Department of Water and Sanitation

EDITION 2

Integrated Water Quality Management POLICIES AND STRATEGIES FOR SOUTH AFRICA

4.2 IMPLEMENTATION PLAN, 2017



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Department of Water and Sanitation

WATER QUALITY MANAGEMENT POLICIES AND STRATEGIES FOR SOUTH AFRICA

INTEGRATED WATER QUALITY MANAGEMENT IMPLEMENTATION PLAN

Report Number 4.2 P RSA 000/00/21715/19

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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.

In light of 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.





The assessment phase of the project informed all three areas as 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.

Based on the fact that 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.

DOCUMENT INDEX

Reports as part of this project:

WATER QUALITY MANAGEMENT POLICIES AND STRATEGIES FOR SOUTH AFRICA			
REPORT SERIES	REPORT TITLE	DWS REPORT NUMBER	
1. PROJECT RE	PORTS/SUPPORTING DOCUMENTS		
1.1	Inception Report	P RSA 000/00/21715/1	
1.2	Literature Review		
1.2.1	A Review of the Water Quality Management Policies and Strategies for South Africa	P RSA 000/00/21715/2	
1.2.2	A Review of the Water Quality Management Institutional Arrangements for South Africa	P RSA 000/00/21715/3	
1.2.3	A Review of the Water Quality Management Instruments for South Africa	P RSA 000/00/21715/4	
1.3	Water Quality and Water Quality Management Challenges for South Africa	P RSA 000/00/21715/5	
1.4	Water Quality Management Glossary	P RSA 000/00/21715/6	
1.5	Stakeholder Consultation and Communication Strategy	P RSA 000/00/21715/7	
1.6	Stakeholder Consultation and Communication Audit Report	P RSA 000/00/21715/8	
1.7	Capacity Building Strategy	P RSA 000/00/21715/9	
1.8	Capacity Building Audit Report	P RSA 000/00/21715/10	
1.9	Technical Close-out Report	P RSA 000/00/21715/11	
2. POLICY REPO	ORTS		
2.1	Integrated Water Quality Management Policy - Edition 1	P RSA 000/00/21715/12	
2.2	Integrated Water Quality Management Policy - Edition 2	P RSA 000/00/21715/13	
2.3	Summary of Integrated Water Quality Management Policy	P RSA 000/00/21715/14	
3. STRATEGY R	EPORTS		
3.1	Integrated Water Quality Management Strategy - Edition 1	P RSA 000/00/21715/15	
3.2	Integrated Water Quality Management Strategy - Edition 2	P RSA 000/00/21715/16	
3.3	Summary of Integrated Water Quality Management Strategy	P RSA 000/00/21715/17	
4. POLICY INTO	PRACTICE REPORTS		
4.1	Implementation Plan - Edition 1	P RSA 000/00/21715/18	
4.2	Implementation Plan - Edition 2	P RSA 000/00/21715/19	
4.3	Monitoring and Evaluation Framework - Edition 2	P RSA 000/00/21715/20	
4.4	Water Quality Management in the Department of Water and Sanitation: Organisational Design	P RSA 000/00/21715/21	

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Approved for Pegasys by:

Mr Derek Weston Project Leader

Ms Traci Reddy Project Manager

Approved for the Department of Water and Sanitation by:

ition

Mr Pieter Viljoen Scientist Manager: Water Quality Planning

marci

Dr Beason Mwaka Director: Water Resource Planning Systems

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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 Green Cape Sector Development Agency Harmony Mines Ikamva

Iliso Consulting Impala Platinum Inkomati Usuthu Catchment Management Agency International Water Management Institute iSAT Isigalo Cooperative Jaco Consulting Jantech JCP Steel JG Afrika Joe Gqabi District Municipality Johannesburg Water Joint Water Forum Jones & Wagener Kaap River Irrigation Board Kakamas Water User Association Komati Basin Water Authority Komati River Irrigation Board Kumkani FM KwaDukuza Local Municipality Kwa-Zulu Natal Agricultural Union La Brie Estate Land bank Lebalelo Water User Association Lemogang womens health Lepelle Northern Water Lephalale Local Municipality Letaba Water User Association Letsemeng Local Municipality Liberty NPO LIM 368 (Mookgophong LM and Modimolle LM) Limpopo Department of Agriculture and Rural Development Limpopo Department of Economic Development, Environment and Tourism Limpopo Proto-Catchment Management Agency Living Lands Lonmin Madibeng Local Municipality Magalies Water Makane Local Municipality Maluti Water Mangaung Metropolitan Municipality Manten Marina Marico River Conservation Association Masilonyana Municipality MBB Consulting Services Merafong City Local Municipality

Midvaal Water Company Modikwa Platinum Mine Mogalakwena Local Municipality Mogalakwena Mine Moses Kotane Local Municipality Mpumalanga Water Caucas Municipal Infrastructure Support Agent Mzimvubu -Tsitsikamma Proto-Catchment Management Agency Nala local municipality Naledi Local Municipality Naledzi Environmental Consulting National African Farmers' Union National Business Initiative Nepad Business Foundation New World Water Sanitation North West Department of Rural, Environment and Agricultural Development North West University Northern Cape Department of Agriculture and Land Reform Northern Cape Department of Environment and Nature Conservation Northern Cape Provincial Government Ntuzuma Enviro Cooperative **OR Tambo District Municipality** Orange Proto-Catchment Management Agency Oranje-Riet Water User Association **Overstrand Municipality** Palabora Copper Petra Diamonds Phumelela Local Municipality **Pilanesberg Platinum Mines Pioneer Foods** Platmines SA Polokwane Local Municipality Pongolo-Umzimkhulu Proto-Catchment Management Agency **PPC** Cement Prime Africa Prop 5 Corporation Randwater **RE-Solve** Rhodes University (Institute for Water Research) **Rhovan Operations Rockwell Diamonds** 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

INTRODUCTION

Although 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 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 required to ensure longer-term intent. 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.

Effective and adaptive management of water quality will be based upon the ability to make key programmatic adjustments timeously. As with any project, the management of resources becomes essential. This then requires an appropriate monitoring and evaluation framework (to enable the ongoing assessment of progress towards the implementation of the strategy) as well as reflection on institutional and organisational aspects (to enable the appropriate and structured use of human and financial resources). In concert, these elements enable a progressive review to ensure actions are undertaken towards attaining identified targets, through efficient and effective use of resources (Figure E-1):



Figure E-1: Adaptive implementation requires on-going evaluation and timeous organisational shifts

This allows the Implementation Plan to become the critical catalyst for shifts in approach towards impact and achievement. As such there is a need to carefully consider the nature of the implementation plan and develop this to create the opportunity to achieve, and demonstrate success.

This **IWQM Implementation Plan, is a management tool** designed to illustrate the critical steps required to progressively achieve the Vision and Goal set out for managing the country's water quality for the next 3-year cycle. Ultimately, the successive suite of implementation plans should support the achievement of the goals laid out in the IWQM Strategy. The implementation plans will support those implementation plans developed to support the National Water Resource Strategy (NWRS) and this would, in turn, support the longer-term goals set out in the National Water and Sanitation Master Plan. The evaluation of progress after three years of implementation will enable improvements to be incorporated into subsequent phases of implementation.

THE THREE PHASE APPROACH

The identification of the need for a new IWQM Policy and Strategy, as well as the assessments that have been undertaken as part of the Policy and Strategy development, have in effect constituted a situation appraisal. This then provides the basis for a three-phase approach, over a period of nine years to transform the management of water quality in South Africa and support the achievement of the longer-term targets set out in the National Water and Sanitation Master Plan (Figure E-2).



Figure E-2: Three-phase approach to transforming WQM

Noting that the next revision on the NWRS is due for release during 2018, the first two phases of IWQM implementation will support the 3rd edition of the NWRS. The National Water and Sanitation Master Plan is currently under development and the first three phases of implementation will support the achievement of the WQM targets that will be set out in the Master Plan. These phases are described below.

PHASE 1: TURNAROUND

This initial phase is the most important phase of the efforts to implement IWQM in that this lays the foundation for later phases of work. As such, the core focus of this phase is to pull together the disparate elements of the WQM business and to create a renewed sense of operating as a coordinated team. This then provides structures and mechanisms for improved governance both within DWS as well building the platforms for improved engagement with external stakeholders/ role-players towards partnerships. There is need to initiate activities that are more longer term in nature such as improvement to management instruments, knowledge management systems and capacity building. These all play a key role in providing the basis for future phases that will aim to improve technical aspects of the WQM business and realise impact in catchments. Towards this end five key focus areas have been identified:

- 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.

PHASE 2: STRENGTHENING

Building upon the strategic direction set in Phase 1, this phase aims to consolidate the experience and aim to further strengthen the capacity, both within the DWS as well as other sector partners. The team that has been consolidated during Phase 1 will be well positioned to work together to strengthen and improve the more technical dimensions of the WQM. The partnerships framework developed in Phase 1 will provide the basis for improved working relationships with key partners who can support catchment-based actions during this Phase. The improved levels of planning, the strengthening of WQM instruments and the drive to realise impacts in catchments will provide the basis for Phase 3 where impacts are expected to be realised. This phase is important in the sense that the cadre of water quality managers that have come together through the various management committees in Phase 1, are now starting to realise the technical benefits of their guidance and hard work. This will cement the community of practice. Hence, this phase will focus on:

 Improving the levels of planning through the development of CMS and WQM 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 is an important dimension of this phase.

PHASE 3: RECLAMATION

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 on-going dialogue, partnerships and capacity building through the previous phases; 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 innovative approaches to further strengthen the management of water quality.

The essence of the transformation agenda for IWQM is to constructively work towards improved management of water quality. The three-phase approach enables the DWS to address the various challenges in a progressive manner with an increasingly outward focus upon the broader sector. The initial turnaround phase will be focused upon resolving many issues that serve to strengthen the leadership and management of water quality from a DWS perspective. This is not to say that many of the other supporting activities that take place as part of the WQM business will not be taking place. Indeed, they will. This implementation plan highlights those key activities that have been identified in order to improve IWQM. The day-to-

day and continuous management activities will progress accordingly and aligned to the line function Annual Performance Plans.

During Phase 1 and 2 there will engagement with the Provincial Offices / CMAs to engage in where priority areas are for technical improvements as well as the identification of catchments for focused management improvement.

IMPLEMENTATION PLAN: PHASE 1 – TURNAROUND FOCUS AREAS

Therefore, 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.

There have been five key focus areas defined as part of the Phase 1 Implementation which describes the turnaround actions (Figure 10E-3) needed to improve the water quality of the resources in the country. These are to Strengthen DWS Leadership, Build and Strengthen a Community of Practice, Improve WQM Operation, Improve systems to support Adaptive Management and Improve Knowledge Management.



Figure E-3: Focus Areas for Turnaround

In effect, this turnaround phase has an inward focus to support an outward strategy and should be understood as a key departure point.

The core turnaround actions for Implementation are presented below:

STRENGTHEN DWS LEADERSHIP	DEVELOP A COMMUNITY OF PRACTICE	IMPROVE WQM OPERATION	IMPROVE SYSTEMS	STRENGTHEN KNOWLEDGE MANAGEMENT
Reconfigure the DWS WQM function as needed to ensure efficiency and structures		Develop IWQM plans and for national priority catchments, ensuring consideration of transboundary WQ concerns	Ensure the harmonisation of data and information systems in DWS pertaining	Formalise and institutionalise the approach to WQM
effectiveness		Develop and Implement Strategic		Develop and implement a IWOM
Identify strategic water quality management champion that will drive	Establish, strengthen and foster existing strategic sector partnerships	Use Authorisation Develop and Implement Strategic	Strengthen existing systems in DWS to enable data and information access by stakeholders/public	Communication Strategy
and monitor the implementation of the		Action Plan to strengthen CM&E approach		
	Develop and enable engagement framework that enables more active	Develop an implementation protocol for RQOs	Develop protocols and systems in DWS to ensure	Develop and implement Strategic IWQM Research Roadmap
Develop line function support plans to ensure an integrated approach	participation of civil society at transboundary, national and catchment levels	Implement the WDCS in pilot Catchment/s	M&E and new information inform adaptive management decisions for IWQM	
		Develop a consolidated approach to WWTW & LG		
		Develop a strategic action plan for the implementation of the mine- water management policy		

Figure E-4: Core Turnaround Actions

WAY FORWARD

This document outlines what needs to be achieved in the next three years to work towards achieving the Vision for IWQM for South Africa. The central challenge to the Implementation Plan process is to ensure that DWS continues to provide effective, efficient and excellent WRM and IWQM service during this transition and that there is ownership of the Plan itself while ensuring that transformation takes place both within Government and in the sector. It is crucial that this first phase unlocks what is required to implement and operationalise the IWQM Policy and Strategy. There are three fundamental points of departure to unlocking IWQM in South Africa:

- Ownership of the IWQM Policy, Strategy and Implementation Plan by an agreed champion within DWS to translate the Plan into action on the ground. This can either be a person, group of individuals or a directorate/sub-directorate, but it is crucial that the IWQM has a consolidated home within DWS.
- Political buy-in and support for the new approaches in WQM from senior decisionmaking official in DWS and Government. This will require these officials to be capacitated to understand the crucial need to IWQM, but also the impact it has on a developing country and how it will affect the ability for Departments and the country as a whole to deliver on the NDP or other developmental targets.
- A communication and awareness drive for "Taking back our water resource together", aimed at informing the sector and the public of water quality trends, issues and impacts, do's and don't's, innovations in technology, and progress with key projects.

The above three elements are the momentum required to take IWQM forward and initiate the start of a longer transformation process to improve the water quality of our resources

TABLE OF CONTENTS

Page No

PRE	FACE			I
DOC	UMENT	INDEX		V
APPI	ROVAL.			VII
ACK	NOWLE	DGEMEN	ITS	IX
EXE	CUTIVE	SUMMA	RY	XIII
INTR	ODUCT	-ION		XIII
LIST	OF FIG	URES		XXI
LIST	OF TAE	BLES		XXI
LIST	OF ACF	RONYMS		XXIII
1.	INTR	ODUCTI	ON	1
	1.1	Backg	round	1
	1.2	Proces	ss of Development	1
	1.3	Purpos	se	2
	1.4	Target	Audience	3
2	THE	CHALLE	INGE	5
	2.1	Fractu	red Links between Water Quality and Water Quantity	5
	2.2	Shiftin	g Nature of Water Quality Challenges	6
	2.3	Institut	tional Misalignment	
	2.4	Limited	d Pool of Resources	9
	2.5	Creatin	ng better synergies with elements of the Development Agen	da9
3.	GOV	'ERNMEI	NT INTERFACES FOR IWQM	
4.	том	ARDS P	RAGMATIC IMPLEMENTATON	
	4.1	Core	Considerations	
		411	Aligning with broader objectives	20
		4.1.2	Prioritised actions	20
		4.1.3	Scale and sectors	
		4.1.4	Supporting implementation	
		4.1.5	Systems-based Adaptive Management	22
	4.2	The T	hree-Phase Transformation	23
		4.2.1	Phase 1: Turnaround	26
		4.2.2	Phase 2: Strengthening	26
		4.2.3	Phase 3: Reclamation	27
5.	IMPI		ATION PLAN: PHASE 1 - TURNAROUND	29
	5.1	Stren	gthen DWS Leadership	
		5.1.1	Intent	.30
		5.1.2	Core Turnaround Actions	
		5.1.3	Implementation Table	
		-	,	

5.2	Devel	op a Community of Practice	34
	5.2.1	Intent	34
	5.2.2	Core Actions	35
	5.2.3	Implementation Table	36
5.3	Impro	ve WQM Operation	37
	5.3.1	Intent	37
	5.3.2	Core Actions	38
	5.3.3	Implementation Table	40
5.4	Impro	ve Systems to Support Adaptive Management	42
	5.4.1	Intent	42
	5.4.2	Core Actions	42
	5.4.3	Implementation Table	44
5.5	Impro	ve Knowledge Management	45
	5.5.1	Intent	45
	5.5.2	Core Actions	46
	5.5.3	Implementation Table	48
WAY	FORW/	ARD	49
REFE	RENCE	S	51

LIST OF APPENDICES

6.

7.

APPENDIX A:	LIST OF ACKNOWLEDGEMENTS	53
APPENDIX B:	SUMMARY OF THE IWQM STRATEGIC OBJECTIVES AND ACTIONS	65
APPENDIX C:	LIST OF PROVINCIAL PRIORITIES	71

LIST OF FIGURES

Figure 1:	Adaptive implementation requires ongoing evaluation and timeous organisational shifts
Figure 2:	Linking the implementation plan to the water sector strategic planning framework.3
Figure 3:	Map of the different types of water quality problems across in South Africa6
Figure 4:	Government Planning System11
Figure 5:	The IWQM Strategic Goals and Objectives18
Figure 6:	Scale and alignment for the implementation of the IWQMS21
Figure 7:	The complex nature of WQM23
Figure 8:	Strategic response to SWOT status24
Figure 9:	Three-phase approach to transforming WQM25
Figure 10:	Focus Areas for Turnaround29
Figure 11:	Outline of the IWQM Implementation Tables

LIST OF TABLES

Table 1:	Summary of Water Quality challenges, key drivers, effects and Water Management Areas
Table 2:	Government interfaces with IWQM13
Table 3:	Summary of Strategic Issues and Objectives18
Table 4:	Implementation Plan to Strengthen DWS Leadership in the short to medium term.33
Table 5:	Implementation Plan to Develop a Community of Practice in short to medium term 36
Table 6:	Implementation Plan to Improve WQM Operation in the short to medium term40
Table 7:	Implementation Plan to Improve WQM Systems to Support Adaptive Management in the short to medium term
Table 8:	Implementation Plan to Strengthen Knowledge Management in the short to medium term

LIST OF ACRONYMS

Abbreviation	Meaning
AMD	Acid Mine Drainage
APP	Annual Performance Plan
ARC	Agricultural Research Council
BPEO	Best Practicable Environmental Options
CAIA	Chemical and Allied Industries Association
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CD	Chief Directorate
CGS	Council for Geoscience
СМА	Catchment Management Agency
СМЕ	Compliance Monitoring and Enforcement
CMF	Catchment Management Forum
CMS	Catchment Management Strategy
COGTA	Department of Cooperative Governance and Traditional Affairs
СоМ	Chamber of Mines
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DDG	Deputy Director General
DEA	Department of Environmental Affairs
DG	Director General
DMR	Department of Mineral Resources
DoH	Department of Health
DPW	Department of Public Works
DST	Department of Science and Technology
DTI	Department of Trade and Industry
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
IWQM	Integrated Water Quality Management
IWRM	Integrated Water Resource Management
LG	Local Government
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002)
NDP	National Development Plan
NEMA	National Environmental Management Act (Act 107 of 1998)
NGO	Non-Governmental Organisation
NPSS	Non-Point Source Strategy

Abbreviation	Meaning
NT	National Treasury
NWA	National Water Act (Act 36 of 1998)
NWRS	National Water Resource Strategy
P&I	Planning and Information
PMU	Project Management Unit
RQO	Resource Quality Objective
SACN	South Africa Cities Network
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SDG	Sustainable Development Goal
SO	Strategic Objectives
SPLUMA	Spatial Planning and Land Use Management Act (Act 16 of 2013)
SWOT	Strengths, Weaknesses, Opportunities and Threats
SWPN	Strategic Water Partners Network
WDCS	Waste Discharge Charge System
WIM	Water Information Management
WISA	Water Institute of South Africa
WMA	Water Management Area
WMS	Water Management System
WRC	Water Research Commission
WRM	Water Resource Management
WSA	Water Services Authority
WSLG	Water Sector Leadership Group
WUL	Water Use Licence
WWTW	Waste Water Treatment Work

1. INTRODUCTION

1.1 Background

The Integrated Water Quality Management (IWQM) Policy and Strategy is a response to an increasing array of water quality challenges. Whilst there is continued pressure on water resources and resource quality continues to decline, current strategies are either not being implemented (due to limited resources) or are not effectively dealing with the increasing water quality challenges arising from, amongst other things, economic and population growth, legacy issues, and the need to maintain existing infrastructure and develop new infrastructure. In the current context of increasing complexity, it is realised that the approaches to water resource management are more regulatory in nature, and whilst still important, regulation alone can no longer be the backbone of an approach to managing water quality. The complexity of managing scarce water resources within a developmental context demands a far more integrated and adaptive approach that will require near real-time decision making based on data and information, supported by capacitated staff, sufficient resources and engaged stakeholders.

Therefore, to be able to address current challenges and be prepared for future challenges, a new integrated approach is required. The IWQM Policy and Strategy have been structured around a **fundamental shift in approach that enables sector-wide engagement** through more **active partnerships** with Government Departments and institutions, as well as the private sector and civil society.

1.2 Process of Development

Although 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 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 required to ensure longer-term intent. 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.

Effective and adaptive management of water quality will be based upon the ability to make key programmatic adjustments timeously. As with any project, the management of resources

becomes essential. This then requires an appropriate monitoring and evaluation framework (to enable the on-going assessment of progress towards the implementation of the strategy) as well as reflection on institutional and organisational aspects (to enable the appropriate and structured use of human and financial resources). In concert, these elements enable a progressive review to ensure actions are undertaken towards attaining identified targets, through efficient and effective use of resources (Figure 1).



Figure 1: Adaptive implementation requires on-going evaluation and timeous organisational shifts

This allows the Implementation Plan to become the critical catalyst for shifts in approach towards impact and achievement. As such there is a need to carefully consider the nature of the implementation plan and develop this to create the opportunity to achieve, and demonstrate success.

1.3 Purpose

This **IWQM Implementation Plan is a management tool** designed to illustrate the critical steps required to progressively achieve the Vision and Goal set out for managing the country's water quality for the next 3-year cycle. Ultimately, the successive suite of implementation plans should support the achievement of the goals laid out in the IWQM Strategy. The implementation plans will support those implementation plans developed to support the National Water Resource Strategy (NWRS) and this would, in turn, support the longer-term goals set out in the National Water and Sanitation Master Plan (Figure 2). The evaluation of progress after three years of implementation will enable improvements to be incorporated into subsequent phases of implementation.

Importantly, the organisational design analysis, undertaken as part of the IWQM Policy and Strategy development programme, has indicated the need to establish a National Water Quality Functional Management Committee. This committee would have the responsibility to oversee and guide the activities contained in this implementation plan. As such, it is recommended that the committee develops an annual business plan that enable them to track progress for the year. This will be provided to the Provincial Offices/ CMAs for discussion at the Provincial Water Quality Functional Management Committees, that will lead WQM in each water management area. The intent of the implementation plan is not to duplicate the Annual Performance Plans (APP) that each line function produces, but to rather compliment this to provide the cohort of staff supporting IWQM a series of steps that will build and strengthen the WQM function with time. The development of the implementation plan does reflect the need to have impact, and each phase of implementation will achieve this in different ways.



Figure 2: Linking the implementation plan to the water sector strategic planning framework

1.4 Target Audience

This IWQM Policy and Strategy are national documents, based on a set of Policy Principles, Values, Strategic Objectives and Strategic Actions to guide decisions and improve the management and status of water quality in the water resources of the country. This Implementation Plan translates those Strategic Actions into pragmatic responses to be executed in this phase. Whilst the Department of Water and Sanitation is the custodian of the country's water resources, this Implementation Plan is directed at all National and Provincial Government departments. It also speaks to South Africa as a whole, including the country's many sectoral institutions, provincial and local governments, as well as non-governmental entities including the private sector, the research community, and civil society. Critically, the IWQM Implementation Plan is meant every individual or institution or organization that plays a role in South Africa's socio-economic growth and development, that impacts or is impacted by water quality and has a stake in the country's future.

2. THE CHALLENGE

South Africa faces a multi-faceted water challenge, which, if not addressed effectively, has the potential to drastically limit the growth potential of the country. Deteriorating water quality is a key element in this challenge, compounded by the fact that South Africa is a water scarce country experiencing variable spatial distribution, frequent droughts, and increasing water demands. Despite the considerable attention paid by the Department of Water and Sanitation (DWS) to water quality management over the years, the current state of the country's water resources reflects several challenges confronting the water sector, resulting from key contributing factors and indicate the need for an integrated approach to the management of the resource.

2.1 Fractured Links between Water Quality and Water Quantity

Water quality management **is a complex and confounding challenge** because of incomplete, contradictory, and changing requirements that are often difficult to recognise. Often, there are a multitude of interacting factors, including incomplete information, political interference, institutional instability, and changes outside the control of managers.

Unfortunately, it is an operational reality that the water quality management approach used to date in South Africa has not managed to adequately address the challenge. The water quality challenges reflected above occur within already complex socio-economic and biophysical systems and understanding the multiple potential impacts and changes in these systems provides a major challenge.

Water quantity and water quality are inextricably linked, especially in complex systems.

Within these complex systems, water quality and water quantity issues are inextricably linked. Water resources have a certain assimilative capacity which can manage pollution impacts to acceptable levels. Increased abstraction of water from water resources decreases the amount of water available in the resource, resulting in reduced assimilative capacity and increased concentrations of pollutants. While a portion of the abstracted water is usually returned to the water resource at the tail end of the use process, it is inevitably in a worse quality than when abstracted. In periods of drought, the assimilative capacity of water resources is significantly decreased, while floods have the potential to mobilise pollutants that have been trapped in sediment. Thus, the management of water quality cannot be done in isolation from the management of abstraction, storage and use, including water conservation and demand management.

2.2 Shifting Nature of Water Quality Challenges

Surface and ground water quality across the country is deteriorating. Water quality challenges are still predominantly a result of the challenges the country faces in managing the ever-expanding sources of pollution. These sources may be point- or non-point (diffuse) in nature and are contributed to by <u>rapid urbanisation</u>, <u>expansion of the mining industry</u>, increasing use of chemicals in industries, inappropriate practices for surface soil tillage and fertiliser application, and the destruction of our natural/green infrastructure, including wetlands and riparian buffer zones. Further to this inadequate land-use planning,

unsustainable development practices, and inadequate operation and maintenance of waste infrastructure (a predominantly urban challenge) have compounded these challenges. As a result, the quality of the country's water resources has been compromised and, in many cases, the fitness for use of water that is required for downstream water use has been hampered.

The changing social, economic and environmental landscape requires new and integrated approaches to water quality management

Pollution challenges in South Africa have different scales and severity of impact, and some are more geographically specific than others. Salinisation, sedimentation, nutrient enrichment, and microbial pollution, for example, occur at a national scale, while acid mine drainage and agrochemical pollution occur at regional or site-specific scales.

The prevalence and/or severity of impact of particular water quality issues varies markedly from river system to river system and between Water Management Areas (WMA) (see Figure 3 and Table 1).




Table 1: Summary of Water Quality challenges, key drivers, effects and Water Management Areas (WMAs) concerned (adapted from DWA, 2011)

Water quality challenge	Key driver/ Impacting Sector	Effect	WMAs associated with water quality challenge
Eutrophication	 Under-performing waste water treatment works; Intensive agriculture fertilizer use; and Dense urban sprawl and un-serviced sewage. 	Proliferation of biomass, occurrence of toxic algae, additional water treatment costs, taste and odour problems, clogging of irrigation infrastructure, impaired aesthetics, negative impacts on recreational water users.	All WMA's
Microbial contamination	 Under-performing waste water treatment works; Diffuse wash-off from informal dense settlements; Vandalism of sewage reticulation system & pumping infrastructure; and Spills of raw sewage into receiving water resources. 	Human health risks to recreational water users, poor bacterial water quality, health impacts on downstream water users, low dissolved oxygen content in affected waters, negative ecosystem impacts, and occurrence of water-borne diseases.	All WMAs except for the Orange WMA (6)
Salinization	 Mines (operational and abandoned); Industrial effluent; Sewage return-flow water; Stormwater runoff; Diffuse agricultural runoff; Atmospheric fallout; and Natural sources. 	Water treatment costs, scaling problems in water infrastructure, appliances and boilers, soil salinity and irrigation system clogging.	All WMAs
Toxicants	 Pesticides; Industry; and DDT for malaria control. 	Fish kills, negative human health impacts, bioaccumulation of harmful substances in fish, increased crocodile mortalities.	Limpopo (1); Olifants (2); Inkomati-Usuthu (3); and Vaal (5) WMAs
Altered flow regime	 Dams and weirs; and Inter-basin transfers. 	Turbidity (erosion), algal growth, altered water temperatures, dissolved oxygen changes, taste and odour changes, changes in environmental flows, seasonal flow changes, ecological water requirement changes, negative impact of recreational water users.	Limpopo (1); Olifants (2); Inkomati-Usuthu (3); Vaal (5); and Orange (13) WMAs
Acid mine drainage (AMD)	 Mines (operational and abandoned); and Controlled releases from mines. 	Mobilisation of metals and potential negative radiological effects, fish and crocodile kills, bioaccumulation of harmful substances, low pH, elevated sulphur and iron, elevated salts and dissolved metals.	Olifants (2); Inkomati- Usutu (3); Pongola- Mtamvuna (4); and Vaal (5) WMAs
Metal contamination	 Mines (operational and abandoned); and Uncertain in some instances. 	Mobilisation of metals, fish and crocodile kills, bioaccumulation, potentially harmful for human health and for the aquatic environment.	Olifants (2); Inkomati- Usuthu (3); and Orange (6)

Water quality challenge	Key driver/ Impacting Sector	Effect	WMAs associated with water quality challenge
Suspended solids (turbidity and sedimentation)	 Land degradation, over grazing and soil erosion; Mining practices; Informal dense settlements; and Subsistence agriculture. 	Increased concentrations of suspended solids during high flows; silting up of rivers, weirs and dams; loss of habitat, increased water treatment costs, and clogging of irrigation infrastructure.	Limpopo (1); Olifants (2); Inkomati-Usuthu (3); Pongola-Mtamvuna (4); Vaal (5); Orange (6); and Mzimvubu-Tsitsikamma (7) WMAs
Radioactivity	 Discarded mine dumps. 	Bioaccumulation in fish, aquatic organisms, soils, humans. Carcinogenic effects.	Vaal (5) WMA
Urban rivers and urban pollution	 Poor quality stormwater; Hydrocarbon sources; Solid waste; and Runoff from dense settlements. 	Poor bacterial water quality, human health risks, and impacts on ecosystems (low Dissolved Oxygen).	Vaal (5); Mzimvubu-Tsitsikamma (7); Breede-Gouritz (16); and Berg-Olifants (19) WMAs
Agro-chemicals	 Pesticide & herbicide residues; and Endocrine disrupting chemicals. 	Interference with hormonal systems of organisms and negative ecological impacts.	Mzimvubu-Tsitsikamma (7); Breede (8); and Berg (9) WMAs
Aesthetics	 Debris, litter and poor waste disposal practices; Oils, greases and detergents; and Sewage and industrial return-flow water. 	Adverse visual impacts, impaired water clarity, odour and colour.	All WMAs

2.3 Institutional Misalignment

Water quality management increasingly requires catchment rehabilitation through a range of rural and urban measures, implying an integrated approach that requires cooperation with other sector regulators. While the **Department of Water and Sanitation is**

The fragmented nature of existing government policies and strategies and inadequate or incomplete institutional arrangements is a major contributor to inadequate cooperative governance and alignment between different government departments and sectors. the department primarily responsible for protecting water resource quality and ensuring that resources are used sustainably, there are a number of other government departments and spheres of government that have important roles in this regard, in particular, national and provincial Mineral Resources. departments of Agriculture, Environmental Affairs, Health, Trade and Industry, Education (Basic and Higher), Rural Development and Land

Reform, Human settlements, National Treasury, Catchment Management Agencies (CMAs), Municipalities, COGTA and SALGA. Currently water quality management arrangements are hampered by misaligned institutional structuring, poor co-ordination and conflicting approaches between government departments and spheres of government. It is also recognised that whilst there is a myriad of supporting operational policies, strategies and management instruments across Government; the fragmented nature of these have created a challenge for water quality management.

Therefore, the Integrated Water Quality Management (IWQM) Policy provides a Policy framework that aims to connect with wider national policies and provides the opportunity to align approaches towards managing water quality and ensuring that water quality management becomes a **national imperative**, and not just the mandate of the Department of Water and Sanitation.

There are significant challenges that exist in working horizontally between sector Departments as well as vertically between the different spheres of Government. To some degree this has also been hampered by the lack of certainty with the establishment of water management institutions that would support these interactions, and would formulate these inter-governmental approaches through the development of a Catchment Management Strategy (CMS).

2.4 Limited Pool of Resources

There are very significant challenges being faced in terms of securing sufficient resources to undertake the planning, monitoring and regulatory functions required to manage water quality. The pressure upon staff to manage multiple and complex projects has become significant. In Departments where water is not "core" business, the matter of water quantity and quality often become "add-on" functions for staff that have to deal with multiple environmental aspects. Staff with experience and knowledge typically become overloaded and incapacitated, and cannot provide the strategic and technical guidance that junior staff require. The ability to purchase the equipment needed to support water quality management and to make the necessary site visits has also been hampered by budget cuts.

2.5 Creating better synergies with elements of the Development Agenda

South Africa's Vision for IWQM, as presented above, mandates that everyone has a role to play in improving resource water quality, especially in those critical areas where rural and peri-urban inhabitants are dependent directly on the resource itself. This improved water quality is crucial to improve socio-economic and environmental development. The National Development Plan (NDP) acknowledges water is a strategic resource and generally highlights that the country is water-scarce (NPC, 2012)

Africa's Agenda 2063 draws from the Pan African vision of having a continent that is peaceful and prosperous (African Union Commission, 2014). Furthermore, the Pan African vision envisages more involvement of its citizens in driving its own agenda, the exact sentiment is echoed by the IWQM Policy, whose vision is:

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

South Africa, as a signatory to the SDGs, must strive to meet specified targets under each of the SDGs. Water quality has a direct bearing on our ability to meet the goals of ending poverty, ending hunger and achieving food security, ensuring healthy lives and promoting sustainable economic growth. 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:

- By 2030, improve water quality by reducing 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;
- By 2030, implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate; and
- By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

These SDGs mirror the sustainable socio-economic development path of South Africa as outlined in the National Framework for Sustainable Development (2008): "South Africa aspires to be a sustainable, economically prosperous and self-reliant nation state that safeguards its democracy by meeting the fundamental human needs of its people, by managing its limited ecological resources responsibly for current and future generations, and by advancing efficient and effective integrated planning and governance through national, regional and global collaboration".

The global indicators, targets and monitoring framework for the SDG's have been set. South Africa is now in a process of building on those platforms to domesticise those indicators and targets to ensure that they are relevant and specific to South Africa. The uptake of those targets into National Policies is key to ensuring its success and has been translated into 3 targets as presented in the National Water and Sanitation Master Plan 2030.

The IWQM Policy has already advocated for its alignment with the broader development agenda. However, like the IWQM Policy, the SDG's require a core champion to ensure coordination and oversight, the functioning institutions and the relevant resources (both human and financial) assigned for its achievement. Trans-boundary uptake of those indicators is also crucial, and the existing platforms, such as River Basin Organisations, and any other structures that support transboundary management should participate in the setting and achieving of the targets.

It is critical to ensure that IWQM is understood as a key dimension of the local development agenda. As such, this needs to dovetail with the Government Planning system, as outlined in Figure 4. The connectivity and interfaces between the various planning instruments within this system is critically important. This will require an on-going discourse across Government to ensure that these instruments do interface effectively and enable integrated approaches to implementation.



Figure 4: Government Planning System

With the mainstreaming of the SDGs, it has been proposed that the within-country reporting should align with the outcomes for the SDG process. Three high-level targets (to be progressively realised by 2030) are set for the Water Quality Management component of the National Water and Sanitation Master Plan. These were selected on the basis of the Department of Water and Sanitation's (DWS's) constitutional mandate and its statutory obligations in terms of applicable national water legislation. The targets for Water Quality Management, further, stand in support of those components of SDG 6 that has direct Water Quality relevance. Each of the three, high-level targets represents milestone objectives that are only realisable upon the harmonious implementation of multiple preceding strategic actions. These three high-level targets pertain to (1) source control; (2) resource Water Quality management; and (3) integrated Water Quality Management and are given as:

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

The upcoming challenge for implementation will be to:

- Lay the foundation for the longer term strengthening of IWQM;
- Undertake processes at a national scale that support national through to local level processes; and
- Undertake catchment to local level management processes that can start to realise impacts (positive change) upon the resource.

3. GOVERNMENT INTERFACES FOR IWQM

The largest challenge for the implementation of the IWQM Strategy, and indeed to the success of IWQM, will be the challenge to mobilise 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 (Table 2). The table below gives a high-level outline of the interfaces with other Government Departments. The Inter-Departmental workshop, held on 10th February 2017, was a useful platform to commence the series of engagements required to obtain buy-in and support for the IWQM. The leading role of the DWS in developing and maintaining these relationships will be critical in the months to follow.

Government Departments	N/P/L Concern		Interfaces	Strategic Objectives							
	Water Quality Impacting Sectors										
Agriculture, Fisheries and Forestry	N / P	 Water quality for irrigated agriculture Impacts upon water and agricultural resources 	 Policy Planning Regulation Adaptive management Monitoring and information Capacity building 	 SO1a SO5a-b SO6a-b SO7a SO10a-c SO 11a-c 							
Cooperative Governance and Traditional Affairs	N / P	 Support inter- governmental cooperation Oversight of municipal services 	 Policy Planning Regulation Monitoring and information Building capacity 	 SO1a SO5a-b SO6a-b SO10a-c SO11a-c 							
Energy	N	 Water quality of water used in power generation i.e. largely for cooling purposes 	PlanningRegulation	SO5a-bbSO6a-b							
Environmental Affairs	N / P	 Environmental impact assessments Protection of specific sites of importance Compliance with NEMA legislation 	PolicyPlanningRegulation	SO1aSO5aSO6a-b							
Health	N / P	 Water quality of domestic supplies (urban and rural supplies) 	 Planning Regulation Monitoring and information Build capacity 	SO6a-bSO10a-cSO11a-c							

Table 2: Government interfaces with IWQM

Human Settlements	N / P / L	Water quality of domestic suppliesSanitation	PlanningRegulation	S05aSO6a-b
Mineral Resources	N / P	 Planning mining developments Impact of mining developments 	 Planning Regulation Adaptive management Monitoring and information 	 SO5a-b SO6a-b SO7a SO10a-c
Municipalities	L	 Bylaws Water quality from industrial discharges Stormwater runoff Municipal discharges from WWTW 	 Policy Planning Regulation Adaptive management Monitoring and information 	 SO1a SO5a-b SO6a-b SO7a SO10a-c
Public Enterprises	N	 Oversight of Public Entities adherence to environmental policy and regulation 	RegulationMonitoring and information	SO6a-bSO10a-c
Rural Development and Land Reform	N	 Water quality for irrigated agriculture 	PolicyPlanning	SO1aSO5a-b
Tourism	N / P / L	 Water quality of domestic supplies Environmental health 	PlanningRegulation	S05aSO6a-b
Trade and Industry	N / P / L	 Water quality for industrial use purposes Water quality of industrial discharges 	PolicyPlanning	SO1aSO5a-b
Water and Sanitation	Ν	 Sustainable water use management and development Sector coordination Sector development 	 Policy Governance Structuring Planning Regulation Adaptive management Financial support Monitoring and information Building sector capacity 	 All SOs
		Enabling Improved	l Water Quality	
Basic Education	N / P	 Broader societal awareness Early career guidance 	 Building sector capacity 	■ SO11a-c
Communications	N / P	 Broader societal awareness 	 Building sector capacity 	 SO11a-c
Higher Education	N / P	 Technical career guidance 	 Building sector capacity 	 SO11a-c
National Treasury	N / P	 Good governance Financial resources to support IWQM 	PolicyGovernanceStructuringFinancial management	 SO1a SO3a-b SO5a-b SO8a SO9a-b
Planning,	N	Oversight of strategic	 Policy 	 SO1a

Evaluation			•	Financial management	•	SO6a-b
					•	SO8a
					•	SO9a-b
Science and	N	 Support water research 	•	Cross cutting projects	•	All SOs
Technology		and technology		that touch all aspects		
		development				

*National/Provincial/Local

There are different 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 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.

These structures, their formats and modalities will be developed progressively, and this will be articulated in the implementation plan.

4. TOWARDS PRAGMATIC IMPLEMENTATON

In many instances strategies fail since there is significant pressure to develop and implement a complete suite of solutions, without fully understanding the challenges at hand and taking deliberate decisions to break up tasks into pragmatic tranches of work that can be effectively completed. In these instances, there is often an over emphasis on placing form over function, and institutions start restructuring with the aim to find an organisational design that can deliver. This results in an avoidance of the real issues in creating improved, efficient and effective action, underpinned by an active learning environment that enables staff and stakeholders to jointly learn and develop adaptive responses (Andrews, Pritchett and Woolcock, 2012).

There is therefore a need for a change in approach to ensure that the trajectory of declining water resource quality is checked, that we start to create the right capacity to strengthen our management of water resources whilst working towards a longer-term vision of on-going IWQM that is supported and enabled through adaptive management approaches.

The approach in the development of the implementation plan has, therefore, been to **focus upon actions and activities that enable improved IWQM**, with a sense that success will result in further success. Strategies typically fail for a range of reasons that include:

- Lack of ownership;
- Lack of communication;
- Staff get lost in the day-to-day delivery;
- Strategy is treated as an add-on;
- Strategy is not relevant;
- Strategy is only discussed at annual planning sessions;
- The strategy fails to develop an implementation plan or approach;
- There is no progress tracking;
- There is no accountability; and
- There is no capacity building or empowerment to support the strategy.

Noting that the approach taken in the development of the IWQM Policy and Strategy, plus the suite of "tools" to ensure implementation (including this implementation plan, the organisational design recommendations and the monitoring and evaluation framework), many of the above mentioned issues should be sufficiently addressed.

However, it is critically important that to ensure that strategy is translated into meaningful focus areas for delivery. This effectively means taking the strategic issues, objectives and actions and effectively cascading them into more pragmatic and tactical focus areas for delivery. This is done in order to make practical and tactical sense of strategic actions that

don't necessarily get implemented consequently due to various administrative and technical aspects.

The **IWQM Strategy provided a significant suite of 11 Strategic Issues, 21 Objectives and 62 Actions** to fulfil the 5 Strategic Goals (Figure 5). These are provided in full in Appendix B.



Figure 5: The IWQM Strategic Goals and Objectives

Table 3:	Summary	of	Strategic	Issues	and	Objectives

Strategic Issues	Strategic Objectives				
STRATEGIC ISSUE 1: Harmonization of Policies and Strategies to enable improved WQM	SO1a : Policies and Strategies impacting upon IWQM are harmonized				
STRATEGIC ISSUE 2: Legislative review	SO2a: IWQM is effectively supported by the NWA/WSA				
and amendments to enable integrated WQM	SO2b: IWQM is effectively supported by other legislation				
STRATEGIC ISSUE 3: Improved WQM	SO3a: DWS departmental structures support integrated WQM				
related governance	SO3b: Inter-sector departmental structures established to				
STRATEGIC ISSUE 4: Formalise	SO4a: Partnerships/stewardships established and maintained				
governance frameworks to support	SO4b: Governance framework for active citizenry formalized				
non-governmental engagements					
STRATEGIC ISSUE 5: Improved	SO5a: Integrated sectoral planning approach is adopted at				
coordination in integrated planning	transboundary and national level				
	SO5b: Integrated sectoral planning approach adopted in catchment/regional plans				

Strategic Issues	Strategic Objectives					
STRATEGIC ISSUE 6: Strengthen IWQM	SO6a: Licencing processes streamlined					
Regulation, Compliance and Enforcement	SO6b: Targeted/strengthened compliance monitoring and enforcement of key polluting sectors					
STRATEGIC ISSUE 7: Application of Systems-based Adaptive Management Approaches	SO7a: Adaptive systems-based management is applied at catchment level					
STRATEGIC ISSUE 8: Fiscal support for integrated WQM	SO8a: WQM interventions are financially supported by the fiscus					
STRATEGIC ISSUE 9: Develop pricing	SO9a: The Waste Discharge Charge System is implemented					
and incentives that support integrated WQM	SO9b: Mechanisms for incentivising good practice developed					
STRATEGIC ISSUE 10: Strengthen Monitoring and Information	SO10a: An integrated and functioning Water Quality monitoring network					
Management	SO10b: Information systems that are current and accessible to support adaptive WQM					
	SO10c: Routine assessments inform adaptive WQM					
STRATEGIC ISSUE 11: Build water quality and WQM Capacity through Education, Training and	SO11a: Sustained capacity for Government /CMA/sector to effectively manage and support WQM through improved education and training					
Communication	SO11b: WQM decisions are underpinned by best practice, research and innovation					
	SO11c: A well informed and actively engaged South Africa					

Recognising that resources and capacity are limited, there is an understanding that this IWQM Strategy will only be implemented iteratively and with time. Hence, a phased and pragmatic implementation of these many actions is required.

4.1 Core Considerations

It is recognised that the sector faces a complex challenge within a context of resource constraints. The development of the implementation plan does therefore need to be both pragmatic and practical.

The core considerations for the formulation of the implementation plan include:

- Focus on short to medium term timeframes, while building a platform for future strategies in line with the policy and visions for WQM;
- **Prioritising critical concerns**, while ensuring that other issues are addressed through on-going management or monitoring for future prioritisation and action;
- **Relevance at national, catchment and local scales,** while ensuring horizontal alignment across sectors and institutions at each scale;

- Provide a framework for actions towards a strategic intent via a series of implementation plans; and
- Enable an adaptive response to changing circumstances and achievements based on effective on-going monitoring and evaluation.

4.1.1 Aligning with broader objectives

Focus on short to medium term timeframes, while building a platform for future strategies in line with the policy and vision for WQM.

The NWA enables the NWRS to be developed progressively over time as well as requiring that the strategy be reviewed and updated every 5 years. This enables the NWRS to have a longer- term vision supported by short to medium term action. It also enables the strategy to be improved and updated more regularly as required, to be adaptive. The second edition of the NWRS has placed a focus upon developing sectoral implementation plans that support the implementation of the NWRS, as well as develop a multi-sectoral approach.

This is now being further expanded into the development of a National Water and Sanitation Master Plan that will provide the longer objectives for the management and development of water resources and sanitation services. The incorporation of the infrastructural dimensions into this plan provides a more comprehensive plan for the water sector to support national development. Whilst the vision for the Master Plan will be long term, these plans will be revised every ten years.

The IWQM Strategy as part of the NWRS focusses on critical and prioritised actions for a short to medium term timeframe, whilst also providing the framework for the longer-term actions that must be undertaken to achieve effective IWQM and support the implementation of the Master Plan. This implementation plan, therefore, needs to be pragmatic in giving effect to the NWRS and the IWQM strategy in a clear, concise and measurable way, as well as aligning with the sectoral implementation plans that require development to support the NWRS and Master Plan.

4.1.2 Prioritised actions

Prioritising critical concerns, while ensuring that other issues are addressed through on-going management or monitoring for future prioritisation and action

The complexity of managing a scarce water resource under increasing levels of uncertainty will necessitate that not all of the many water quality challenges can be addressed simultaneously. Human and financial resources as well as information and systems constraints will inhibit this. Therefore, the focus of the implementation plan must be on delivering change for prioritised challenges. This does not mean that work on other areas pertinent to water quality will not continue, but it serves to guide the allocation of human and financial resources for the 5-year period of the strategy, with the objective of building for longer term improvements.

In considering these priorities it will be critical to understand:

- **Impact:** Some activities need to be undertaken to reflect higher levels of impact upon water resources and water resource management.
- **Resources:** There are increasing levels of resource constraint that will influence as to what can be undertaken pragmatically.
- Causality: Some activities need to be undertaken in order to enable future activities.
- **Complexity:** It may be an effective approach to deal with simpler issues upfront whilst unpacking the more complex issues.

4.1.3 Scale and sectors

Relevance at national, catchment and local scales, while ensuring horizontal alignment across sectors and institutions at each scale

Implementation must consider activities across a range of different spatial scales (transboundary, national, catchment, local), whilst also addressing the issues that are specific to certain, and between sectors (Figure 6). There is, therefore, the need to work "vertically" across different spheres of Government, functioning at different geographic scales and across differing administrative boundaries. Likewise there is a need to work "horizontally" between the various sectors that have differing mandates. These vertical and horizontal interfaces present an array of institutional and administrative challenges that are not easy to overcome, but are critical to address in ensuring IWQM. Whilst being cognisant of these dimensions is important, finding pragmatic ways of addressing these through the implementation plan becomes critical.





Whilst the roles of different departments and organisations vary according to spatial scale and mandate, the catchment level is understood as the critical scale for managing water quality and it is the various interfaces at the catchment scale that are key in successful WQM. As such, the role of Catchment Management Agencies (CMAs) becomes important as a facilitator to this end. The development of catchment management strategies (CMS) then becomes a key tool to guide in the strategic, adaptive management of water quality. The implementation plan does need to prioritise catchment level interventions in order to realise impact upon the resource.

4.1.4 Supporting implementation

Provide a framework for actions towards a strategic intent

Noting the complexity of WQM which involves dimensions of protection, planning, authorisations, monitoring, regulation and oversight, it is important to provide a purposeful and pragmatic framework that enables short term achievement towards a longer-term purpose. In this regard, the implementation plan must have a short-term implementation focus and review cycle, and which must support the use of annual performance plans in government. Of critical importance is the development of SMART (Specific, Measurable, Agreed-upon, Realistic, Time-based) targets in these plans, which will be supported by the development of the monitoring and evaluation framework.

4.1.5 Systems-based Adaptive Management

Enables an adaptive response to changing circumstances and achievements based on effective on-going monitoring and evaluation

The management of a complex socio-ecological system requires an adaptive management approach. Successful implementation of the IWQM strategy will be based on the ability of the state, particularly at the catchment level, to implement a deliberate, systems-based, adaptive management approach. This approach must be inclusive, bringing together state, private sector and civil society players on a regular basis to review and adapt plans and actions. As such the implementation plan must reflect where these different stakeholders are engaged.

Adaptive management enables the refinement of strategies and plans and the refocusing of financial and human resource allocation once certain actions have been implemented or certain milestones achieved, when the expected results from implemented actions are not achieved or when additional information becomes available that informs improved approaches.

The implementation plan should look to support this approach, supported by an effective monitoring and evaluation system. This needs to take place at the catchment level where the most substantial implementation of the strategy will take place. This system needs to be structured around a broader programmatic monitoring and evaluation that would include a reflection of impact upon water resources themselves.

4.2 The Three-Phase Transformation

Despite considerable attention being paid by government to WQM over the years, the current state of the country's water resources indicates that the management of water quality has not been as effective as required to ensure that water resources are sustainably used. The planning level review of water quality in South Africa undertaken by DWA in 2011 revealed that, only 17% of monitoring points met the Resource Water Quality Objectives for (all) 6 selected water quality variables (DWA, 2011).

At a strategic level, the key issues are due to many complex and inter-connected challenges such as balancing of socio-economic development needs, on-going uncertainties in governance, challenges with appropriate technical capacity and impacts of global shocks like climate change and disasters (Figure 7).

A 'Strengths-Weaknesses-Opportunity-Threats' (SWOT) analysis revealed a range of considerations including:

- Legal/Policy/ Regulatory;
- Institutional structural;
- Institutional management;
- Institutional processes;
- Institutional capacity;
- Funding;
- Technical;
- Planning processes;
- Cooperative Governance/ partnerships;
- Political; and
- Social.



Figure 7: The complex nature of WQM

In developing the IWQM Strategy these various challenges were categorised into: (i) Nonaligned policy, legislative and governance frameworks, (ii) inappropriate practices, (iii) insufficient finances and (iv) ineffective knowledge and information management and these became the basis for the five Strategic Goals (Figure 5).

Noting the complex array of pressures that are being placed upon water resources and that there are also significant institutional/ governance challenges being faced in the management of these resources, there is strong case for fundamental changes that can then unlock challenges and catalyse new approaches. This intimates the need for a turnaround strategy that helps get the fundamental building blocks in place to catalyse improved implementation.

A turnaround is to produce a noticeable and durable improvement in performance, to turn around the trend of results from down to up, from not good enough to clearly better, from underachieving to acceptable, from losing to winning (Bibeault, 1999).

Typically, transformation is understood to be a longer term programme of change that looks to improve relative performance over time. Turnarounds on the other hand are seen to be swifter and more focused interventions to adjust matters of performance within very short time-spans (Harvey, 2011). However, when reviewing the various stages that organisations move through to improve performance (Bibeault, 1999; Slatter, Lovett and Barlow, 2005; Harvey 2011) it is apparent that turnaround strategies indeed become useful dimensions of a longer-term transformation process that shifts an organisation from getting back to basics (turnaround) to a paradigm changing space that actively supports development (Figure 8).



Figure 8: Strategic response to SWOT status

It is important to note that the SWOT analyses undertaken for the situation assessment, as part of the policy and strategy development, indicated that the greater challenges existed in terms of dealing with internal weaknesses than resolving external threats. Therefore, the route chosen to reach the developmental strategy space needs to resolve these internal issues (Figure 8).

The stages described (for typical turnaround) broadly move through a process of analysis, turnaround, stabilisation and recovery/rehabilitation (Harvey, 2011). These provide useful guidance in considering the approach to getting IWQM stabilised, resourced and realising impact. The identification of the need for a new IWQM Policy and Strategy, as well as the assessments that have been undertaken as part of the Policy and Strategy development, have in effect constituted a situation appraisal. This then provides the basis for a three-phase approach, over a period of nine years to transform the management of water quality in South Africa and support the achievement of the longer-term targets set out in the National Water and Sanitation Master Plan (Figure 9).



Figure 9: Three-phase approach to transforming WQM

Noting that the next revision on the NWRS is due for release during 2018, the first two phases of IWQM implementation will support the 3rd edition of the NWRS. The Master Plan is currently under development and the first three phases of implementation will support the achievement of the targets that will be set out in the Master Plan. These phases are described below.

4.2.1 Phase 1: Turnaround

This initial phase is the most important phase of the efforts to implement IWQM in that this lays the foundation for later phases of work. As such, the core focus of this phase is to pull together the disparate elements of the WQM business and to create a renewed sense of operating as a coordinated team. This then provides structures and mechanisms for improved governance both within DWS as well building the platforms for improved engagement with external stakeholders/ role-players towards partnerships. There is a need to initiate activities that are more long-term in nature, such as improving management instruments, knowledge management systems and capacity building. These all play a key role in providing the basis for future phases that will aim to improve technical aspects of the WQM business and realise impact in catchments. Towards this end five key focus areas have been identified:

- 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.

4.2.2 Phase 2: Strengthening

Building upon the strategic direction set in Phase 1, this phase aims to consolidate the experience and aim to further strengthen the capacity, both within the DWS as well as other sector partners. The team that has been consolidated during Phase 1 will be well positioned to work together to strengthen and improve the more technical dimensions of the WQM. The partnerships framework developed in Phase 1 will provide the basis for improved working relationships with key partners who can support catchment-based actions during this Phase. The improved levels of planning, the strengthening of WQM instruments and the drive to realise impacts in catchments will provide the basis for Phase 3 where impacts are expected to be realised. This phase is important in the sense that the cadre of water quality managers that have come together through the various management committees in Phase 1, are now starting to realise the technical benefits of their guidance and hard work. This will cement the community of practice. Hence, this phase will focus on:

 Improving the levels of planning through the development of CMS and WQM 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 is an important dimension of this phase.

4.2.3 Phase 3: Reclamation

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; 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 innovative approaches to further strengthen the management of water quality.

The essence of the transformation agenda for IWQM is to constructively work towards improved management of water quality. The three-phase approach enables the DWS to address the various challenges in a progressive manner with an increasingly outward focus upon the broader sector. The initial turnaround phase will be focused upon resolving many issues that serve to strengthen the leadership and management of water quality from a DWS perspective. This is not to say that many of the other supporting activities that take place as part of the WQM business will not be taking place. Indeed, they will. This implementation plan highlights those key activities that have been identified in order to improve IWQM. The

day-to-day and continuous management activities will progress accordingly and aligned to the line function APPs.

During Phase 1 and 2 there will engagement with the Provincial Offices / CMAs to engage in where priority areas are for technical improvements as well as the identification of catchments for focused management improvement.

5. IMPLEMENTATION PLAN: PHASE 1 - TURNAROUND

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 seen as purely theoretical or academic exercises. Therefore, 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.

There have been five key focus areas defined as part of the Phase 1 Implementation which describes the turnaround actions (Figure 10) needed to improve the water quality of the resources in the country. These are to Strengthen DWS Leadership, Build and Strengthen a Community of Practice, Improve WQM Operation, Improve systems to support Adaptive Management and Improve Knowledge Management. In effect, this turnaround phase has an inward focus to support an outward strategy and should be understood as a key departure point.



Figure 10: Focus Areas for Turnaround

Each section below describes the intent of the focus area, the core actions required and the implementation table. These tables have been constructed around the implementation of the 5 key focus areas for change which have been linked to and aligned to the Strategic Objectives and Actions.

The tables relay the following information:

Focus Area

• Indicates the focus area that requires change to achieve the turnaround strategy

Strategic Objective and Action

• Indicates the SO and SA that is being addressed as part of the turn around strategy/phase

Core Turnaround Action

• Indicates what must be undertaken to address the SA

• Core Actions are listed from A to S

• Specific activities/approaches for each Core Action are provided in the paragraphs before each table.

Expected Outcome

• Indicates what we wish to achieve

National/Catchment

• Indicates at which scale the action is relevant

Interlinks

• Indicates the connectedness to other actions/activities/line functions/programmes

Timeframe

• Indicates in which year the specific activity could be initiated and its duration, noting that some may be on-going activities.

Champion/Driver

• Indicates who will oversee the implementation of the specific action.

Collaboration and Sector Support

• Indicates the sector collaboration or coordination required to achieve the specific activity .

Figure 11: Outline of the IWQM Implementation Tables

5.1 Strengthen DWS Leadership

5.1.1 Intent

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 (SA8¹).

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 and ensuring alignment of the water quality management function between the national and regional offices as well.

¹ SA – refers to the Strategic Action number relevant to each focus area. The full list and description is presented in Appendix B.

The DWS has initiated a restructuring process in order 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 different 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.

5.1.2 Core Turnaround Actions

The core actions that support this focus area are:

A. Reconfigure the DWS WQM function

- Clarify the WQM functions in DWS restructuring processes at the different spatial levels
- Make recommendations to improve the function, operation and implementation of WQM
- Develop protocols and systems to improve and strengthen the WQM function, as needed

B. Develop IWQM line-function support plans

- Line functions to develop plans to support IWQM based on strategy and Phase 1 Implementation Plan
- DWS Champions to guide and advise the conversion of IWQM Implementation plan into line-function Annual Performance Plan targets.

- CD: WQM to consolidate, monitor, evaluate and review technical implementation actions
- DWS PMU to consolidate, monitor, evaluate and review the administrative implementation actions

C. Identify and capacitate the DWS champions

- Strategic oversight champions to be identified at National Level, Operational Champions to be identified at catchment/regional level
- Establish a Water Quality Functional Management Committee
- Strengthen the Water Quality Forum and its function
- Fully re-instate the WQM Training course for WQM Officials
- Capacitate DWS decision-makers on water quality and WQM issues

5.1.3 Implementation Table

Link to	Link to					Timeframe				Collabo	ration and	d Sector Sup	port				
Strategic Objective	Strategic Action	Core Turnaround Actions	Expected Output	National / Catchment	Inter-links	2018	2019	2020	Champion/Driver	National Government	Provincial Government	LG Muni	Imp Mines	acting Privat	e Sectors Agriculture	Civil Society	Other
SO3a : DWS	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 B. Develop line function support 	Effectiveness and efficiency of the WQM function is improved. Operational aspects of WQM improved	National	DDG: Regulation, CD: Planning CD: Water Ecosystems DDG: Regulation				DG: CS CD:WQM Branches	DWS							
departmental structures support integrated WQM		plans to ensure an integrated approach			CD: WQM CMAs				DG:CS								
	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 implementation of the IWQM Policy and Strategy	Leadership of the WQM function is strengthened and coordination is improved.	National Catchment	DWS: DG CD: WQM Provincial Offices				DDG: Regulation	DWS							

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

5.2 Develop a Community of Practice

5.2.1 Intent

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.

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.

5.2.2 Core Actions

The core actions that support this focus area are:

D. Strengthen existing inter-departmental WQM structures

- Conduct an assessment on all existing inter-departmental structures understanding their purpose and identify any gaps or overlaps
- Develop governance framework for intergovernmental structures at different spatial scales (roles, responsibilities, reporting) for IWQM
- Coordinate/align/discuss with the Orange-Senqu River Commission, Limpopo Watercourse Commission and the Tripartite Technical Committee regarding the coordination of WQM functions at transboundary levels
- Initiate processes to establish inter-departmental structures at national and catchment levels, where necessary
- Strengthen existing structures for sector collaboration initiatives, such as the General Task Team for AMD, amongst others

E. Strengthen and foster existing strategic sector partnerships

- Identify and understand all existing partnership/stewardship activities and distinguish between those that are driven by DWS versus those where DWS is a member
- Identify gaps and see where there are synergies
- Finalise partnership framework developed by DWS
- Identify any additional key structures that are required
- Maintain and strengthen existing partnerships
- F. Develop and implement engagement framework that enables more active participation of civil society at transboundary, national and catchment levels
 - Clarify the roles and responsibilities of civil society in supporting IWQM
 - Develop a consolidated and current stakeholder list
 - Identify and understand terms of reference of existing platforms for civil society engagement
 - Develop a consolidated list of stakeholder platforms, their purpose and potential interlinkages with IWQM
 - Develop a "civil society" engagement framework
 - Understand, document and build on existing initiatives, such as the "Adopt a River" programme

5.2.3 Implementation Table

	-			l able 5: imp	lementation	Plan to L	Jevelop	a Comr	nunity c	of Practice in the	snort to med	lum term		
							Т	imefram	e				Collab	oration
Links to Strategic Objective	Link to Strategic Action	Core To Ad	urnaround ctions	Expected Output	National / Catchment	Inter- links	2018	2019	2020	Champion/Driv er	National	Provincial Governme	LG	lı
•											Government	nt	Muni	Mines
SO3b: Inter- sector	SA10: Establish intergovernmen	D. Stren existi depa	ngthen ting inter- artmental	Strengthened integration of WQM function across	National	DDG: Regs,				DWS DDG: P&I	DWS, DAFF, DMR, DFA,		SALGA, SACN	
departmental structures	tal WQM structures at	WQN	M structures	sectors. Improved understanding of the		CMAs				CMA DDG:	DTI, COGTA,			
established to support	trans-boundary basin, national			the country.						Regulation	NT			
WQM	supported by regular									DDG: Int. Relations				
	reporting													
\$04a:	SA13: DWS to develop and	E. Estat stren foste	blish, ngthen and er, where	Partnership frameworks developed that	National	CD: WQM				DWS DDG: P&I	DWS			CoM SACN
Partnerships/	foster strategic sector	requi strat	iired, existing tegic sector	encourage non- governmental actors	Catchment	CD: IO				DDG: Int. Relations				
established and	partnerships	partr	nerships	to establish partnerships and consistency in		CMAs				DDG:				
maintainea				approach is enabled.						supported by				
										DG				
	SA14: DWS with DEA and CMAs	F. Deve enab	elop and ble	Consistency in engagement with civil	National	CD: 10				DG Supported	DWS			
	to develop an engagement	fram	nework that	catchments has	Catchment	CD:WQM CMAs				Regulation				
SO4b:	framework that enables more	activ	icipation of	WQM.						DDG: Int.				
Governance		civil s	society at							Relations				

FOCUS AREA 2: DEVELOP A COMMUNITY OF PRACTICE

framework for

active citizenry

formalized

active

participation of

civil society at

transboundary, national and catchment levels

transboundary,

catchment levels

national and

DDG: Comms

ation and Sector Support							
Impa	acting Private	Sectors	Civil	Othor			
lines	Industries	Agricultur e	Society	Other			
CoM SACN	CAIA	AgriSA		Alliance for Water Stewardship			
			WSLG, CMFs, CMCs, others				

5.3 Improve WQM Operation

5.3.1 Intent

Realising impact: Nothing breeds success, like success. It is critically important that as a sector we can demonstrate that we can fix key challenges in prioritised catchments or systems. The broader water quality management approaches, mentioned above, will support these impacts on the ground.

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 forgone, but those catchments that need to be maintained, and/or protected. The development of IWQM plans will be a priority in supporting this drive.

Poor administration of water use authorisations has historically created significant backlogs in applications. 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 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. The implementation of the **WDCS in key priorities catchments is urgently required** since it has the ability to **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 40).

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).

5.3.2 Core Actions

The core actions that support this focus area are:

- G. Develop IWQM plans for national priority catchments, ensuring consideration of transboundary water quality concerns
 - Develop selection criteria for national prioritisation of catchments
 - Develop IWQM Plans for prioritised catchments
- H. Develop a consolidated approach to Local Government and WWTWs
 - Develop a Terms of Reference for engagement structure
 - Assess current situation and identify gaps and challenges
 - Develop approach, in consultation, with COGTA/NT/SALGA
- I. Develop a strategic action plan for the implementation of the mine-water management policy
 - Finalise mine-water management Policy
 - Develop a Mine-water Strategy and Strategic Action Plan based on finalised Policy
 - Implement Action Plan, which should include Validation and verification

- J. Develop and Implement Strategic Action Plan to Strengthen Water Use Authorisation
 - Address the backlog of WUL applications urgently and to meet stipulated timeframes for new licence applications DWS to categorise risk-based protocols for determining water use authorization
 - DWS/CMAs to develop protocols for CMA engagement in IWUL applications and approval processes
 - DWS, DEA, DAFF and DMR implement licencing regulations

K. Develop and Implement Strategic Action Plan to strengthen CME approach

- Develop and implement a targeted approach for the enforcement of regulation
- Finalise the enforcement protocol for other levels of government
- Assess gaps in regulatory frameworks and instruments and develop revised approaches and instruments as necessary
- Develop approaches to strengthen operational CME and the EMI network
- Publication of the Pollution Register

L. Develop an implementation protocol for RQOs

- Develop RQOs nationally and input into CMS on how to achieve these RQOs
- Develop protocol for Implementation of RQOs and conversion to licence conditions

M. Implement the WDCS in pilot Catchment/s

- Finalise business plans for Pilot catchments
- Ensure Validation and Verification of registered users
- Strengthen WARMS-SAP link for billing
- Implement business plans

5.3.3 Implementation Table

Colla Timeframe Links to **Turnaround Actions/** Champion/ National / Inter-Strategic Link to Strategic Action Implementation Expected Output Catchment National Provincial LC links Driver Objective Actions 2018 2019 2020 Government Government Mu G. Develop IWQM National DDG: CMA DWS SAL Strategic and operational plans for national direction set and Catchment Regs SA 16: DWS to lead the CMAs priority coordination requirements development of an catchments, determined for the IWQM plan for national management of water quality ensuring priority catchments, consideration of in priority catchments. ensuring consideration transboundary of transboundary water water quality SO5a: quality concerns concerns Integrated sectoral SA 17: DWS, with NT, H. Develop a Coordinated action for the National DDG: DWS, NT, SAL planning consolidated rehabilitation and upgrade of P&I SALGA and COGTA to and COGTA approach is approach to prioritised WWTWs outlined develop a strategic adopted at DDG: Regs, WWTW & LG and planned FOCUS AREA3: IMPROVE WQM OPERATIONS action plan for the COO, CMAs transboundary financing, rehabilitation and national and upgrade of level prioritized WWTWs SA18: DWS, with DMR I. Develop a strategic Mine-water management National COO, CD: WQM DWS, DMR DDG: action plan for the programme implemented and DEA, to develop a Catchment National Minethrough inter-Departmental Regs strategic action plan for water programme coordination. CMAs the implementation of the mine-water management policy DDG: National DDG: Regs DWS, DMR, SA 24: DWS to address Water Authorisation J. Develop and Regs, Supported the backlog of WUL processes are streamlined DEA, DAFF, Implement Catchment CMAs and enforced by CD: WUA COGTA applications urgently Strategic Action and to meet stipulated SO6a: Licencing Plan to strengthen timeframes for new processes licence applications. Water Use streamlined SA 26: DWS/CMAs to Authorisation develop protocols for CMA engagement in IWUL applications and approval processes DDG: DDG: Regs K. Develop and National DWS, DEA, SA 29: DWS, DEA to Approach towards more SAL Implement effective management of P&I, CD WQM DMR, DAFF develop improved **Strategic Action** land based and in-stream Catchment CMAs regulatory approaches Plan to strengthen activities developed to manage water quality CM&E approach pollution from land-SO6b: based and in-stream Targeted/Stren activities gthened DDG: DDG: Regs DWS, DEA, SA 30: DWS, DEA, CMAs Strengthened inter-National Compliance, P&I, departmental regulatory to develop a targeted DMR, DAFF Monitoring and approach Catchment CMAs approach for the Enforcement of enforcement of key polluting regulation sectors SA 32: DWS, DEA, CMAs Strengthened compliance National DDG: CD CME DWS, DEA, monitoring and enforcement P&I. to develop approaches DMR, DAFF CMAs staff compliment Catchment to strengthen operational CME and the EMI network

bor	ation and	d Sector Supp	oort		
ì	Imp	acting Privat	e Sectors	Civil	
ni	Mines	Industries		Society	Other
 GΔ	CoM	CAIA	ΔσriSA	WSIG	Academia
57	CONT	CAIA		CMFs	, research
				CMCs	institutes,
				civics	WRC,
					SANBI
GA				WSLG,	Academia
				CMFs,	, research
				CMCs	institutes,
					WRC,
	CoNA			CNAFA	Acadomic
	COIVI			CIVIES,	. research
				CIVICS	institutes,
					WRC,
	CoNA	CALA	A cuic A	CNAFA	
JA	COIVI	CAIA	Agrisa	CIVIES,	
				CIVICS	

SO7a: Adaptive	CA 25: DWG and CMAs	L.	Develop an	Adaptive management	National	DDG:		CD: Water	DWS					CMFs,	Academia
systems-based	SA 35: DWS and CIMAS		implementation	approaches ensure RQOs are		P&I,		Ecosystems						CMCs	, research
management is	to develop protocols for		protocol for RQOs	met.	Catchment	CMAs									institutes,
applied at	systems-based adaptive														WRC,
catchment level	management for IWQM.							CD: WQM							
SO9a: The		м.	Implement the	Financial investments realise	National	CMAs		CD: WQM	DWS, DEA,	SALGA	СоМ	CAIA	AgriSA	CMFs,	Academia
Waste	SA 40: DWS, with CMAs,		WDCS in pilot	water quality improvements					DMR, DAFF				-	CMCs	, research
Discharge	to implement the WDCS		Catchment/s	within key catchments	Catchment										institutes,
Charge System	in priority catchments														WRC,
is implemented															

5.4 Improve Systems to Support Adaptive Management

5.4.1 Intent

Improving our information management: At the core of information management is good, sound, current and scientifically defensible data to support the implementation of the actions and track progress. It is critical that the data systems are integrated and updated, to ensure that a baseline for water quality can be established, for reporting and tracking purposes to support Adaptive Management. This will require on-going development by both Government and the Sector.

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 decision-making.

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.

In addition, the current systems such as WARMS, WMS and SAP need to be strengthened in order to fully implement the WDCS.

The critical questions about connectivity of systems between departments need 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.

5.4.2 Core Actions

The core actions that support this focus area are:

N. Ensure the harmonisation of data and information systems in DWS pertaining to both source and resource water quality

- Harmonise the systems and approaches being used across sector Departments and catchments, such as DWS, DoH, DPME, DMR, DEA and DAFF, amongst others
- Ensure alignment CMAs/Regions use the national systems and protocols agreed upon
- Ensure that the link between WARMS, WMS and SAP is successful and live as part of the WDCS implementation process.
- Strengthen existing systems by develop interfaces between systems where appropriate
- Assess gaps in the data and information management systems
- Finalisation of the Data Acquisition and Management (DAM) Strategy
- Develop action plan to address gaps, strengthen system and expand to other Departments
- Finalisation of laboratory contracts
- **O. Strengthen existing systems in DWS** to enable data and information access by stakeholders/public
 - Assessment and status quo of information requirements and existing systems that can be used
 - Develop a plan/protocol to update the systems
 - Assess information requirements of stakeholders and public
 - Assess existing access points and systems
 - Develop or strengthen systems to enable smooth access to data and information by stakeholders
- **P. Develop protocols and systems in DWS** to ensure M&E and to ensure that new information informs adaptive management decisions for IWQM
 - Determine gaps in protocols, for instance, there needs to be a protocol in place to guide/interpret the use water quality reports and information in decision making processes such as the licensing.
 - Assess systems for ability to inform strategic adaptive management and ability to compile reports on the status of water quality and different spatial levels
 - Develop Implementation Plan to roll out the DAM Strategy, specifically looking at the four areas of focus:
 - Data Governance
 - Data Management Systems
 - Data Life Cycle Management Approaches
 - \circ $\,$ Collaborations with Sector Wide Institutions for Data sharing

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5.4.3 Implementation Table

Links to	Link to Strategic	Turnaround Actions/	National /	Inter-	Timeframe		Champion/	Collaboration and Sector Support									
Strategic Objective	Action	Implementation Actions	Expected Output	Catchment	links	2018	2019	2020	Driver	National Government	Provincial Government	LG Muni	Imp Mines	acting Privat Industries	e Sectors Agriculture	Civil Society	Other
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: Government to ensure the harmonisation of data and information systems pertaining to source water quality SA 51: Government to develop systems to enable data and information access by stakeholders/ public	 N. Ensure the harmonisation of data and information systems in DWS pertaining to both source and resource water quality O. Strengthen existing systems in DWS to enable data and information access by stakeholders/ public 	Improved data collection and information management strengthens IWQM in key catchments.	National Catchment National Catchment	DDG: Regs, CMAs DDG: Regs, DDG: P&I WTE, CMAs				CD: WIM CMA CD WIM, CMAs	DWS, DEA, DMR, DAFF DWS, DEA, DAFF, DMR		SALGA, SACN	CoM	CAIA	AgriSA	WSLG, CMFs, CMCs, NGOs	Academia , research institutes, WRC Academia , research institutes, WRC SANBI
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 new information inform adaptive management decisions for IWQM	Improved systems support decision making in support of IWQM	National	DDG: P&I				Admin DDG: PMU DDG: Regs, Technical	DWS, DEA							Academia , research institutes, WRC

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

5.5 Improve Knowledge Management

5.5.1 Intent

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 different 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 53) 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 in order to understand the return on investment on the use of state funds to manage water quality, not least in order to be able to motivate for greater resource allocation. Part of the challenge is that there is **not a complete understanding of what the real costs of managing water quality should be** and **what investment is required** over the next ten years in order 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.

There should be a much closer working relationship between the water quality units in the regional offices and national and the WRC so that more applicable water quality related research can be done that will assist in the practical catchment management. There should be an increase in projects geared towards implementation.

An IWQM Research Roadmap (SA56) 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 imitated 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 to be canny in its ability to not only communicate internally, 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 60).

5.5.2 Core Actions

The core actions that support this focus area are:

Q. Formalise and institutionalise the approach to WQM

- Develop an operation manual that translates the "business of water quality and its management" in the department into guidelines and protocols
 - Updating water quality guidelines, protocols and training manuals
- Develop a Capacity Building Strategy and roll-out programme
 - Undertake a status quo and needs-analysis for all levels/spheres of government, private sector and civil society
 - Review past and existing capacity development programmes
 - o Develop concepts for revised and more holistic capacity development in sector
 - o Implement Capacity Building Strategy and programme
- Professionalisation of staff in key areas and review of Occupation Specific Dispensation

R. Develop and implement a Strategic IWQM Research Roadmap

- Consolidate research related to water quality and its management and identify gaps to address
- Determine opportunities for resource sharing (WRC, CGS, DWS, DST, ARC, DoH, DPME *etc.*) and review of existing platforms that can be used, for instance, bi-lateral meetings between DWS and WRC
- Identify IWQM related topics for research, such as:
 - Socio-economic and financial impact of water quality
 - Impact of mega-trends (Climate change etc.) on water quality

- Improving knowledge and understanding impacts of water quality issues such as nanoparticles, radioactivity etc.
- o Uptake of research/BPEO into implementation
- o Cost implications of implementing the IWQM Policy
- Develop Research Roadmap for IWQM for execution of projects
- Implement IWQM Research Roadmap

S. Develop and implement a IWQM Communication Strategy

- Undertake a status quo and needs-analysis
 - Review past and existing DWS communication strategies
 - Understand the contribution of technology in communicating
- Develop guiding principles and criteria for IWQM Communication Strategy
- Identify, coordinate and align with existing information sharing platforms/tools to ensure two-way communication, where appropriate. For instance, the reporting of incidences, leakages, etc.
- Develop IWQM Communication Strategy and roll-out programme
 - Report to parliament annually on water quality progress on the state of the rivers, blue drop, greed drop, silver drop, etc.
 - o Compilation and publication of the Pollution Register
 - Review of the IWQM Website
 - Development of a cell-phone based water quality reporting/information app
 - Informing the broader public through an awareness campaign around "Taking back our water resources together!"
- Implement strategy, rollout programme and awareness campaign

5.5.3 Implementation Table

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

Links to	Link to Strategic	Core Turnaround		National /	ational / Inter-		onal / Inter-		er-		Champion/	Collaboration and Sector Support					
Strategic	Action	Actions	Expected Output	Catchment	links	links 2018	inks 2018	2019	0 2020	Driver N	National	Provincial	LG	Impacting Private Sectors Ci		Civil	Other
Objective						2018	2019	2020		Government	Government	Muni	Mines	Industries	Agriculture	Society	Other
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	National Catchment	DDG: Regs, COO, WRC, CMAs				DDG: P&I DDG: Regs CD: Policy (Knowledge Management)	DWS							Academia , research institutes
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.	National Catchment	DDG: P&I, CMAs				WRC CD: Policy (Knowledge Management)								Academia , research institutes,
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.	National Catchment	DDG: Regs,				DDG: Comms CD: Policy Knowledge Management				СоМ	CAIA	AgriSA	WSLG, CMFs, CMCs, NGOs	Academia , research institutes, WRC

6. WAY FORWARD

The IWQM Policy and Strategy guide the aspirational and pragmatic intent, for improved water quality management of the country's resources. These translate to a significant amount of work to be conducted over the next twenty years and beyond to ensure that South Africa's water resources are appropriately managed to meet the socio-economic and environmental development needs of the people.

A clear assessment of the challenges, the actions required to achieve improvement and an understanding supported by a phased approach, showing the interlinkages and dependencies between different activities, is critical. Those phases provide an opportunity to understand roles and responsibilities towards an objective as well as matter of causality, providing the foundation for improved and effective inter-connectedness and integration.

This document outlines what needs to be achieved in the next three years to work towards achieving the Vision for IWQM for South Africa. The central challenge to the Implementation Plan process is to ensure that DWS continues to provide effective, efficient and excellent WRM and IWQM service during this transition and that there is ownership of the Plan itself while ensuring that transformation takes place both within Government and in the sector.

It is crucial that this first phase unlocks what is required to implement and operationalise the IWQM Policy and Strategy. There are three fundamental points of departure to unlocking IWQM in South Africa:

- ✓ Ownership of the IWQM Policy, Strategy and Implementation Plan by an agreed champion within DWS to translate the Plan into action on the ground. This can either be a person, group of individuals or a directorate/sub-directorate, but it is crucial that the IWQM has a consolidated home within DWS.
- Political buy-in and support for the new approaches in WQM from senior decision-making official in DWS and Government. This will require these officials to be capacitated to understand the crucial need to IWQM, but also the impact it has on a developing country and how it will affect the ability for Departments and the country as a whole to deliver on the NDP or other developmental targets.
- ✓ A communication and awareness drive for "Taking back our water resource together".

The above three elements are the momentum required to take IWQM forward and initiate the start of a longer transformation process to improve the water quality of our resources.

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APPENDIX A: LIST OF ACKNOWLEDGEMENTS

The following individuals and organisations are thanked for their contributions to the project:

mittee (PAC)	
Department of Water Affairs and Sanitation (DWS): Water Quality Planning (WQP)	Chairman / Project Manager
DWS: WQP	Project co-ordinator
DWS: WQP	Deputy Project Manager
DWS: WQP	
Pegasys	
Pegasys	
Write Connection	
	mittee (PAC) Department of Water Affairs and Sanitation (DWS): Water Quality Planning (WQP) DWS: WQP DWS: WQP DWS: WQP Pegasys Pegasys Write Connection

Project Management Committee (PMC)

Chairman and Co-Chairman:

Beason Mwaka	DWS: Water Resource Planning Systems	Project Director
Pieter Viljoen	DWS: Water Quality Planning	Project Manager

PAC plus the following members / alternative members:

Siboniso Mkhaliphi	DWS: Compliance Monitoring (Agricultural Processing)
Namisha Muthraparsad	DWS: Compliance Monitoring (Industry)
Landile Jack	DWS: Eastern Cape Provincial Operations Office
Lizna Fourie	DWS: Eastern Cape Provincial Operations Office
Melissa Lintnaar-Strauss	DWS: Eastern Cape Provincial Operations Office
Rodrick Schwab	DWS: Economic and Environmental Studies
Collen Morodi	DWS: Economic and Social Regulation
Thandi Mopai	DWS: Enforcement: Administration Support
Willem Grobler	DWS: Free State Provincial Operations Office
Tovhowani Nyamande	DWS: Information Programmes
Fanus Fourie	DWS: Integrated Hydrological Planning (Ground Water)
Siyabonga Buthelezi	DWS: KZN Provincial Operations Office: Water Quality Management
Strinivasen Govender	DWS: KZN Provincial Operations Office: Water Quality Management
Donald (Hangwani) Mabada	DWS: Limpopo Provincial Operations Office
Stanford Macevele	DWS: Mpumalanga Provincial Operations Office (Bronkhorstspruit)
Silo Kheva	DWS: Mpumalanga Provincial Operations Office (Nelspruit)
Niel van Wyk	DWS: National Water Resource Planning
Lethabo Ramashala	DWS: North West Provincial Operations Office
Gawie van Dyk	DWS: Northern Cape Provincial Operations Office (Kimberley)
Danita Hohne	DWS: Northern Cape Provincial Operations Office (Upington))
Manisha Maharaj	DWS: Planning
Thobile Mthiyane	DWS: Policy
Hlalanathi (Nathi) Fundzo	DWS: Policy and Strategy Co-ordination: Policy
Sibusiso Xaba	DWS: Policy and Strategy Co-ordination: Policy
Tendamudzimu Rasikhanya	DWS: Policy and Strategy Co-ordination: Policy
Magda Ligthelm	DWS: Policy and Strategy Co-ordination: Strategy
Kganetsi Mosefowa	DWS: Resource Protection & Waste
Malise Noe	DWS: Resource Protection & Waste
Thivhafuni Nemataheni	DWS: Resource Protection and Waste (Mines)
Gerhard Cilliers	DWS: Resource Quality Information Services
Sebastian Jooste	DWS: Resource Quality Information Services
Zanele Bila-Mupariwa	DWS: RQIS
Bashan Govender	DWS: SA Mine Water Management Unit: Mine Water Policy
Siboniso Ndlovu	DWS: Urban and Rural Water Management
Fhedzisani Ramusiya	DWS: W.A.R.M.S
Wietsche Roets	DWS: WA&IU: Environment and Recreation
Sipho Skosana	DWS: Water Allocation

DWS: Water Ecosystems: Surface Water Reserve Requirements
DWS: Water Ecosystems: Surface Water Reserve Requirements
DWS: Water Ecosystems: Water Resource Classification
DWS: Water Management Institutional Governance
DWS: Water Quality Planning: East
DWS: Water Quality Planning: North
DWS: Water Services Planning and Information
DWS: Water Services Planning and Information
DWS: Water Services Regulation: Waste Water (Green Drop)
DWS: Water Use Administration
DWS: Western Cape Provincial Operations Office
Proto CMA: Pongola to Umzimkulu: Integrated Water Resources Planning & Information
Management
DWS: Knowledge Management
DWS: Director: Compliance Monitoring
DWS: Deputy Director: Policy and Strategy Co-ordination: Strategy
CMA: Breede Overberg
CMA: Inkomati Usuthu
CMA: Vaal
WRC
CGS
DMT

Project Steering Committee Members

PAC plus the following members / alternative members:

Mary Jean Gabriel	DAFF									
Anil Singh	DDG: Water Sector Regulation									
Wilma Lutsch	DEA									
Ishaam Abader	DEA: Legal Authorisations and Compliance									
	Inspectorate									
Ruben Masenya	DMR									
Andre Cronje	DMR									
Pieter Alberts	DMR									
Munyadziwa Sinthumule	DMR									
Molefe Morokane	DMR: Mine Environmental, Research and Sustainable									
	Development (MERSD)									
Andries Moatshe	DMR: Mine Environmental, Research and Sustainable									
	Development (MERSD)									
Aubrey Tshivhandekano	DMR: Mineral Regulation (regional)									
Andrew Lucas	DWS: Eastern Cape Provincial Operations Office									
Sizani Moshidi	DWS: Economic and Social Regulation									
Moloko Matlala	DWS: Information Programmes									
Leonardo Manus	DWS: Infrastructure Operations									
Refiloe Maloi	DWS: International Relations									
Fred van Zyl	DWS: Macro Planning									
Livhuwani Mabuda	DWS: National Water Resource Planning									
Peet Venter	DWS: North West Provincial Operations Office									
Marie Brisley	DWS: Policy and Strategy Co-ordination									
Chris du Preez	DWS: Risk Management									
Marius Keet	DWS: SA Mine Water Management Unit: Mine Water									
	Policy									
Andre van der walt	DWS: Sanitation									
Nomathamsanga Mpotulo	DWS: Sanitation: Macro-Planning									
Andre van Heerden	DWS: Sanitation: Operations									
Zanele Maphumulo	DWS: Scientist: Water Use Efficiency									
Steve Shibambu	DWS: UPTN Lower Orange									

Ndileka Mohapi	DWS: Water Ecosystems, Planning and Information
Yakeen Atwaru	DWS: Water Ecosystems: Reserve Determination
Thoko Sigwaza	DWS: Water Management Institutional Governance
Beason Mwaka	DWS: Water Resource Planning Systems
Lerato Mokoena	DWS: Water Services Regulation
Paul Herbst	DWS: Water Use Efficiency
Nkhumeleni Musekene	DWS: Branch: P&I
Doris Segoale	DWS: Director: Knowledge Management
Rachalete Grobbelaar	DWS: Director: Integrated Water Resource
	Management Support
Benjamin Diutlwileng	DWS: Snr Secretary: International Relations
Bronwyn Naidoo	DWS: Acting Director: Strategic Support (Office of the
,	DDG: Water Sector Regulation)
Puseletso Loselo	DWS: Chief-Director: Legal Services
Matome Mashasha	DWS: Director: Institutional Oversight
Deborah Mochothli	DWS: DDG: Planning and Information
Shirley Mathe	DMR
Shingirai Chimuti	National Treasury
Sarah Macphail	National Treasury: Tax Policy
Misaveni Ngobeni	National Treasury: Water and Sanitation and COGTA
Phakamani Buthelezi	CMA: Breede Overberg
Thomas Gyedu-Ababio	CMA: Inkomati Usuthu
Konanani Khorommbi	CMA: Vaal
Ashia Petersen	Proto-CMA: Berg-Olifants
Doris Maumela	Proto-CMA: Limpopo
Maxwell Serenya	Proto-CMA: Mzimvubu-Tsitsikamma
Wendy Ralekoa	Proto-CMA: Olifants
Moses Mahunonyane	Proto-CMA: Orange
Jay Reddy	Proto-CMA: Pongola-Umzimkulu
Jay Bhagwan	Water Research Commission (WRC)
Jennifer Molwantwa	Water Research Commission (WRC)
Stanley Lipadzi	Water Research Commission (WRC)
Barbara Schreiner	Pegasys
Guy Pegram	Pegasys
Andre Gorgens	Aurecon
Nico Rossouw	Aurecon
National Workshop Other Departments	
Analiawa Cala	

Aneliswa Cele	Health
Alinah Mthembu	Environment
Albert Marumi	Gauteng Health
Emanuel Baloyi	DHET
Nomvuzo Mjadu	DAFF
Palo Kgasago	DAFF
Mahlatse Modiba	Human Settlements
Magamase Mange	DST
Joan Arrikum	DPE
Werner H	DCOG
Aubrey Matshelo	NDOHS
Gareth Muthumuni	DPME
Sara Bopape	National Dept. of Tourism
Senzo Nkala	National Dept. of Tourism
Mukondi Masithi	DPME
Mary M	Department of Health
Wonder Nkosi	NDHS

External Stakeholders

Abri Vermeulen

Pegasys

Chris Dickens Farai Tererai Mariette Liefferink Matome Makwela Mongezi Veti Nic Opperman Nomvyzo Mjadu Palo Kgasago Ritva Mulbauer Peter Ashton Dirk Versfeld Robert Davel Simon Mporetji Lizette van der Walt Tally Palmer Melissa Fourie **Bill Harding**

IWMI DEA Federation for a Sustainable Environment Chamber of Mines EXXARO AgriSA DĂFF DAFF Anglo American Private Consultant Dirk Versfeld CC (Catchment Resources Consultant) Mpumalanga Agri Goldfields **Environment Legal Consultant Rhodes University** Centre for Environmental RI DH Environmental Consulting

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Petrus du Preez Maurice Bila Nikite Muller	Agri Eastern Cape Amatola Water Amatola Water
Deanne Karshagen	Buffalo City Metropolitan Municipality
Luvolo Ndanze	Buffalo City Metropolitan Municipality
Theunis Schoeman	Buffalo City Metropolitan Municipality
Gcobisa Matakane	Chris Hani District Municipality
Mfesane Nkwenkwezi	Chris Hani District Municipality
Mpfariseni Kennedy Ramulifho	Chris Hani District Municipality
Noluvuyo Nanto	Chris Hani District Municipality
Zola Dolomba	Chris Hani District Municipality
Anathi Mgobozi	DWS
Ncumisa Mnotoza	DWS
Philip de Wet	DWS
Sonwabile Menyelwa	DWS
Thandile Ngcume	DWS Communication
Simphiwe Simunca	DWS Mtata
Mzukisi Maneli	DWS Port Elizabeth
Bolekwa Xama	DWS: Proto-CMA
Mmabatho Mampane	DWS: Proto-CMA
Nqabomzi Xotyeni	DWS: Proto-CMA
Ntombi Feni	DWS: Proto-CMA
Xolani Mtsolongo	DWS: Proto-CMA
Dr Cherie-Lynn Mack	EOH Coastal and Environmental Services
Pierre Joubert	Gamtoos Irrigation Board
Mervin Olivier	GIBB Engineering
Bongani Makehle	Joe Gqabi District Municipality
Ncumisa Dingilizwe	Joe Gqabi District Municipality
Yola Ketezwa	Kumkani FM
Ntombi Tshialela	Makane Municipality
Jim Gibson	MGSM
Bongani Matomela	OR Tambo District Municipality
Wayne Selkirk	PCT
Frank Akamagwana	Rhodes University Institute for Water Research
Nelson Odume	Rhodes University Institute for Water Research
Notiswa Libala	Rhodes University Institute for Water Research
Pindiwe Ntloko	Rhodes University Institute for Water Research

Regional Workshop Free State

Dr Johan van der Merwe Tascha Vos Kenneth Masindi Gerda Venter Richard Phaiphai	Bloem Water Centre for Environmental Management, University of the Free State DWS DWS Free State DWS Free State
Quentin Kemp	DWS Potchefstroom
I soeu Setojane	Free State Department of Agriculture
Kioena Mathekaa	Free State Department of Agriculture and Rural Development
Trinity Hleza	Free State Department of Agriculture and Rural Development
Pietie Wagener	Mangaung Metro
Mamoretlo Koaho	Masilonvana Municipality
Jan Vos	MISA
Prossy Nakanjako	MISA
Soga Thembile	Nala Local Municipality
Thabang Moses	Nala Local Municipality
Hanke du Toit	Oranje-Riet Water User Association
Hope Mthembu	Phumelela Local Municipality
Leslie Putsoe	Phumelela Local Municipality
Hans Mey	Sedibeng Water
Hennie Pretonus	Sidanye Gold
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Henno Gericke	
Hannes de Wet	Agri Northern Cape
Lizette Schon	Department Co-operative Governance, Human Settlements and Traditional Affairs
Marizei van As	Department of Agriculture (Land Care)
Mmereki Mokaadi	DWS Kimberley (Geobydro)
Lucky Balovi	DWS Northern Cape
Khutio Sekwaila	DWS OPCMA
Rendani Ndou	DWS Resource Protection and Waste
Bennie Viljoen	DWS Water Supply and Sanitation
Kobus Streuders	DWS Water Supply and Sanitation
Peet van der Walt	Frances Baard District Municipality
Terry Stoffel	Frances Baard District Municipality
Henri Coetzee	Kakamas Water User Association
Loewellyn van Wyk	Kakamas Water User Association
Chamunorwa Moshakvanhu	MISA
Hendrik du Plessis	MISA Renosterberg
Dr Jonan van der Merwe	Northern Cano Department of Environment and Nature Conservation
Stophon yon Wyk	Northern Cape Department of Environment and Nature Conservation Potra Diamonde
lan Vilioen	Private Consultant
Brenda van Zvl	Rockwell Diamonds
L van As	Source Point
N Flemming	Source Point
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Robert Bologo Faith Mugivhi Kai Petty MP Lekoane Thembinkosi Ndou Ramaano Masibigiri Marencia Mashilo NS Mello Motlogonang Maeosele Adolph Maredi Joseph Phasha Ben Sengani Damaries Thotse Moses Malete Regina Kganyago Kenneth Makhubele Margaret Matide Molly Maluleke Mpho Sinthumule Tshiphiwa Matamela Anthony Dikgale Baloyi Khanamola Ansia de Jager Jakes Louw Solomon Monyepao A Letsoalo MC Mphahlele PD Mathole Lebo Sebola Lekwato Marakalala Ngoako William Moremi Nkele Lodgina Ditsela Andre Venter Manamela Lehabo Mokgadi Thobejane Sandra Ramaphala Matshamaite Gilbert ER Kutama **MIR Bohego** Nebonde Dominick Thema Maishibe Hlengwane Joseph Nkhona Mpumalanga Agri Olifants Proto-CMA Olifants Proto-CMA Olifants Proto-CMA Olifants Proto-CMA Olifants Proto-CMA Olifants Proto-CMA Environmental Officer Palabora Copper Quality Engineering SANParks SANParks Sapienza University, Rome Sapienza University, Rome SEMBCORP Silulumanzi

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Calvin Shiburi Richard Nemaungani Patrick Muthelo Modikwa Motibane Doyoyo Farani Matsenene Thendo Nembahe Aluweni Ramathieledza Ronald Shitlhangu Aaron Sithabusiwe Ncube Ndou Africa Sepadi Motau CJ Emmerich Moses Mudau Alidzulwi Mudau Salome Sathekge Letsatsi Chuene Joseph Sara Kris Bal Freeman Chauke Jacques Willemse

Regional Workshop Western Cape

Carolyn Howell Reckson Mulidzi Nico Rossouw Patrick van Coller Phumla Nogumshe Richard Nell Linda Rossouw Jonas Mphepya Annabel Marian Horn Juan Hugo Marlé Kunneke Wilna Kloppers Izak Toerien Sibusiso Maseko Felicia Nemathaga Michiel Meets Bridget Fundikwa Gareth McConkey Irene Waller Jiahnah Göbel Elizabeth Were Adriaan Kurtz Esmari Steenkamp Johan de Jager Rudolph Rescher Lydia van Rooyen Adriaan Oelofse Anel Andrag Derick Kellerman

Regional Workshop North West

Anna Malemela Jenny Evans Kevin Khoze Mutale CMA Mutale CMF NAFU Naledzi Environmental Consulting Naledzi Water Works North West Proto-CMA Nzheleke/Nwandi CMF Nzheleke/Nwandi CMF Office of the Premier Polokwane Municipality Sand Catchment Management Forum University of Limpopo University of Limpopo Vele Colliery Vhembe WUA/ Werpe Farmers Union

Mogalakwena Mine

ARC ARC Aurecon BGCMA **Bitou Local Municipality** City of Cape Town Consultant DEA DEA&DP (BRIP) DEA&DP (BRIP) DEA&DP (BRIP) DEA&DP (PCM) Department Local Government DWS Institutional Oversight HO **DWS RPW Mines** Eco-Owl Consulting Green Cape Jantech CC La Bri Living Lands See Saw (probably) Stellenbosch Municipality Swartland Municipality Vin Pro Western Cape Department of Agriculture Wildlands Winetech Winetech Xylem

DWS DWS

DWS

Lillian Siwelane Mahadi Mofokeng Phillip Tjale Sebenzile Ntshangase Sharlotte Tema Tshepo Mathebe Kentse Mathiba Ndivho Mphuma Lucky Motsoeneng Lelanie du Preez Lynette Tungwane 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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Amanda Mkhonza	CER
Johan Kann	CRM
Sibonginkosi Manosa	CSIR
Matome Mathetha	CSIR
Edwin Mametia	DAFE
Nomvuzo Miadu	DAFE
Takalani Sithi	Department of Tourism
Joan Arrikum	DPE
Andretta Tsebe	DPE
Phawen Maluleke	DRDLR
Magamase Mange	DST
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Marie Brisley	DWS
Laura Dotse	DWS
Fanus Fourie	DWS
Nwabisa Fundzo	DWS
Johan Greyling	DWS
Rachalet Grobbelaar	DWS
Geert Grobler	DWS
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Millicent Kabwe	DWS
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Glencore BHK

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Tlokwe City Council Tlokwe City Council

Land Bank

Platmin SA

RB Plats

DWS Limpopo North West Proto-CMA

Marico River Conservation Association

Marico River Conservation Association

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Maduvha Maseda	DWS
Patrick Mlilo	DWS
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Ndileka Mohapi	DWS
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Moses Mukota	DWS
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Reason Mwaka	DWS
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Intel Vall Wyk	DWS
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Pieter Viljoen	DWS
	DWS
Luvuyo Zigana	DWS
Anne Kilian	
lan Midgley	Eskom
Lutho Iotsa	Eskom
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Gabi Khumalo	GCIS
Annah Ngope	Glencore
Lynette Tungwane	Glencore
Joanna Goeller	Gold Fields
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Victor Munnik	Independent
Marcus Selepe	IUCMA
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Marina Krüger	Midvaal Water
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lqbal Mohamed Ali	National Treasury
Sara Bopape	NTD
Amanda Nyingwa	Pegasys
Guy Pegram	Pegasys
Traci Reddy	Pegasys
Barbara Schreiner	Pegasys
Derek Weston	Pegasys
Francois Van Wyk	Rand Water
Morakane Madiba	Rhodes University
Tally Palmer	Rhodes University
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Shane Laubscher	Samancor
Bongani Mtsweni	Samancor
David Schaub-Jones	SeeSaw
Marilyn Govender	South African Sugar Asso
Vukosi Tinghitsi	South Deen Gold Mine
Michelle Proude	SWPN
Nick Tandi	SWPN
Tinashe Mukuta	University of Pretoria

Willem Hazewindus Nonhlanhla Kalebaila Robyn Arnold Samir Randera-Rees Klaudia Schachtschneider

Capacity Building Training Sessions

Anet Muir Sizani Moshidi Eliiah Moqakabe Siboniso Mkhaliphi Mxolisi Mukhawana Tovho Nyamande Pieter Viljoen Jackie Jay Jurgo van Wyk Geert Grobler Lebo Mosoa Yakeen Atwaru Raquel Nosie Mazwi **Desmond Mutshaine** Thivhafuni Nemataheni William Mosefowa Rendani Ndou Malise Noe Shibambu Steven Zethu Makwabasa **Renelle Pillay** Marcus Selepe Samantha Saayman Mercy Ralushai Dephney Kabini Landile Jack Melissa Lintnaar-Strauss Nelisa Ndobeni Lillian Siwelane Petrus Venter Dennis Mtsweni Lerato Mbotja Mpho Mabuda Machaba Motlatso Ramahuma Livhuwani Mathebe Tshepo Nicole Vosloo Ramaremela Kedibone Peggy Thwala Mmapheto Sebenzile Ntshangase Mokoena Lerato Marie Brisley Herbert Kutama Kenneth Masindi Sibusiso Maseko Isaac Ramukhufa Michael Munzhelele Amanda Nyingwa Derek Weston Traci Reddv Barbara Schreiner

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APPENDIX B: SUMMARY OF THE IWQM STRATEGIC OBJECTIVES AND ACTIONS

Table B-1: Summary of Strategic Issues, Objectives and Actions

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
STRATEGIC ISSUE 1: Harmonization of Policies and Strategies	SO1a : Policies and Strategies impacting upon IWQM are harmonized	SA1: DWS to ensure that policy and strategy development and refinement within DWS addresses WQM
to enable improved WQM		SA2: Sector departments to harmonise policies and strategies to support IWQM
		SA3: DWS to finalise and implement a non-point source pollution (NPS) strategy
STRATEGIC ISSUE 2: Legislative review and	SO2a: IWQM is effectively supported by the NWA/WSA	SA4: DWS to amend NWA and WSA to provide effective support to IWQM
amendments to enable IWQM		SA5: DWS to develop guidelines and protocols on the effective use of instruments
	SO2b: IWQM is effectively supported by other legislation	SA6: National Treasury and DWS to promulgate a Money Bill for the Waste Discharge Levy
		SA7: Government to identify and amend relevant legislation to strengthen IWQM, including efficient by-laws for WQM
STRATEGIC ISSUE 3: Improved WQM related governance	SO3a: IWQM is supported by effective DWS departmental arrangements	SA8: DWS to reconfigure the departmental WQM function as needed to ensure efficiency and effectiveness
		SA9: DWS to identify a strategic water quality management champion that will drive and monitor the implementation of the IWQM Policy and Strategy
	SO3b: Inter-sector departmental structures established to support integrated WQM	SA10: Establish inter-governmental WQM structures at trans-boundary basin, national and provincial levels to ensure coordination and joint action supported by regular reporting
		SA11: Government departments to develop sector WQM plans and report annually on progress
STRATEGIC ISSUE 4: Formalise governance	SO4a: Partnerships/stewardships	SA12: Government to develop a partnership framework that is fair and equitable
frameworks to supportestablished and maintainnon-governmental		SA13: Government to develop and foster strategic sector partnerships
engagements	SO4b: Governance framework for active citizenry formalized	SA14: DWS with DEA and CMAs to develop an engagement framework that enables more active participation of civil society at transboundary, national and catchment levels

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS	
		SA15: DWS, DEA and CMAs to support and drive functional platforms for the engagement of civil society nationally and within catchments	
STRATEGIC ISSUE 5:	SO5a: Integrated sectoral	SA 16: DWS to lead the development of an IWQM	
Improved coordination	planning approach is adopted	plan for national priority catchments, ensuring	
in integrated planning	at transboundary and national	consideration of transboundary water quality	
	level	concerns	
		SA 17: DWS, with NT, SALGA and COGTA to develop	
		a strategic action plan for the financing,	
		rehabilitation and upgrade of prioritized WWTWs	
		SA18: DWS, with DMR and DEA, to develop a	
		strategic action plan for the implementation of the	
		mine-water management policy	
		SA 19: DWS/DAFF/DMR/DEA/DRDLR/COGTA to	
		develop strategic action plans to reduce non-point	
		source pollution	
		SA 20: DWS, DEA, SALGA and COGTA to develop a	
		protocol for the management of industrial discharge	
	COSh late and a stand	within the municipal environment	
	SUSD: Integrated sectoral	SA 21: CMAS to develop an IWQM plan for each	
		SA 22: DWS DEA and DMP to integrate IWOM and	
	catchinent/regional plans	SA 22. DWS, DEA and DWK to integrate two wild and	
		in priority areas	
		SA 23: DWS and COGTA to ensure that WSDPs. IDPs	
		and SDEs reflect WOM priorities and management	
		responses	
STRATEGIC ISSUE 6:	SO6a: Licencing processes	SA 24: DWS to address the backlog of Water Use	
Strengthen IWQM	streamlined	Licence (WUL) applications urgently and to meet	
Regulation, Compliance		stipulated timeframes for new licence applications.	
and Enforcement		SA 25: DWS to categorise risk-based protocols for	
		determining water use authorization	
		SA 26: DWS/CMAs to develop protocols for CMA	
		engagement in IWUL applications and approval	
		processes	
		SA 27: DWS, DEA, DAFF and DMR to develop and	
		implement a protocol for integrated licensing	
		processes	
		SA 28: DWS, DEA, DAFF and DMR to develop	
		information management systems to support the	
		integrated licensing approach	

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS	
SO6b: Targeted/strengthened compliance monitoring and enforcement of key polluting sectors		SA 29: DWS, DEA, COGTA, Department of Human Settlements, DRDLR to develop improved regulatory approaches to manage water quality pollution from land-based and in-stream activities, including the review and establishment of mandatory national waste discharge standards.	
		SA 30: DWS, DEA, CMAs to develop a targeted	
		approach for the enforcement of regulation	
		SA 31: DWS, DEA to assess gaps in regulatory frameworks and instruments and develop revised approaches and instruments as necessary	
		SA 32: DWS, DEA, CMAs to develop approaches to	
		strengthen operational CME and the EMI network	
STRATEGIC ISSUE 7: Application of Systems-	SO7a: Adaptive systems- based management is applied	SA 33: CMAs to develop localised programmatic monitoring and reporting of actions and outcomes	
based Adaptive	at catchment level	SA 34: CMAs to lead process with other relevant	
Management		government departments and agencies, and	
Approaches		stakeholders, to review, identify and address priority	
		water quality challenges at regular intervals	
		SA 35: DWS and CMAs to develop protocols for	
		systems-based adaptive management for IWQM.	
		SA 36: DWS to determine RQOs for all catchments	
		(WMAs) in South Africa	
STRATEGIC ISSUE 8:	SO8a: WQM interventions are	SA 37: DWS/WRC to support research into the	
integrated WOM		socio-economic-environmental and management	
	liscus	SA 38: Government to develop an investment	
		framework including innovative mechanisms to	
		mobilise funding for sustained support to IWQM	
		SA 39: DWS, with NT, COGTA, SALGA, to review	
		municipal conditional grants	
		SA 40: DWS to develop and implement a protocol for	
		extending the financial provisioning clause to all	
		industries that are deemed "high-risk" polluters.	
STRATEGIC ISSUE 9:	SO9a: The Waste Discharge	SA 41: DWS, with CMAs, to implement the WDCS in	
Develop pricing and	Charge System is	priority catchments	
incentives that support	implemented	SA 42: DWS, with CMAs, to develop an action plan	
integrated WQM		to support the phased implementation of the WDCS	
	COOL Mashari	across the country	
	מפטכ: iviechanisms for	SA 43: DWS/DEA/WRC to explore innovative	
	incontivicing good practice	financing mechanisms for incentivising good NMONA	

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS	
		SA 44: DWS and NT to determine financial incentives for water-reuse (AMD, other)	
		SA 45: Government to develop the legal and	
		institutional mechanisms for introducing	
		administrative penalties for environmental non-	
		compliance including water pollution.	
STRATEGIC ISSUE 10:	SO10a: An integrated and	SA 46: DWS/CMAs to strengthen national and	
Strengthen Monitoring	functioning water quality	catchment water quality monitoring networks	
and Information	monitoring network	through spatial expansion and identification of	
Management		priority constituents for catchment-specific	
		monitoring	
		SA 47: DWS to support the network expansion with	
		an initiative to ensure that accessible accredited	
		laboratories are available to ensure efficient and	
		effective analyses	
	SO10b: Information systems	SA 48: DWS, with the WRC and CMAs, to lead the	
	that are current and	development of a programme to create and support	
	accessible to support adaptive	citizen-based monitoring programmes	
	WQM	SA 49: Government to ensure the harmonisation of	
		data and information systems pertaining to resource	
		water quality	
		SA 50: Government to ensure the harmonisation of	
		data and information systems pertaining to source	
		water quality	
		SA 51: Government to develop systems to enable	
		data and information access by stakeholders/ public	
	SO10c: Routine assessments	SA 52: DWS/DEA/CMAs to develop protocols and	
	inform adaptive WQM	systems to ensure monitoring and evaluation and	
		new information inform adaptive management	
	CO11 - Custo in a discussion for	decisions for IWQM	
STRATEGIC ISSUE 11:	SO11a: Sustained capacity for	SA 53: DWS/WRC to develop and implement a	
Build water quality and	Government /CMA/sector to	capacity building programme for officials in DWS,	
WQIVI Capacity through	WOM through improved	cond and other sector departments in systems-	
Education, Training and	wQivi through improved		
Communication	euucation and training	SA 54: DWS/CMAs to expand capacity-building	
		Initiatives to civil society and private sector	
		SA SS: DWS to develop regulations to ensure the	
		professionalization of key water services functions	
		5A 50 : DWS/private Sector to provide	
		bursaries/rearrierships pertaining to WQW at	
		tertiary institutions	

STRATEGIC ISSUES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS
	SO11b: WQM decisions are	SA 57: DWS, with the WRC, to investigate the
	underpinned by best practice,	options provided by recent innovative
	research and innovation	developments to improve water quality
		SA 58: WRC to lead the sector in innovation,
		research and development for IWQM
	SO11c: A well informed and	SA 59: DWS to report annually on the state of water
	actively engaged South Africa	quality in the country
		SA 60: DWS/WRC to develop online tools for easy
		access to water quality and WQM related
		information
		SA 61: DWS/DEA/DAFF/DMR/CMAs to develop and
		maintain multi-sector stakeholder platforms for
		sharing information
		SA 62: DWS, with other Departments and sector
		institutions, to lead and roll-out awareness creation
		campaigns

APPENDIX C: LIST OF PROVINCIAL PRIORITIES

Consultation and communication with stakeholders has formed an essential part of the development of the IWQM Strategy. This has included a range of governmental and non-governmental stakeholders. Nine provincial roadshows, preceded by a work-session with the DWS Provincial Office and Proto-CMA, as well as a national workshop that involved many Government Departments has provided insights as to matters of priority at the national and provincial levels for the finalisation of this IWQM Strategy and for the development of the Implementation Plan.

These provincial priorities provide guidance as to issues that need to be addressed within the individual Integrated Water Quality Plans and the Catchment Management Strategies (Table C-1) noting that it will be essential to initiate activities that require longer-term time frames to be realised.

Consequently, the Implementation Plan has been developed with these priorities in mind, and whilst not all provincial priorities have been reflected in this Implementation Plan, the provincial IWQM Plans should take cognisance of this list.

Goal	Strategic Issue	Strategic Objective	National/ Provincial	Comment
Aligned Policy, Strategy and Legislation	1: Harmonise Policies and Strategies to Enable Improved IWQM	1a : Policies and Strategies impacting upon IWQM are harmonized	National	Recognising the importance of enabling more seamless governance, this longer- term process needs to be initiated. DWS internal, operational policies and strategies also require strengthening to be more inclusive of WQM issues.
Improved Governance	3. Improved WQM institutional structuring	3a: DWS departmental structures support IWQM	National	The WQM function within the DWS and its institutions is spread across various line functions. Whilst there is a need for this to ensure good governance, there may be ways to strengthen the coordination as well as provide an aligned intent.
		3b : Inter-sector departmental structures to support IWQM	National	The need to have inter-governmental structures that enables improved coordination and reporting as well as better planning for interventions is fundamentally important to enable IWQM.
-	4: Formalise Governance Frameworks to Support Non- Governmental Engagements	4a : Partnerships / stewardships established and maintained	Provincial	Whilst there are some partnerships that will be important at a national level, the importance of these arrangements at the catchment scale is a key part of enabling IWQM. Stewardships are most effective when focused upon specific catchments.

Table C-1: Identified priorities for implementation

Goal	Strategic Issue	Strategic Objective	National/ Provincial	Comment
		4b : Governance framework for active citizenry formalised	Provincial	Civil Society, as the ultimate victims of impacts from poor water quality in catchments, needs to be seen as a strategic partner. Civil society has always played a "watch-dog" and advocacy role, and is often the voice to hold both Government and Private Sector to account. However, a platform where the voice of civil society is given strength to play the above roles in a more formalised manner is needed.
Improved, Effective and Efficient WQM Practice	6 : Strengthen IWQM Regulation, Compliance and Enforcement	6a : Licencing processes streamlined	National Provincial	Clearly, there are process and procedural issues that require attention at the national level, however, there are concerns about process, timelines and information requirements that officers in catchments need to interface upon between DWS and water users.
		6b : Targeted/strength ened compliance monitoring and enforcement of key polluting sectors	National Provincial	Driven nationally, there is a need for a targeted programme to address priority issues. There is a need to reflect success at the catchment scale to influence behaviours. This requires a strong and coordinated partnership between national, provincial and local actors.
Innovative Finance	8: Fiscal support for IWQM	SO8a: WQM interventions are financially supported by the fiscus	National	The need to fully understand the cost of managing water quality is priority. Government then needs to develop an investment framework including innovative mechanisms to mobilise funding for sustained support to IWQM
	9: Develop Pricing and Incentive Systems that Support IWQM	9a : The Waste Discharge Charge System is implemented	National	The Waste Discharge Charge System has been approved and work towards implementation readiness has been undertaken. Nationally, DWS with National Treasury, need to initiate implementation, but this will require some systems issues and legislative challenges to be resolved.
Improved Knowledge and Information Management	10: Strengthen Monitoring and Information Management	10a : An integrated and functioning water quality monitoring network	National Provincial	Nationally driven, with provincial and local support to operationalise. The need for data is critical to enable IWQM. This data is needed by many other national and provincial departments to inform management decisions.

Goal	Strategic Issue	Strategic Objective	National/ Provincial	Comment
		10b : Information systems that are current and accessible to support adaptive WQM	National Provincial	Access to data and information at national, provincial and local levels is essential for adaptive management. Improvements in terms of systems has been significant but there is still much to do, especially with regards to inter-departmental data and information, and regarding access by non- governmental stakeholders.
	11: Build WQ and WQM Capacity through Education, Training and Communication	11a : Sustained capacity for Government/CMA /sector to effectively manage and support WQM through improved education and training	National Provincial	In the technical arena of IWQM the need for qualified, skilled and competent staff is dire at national, provincial and local levels. The development of this capacity does not happen rapidly, and requires structured programmes with clear targets. This cuts across sectors and various government departments. This is a matter of absolute priority and was possibly the most discussed issue during the engagements on the strategy.