green Paper: National Planning Commission", which were tabled in Parliament.

Whilst all Government Departments have a clear responsibility to monitor and report on their progress in delivering upon their mandate, there is equally a need for an oversight function that monitors and evaluates the overall performance of Government. The Department of Planning, Monitoring and Evaluation (DPME) has the following key mandates:

- Facilitate the development of plans or delivery agreements for the strategic cross cutting priorities or outcomes of government;
- Monitor the implementation of these plans;
- Assess departmental strategic plans and Annual Performance Plans to ensure alignment with long term and short-term plans;
- Monitor the performance of individual national and provincial government departments and municipalities;
- Monitor frontline service delivery;
- Carry out evaluations; and
- Promote good planning and M&E practices in government.

Moreover, National Treasury has delegated the PFMA function of regulating strategic and annual performance planning to DPME (DPME, 2015). During the current planning cycle, the department will embark on a review of the current Framework for Strategic and Annual Performance Plans (see Figure 2), as utilised by all Government Departments, and issued by National Treasury in terms of the Treasury Regulations under the Public Finance Management Act, 1999 (Act 1 of 1999) (PFMA). This process has started with the commissioning of an evaluation that will determine the effectiveness of the current frameworks and recommendations for changes that could be made. The review is envisaged to take approximately 2 years with extensive consultation with both internal and external stakeholders. It is envisaged that the reviewed framework for planning will be piloted in year 4 and year 5 of 2015 to 2020 DPME planning cycle.

Noting that the IWQM Policy and Strategy call for an inter-sectoral, inter-departmental approach to the management of water quality, these revised approaches will provide an opportunity for improved M&E approaches in support of IWQM, over time.



Figure 2: Governmental Planning and Review Cycle (Adapted from Public Service Commission, 2008)

In the meantime, the development of the M&E framework for IWQM will need to consider the existing monitoring and reporting frameworks, and explore modalities for this across the various sectors (horizontally) as well as between different spheres of Government and spatial scales (vertically).

4

1.4 Sustainable Development Goals

The Sustainable Development Goals (SDGs) provide an ambitious and transformational agenda for a common growth-future up to 2030. To provide a suite of targets and milestones to monitor and evaluate progress, the SDG indicator set has been developed by national statistical agencies with the coordination of the United Nations Statistical Division (UNSD).

The framework has been developed so that countries will customize this indicator set in their reports to appropriately contextualize the SDGs to their national contexts. This will also assist countries in aligning with national monitoring and reporting capacities. Countries will then choose subsets of the official SDG indicators, as well as modify and complement them to capture issues that are too country-specific to be fully reflected in global indicators. This then supports a bottom-up approach in enabling countries to develop a suite of indicators to monitor SDGs that are more appropriate than a suite of top-down indicators identified globally.

To meet reporting requirements, countries will have to build up their SDG reporting capacities and practices based on their existing systems of measurement, whilst also taking into account the guidance that has been developed by UNSD. Challenges do exist in ensuring that the reporting requirements are met when one notes that there may be a need to drive improvements in the various systems needed to underpin the reporting. This is compounded by difficulties that may emerge where information and data are needed in areas where there is poor or no alignment, or where entrenched interests may work against the transparency or change that is required. As such, this lies at the very core of the SDG challenge and will require that countries unlock these difficult discourses and find agreed modalities to effectively support attainment of the goals.

However, the SDG framework has been developed to provide a more pragmatic mechanism that enables countries to effectively and efficiently monitor and report. Countries will, themselves, need to construct the necessary systems and techniques to support this. Noting the importance of water (and water quality), monitoring and reporting within the water sector and across water use sectors will require strengthening and the leadership of DWS will prove critical in this regard.

1.5 Purpose of this Document

M&E is not a neutral process and is also inherently political in nature. When considering the strategic importance of water as a necessity for life and in underpinning national development, against a highly variable spatial and temporal distribution, the requirements to ensure sustainable development becomes imperative. The recent droughts across the country have emphasised for many the absolute importance of water. Poor water quality not only renders water supplies potentially damaging or harmful, but can cost the economy excessively by requiring expensive water treatment techniques prior to water use.

It will become increasingly important, as pressures upon our water resources increase, to strengthen, and where necessary develop, M&E systems to enable more adaptive Water Resource Management (WRM) and development responses.

In the context of this project, an M&E tool will be required to ensure that the IWQM Strategy and the actions that are taken forward into the Implementation plan truly lead to action. The format of reporting on progress and outcomes should satisfy the needs of various target audiences and the system should include the use of indicators that not only measure progress, but also meaningfully measure the success of the strategy. The development of an M&E framework will thus strengthen the development of the IWQM implementation plan (see Figure 3) by specifying and describing the indictors that should be used in the plan to evaluate, monitor and report on progress and success.





The M&E framework will, amongst others, provide the procedures and approaches for ongoing M&E, will describe the various roles and responsibilities, will articulate the various systems requirements as well as provide guidance for the development of appropriate M&E skills and capacity. The importance of organisational design and institutional development should not be underscored in providing an effective basis for implementation. As such, the development of the M&E framework has been completed in conjunction with the implementation plan and the recommendations for an organisational design for WQM.

It is important to note that the aim of this framework is not to replace the ongoing monitoring of performance against line function APPs, but for monitoring progress on IWQM the APP system is an important source of supporting information.

In addition, it is important to note whilst the IWQM Policy and Strategy articulate the importance of WQM as a sector wide, inter-sectoral, inter-departmental challenge the first phase implementation is largely focused on achieving turnaround within DWS. Thus, this M&E framework is structured to support that Phase 1 implementation plan and is focused upon normalising the WQM business within DWS. Phase 2 of implementation will then build upon this platform to develop a more inter-sectoral approach.

This M&E framework then provides the strategic and conceptual thinking that shapes the M&E approach, it provides the structure and form of the framework and importantly describes the institutional roles and responsibilities in terms of giving effect to the framework. This document should be read in conjunction with the implementation plan and the organisational design reports.

2. FUNDAMENTALS OF MONITORING AND EVALUATION

Water resource management (WRM) has changed over time, where focus has moved from large infrastructure developments aimed at servicing core water demands to far more integrated approaches recognising the need to sustainably utilise water resources. At the same time, we have seen an increasing level of stakeholder participation and there is a realisation that we need to move beyond consultation to far more collaborative approaches. Therefore, attention has moved towards more participative approaches of engaging primary stakeholders in WRM and towards strategies that build capacity and empower people to direct and manage their local resources (DWA, 2013).

This will require that all stakeholders **accept the consequences** of participation, including uncertainty, politicisation and shared decision-making. Furthermore, the idea of structured and rigid planning is giving way to more **flexible**, **process-oriented and adaptive approaches** (Biggs and Rogers, 2003; Biggs, Breen and Palmer, 2008; Pollard, Du Toit and Biggs, 2011). Ideally, the M&E requirements in support of adaptive policy and strategy development (supported by ongoing implementation) would be determined as policy and strategy are developed and established. This would enable the setting of baselines and the design of an appropriate and robust M&E framework. The difficulty arises in that it is often challenging to predict what indicators need to be included for the short term and long-term analyses, due to the dynamic nature of systems.

Therefore, ongoing shifts in approach are required supported by more interaction and engagement. This will require more decentralised approaches, with the establishment of platforms at more localised levels to support the necessary discourse and a more adaptive approach. This has a direct bearing on our approach towards M&E.

It does need to be understood that M&E is a technical field like any other field such as engineering, planning, hydrology and water quality management. Yet it is usually and unfairly expected that anyone with minimal support should be able to effectively undertake M&E. Fundamentally, and when done properly, M&E can **empower** stakeholders to manage localised water resources, with critical self-evaluations of collective experiences reinforcing their capacity for self-management. M&E can thus direct information not only upward, to guide strategic decision making, but also downward towards citizens making day-to-day resource management decisions.

Adaptive and flexible approaches to water resource management will require better M&E systems, as the whole model is based on being responsive to feedback from primary stakeholders and to changing circumstances. However, M&E capacity development and empowerment-oriented initiatives will require different approaches. In a decentralised context, attention needs to be given to building M&E capacity within more localised institutions and implementing partners, rather than just focusing on M&E in a typical programme management unit, thus making questions of governance critical in shaping the way that M&E supports improved resource management. The importance of downward

accountability and stakeholder participation in developing, implementing and improving the M&E process becomes essential.

It is important to note that as different stakeholders are engaged in M&E, that their views of different impacts, system components and different causal linkages can create challenges in undertaking management actions that cut across various sectors. This then requires a more fluid and open discourse to avoid misalignment in objectives. As a result, when working in inter-sectoral, multi-stakeholder environments there is a need to ensure that the M&E frameworks and strategies are designed appropriately.

2.1 Key Terminology and Concepts

An effective M&E framework is fuelled by a robust measurement system that provides accurate data, supported by efficient and effective entry methods. Monitoring and reporting then provides the data and information needed to undertake evaluations so that improved practices and outcomes can be achieved (DCEC, 2009).

However, these concepts are often misunderstood and are used interchangeably, creating confusion. In effect, this can result in poor or non-responsive management decision making.

2.1.1 Monitoring, reporting and evaluation

Monitoring involves the ongoing observation of a range of criteria that provides data and information regarding progress in terms of policy and strategy implementation. The information gathered during monitoring may be qualitative and quantitative in nature, generated from formal or informal collection processes. Monitoring, therefore, needs to be understood as an ongoing function that uses systematic and non-systematic collection of data on specified indicators to provide management and key stakeholders, with indications of progress and achievement of objectives and progress (DCEC, 2009; PSC, 2008).

In some instances, monitoring can be understood to include the shorter-term analysis of progress against targets and expectations. This enables more responsive adjustments and adaptive management of processes.

Reporting involves the regular communication, often within defined intervals, of results and findings. The nature of some reporting does require some form of indication of how the information can or cannot be used. Reporting often follows pre-determined and structured formats to ensure that information gathered is more easily collated and synthesised, but informal or irregular reporting can be an equally important source of data and information and provide useful up-to-date and anecdotal information. Whilst reporting is essential for informing adaptive management that improves implementation methods and the achievement of outcomes, it is equally important in demonstrating commitment and accountability. DPME (2012) note that monitoring data should arise from normal business processes and be captured in administrative data systems. The monitoring and reporting is thereafter based on the extraction of key information points from these systems (see Figure 2).

Evaluation is a periodic, systematic, and objective analysis to assess matters of relevance or appropriateness, performance in terms of efficiency or effectiveness, as well as value for money. Evaluations typically provide recommendations as to the way forward to address specific challenges and strengthen programme delivery.

The mid-term Review is important because if performance is poor, corrective action can still turn things around and the 'Evaluation' is equally important in that it serves as evidence of what was achieved by the programme or project.

In some instances, evaluation is understood to be the higher-end assessment of attainment of programmatic objectives and has resulted in the outcomes and impacts that are desired. This then supports the notion of more regular monitoring as being the tool for day-to-day project assessments and adjustments.

2.1.2 Key Indicators

Indicators are developed for two key reasons, namely a) to measure attainment of inputs, activities, outputs, effects/outcomes and impacts related to the project design hierarchy; and b) to evaluate key questions in the evaluation of projects and programs.

Indicators can be expressed in quantitative terms - where numbers are used to measure changes for example, percentage, rate, ratio and in qualitative terms- where words are used to describe changes for example, perception on well-being and quality of life.

Indicators are quantitative and qualitative criteria that provide a simple and reliable means to measure achievement, to reflect the changes connected to an intervention or to help assess performance.

The importance of getting the right balance between qualitative and quantitative indicators cannot be over-emphasised. This is further compounded by the fact that quantitative indictors are often favoured as they are easier to monitor and report against, yet the qualitative indicators provide a richness that is often lost when only focused upon numbers. Hence, the need to ensure a balance and good mix of quantitative and qualitative indicators.

Indicators may also be disaggregated for "people-level indicators" to clarify the intended beneficiary groups. For example, projects want to measure indicators separately for men and women to conduct gender analysis for the project.

To avoid collecting unnecessary data to analyse all aspects of a project or intervention, M&E systems need to identify the set of indicators that will help track its most critical activities.

Other criteria influencing the choice of indicators include:

- Time, resources and capacity required for data collection;
- Timeliness of data collection and analysis (temporal and seasonal factors);
- Usefulness to programmers for tracking risk and vulnerability;
- Comparability across programs.

Being adaptive means the ability to act and adjust as implementation proceeds, giving the managers and line-staff the ability to reflect upon and adjust activities towards attainment of the set targets.

Adaptiveness is therefore the ability to respond in a timely manner without the fear of change, and is done in the best interest towards achieving the broader goals and intended impact.

2.1.3 **Performance Targets**

Unlike indicators, performance targets represent commitments made about the level and timing of results to be achieved by a programme. It is considered good practice that for each outcome indicator or indicator selected for strategic objectives or intermediate results, a performance target should be established.

Although performance targets are usually quantitative, they can be qualitative, depending on their indicators. Sometimes it is necessary to develop *baselines* or *benchmarks* to track planned progress. These baselines or benchmarks are essential to understand the rate of change over time of an indicator. Final targets are the planned value of a performance indicator at the end of the planning period whilst interim targets are set for years in between the baseline and final target year.

2.1.4 Theory of Change and Logic Models

There has been an increasing awareness of the need to understand, in a more structured manner, the route towards ensuring programmatic outcomes. As such the notion of a Theory of Change has become important when developing policy, strategy and implementation plans.

A Theory of Change provides a more analytical description and illustration of how and why a desired change can be expected because of a suite of inputs and activities. In effect, this then provides the "missing middle" between what a programme or change initiative does (activities or interventions) and how these result in the attainment of desired goals being achieved (outcomes and impacts) (see Figure 4). Through this approach, key concepts can be further unpacked and constructed to establish causal linkages that provides the relations and connection between and among the inputs, activities, outputs, outcomes and impact known as the logic model.


Figure 4: Components of the Logic Model (adapted from DCEC, 2009)

The development of a Theory of Change can lead to better planning, in that activities are linked to a detailed understanding of how change happens. It also leads to better programmatic evaluation, as this enables the detailed measurement of progress towards the achievement of longer-term goals.

The various pieces of the logic model are described briefly below.

- Inputs: all the resources that contribute to the production of service delivery outputs. Inputs are "what we use to do the work". They include finances, personnel, equipment and buildings.
- Activities: the processes or actions that use a range of inputs to produce the desired outputs and ultimately outcomes. Activities basically describe "what we do".
- **Outputs:** the final products, goods and services produced for delivery. Outputs may be defined as "what we produce or deliver".
- Outcomes: the medium-term results for specific beneficiaries which are the consequence of achieving specific outputs. Outcomes should relate clearly to an institution's strategic goals and objectives set out in its plans. Outcomes are "what we wish to achieve". Outcomes are often further categorized into immediate/direct outcomes and intermediate outcomes.
- Impacts: the results of achieving specific outcomes, such as reducing poverty and creating jobs. Impacts are "how we have actually influenced communities and target groups".

A Theory of Change is best used when there is need to:

- Design a complex initiative and want to have a rigorous plan for success,
- Evaluate appropriate outcomes at the right time and the right sequence,
- Provide transparency regarding the various initiatives and enable agreement among stakeholders about what defines success and what it takes to get there, and
- Explain why an initiative worked or did not work, and what exactly went wrong.

It is of importance to note that a Theory of Change can provide a valuable unifying framework for strategic decision-making, communicating and reporting. As such, this can be of significant value in contexts where discord has halted progress.

2.2 Common Challenges

The water sector is complex and management of water resources does require an engaged multi-sectoral approach that spans different spheres of Government, the private sector and civil society. M&E in these complex contexts face many challenges.

- Lack of baseline data and information impedes the value and impact of M&E. Without baseline information, change cannot be measured. Baseline information is essential for developing robust *attribution*. The baseline describes the intervention before programme activities and will allow for the measurement of changes/impact *attributable to the programme;*
- Inadequate understanding of and attention to M&E in project design and subsequently inadequate resource allocation and hierarchical organisation of decision-making and analysis;
- Lack of commitment to monitoring by project staff and implementing partners leads to delays in implementing monitoring systems and to lack of information use by project management;
- Monitoring seen as an obligation imposed from outside, with project staff mechanically filling in forms for managers and the project managers seeing monitoring only as a form of data collection in the process of writing reports for donors;
- Irrelevant and poor-quality information produced through monitoring at the various programme stages may prevent the ability to evaluate whether the project has attained the desired project outreach, effect and impact;
- Little or no attention to M&E needs and potentials of other stakeholders and other local cooperating institutions;
- Very few internal project reviews or ongoing evaluations, with adjustments triggered mainly by external evaluations or supervisions;
- Widespread lack of integration and cooperation between project M&E and project management with no clear, mutually agreed-upon guidelines;

- **M&E** documentation that does not address or resolve identified problems leaving a disjuncture between the programme, its overall intent, and the need to effectively monitor progress;
- **Over-ambitious monitoring systems**, with too much being asked in terms of information and methods and that serve to impede the ability to undertake M&E;
- **Poor use of participatory and qualitative M&E methods**, due to limited capacity and inability to see the need for or importance of such information;
- **M&E staff with insufficient relevant skills and experiences**, with this often being an add-on function for technical staff who are busy with the day-to-day business of project implementation;
- Lack of accountability of staff for delivery means that the M&E activities or outcomes may not actually result in directed actions to address issues rendering the M&E void; and
- **Differentiation of monitoring from evaluation activities**, with evaluation being contracted out. This leads to M&E not being an integrated system for improvement-oriented critical reflection.

Whilst it is essential to design robust M&E systems and frameworks, it is equally important to recognise the need for continuous learning and adaptation so that the systems and frameworks remain relevant and fit-for-purpose as the programmes, policies and strategies change. This calls for the need to plan for learning and adaptation.

Responsiveness entails the ability to anticipate and adapt to changed circumstances, or, from the perspective of citizens, whether people's (changing) needs are met. It means that stakeholders' unique circumstances in their constituencies are considered in the design and implementation of programmes and strategies. It implies a demand driven approach to service delivery that really studies and responds to the needs of specific stakeholder groups in varied locations and with unique needs, values, abilities and experiences and have unique problems to contend with.

The M&E system and resultant framework should underpin and support this adaptive and responsive need. The principles and values that importantly guide the approach to M&E to this end, are reflected in Appendix 1.

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3. TOWARDS A MONITORING AND EVALUATION FRAMEWORK

A good M&E system manages to integrate the formal data orientated M&E approaches together with the more informal monitoring and communication. The exercise should therefore not be seen as a tedious statistical task or an external obligation. It is common to see the M&E functions split which can cause a disjuncture in project learning processes. This calls for the need to see M&E as an integrated support to implementation and this can be achieved by creating M&E processes that lead to clear and regular learning; understanding the links between M&E and the management functions; using existing processes of learning, communication and decision making amongst stakeholders (internal and external) as the basis for project oriented M&E; and putting in place the necessary conditions and capacities.

A well-developed project design document will include an indicative M&E framework that provides detailed information about the above-mentioned steps to facilitate budgeting and allocation of technical expertise, to give an overview of how M&E will be undertaken, and to guide project and partner staff during start up. However, it is important to understand that this will only be indicative and needs to be adjusted and detailed further during the start-up phase.

There are some essential steps involved in designing an M&E system, and as such provides the basis for an M&E framework:

- Setting up the purpose and scope,
- Identifying information needs and indicators,
- Planning information gathering and organization (SDGs, National Development Plan etc),
- Planning for data processing,
- Planning for quality communication and reporting, and
- Planning critical reflection processes and events.

The IWQM Policy and Strategy have been developed to support the national development agenda, and as such aligns with the NWRS. The implementation of the IWQM Policy and Strategy will be outlined in an implementation plan that will detail how outputs, outcomes and impacts will be attained.

There are international reporting obligations that this system will need to support. The IWQM Policy and Strategy provides a number of interventions that will contribute to the country's ability to meet the global Sustainable Development Goals, adopted in 2015. South Africa, as a signatory to the SDGs, must strive to meet the targets under each of the SDGs. Water quality has a direct bearing on the ability of the county to meet the goals of ending poverty, ending hunger and achieving food security, ensuring healthy lives and promoting sustainable economic growth. In relation to **Goal 6: Ensure availability and sustainable management of water and sanitation for all**, water quality is particularly relevant. Under Goal 6, there are three targets that are particularly relevant to water quality (DWS, 2016).

The M&E framework that supports the implementation of the IWQM Policy and Strategy does then need to reflect the various governance layers, from international levels through to local level, and provide the M&E connections that run through these differing governance levels. This is indeed complex, but a core principle of pragmatism does need to guide how this is structured.

This does require the support of an operational M&E system that enables the gathering of data and information, supported by routine reporting. It must be understood that a process of refinement and improvement in the M&E system will be required, as will our adaptive response to WRM be a necessity (Figure 5).



Figure 5: IWQMS and the placing of M&E (adapted from IFAD, 2011)

3.1 Why an M&E framework

The aim of the M&E framework would be to provide guidance as to the organisational and structural instruments that will be used to assess achievement of a range of initiatives towards IWQM. Ongoing implementation of the framework supported by monitoring and reporting will enable longer term evaluation of the implementation plan in attaining outcomes and impacts. Noting that the ultimate outcomes and impacts of the IWQM policy and strategy will be realised in the longer term, the M&E framework will support the current implementation plan. Subsequent implementation plans may require revised approaches in terms of M&E, to better suit the nature of the implementation activities. As such each implementation plan will be supported by a revised M&E framework.

Importantly, The M&E framework will provide the basis for adaptive management in order to:

- **strengthen the design** of implementation activities using lessons learnt from evaluation to revise existing activities and scope out future implementation activities;
- better implementation approaches by enhancing the efficiency and effectiveness of new or revised implementation activities;

- report ongoing achievement of targets and so demonstrate returns for investment in IWQM;
- help empower primary stakeholders by creating opportunities for critical reflection on the policy and strategy direction and implementation intent; and
- **demonstrate the benefits of IWQM and** thereby promoting improvement in practice.

There are existing Departmental and Governmental processes for the M&E of performance, as described earlier in this report. However, due to the structural nature of IWQM across DWS organisation and institutions it is difficult to assess the collective effort towards attaining IWQM. The development of this M&E framework, therefore, provides the opportunity, in support of the implementation plan, to pull this M&E into one framework and enable a systemised and centralised evaluation of progress.

3.2 Structuring the M&E Framework

The M&E framework must provide in a clear and concise manner the business case for effecting a supportive M&E process that supports IWQM. This means it must broadly provide:

- the scope and intent of undertaking M&E;
- the performance questions, the indicators and targets;
- the organisational and systemic modalities of operationalising M&E; and
- guidance as to the key steps for implementing the M&E framework.

The articulation of the purpose for undertaking M&E is not as self-evident as one may think. It is critical to be clear as to the outcomes and impact that are expected and as a result the expectations of the M&E framework to assess how these are achieved. Therefore, this will reflect not just the core reasons as to why monitor and evaluate, but also the scope of this in terms of extent and sophistication. This includes both spatial and temporal dimensions.

Generating a suite of performance questions typically provides the basis for determining the types of indicators and targets. These can equally be outlined via the development of RCs that reflect the causal relationship between activities towards outputs and outcomes. The indictors and targets required provide indication of the requirements for baselines, for data gathering requirements as well as how data and information can be used in support of M&E.

Noting the fact that IWQM is supported by a range of line functions across the DWS, as well as across differing institutions, it is important to describe the organisational and structural processes that will enable M&E.

Applying the M&E framework entails a step-wise process from the start-up phase through implementation, up to end of phase (close-out). As with any other "project" the development of the approach to M&E needs to be managed thoroughly, and is not just some form of administrative add-on. This then requires a series of progressive project management steps

that need to be managed and overseen, preferably by a co-ordinating body for the M&E of the IWQM Implementation Plan.

4. A MONITORING AND EVALUATION FRAMEWORK FOR IWQM

The IWQM Strategy articulates the need to show success, hence it is important to be able to reflect that efforts that can improve the status of water quality in identified catchments and not be purely theoretical or academic exercises. Therefore, the implementation plan proposes a suite of turnaround actions needed to deal with the key governance and systemic issues, whilst reflecting the need to be rooted in our catchments and show impact. It should be noted that whilst some actions are initiated in the short-term and have immediate impact, other actions are required to lay the foundation for more longer-term impact and should, therefore, also be initiated as quickly as possible.

This M&E framework provides the tools to monitor progress and ultimately measure impact. This is aimed at supporting more adaptive responses as we progress and this key theme for the IWQM strategy does need to be underpinned by the implementation plan and this M&E framework. Inadequate M&E has two consequences, namely:

- Learning opportunities are potentially lost or minimalised and misses the chance to reflect on a project's progress, opportunities and problems that may support corrective action, and hence may lead to sub-optimal impact on the water resource; and
- **impact performance** may not be sufficiently assessed, impeding the ability to account for project progress towards achieving objectives, goals and impact.

Addressing these critical issues is important and, hence, the design of an M&E framework in support of the IWQM Implementation Plan becomes invaluable in providing a structured approach.

If there is no method for tracking activities and the impact of these activities, then it is difficult to understand how programmes are being effective, efficient or are even appropriate. As such, the understanding of the importance of M&E has developed very significantly in recent years. Of course, the development of an M&E framework in a complex world, is an inherently complex task.

4.1 Strategic Intent

The IWQM Strategy is an integral part of the NWRS which notes 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 WQM in South Africa is:

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

This vision is brought to life through 5 core mission statements of intent:

- 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 WQM 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 show that, as a country, we can halt the deterioration of our water resources.

In support of these longer-term objectives, a Theory of Change (TOC) describes the intervention logic that will be utilised towards that longer-term intent. As such, the TOC reflects the end goal or impact desired, and the outcomes, outputs, and inputs viewed as necessary for this impact to be achieved. A set of assumptions underpin the elements of the TOC and these maybe challenged and improved through ongoing M&E (Figure 6).



Figure 6: Strategic Theory of Change for IWQM

This TOC together with ongoing monitoring, active learning together with adaptive approaches and potentially some organisational agility will support the attainment of the desired impact. It must be understood that circumstances in any project or programme may change, and so the ongoing M&E become valuable in identifying the approaches that work (and that we need to maximise) and those approaches that don't work (and that we need to change).

Noting this, it is not expected that the vision or the impact should fundamentally shift in the shorter term, although the indicators and targets for the impact could be adjusted with time.

It can be expected that with the experience generated it is more likely to influence the inputs, outputs and outcomes of the programme, and this will support in ensuring that an appropriate path is taken towards achieving the desired impact.

The impact of the IWQM strategy would be that *water resources are fit for use in support of sustainable development*. This is ensured through a suite of outcomes that ensure strengthened IWQM. A key outcome from IWQM will be that the water resource quality would be such that resources are fit for use. The concept of fitness for use is the scientific judgement that involves the objective evaluation of available evidence, of how suitable water is for its intended use or for protecting the health of aquatic ecosystems. The inclusion of the concept of sustainable growth underlines that resources need to be sustainably developed in order to support the country's socio-economic development.

The five outcomes collectively work towards improved IWQM and include:

- Aligned policy, legislation and strategy: A more integrated approach to IWQM has been supported;
- **Good governance strengthened**: A more inclusive approach and supports improved functional roles and responsibilities has been enabled;
- Efficient and effective WQM practiced: Operational and functional management that drives catchment improvements has been effected;
- Innovative financing secured: Instruments that can fund the various IWQM functions have been secured; and
- Effective knowledge and information management enhanced: Systems that empower IWQM decision making and build capacity in staff to drive IWQM have been improved.

The IWQM strategy and implementation plan needs to support the country's effort to achieve the SDGs. The relevant SDG targets and indicators are provided in Table 1.

sanitation for all							
Targets	Indicators						
6.3 By 2030, improve water quality by reducing	6.3.1 Proportion of wastewater safely treated						
pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.2 Proportion of bodies of water with good ambient water quality						
6.5 By 2030, implement integrated water resources management at all levels, including	6.5.1 Degree of integrated water resources management implementation (0-100)						
through transboundary cooperation as appropriate	6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation						

Table 1:	SDG	targets	and	indicators	relevant	to	IWQM
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In support of attaining the SDGs, the development of the National Water and Sanitation Master Plan has identified three master plan targets:

- TARGET 1: By 2030, water in, or from water resources shall be fit for use.
- **TARGET 2:** By 2030, all waste/ water containing waste generated by households and by economic activities shall be disposed of/ discharged lawfully and safely.
- **TARGET 3:** By 2030, integrated Water Quality Management shall be implemented at all levels, including the trans-boundary (international), national, Water Management Area (WMA) and sub-catchment levels.

These targets support the IWQM TOC and strategic intent of the IWQM strategy and noting that this strategy, linked to the NWRS, will need to be revised within a five-year (or ten year as per new bill in preparation) time frame, the attainment of the targets for the Masterplan targets will only be achieved with time and over the period of three implementation plans. This will allow for the adaptive management approaches, at more regular iterations, that are core to the strategy.

It is important to note the level of emphasis that needs to be placed upon our impacts, outcomes, outputs and actions within the appropriate time frames, and linked to specific strategy and planning instruments (Figure 7).



Figure 7: Focused M&E attention within appropriate timeframes

With the more strategic intent being captured through the impact, the aim is to attain the impact in the longer term supported by outcomes attained in the medium term, which are underpinned by iterative suites of inputs-actions-outputs in the short term.

This is not to say that there should not be monitoring or evaluation of progress towards the targets set for outcomes and impacts, it is indeed useful to keep track of progress in this regard. Therefore, whilst this M&E framework delves into some detail to support the short to medium term intent, of giving effect to the implementation plan, it is important to understand the longer term intent so as to enable this ongoing oversight.

The outcomes and impacts are described in Table 2 below to assist in understanding the strategic M&E framework that is presented in Table 3. It must be understood that indicators

and targets may not be a "perfect fit" for any given element of the TOC, and as such need to be understood as "proxy" indicators. Furthermore, some indicators are quantitative and more easily measurable whilst others are more qualitative and require a more intense deliberative assessment. The establishment of baselines is critically important in being able to assess progress and so whilst quantitative baselines would be numeric in format, the qualitative baselines would need to be more descriptive in nature.

Logic Model	Statement	Intent	Description
Impact	By 2030, water in, or from water resources shall be fit for use.	IWQM ensures water resources can be used	IWQM actions supported by regulatory responses realises that Resource water quality objectives (RWQOs) are being met to ensure that resources can be used sustainably and compliance with the RWQOs reflects that water resources can be used sustainably to support development as well as maintain ecosystem functioning.
Outcomes	Aligned policy, legislation and strategy	Policy, legal and strategic frameworks support IWQM	The policy, legal and strategic frameworks across the various sectors of government are strengthened and aligned in order to support IWQM.
	Good governance strengthened	Management decisions support IWQM	The complexities of IWQM will require good governance that engages different government departments, the private sector and civil society. There are spatial dimensions to this that will reflect upon the roles and responsibilities and connect to the various strategy and planning instruments.
	Efficient and effective WQM practiced	Practice realises catchment improvements	The day-to-day business of IWQM will realise more efficient and effective practices, such as improved catchment planning, strengthened regulation and more adaptive management responses. These improvements at catchment level will provide the basis for water quality that is fit for use in catchments.
	Innovative financing secured	Financial resources sustainably support IWQM	A range of different financial instruments are utilised, that move beyond funding from the national fiscus, to ensure that the financial resources needed to effect IWQM are in place.
	Effective knowledge management and information systems enhanced	Information enables decision making	The shift towards more adaptive management approaches will require that data and information is more readily available and packaged in order to support the decision-making process. This will require not only improved monitoring networks, but equally supportive systems and capacitated staff.

Table 2: Impact and outcome level intent descriptions

	Statement	Indicators	Targets	Source of Evidence
Impact	Water resources are fit for use in support of sustainable development	% of national monitoring sites complying with all RQOs for all water quality variables	 By 2030 90% of all national monitoring sites comply with the RQOs and RWQO planning limits 	National IWQM Annual reportAnnual analysis of sites from WMS
Outcomes	Aligned policy, legislation and strategy	Degree to which policy, legislation and strategy across different sectors include core concepts that underpin IWQM	 By 2030, national policy, legislation and strategy instruments for DWS, DEA, DAFF, DMR, DTI, and DH incorporate concepts of IWQM 	 Review of policy, legislation and strategy instruments Inter-departmental committees provide qualitative input
	Good governance strengthened	Degree to which joint and integrated decision making is translated into strategy and implementation	 By 2030 all identified sectoral plans and strategies reflect IWQM as a key consideration in decision making. By 2030 all sectors have regular engagement with DWS through inter-governmental platforms 	 Review of policy, legislation and strategy instruments Inter-departmental committees provide qualitative input
	Efficient and effective WQM practiced	Improvement in compliance with RQOs in each WMA year on year	 By 2030, 90% of monitoring sites comply with RQOs and RWQO planning limits By 2030, enforcement actions have reduced by 50% from baseline 	 National planning review report Annual analysis of sites from WMS Quantitative feedback from National and Provincial WQFMCs
	Innovative financing secured	Level of funding/Financing of IWQM Investment Framework	 50% of IWQM Investment Framework initiatives are funded/financed 	DWS financial analysisDWS and IWQM annual reports
	Effective knowledge and information management enhanced	Level of improvement in development of knowledge products	 By 2030, 50% increase in the development of water quality related knowledge products 	 National survey Quantitative assessments though the National and Provincial WQFMC

Table 3: Strategic M&E framework

4.2 Effecting Implementation

Whilst it is clearly important to have a longer-term intent, there is a need to resolve the challenges that currently exist and to construct actions that help work towards that longer-term intent. There is a real danger in focusing on the day-to-day actions that need to be undertaken to support IWQM, and without strategic direction, and to effectively "muddle along". Therefore, the approach that has been developed and outlined in the IWQM implementation plan is one of a series of phases that provide a constructive approach towards achieving the intent that the IWQM strategy articulates.

This approach is intended to be transformative in nature and drive a longer-term programme of change that looks to improve relative performance over time. In considering the phasing and structure of the implementation plan there was a need to consider:

- **Impact improvements**: These are initiatives that have impact and may be delivered within a defined time frame. These could catalytic and have more far reaching benefits.
- Resolving the basics: These are improvements in the more day-to-day business processes and would most likely be ongoing with time to realise continuous development.
- **Strategic interventions**: These would be more longer-term interventions and may be more complex or resource intensive in nature.

The concept of transforming our strategic approach to IWQM was structured around three keys phases that have prioritised actions, but are not distinct in that there is causality and connectivity between these three phases (Figure 8).



Figure 8: Three-phase approach to transforming WQM

Turnaround: This initial phase lays the foundation for later phases of work with a key theme of strengthening sector leadership. Therefore, the various aspects of this phase have quite far-reaching implications and include:

- Setting the leadership tone for IWQM;
- Building up the broader community of practice both internally to the DWS as well as with a range of external partners;
- Improving key operational aspects that will lay the foundation for meaningful impact in catchments;
- Strengthening our systems particularly with respect to monitoring and information management; and
- Initiating a range of activities that will build capacity and awareness, again, both within and external to the DWS.

During this phase, the actions taken must be seen to have short term impact as well as be understood to be critical for later phased effort.

Strengthening: Building upon the strategic direction set in Phase 1, this phase aims to consolidate to further strengthen the capacity, both within the DWS as well as other sector partners. This phase focuses on normalising the improved IWQM business and hence, this phase will focus on:

- Improving the levels of planning through the development of CMS and Water Quality Management Plans on a water management area basis;
- Continued strengthening of the regulatory aspects of IWQM both through improved water use authorisation and compliance monitoring and enforcement;
- Starting to address the increasing levels of non-point source pollution;
- Addressing the increasing financial challenges through a range of different instruments; and
- Starting to increasingly drive key actions that will realise impacts within identified catchments.

This phase will have a significant focus upon capacitation and as such access to information will be a core theme. Therefore, the importance of predictable and pragmatic action backed up with communications with stakeholders both nationally as well as within water management areas. An important dimension of this phase will be delivery built upon solid partnerships.

Revival: This phase of the IWQM transformation process will start to realise the benefits of Phase 1 and 2 with meaningful impacts being realised within key catchments. This would have been enabled by sound planning, functional partnerships and a financial base that enables interventions.

The work in previous phases to strengthen regulatory approaches would be paying off, supported by a stable institutional framework. Core aspects of this phase would then include:

- The realisation of positive impacts within key, identified catchments will reveal lessons for expansion to other catchments and this will support and strengthen communications and awareness programmes that aims to celebrate successes;
- The efforts to align policy and legislation will start to be realised through ongoing dialogue, partnerships and capacity building through the previous phases;
- Improvements in governance of IWQM will be realised horizontally between sectors and vertically between spheres of government; and
- The next phases of strategy and implementation will be emergent and will potentially see new, diverse approaches to strengthen IWQM.

During this phase, it will be essential for the DWS and partners to demonstrate the benefits of the partnerships and more integrated approaches towards WQM. As such, this phase will celebrate success as well as look to define new approaches to further strengthen the management of water quality, for future phases.

4.3 Phase 1: Turnaround

This implementation plan proposes the turnaround actions needed to deal with the key systemic issues, whilst reflecting the need to be rooted in our catchments and show impact. It should be noted that whilst some actions are immediate and have immediate impact, other actions are required to lay the foundation for more longer-term impact and should also be initiated now. This then supports the elements of causality and connection between the phases (Figure 8)

There have been five key focus areas defined as part of the Phase 1 Implementation which describes the turnaround actions.

4.3.1 Key Focus Area 1: Strengthen DWS Leadership

Internally within DWS, the water quality management function is spread across differing line functions. This strengthens governance in some instances, for example, by splitting policy development and sector support from water use authorisation and compliance monitoring and enforcement, which are specialised functions. There is, therefore, a need for the internal line functions within DWS to work in harmony with each other and have improved alignment, where necessary, to ensure that departmental interventions are both efficient and effective and to enable integration or co-ordination within line functions (SA8).

As has been identified in the IWQM Policy and in Strategic Issue 1, there is a need for improved water quality governance and therefore, to strengthen water quality management governance by resolving internal arrangements within DWS.

The DWS has initiated a restructuring process to find improved structural mechanisms to implement legislation and policy. However, there is currently no strategic champion for water quality management and hence, coherence in approach is being lost (SA9). This needs to be addressed as a matter of some urgency to lead the implementation of the IWQM Policy and Strategy.

The way in which WQM is coordinated can be improved through coordination committees. There are diverse ways in which these coordination committees could be developed. In the first instance the national matters of policy, legislation, regulation and key systemic issues could be coordinated through a national coordinating committee, whilst the more operational aspects of resource management and development would be handled at the provincial level working through the DWS Proto-CMA/CMA and would involve the provincial departments as well as the municipalities. It would be useful for the provincially based committees to report on matters so that key policy and regulatory challenges are swiftly resolved, as well as providing an opportunity for the national committee to gather lessons learned that may influence policy positions or day to day practice.

The focus on the business of water quality management in this first period of implementation should be towards strengthening the water quality management function. Whilst this may involve some elements of organisational design, this would ostensibly be about resolving roles and responsibilities as well as determining accountability. In addition, the identification of a cohort of champions primarily within DWS, to lead the water quality management function is priority. Capacitation of these champions as well as the DWS senior decision-makers is paramount to success.

The M&E framework for Key Focus Area 1 is presented in Table 4.

4.3.2 Key Focus Area 2: Develop a Community of Practice

Whilst the emphasis of this phase of the implementation plan is within the DWS, the foundation also needs to be laid for strengthening and growing future partnerships. The objective is, therefore, to strengthen water quality management governance by resolving internal arrangements within DWS in focus area 1, whilst strengthening inter-departmental structures that can support the development of an integrated approach.

The largest challenge for the implementation of the IWQM Strategy, and indeed to the success of IWQM, is the mobilisation of the broader sector. The Strategy had articulated repeatedly how the operational policies and strategies that the DWS has used to implement the NWA are in effect sound, however, the DWS cannot ensure the sustainable use of the resource without the buy-in and support of the broader sector.

Noting that different Government Departments and sectors have quite different interfaces with water resources, there is a need for a differentiated approach to this mobilisation. During Phase 1 it will be critical for DWS and other Departments including but not limited to DAFF, DEA, DMR, DOH, and DTI to determine how best to work together towards IWQM and to report effectively on progress to this end.

The increasing levels of impact and complexity in managing water quality requires more active engagement of stakeholders. Both local and international experience has shown that 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 are able to support actions by government in WQM. This supports the concept of developing local solutions for local problems, and enables cooperative and coordinated actions that reduce the burden on government for command and control style compliance.

Already in South Africa, there is a strong tradition of engagement of several large private enterprises on water issues. The implementation activities are to strengthen these existing relationships/partnerships, and developing new ones as needed. This will require the development of a partnership framework that will assist in the structuring and development of these partnership arrangements (SA12). DWS will continue to foster these partnerships through initiatives such as the Strategic Water Partners Network and the uMngeni Ecological Infrastructure Partners (SA 13).

This is a critical role and DWS, together with the various government departments that partner the water sector, will continue to support the active engagement of civil society through a variety of platforms such as the Water Sector Leadership Group, various working groups and catchment management forums (SA 15). This engagement with civil society will take place in line with a framework developed by DWS, DEA and CMAs, through a consultative process with civil society (SA 14).

Therefore, the need to develop a sector-wide approach underpins the philosophy of IWQM. There are, and will continue to be, questions of clarification regarding roles and responsibilities between various actors, but noting that these will be resolved through experimentation and implementation means that efforts to mobilise across a wider spectrum of actors needs to be initiated sooner than later. Establishing the "Community of Practice" across the sector is a significant priority in initiating and maintaining sector-wide engagement.

The M&E framework for Key Focus Area 2 is presented in Table 5

4.3.3 Key Focus Area 3: Improve WQM Operation

The catchment is at the 'coal-face' for IWQM and integrated, coordinated planning ensures the effective use of resources (human and financial) in managing water quality. Therefore, **priority catchments must be identified** and processes initiated to address the core issues. Water quality challenges manifest differently across the country, and have different geographical footprints. While some water quality issues are of national importance, others have more localised impacts. The former requires intervention and support from the national level Government, while the latter require more localised management responses.

Of national importance are issues such as:

• Addressing water quality in national priority catchments, including those with significant transboundary water quality concerns;

- The rehabilitation and upgrading of WWTWs in prioritised areas;
- Resolving mining related pollution challenges
- Finding effective solutions to non-point source pollution; and
- Finding effective solutions to the management of industrial discharge within the municipal environment.

Prioritisation should not only include those catchments that are significantly impacted, but those catchments that need to be maintained, and/or protected. The development of IWQM plans will be a priority in supporting this drive.

Weak compliance monitoring and enforcement is currently enabling the discharge of water containing waste to go unchecked, and for water users not to meet the conditions of their water use licences. Often, the conditions under which authorisations are given change and appropriate management or treatment is not sufficiently applied prior to discharge. This is exacerbated by an increasing non-point source pollution as a result of poor or uncontrolled land use management practices. A consolidated approach to strengthen regulation and enforcement is critically 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.

Whilst RQOs exist for certain catchments, there are **no guidelines on its implementation and how to relate the RQO's to licence conditions**. This is a critical issue to be addressed in this implementation phase (SA 36).

The implementation of the WDCS in key priorities catchments is urgently required since it has the ability not only to change behaviour, but also raise revenue to initiate real change in critical catchments. Implementation should take place in priority catchments as a matter of urgency (SA 41).

A major challenge that affects water quality across the country is the pollution derived from poorly managed or failing WWTW. This challenge has been widely recognised, and plans are already in place for addressing some of the challenges. To take this work forward, DWS, with NT, SALGA, CMAs and COGTA will develop a strategic action plan for the rehabilitation and upgrade of prioritized WWTWs (SA 17).

A significant part of the non-point source pollution challenge in specific catchments is pollution from existing and closed mines, with the potential pollution from new mines as an additional challenge. The mine-water management policy has been gazetted and once finalised, a strategic action plan needs to be developed to support the implementation of the mine-water management policy which will include annual reporting on progress against agreed targets (SA 18).

It will be essential for national, provincial and local government to engage in the management of water resources within catchments. DAFF, DMR, DEA, DTI, DoH and other Departments must start to engage with the realities of managing water quality in catchments.

The M&E framework for Key Focus Area 3 is presented in **Table 6.**

4.3.4 Key Focus Area 4: Improve Systems to Support Adaptive Management

Historically, there have been multiple systems within DWS that were not well inter-faced or aligned; this created difficulty for integrated management decisions. Key water quality systems such as Water Management System (WMS) are not effectively being used, nor is it consistently used across provinces. Furthermore, data is scattered, inconsistent, not current or available in an accessible manner to support

Recently, there has been effort through such tools as National Integrated Water Information System to attempt to provide an integrated decision-support system. However, to enable these systems to support adaptive management, increased effort is required to strengthen the systems and build the relevant capacity to use the systems, which include harmonising data that is current, developing guides and protocols and ensure on-going support when needed.

The critical questions about connectivity of systems between departments needs to be considered in this phase and the strategic intent of an integrated system needs to be clarified.

Access to information by stakeholders is currently problematic as information on water quality is not readily available in an accessible way. This needs to be resolved to ensure an inclusive, integrated and people-centred approach to enable the IWQM paradigm.

The M&E framework for Key Focus Area 4 is presented in Table 7.

4.3.5 Key Focus Area 5: Improve Knowledge Management

The lack of technically skilled and experienced staff in water quality and WQM in all spheres of government has significantly contributed to the decline of the country's resources, mainly from weaknesses in authorisation of waste discharges by DWS, gaps in water quality and compliance monitoring and failure to take effective action against polluters, and poor management of WWTW. Whilst there is a myriad of tools that speak to the various aspects of management of water quality, a consolidated approach and the inter-linkages between functions is not well understood or supported. Operational tools to understand the "business of water quality" is limited and needs immediate addressing. It is critical to act swiftly to build capacity through training, professionalization of staff in key areas (SA 55) and to adopt a longer-term vision for sustaining and ramping up capacity to manage increasing water quality challenges in future.

Water pollution has direct, but insufficiently recognised, impacts on economic growth, human health, ecosystems, job creation and the cost of doing business. These economic, social and

environmental impacts need to be quantified to understand the return on investment on the use of state funds to manage water quality, not least to be able to motivate for greater resource allocation. Part of the challenge is that there is not a complete understanding of what the actual cost of managing water quality should be and what investment is required over the next ten years to be able to manage water quality effectively. This lack of understanding impacts on resource prioritisation, both human and financial resources, which ultimately perpetuates the WQM issues.

This is a complex challenge noting that the management of water quality cuts across spheres of Government; has interfaces along the entire water value chain; and has impacts from mega-trends (such as climate change, unconventional gas exploration) and that are not well understood. This is in addition to those pollutants where the level of knowledge, understanding or impact (e.g. nanoparticles, hydrocarbons) were too low to make informed decisions around their management. Understanding of these trends and their water demands and impact on water quality is essential for forward planning. There are a range of research, innovation and academic institutions that produce good products, however, this information is not being fully utilised to underpin decision-making for WQM. An IWQM Research Roadmap (SA 58) is a key step in making informed decisions in relation to WQM and the development of a water quality management investment framework and needs to be initiated now.

Finally, the communication around progress in WQM is poor, currently the media is dominated by images of poor water quality and its horrendous impacts such as fish kills, raw sewerage flowing into rivers, etc. The Department should improve its internal communication, within DWS, but also across sectors and to the media. There are many initiatives taking place to improve the resource water quality, however, this information sits in silos. The development of a IWQM Communication Strategy, that includes an awareness campaign is required to not only mitigate the negative media attention and build confidence in the Department and Government, but also ensure a common understanding of progress being made in WQM and new technology innovation that can be used for communicating. Reporting on water quality trends and progress against targets is a critical element of this strategy, and DWS will report annually, to Parliament, on the state of raw water quality in the country, and on progress against targets by all relevant government departments, as well as on the role played by the private sector and civil society (SA 62).

The M&E framework for Key Focus Area 5 is presented in **Table 8**.

Link to		Turnaround			In	dicator Data (Targe	ts)		
Strategic Objective	Link to Strategic Action	Actions/ Implementation Actions	Expected Output	Indicator	Target 1	Target 2	Target 3	Responsibility	Support
SO3a: DWS departmental structures support integrated WQM	SA8: DWS to reconfigure the departmental WQM function as needed to ensure efficiency and effectiveness	A. Reconfigure the DWS WQM function as needed to ensure efficiency and effectiveness	Effectiveness and efficiency of the WQM function is improved.	Degree to which WQM committees are established and function	 WQM Committees established 	 WQM Committees functional and meet as per the ToR 	 WQM Committees functional and meet as per the ToR 	CD: WQM	DDG: P&I DDG: Regs Provincial Office / CMAs
		B. Develop line function support plans to ensure an integrated approach	Operational aspects of WQM improved	Line functions input into the development of an IWQM business plan	 All required line- functions input into IWQM business plan 	 All required line- functions input into IWQM business plan 	 All required line- functions input into IWQM business plan 	CD: WQM	DDG: P&I DDG: Regs Provincial Office / CMAs
	SA9: DWS to identify a strategic water quality management champion that will drive and monitor the implementation of the IWQM Policy and Strategy	C. Identify strategic water quality management champion/s that will drive and monitor the implementatio n of the IWQM Policy and Strategy	Leadership of the WQM function is strengthened and coordination is improved.	Champion in place and capacitated	 Champion identified and chairing national water quality FMC 	 Champion provides IWQM input into Top Management Strategic discussions 	 Champion leads evaluation of IWQM implementation plan 	DWS DG	DDG: P&I DDG: Regs Provincial Office / CMAs

Table	4: Implementation	Plan to	Strengthen	DWS I	_eadership	in the	short to	medium	term

				-					
		Turnaround				Indicator Data (Tar	gets)		
Strategic Objective	Link to Strategic Action	Actions/ Implementation Actions	Expected Output	Indicator	Target 1	Target 2	Target 3	Champion/Driver	Support
SO3b: Inter- sector departmental structures established to support integrated	SA10: Establish intergovernmental WQM structures at trans- boundary basin, national and joint action supported by regular reporting	D. Establish new inter- departmental WQM structures where needed	Strengthened integration of WQM function across sectors. Improved understanding of the status of WQM across the country.	Functionality of new inter- departmental structures	 New inter- departmental structures meeting where needed 	 New inter- departmental structures meeting where needed 	 New inter- departmental structures meeting where needed 	Provincial Offices / CMAs	DMR, DAFF, DEA, DOH
WQM		Strengthen existing inter- departmental WQM structures	Strengthened integration of WQM function across sectors. Improved understanding of the status of WQM across the country.	Functionality of existing inter- departmental structures	 Existing inter- departmental structures maintained 	 Existing inter- departmental structures strengthened as needed 	 Existing inter- departmental structures input into Phase 2 implementation plan 	CD: WQM, Provincial Offices / CMAs	DMR, DAFF, DEA, DOH
SO4a: Partnerships/ stewardships established and maintained	SA13: DWS to develop and foster strategic sector partnerships	E. Establish, strengthen and foster, where required, existing strategic sector partnerships	Partnership frameworks developed that encourages non- governmental actors to establish partnerships	Degree to which partnerships support IWQM Consistency in approach is enabled.	 Review of existing partnerships to generate lessons learned 	 Framework for partnership developed and agreed 	 Partnership framework implemented 	CD:IO	CD: WQM, Provincial Offices / CMAs
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	F. Develop and enable engagement framework that enables more active participation of civil society at transboundary, national and catchment levels	Consistency in engagement with civil society across catchments has enabled more robust WQM.	Degree to which civil society support IWQM	 Review of existing participative platform to generate lessons learned 	 Framework for participation developed and agreed 	 Participation framework implemented 	CD: 10	Provincial Offices / CMAs

Table 5: Implementation Plan to Develop a Community of Practice in the short to medium term

		Turneround				Indicator Data (Tar	gets		
Links to Strategic Objective	Link to Strategic Action	Actions/ Implementation Actions	Expected Output	Indicators	Target 1	Target 2	Target 3	Champion/ Driver Provincial Offices / CMAs	Support
SO5a: Integrated sectoral planning approach is adopted at transboundary and national level	SA 16: CMAs to lead the development of an IWQM plan for national priority catchments, ensuring consideration of transboundary water quality concerns	G. Develop IWQM plans for national priority catchments, ensuring consideration of transboundary water quality concerns.	Strategic and operational direction set and coordination requirements determined for the management of water quality in priority catchments	Level of IWQM Plan developme nt	 Identification of priority catchments for plan 	 IWQM plans developed in priority catchments 	 IWQM plans developed in priority catchments 	CMAs	DDG P&I, CD:WQM, Provincial Offices National and Provincial Depts
	SA 17: DWS, with NT, SALGA and COGTA to develop a strategic action plan for the financing, rehabilitation and upgrade of prioritized WWTWs	H. Develop a consolidated approach to WWTW & LG	Coordinated action for the rehabilitation and upgrade of prioritised WWTWs outlined and planned	Consolidate d approach to WWTW and local government developed	 Framework for regulatory approach developed 	 Key stakeholders engaged to finalise regulatory approach 	 Approach approved through necessary channels 	CD:WQM	DDG:P&I NT COGTA SALGA
	SA18: DWS, with DMR and DEA, to develop a strategic action plan for the implementation of the mine-water management policy	1. Develop a strategic action plan for the implementatio n of the mine- water management policy	Mine-water management policy implemented through inter-Departmental coordination.	Degree to which Strategic Action Plan is implemente d	 Mine-water management policy approved 	 Framework for action plan developed and workshopped with stakeholders 	 Strategic Action Plan developed 	CD: WQM	DMR, DEA, DWS COO, CMAs
SO6a: Licencing processes streamlined	SA 26: DWS/CMAs to develop protocols for CMA engagement in IWUL applications and approval processes	J. Develop and Implement Strategic Action Plan to strengthen Water Use Authorisation	Approach to IWUL is strengthened and more effectively and efficiently coordinated	Degree to which Strategic Action Plan for WUA is implemente d	 WUA Framework for action plan developed and workshopped 	 Strategic Action Plan developed with stakeholders 	 Strategic Action Plan implemented 	DDG: Regs Supported by CD: WUA	DDG: Regs, CMAs

Table 6: Implementation Plan to Improve WQM Operation in the short to medium term

						Indicator Data (Ta	rgets		
Links to Strategic Objective	Link to Strategic Action	Turnaround Actions/ Implementation Actions	Expected Output	Indicators	Target 1	Target 2	Target 3	Champion/ Driver Provincial Offices / CMAs	Support
SO6b: Targeted/Strengthe ned Compliance, Monitoring and Enforcement of key polluting sectors	SA 29: DWS, DEA to develop improved regulatory approaches to manage water quality pollution from land- based and in-stream activities	K. Develop and Implement Strategic Action Plan to strengthen CM&E approach	Approach towards more effective management of land based and in-stream activities developed	Degree to which Strategic Action Plan for CME is implemente d	 CME Framework for action plan developed and workshopped 	 Strategic Action Plan developed with stakeholders 	 Strategic Action Plan implemented 	DDG: Regs	DDG:P&I, CMAs
SO7a: Adaptive systems-based management is applied at catchment level	SA 35: DWS and CMAs to develop protocols for systems-based adaptive management for IWQM. SA 36: DWS to determine RQOs for SA	L. Develop an implementatio n protocol for RQOs	Adaptive management approaches ensure RQOs are met.	Number of corrective actions taken	 10% improvement in successful interventions from baseline 	 20% improvement in successful interventions from baseline 	 30% improvement in successful interventions from baseline 	CD: Water Ecosystems	DD: P&I, CMAs
SO9a: The Waste Discharge Charge System is implemented	SA 41: DWS, with CMAs, to implement the WDCS in priority catchments	M. Implement the WDCS in pilot Catchment/s	Financial investments realise water quality improvements within key catchments	Implementa tion of the WDCS in pilot catchments	 Implementation readiness completed 	 Business Plans for priority catchments finalised 	 Business plans implemented 	DDG: Regs	DDG:P&I, CMAs NT

				Indicators		Indicator Data (T	argets)		
Links to Strategic Objective	Link to Strategic Action	Turnaround Actions/ Implementation Actions	Expected Output		Target 1	Target 2	Target 3	Champion/ Driver	Support
SO10b: Information systems that are current and accessible to support adaptive WQM	SA 49: DWS/DEA/CMAs to ensure the harmonisation of data and information systems pertaining to resource water quality SA 50: DWS/DEA/CMAs to ensure the harmonisation of data and information systems pertaining to source water quality	N. Ensure the harmonisation of data and information systems in DWS pertaining to source and resource water quality	Improved data collection and information management strengthens IWQM in key catchments.	Degree of improvement in monitoring networks	 Monitoring programme compliance of 80% 	 Monitoring programme compliance of 85% 	 Monitoring programme compliance of 90% 	D:RQIS	DDG:P&I, DDG: Regs, CMAs
	SA 51: DWS, CMAs, DEA, DAFF, DMR to develop systems to enable data and information access by stakeholders/ public	O. Strengthen existing systems in DWS to enable data and information access by stakeholders/pub lic	A more informed civil society supports IWQM	Increased access to NIWIS by stakeholders	 10% increase in access by stakeholders from baseline 	 20% increase in access by stakeholders from baseline 	 50% increase in access by stakeholders from baseline 	D:RQIS	DDG:P&I, DDG: Regs, WTE CMAs
SO10c: Routine assessments inform adaptive WQM	SA 52: DWS/DEA/CMAs to develop protocols and systems to ensure M&E and new information inform adaptive management decisions for IWQM	P. Develop protocols and systems in DWS to ensure M&E and additional information inform adaptive management decisions for IWQM	Improved systems support decision making in support of IWQM	Improvement in systems and protocols to support M&E	 Needs assessment for improvement of systems and protocols undertaken 	 Plan for improving systems and protocols rolled out 	 Existing protocols and systems updated 	CD: CME, DDG: Regs	DDG:P&I, DDG: Regs, WTE CMAs

Table 7: Implementation Plan to Improve WQM Systems to Support Adaptive Management in the short to medium term

						Indicator Data (Target	s)	-	
Links to Strategic Objective	Link to Strategic Action	Turnaround Actions/ Implementation Actions	Expected Output	Indicators	Target 1	Target 2	Target 3	Champion/ Driver	Support
SO11a: Sustained capacity for Government /CMA/sector to effectively manage and support WQM through improved education and training	SA 53: DWS/WRC to develop and implement a capacity building programme for officials in DWS, CMA and other sector departments in systems-based, adaptive IWQM	Q. Formalise and institutionalise the approach to WQM through ongoing capacity building	Strengthened capacity building programmes support the consolidation of a new cohort of water quality champions	Number of staff trained	 Develop and source formalised training programme 	 All WQM staff in provincial offices and CMAs receive annual training 	 All WQM staff in provincial offices and CMAs receive annual training 	DDG: P&I	DDG: Regs, COO, WRC, CMAs
SO11b : WQM decisions are underpinned by best practice, research and innovation	SA 58: WRC to lead the sector in innovation, research and development for IWQM	R. Develop and Implement Strategic IWQM Research Roadmap	A structured programme of research supports innovative approaches to IWQM.	Degree to which roadmap is completed and implemented	 Roadmap is completed and approved 	 15% of roadmap is implemented 	 30% of roadmap is implemented 	WRC	DDG: P&I, CMAs
SO11c: A well informed and actively engaged South Africa	SA 62: DWS, with other Departments and sector institutions, to lead and roll-out awareness creation campaigns	S. Develop and implement an IWQM Communication Strategy	Civil society and other key stakeholders are better informed regarding the water quality challenges faced across the country	Degree to which IWQM Communication strategy is completed and implemented	 Communication Strategy is completed and approved 	 30% of strategy is implemented 	 50% of strategy is implemented 	DDG: P&I DDG:Regs CMAs	DDG: Comms

Table 8: Implementation Plan to Strengthen Knowledge Management in the short to medium term

4.4 Putting M&E into practice

This focus of this first phase is to strengthen the internal functioning of the Department whilst building up towards an integrated inter-departmental and inter-sectoral approach. This will not happen overnight and will require dedicated effort. Likewise, to start building a more integrated monitoring and evaluation process, focused in on IWQM, is going to be iterative and will require the lead of the IWQM champion.

A key dimension of operationalising the M&E framework is to understand the planning cycle, the institutional structures that guide the inputs into these and how M&E is driven (Figure 9).



Figure 9: Operationalising the M&E framework

The development of the IWQM implementation plan will kick off this process and will be fed into a **IWQM business plan**. This plan will be led by the National Water Quality Functional Management Committee (NWQFMC) and will be supported in its development by inputs from Directorate Annual Performance Plans (APPs) as well as the Provincial Offices APPs through the Provincial Water Quality Functional Management Committee. Directorate and Provincial Offices will report on a monthly basis on their APP progress through the DWS Project Management Unit (PMU). The PMU will play a key role in facilitating the sharing of information from the APPs, but the NWQFMC will also set up arrangements for feedback from Directorates and Provincial Offices. The nature of these discussions at these meetings will be empowering and will create the milieu where reporting becomes an integral part of the adaptive management cycle.

It is critical to note that the IWQM business plan will support the implementation of the IWQM Strategy. Not everything in the IWQM business plan for the year will necessarily be in the APPs of the various Directorates and Provincial Offices.

The IWQM business plan will be tracked by the NWQFMC and this will provide the monitoring and reporting to support the development of the IWQM Annual Report as well as an end-of-phase evaluation that will inform the development of the Phase 2 implementation plan. These will support the development of the DWS Strategic plan as well as the next edition of the NWRS and the National Water and Sanitation Masterplan.

During the process to engage with the development of the IWQM business plan it will be imperative to finalise the baselines for the indicators, to support effective and ongoing evaluation.

The importance of the end of phase evaluation cannot be underestimated and needs to objectively review the achievement of the programme through the lenses of effectiveness, efficiency and appropriateness (Figure 10). Based on lessons learned, this will then inform the development of the approach to Phase 2.



Figure 10: Relationship between the project cycle and the different types of evaluation (adapted from DCEC, 2009)

To appropriately shape the evaluation required, there are a series of useful questions that assist in the design. These provide the purpose for the evaluation (what do we want to get out?), understanding the stage of programme implementation (how far have we progressed?), the focus of the evaluation (what do we need to pay attention to?) and the timing of the evaluation (Is there a stage when evaluation is most appropriate?).

A key element of the evaluation at the end of Phase 1 will be the degree to which other sectors and Government Departments have been engaged in IWQM as this will provide an important basis for Phase 2.

4.5 Developing Capacity for Implementation of the M&E Framework

Capacity development is required at different levels and should be targeted in order to ensure that M&E is both supported and managed. However, developing the appropriate capacity is not just about sending staff on training courses. A more holistic approach is required and needs to consider:

- Capacities of people and organisations;
- Incentivising M&E;
- Getting staff allocated for M&E responsibilities;
- Determining the information needs and ensuring system requirements are in place; and
- Financing and resourcing.

Noting that this does indeed require significant coordination and due diligence, the need to have an identified champion who will lead and promote this, is imperative. The chairperson of the NWQFMC is the obvious choice for this and will require regular reporting on progress against the business plan.

5. WAY FORWARD AND READINESS TO IMPLEMENT

Whilst there has been substantial work conducted as part of the project to identify the issues around water quality and its management in the country, the true strength of the IWQM Implementation Plan actually lies in the extent to which implementers and stakeholders have been able to conceptualise the issues and the ability to adopt the strategic actions put forth. Water quality management is a multifaceted and complex issue, affecting all South Africans, and as such, needs to be pursued in a participatory manner, taking into account the varying and differing perspectives of stakeholders (government, private sector and civil society).

The IWQM Strategy will be implemented in a phased approach, with some short-term activities (results chains) required to ensure longer-term intent (the strategic TOC). As such, there are parts of the strategy that need to be initiated rapidly, with the understanding that the action will quickly generate results. Other actions will be initiated in the short term knowing that the outcomes will only be realised in the longer term.

The Theory of Change presented herein illustrates the strategic long-term policy and strategy intent whilst the results chains address the short-term activities, outputs and outcomes that the IWQM Implementation Plan aims to address. Since a range of DWS line functions engage in IWQM, the M&E framework is rooted in cooperation between and amongst these line functions. As the IWQM implementation plan is taken forward there will be an increasing need to engage with broader government, private sector and civil society. The focus of this first phase of the IWQM transformation journey, is inward and enables DWS to strengthen its approach before engaging with the broader water sector. This will develop with time and with strong IWQM implementation and success, this will provide a platform for participation.

Ongoing M&E will take stock of progress and impact towards the IWQMS implementation objectives, and through the establishment of the NWQFMC and the Provincial WQFMC will provide the platform for ongoing discussions about adaptive responses.

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APPENDIX A: PRINCIPLES AND VALUES FOR MONITORING AND EVALUATION

Since evaluation is the determination of merit or shortcoming, a standard of good performance or merit, with which to compare, needs to be defined. Values help to define what is regarded as a good standard of public administration or a good standard of performance (PSC, 2008). Values include the concepts of effectiveness, efficiency, responsiveness to needs and development orientation. These values also align with international good practices as promoted by the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee's principles of effectiveness, efficiency, relevance, impact and sustainability. In addition, Section 195 (1) of the South African Constitution (Act 108 of 1996) states that "public administration must be governed by the democratic values and principles enshrined in the Constitution" and then lists nine values (PSC, 2008:26).

It is within this broad understanding that M&E should be rooted into some core principles and values that must be adhered to. This then not only informs the nature of the evaluation to be undertaken, but also guides matters of process.

Some of these principles can be related to the Theory of Change, as discussed earlier, and influence how the evaluation is undertaken at each level of the Theory of Change. The assumptions, as outlined in the Theory of Change, also require scrutiny in this regard to assess alignment with core values and principles.

Outlining the Key Principles

Having described and briefly detailed the importance of values and principles, it is important to outline the principles upon which the M&E framework for the IWQM Policy and Strategies will be based. There are 12 essential principles as detailed in the Table A1 below.

Principle	Description
Principle 1: Link the performance information to other planning scales	There is a hierarchy of links between sub-catchment, catchment and national resource planning scales. Indicators are selected and measured to ensure that they satisfy the requirements of the scales against which they are primarily evaluated. Ideally, the information provided by these indicators can be aggregated or disaggregated and used at other scales of evaluation. It is important, however, to ensure that the data is technically relevant for use at these other scales.
Principle 2: Complement and consolidate	An evaluation system should, where feasible, integrate and complement relevant existing evaluation requirements. This ensures a consistent approach that not only helps build capacity but also enables more

Table A1: Key Principles to Consider for M&E

Principle	Description
relevant existing systems	efficient use of evaluation information. This principle does not deny the importance of considering the appropriate method of evaluation on a case-by-case basis.
Principle 3: Be cost-effective	The benefits of the information obtained from the M&E system must outweigh the costs of developing and implementing the system. Existing monitoring programmes, for example, should be reviewed and, where relevant, incorporated to reduce duplication and increase cost- effectiveness. The principle can also be applied to reporting processes which can be aligned to meet different stakeholder needs.
Principle 4: Ensure the evaluation system is relevant to the Catchment planning targets	Evaluation design and the selection of performance measures must be relevant to the targets of the plan and the type of evaluation to be undertaken. If the design is not relevant, it will be difficult for DWS/CMA to make judgements on the performance of action plans.
Principle 5: Apply ethical practices to evaluation	Ethics is about right and wrong. In the context of evaluation, ethics covers issues such as informed consent, appropriate behaviour, and storage and retrieval of study data. Ethical issues should be considered at the beginning of an evaluation and throughout all its phases, no matter what role is being played: commissioning the evaluation, undertaking it, or participating in it.
Principle 6: Make evaluations manageable	The complexity of IWQM issues, action plans and their targets, and the practical constraints of the operational environment can make developing and implementing an evaluation system seem overwhelming. It is therefore important to ensure that evaluations are manageable.
Principle 7: Ensure indicators are flexible	IWQM is an evolving discipline and is based on current best practice. Issues that need to be addressed to ensure appropriate management of water resources will change over time and it will be likely that some of the indicators chosen for long-term projects may also change.
Principle 8: Develop evaluation in partnership	Partnership approaches will greatly benefit in building capacity and managing expectations of evaluation. In addition, the sources of data to meet the evaluation needs are likely to come from a variety of collaborators. As evaluation and the action plans are both short to medium-term projects, it is essential that the partnerships are long-term to support ongoing M&E.
Principle 9: Use practical and objective verification	An evaluation system must be based on sound information and processes so that there is confidence in its findings, it is practical to apply, and its approach transparent.
Principle 10: Link evaluation to the	Evaluation systems are primarily implemented to provide feedback on IWQM. They should be used as part of a continuous improvement or

Principle	Description
adaptive management cycle	adaptive management process and focus on the use of information from the evaluation, not just the collection of the information.
Principle 11: Be consistent with national/ Governmental Standards	DWS/CMAs should conform with national or governmental standards for M&E. Some elements may be more relevant to IWQMS evaluations than others, but following the elements of the standard will contribute to consistent project management and evaluation.
Principle 12: Participation in policy making	This principle requires that ordinary people be consulted and involved in all phases of government programmes, from design through to implementation and evaluation, so that their needs will be properly articulated and addressed.

The principles herein are useful in guiding the development of the M&E framework as well as providing insights as to matters of modality. An M&E framework so conceived provides for more rigour in terms of the ability to provide a useful assessment of programme progress, as well as enabling adaptation to both foreseeable and non-foreseeable shifts in the operating environment.

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ACMP Afri Forum Afri Forum Agri SA Anglo American Platinum Armour Chamber of Mines City of Johannesburg Metropolitan Municipality Cleanstream CSIR CSIR Department of Energy **Digby Wells** DWS DWS DWS DWS **DWS Gauteng Provincial Office** DWS GPO DWS GRO DWS Groundwater Planning DWS National Water Resource Planning DWS National Water Resource Planning DWS REMP **DWS Resource Protection and Waste DWS Resource Protection and Waste DWS Water Ecosystems DWS Water Quality DWS Water Quality** DWS WIP Fezile Dabi District Municipality Galeyo Environmental CC Gold Fields Ikamva

Martin van Veelen Charlie Crawford Louis Naudé Alistair Collier Thihanedzwi Ratshibvumo Warrick Ross Thys Kapp Karl-Heinz Riedel Matsidiso Thelingwani John Dini John Annandale Gavin Snow Mogale Matseba Victor Nkuna Bonani Madikizela

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Ndou Africa Sepadi Motau CJ Emmerich Moses Mudau Alidzulwi Mudau Salome Sathekge Letsatsi Chuene Joseph Sara Kris Bal Freeman Chauke Jacques Willemse

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DWS DWS DWS DWS DWS DWS DWS DWS DWS Head Office DWS Head Office DWS Limpopo North West Proto-CMA Glencore BHK Glencore Rhovan Operations Glencore Western Mine Keneilwe Makwela Tania Rademeyer Abram Semata Beatrice van der Merwe Irene van der Merwe Shalene Janse van Rensburg Mothusi Mafatshe Peter Lentsoane Tshepo Dire Stenly Makuwa Thuli Letseka Hlulani Chauke Mmalenyalo Moeng

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Tswelopele Pida	Africa
Hannes De Wet	Agri N
Janse Rable	Agri S
Janse Rabin	Agri S
Mark Dent	AWS
Misaveni Ngobeni	BNT
Melissa Fourie	CER
Amanda Mkhonza	CER
Johan Kapp	CRM
Sibonginkosi Maposa	CSIR
Matome Mathetha	CSIR
Edwin Mametja	DAFF
Nomvuzo Mjadu	DAFF
Takalani Sithi	Depa
Joan Arrikum	DPE
Andretta Tsebe	DPE
Phawen Maluleke	DRDL
Magamase Mange	DST
Tsakane Baloi	DWS
Wilna Bezuidenhout	DWS
Eustathia Bofilatos	DWS
Marie Brisley	DWS
Laura Dotse	DWS
Fanus Fourie	DWS
Nwabisa Fundzo	DWS
Johan Grevling	DWS
Rachalet Grobbelaar	DWS
Geert Grobler	DWS
Jackie Jav	DWS
Millicent Kabwe	DWS
Marius Keet	DWS
Kwaila Lamola	DWS
Knowledge Langa	DWS
Musa Lubambo	DWS
Maduvha Maseda	DWS
Patrick Mlilo	DWS
Zama Mncwabe	DWS
Ndileka Mohapi	DWS
Lerato Mokoena	DWS
Lebo Mosoa	DWS
Thobile Mthivane	DWS
Anet Muir	
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Noxolo Ncapayi Tovhowani Nyamande Bongizenzo Nyawo Rivashi Panday Sputnik Ratau Isa Thompson Nnzumbeni Tshikalange Itan Tshohale Jurgo Van Wyk Niel Van Wyk Fred Van Zyl Pieter Viljoen Barbara Weston Luvuyo Zigana Anne Kilian Ian Midgley Lutho Totsa Mariette Liefferink Gabi Khumalo Annah Ngope Lynette Tungwane Joanna Goeller Zeveli Masuku Victor Munnik Marcus Selepe Stenly Makuwa Bertus Bierman Shalene Janse van Rensburg Marina Krüger Robert Davel Iqbal Mohamed Ali Sara Bopape Amanda Nyingwa Guy Pegram Traci Reddy Barbara Schreiner Derek Weston Francois Van Wyk Morakane Madiba Tally Palmer Heather Booysen Shane Laubscher Bongani Mtsweni David Schaub-Jones Marilyn Govender Vukosi Tinghitsi **Michelle Proude** Nick Tandi Tinashe Mukuta Willem Hazewindus Nonhlanhla Kalebaila Robyn Arnold Samir Randera-Rees Klaudia Schachtschneider

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