NATIONAL WATER AND SANITATION SUMMIT
18 to 19 FEBRUARY 2022
COMMISSION REPORT

NAME OF COMMISSION : MANAGING POLLUTION AND WATER QUALITY

NAME OF CHAIRPERSON	**Mr. Benoît Le Roy**
NAME OF FACILITATOR	**Dr Chantal Ramcharan -Kotze**
GUEST SPEAKER	**Deputy Minister David Mahlobo**
RAPPORTEUR	**Mr Leonard Manus**
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1. BACKGROUND ON THE THEME

1.1 State of Rivers

The National Water Act (Act 36 of 1998) requires regulators to strike an equitable long-term balance between water resource use and protection. This includes a variety of resource monitoring and protection measures that must be implemented for South Africa's rivers.

Through the River Eco-Status Monitoring Programme (REMP) South Africa monitors the ecological condition of river ecosystems and provides information to support the management of rivers. Different indicators that are monitored under this programme include Macroinvertebrates, Fish, Habitat Integrity, Geomorphology, and riparian vegetation. Integrated results from all these indicators provides the ecological condition of a river system.

This monitoring programme informs prevention measures that can be initiated timeously. In areas that are in a poor or unsustainable condition, intervention actions can be initiated to remedy problems and rehabilitate these vital water resources. A state of rivers report is drafted for every hydrological year to determine the ecological condition of South Africa's rivers. These reports are currently based on mostly the rapid assessment of aquatic macroinvertebrates.

The state of the rivers report summarizes the findings of river eco-status monitoring conducted during the 2019-20 hydrological year, comparing them to previous assessments and, where applicable, Resource Quality Objectives (RQOs). The Eco-classification approach makes use of a range of ecological categories to describe the condition of the component under consideration ranging from natural (A) to critically modified (F).

The resent state of rivers report (2019/2020) indicates that most of our rivers, particularly those that run through developed areas such as cities and towns, have been severely impacted by pollution, sedimentation, erosion, and riparian vegetation disturbances, resulting in a deterioration in their ecological condition.
Although some sites show a slight improvement, when comparing the sites which have been sampled annually since 2017, thus seems as if there is a steady deterioration in some primary drainage regions.

The 2019/2020 results indicate that all stakeholders (national, provinces, Municipalities, Private sectors, communities, etc.) need to contribute towards long-term solutions in our country to ensure sustainable use of our water resources while maintaining their ecological state of our river systems.

1.2 Eutrophication

Declining trends of water quality and exacerbated eutrophication over the years, due to industrial effluent, water-borne sewage systems, wash-off from built-up areas, fossil fuel combustion and atmospheric fall-out, and agricultural practices contributing to elevated loads of nutrients entering receiving water resources. The Integrated Water Quality Management (IWQM) Policies and Strategies for South Africa in 2016 and 2017 respectively, emphasised eutrophication as an issue of priority amongst others such as salinization, Acid-Mine Drainage, urban pollution and sedimentation. An urgent need to rectify this situation was therefore identified, that led the DWS to develop the strategy to deal with point and non-point sources of pollution.

1.3 Regulatory Framework (Antipollution action plan)

Number of complex and inter-connected challenges such as balancing of socio-economic development needs, on-going uncertainties in governance, challenges with appropriate technical capacity and impacts of global shocks like climate change and disasters. Broadly, the challenges can be split into 4 categories: (i) Non-aligned policy, legislative and governance frameworks, (ii) Inappropriate practices, (iii) Insufficient finances and (iv) ineffective knowledge and information management. Water is a key part of the development of all sectors and as such water quality is an important dimension of ensuring that water resources do not constrain the developmental agenda.

Government already has a number of initiatives to support good water quality management and are strengths that can be built on. These already provide a strong foundation from which WQM can be improved. These are:

- Strong legal and policy frameworks that are well articulated:
- Considerable governance and institutional frameworks:
- Robust regulatory instruments:
- Established monitoring network and information systems:
- Increasing knowledge and information:

In order to address national water quality management, an Integrated Water Quality Management Strategy (IWQMS) was approved in 2017. The IWQMS sets out strategic actions which are required to be undertaken to realise the vision and goals of 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 IWQMS broadly integrates established water quality principles with contemporary water governance/ management and emerging water resources issues and articulates that water quality management is a government-wide task that must be spear-headed by the Department, in conjunction with the private sector and civil society.

Similarly, the salient objectives of the WQM Action Plan is to expediently co-ordinate and integrate immediate efforts for the improved management of water resources quality in South Africa, with turn-around interventions for high-risk pollution hotpots and water use pollution activities. The committee will direct its efforts towards the protection of water resources and identifying remedies to mitigate pollution mitigation impacts in all water use sectors. The committee must achieve its mandate by engaging other organs of State and any water user. Intervention from the Minister of Human Settlements, Water and Sanitation will be requested as and when required.

1.4 Blue Drop/Green Drop Certification Programme

The Blue Drop/Green Drop (BD/GD) regulation programme seeks to identify and develop the core competencies required for the sector that, if strengthened, will gradually and sustainably improve the level of wastewater management in South Africa. The Department introduced the Blue and Green Drop Certification as an incentive-based regulation programme to encourage the Water Services Institutions (WSIs) to achieve excellent drinking water and wastewater quality management to bring about sustainable compliant drinking water/wastewater services through competent people, disciplined thought, and collective action which can be measured and reported to the South African citizens every year. The process has been designed in keeping with international good practice and has been well received by South African authorities and accoladed by international peers.

Water/Wastewater systems which are identified as critical during the assessment are placed under regulatory surveillance. These WSIs are therefore required to submit a detailed corrective action plan within 60 days of publishing of the BD/GD report. The plan will be considered against the Regulatory Comment and recommended for approval by the Department.

1.5 National Water Sector Science Forum as mechanism for scientists to address SA Water Quality Challenges

The purpose of a National Water Sector Science Forum (NWSSF) is to provide a platform for knowledge exchange and capacity building in science and research within local government. The main aims of this network are as follows: To provide strategic direction and leadership to the country's scientific community in order to develop intuitive scientific leaders. To provide a platform for sharing scientific knowledge, cutting-edge scientific solutions and best practices to support the delivery of services within local government. To create an environment that supports professional development and capacity building and promotes a culture of scientific excellence.

2 AIMS OF THE THEMATIC SESSION

To address issues which emanated from the Ministerial visits across all provinces. To provide opportunity for further engagement and enhancement of strategies and plans developed by the department in consultation with the sector. To agree with stakeholders on possible interventions and approaches to be used.

3 CHALLENGES THE THEMATIC SESSION SEEKS TO ADDRESS

The cumulative impact of non-functioning or partially functioning wastewater treatment works mining, forestry, and agriculture on the riverine ecosystems. Consolidation of plans and focusing of limited resources to optimise impacts. Increase efforts on pollution prevention.

4 CURRENT INTERVENTIONS BY DWS TO ADDRESS THESE CHALLENGES

- Water quality management and eutrophication strategy.
- Regulatory developments to strengthen response against polluters and to safeguard the resource
- Regulatory actions including compliance monitoring, incentive based regulatory activities, enforcement
- Development and implementation of the Integrated Water Quality Management Policy
- Anti-Pollution Task Team and WQ SC -implementation and further development of Anti-pollution action plan
- Support and Interventions lead by Water Services Branch.

5 OUTCOMES

The envisaged outcomes are as follows:

- Share the departments current measures to ensure the water resource is protected and challenges encountered, and successes achieved
- Identify possible alternative solutions and interventions where measures can be strengthened, and new measures introduced.

6 COMMISSION 6 SESSION SUMMARY

6.1 SETTING THE SCENE ADDRESS

Deputy Minister: D Mahlobo

Deputy Minister welcomed everyone and elaborated that he wants to respond to all the challenges in the water sector and reconfirms that water is life and associated with constitution right. The Department is obligated to give people an environment that is not harmful, according to Water laws. Water is simple has quality and quantity aspects. Protection of environment, partnership with other countries, effective system for disposal of waste.

Climate change, pollution and increasing demand put pressure on the limited resource. Water must be managed and sustained for future use. Pollution degrades the resources, it must be reversed and dealt with. Governance and interrelations are important, we must involve citizens in issues of strategies and establish knowledge banks. The Department does not have confidence when responding to questions as to how much water we have and what is the quality thereof. Data bank establishment is an impediment for researchers and developers. We need to involve communities as they have an understanding of our water and we shouldn't undermine knowledge that is sitting with our people.

Water Resource protection (WRP) is critical for water supply management. There are 3 pillars for WRP:

1. Resource directed measures-lacks harmonization
2. Source Directed Measures: Managed through Water use License authorization(WULA).Sources must be controlled- Money is wasted by cleaning dams but problem is still persistent, poor management of Brits municipality(Madibeng) for effluent

treatment not addressed, sewer spillage causes eutrophication and the people appointed not capacitated to carry out the proper work.

3. Land use and its impact-land use management and planning affects water quality

We have limited knowledge of Water Resource Management, Non-Governmental Organizations are important and have raised how management and licensing has caused damage to ecosystem, but issues are not escalated enough. There is untold suffering caused by mining such as illegal discharge especially during the rainy season is not dealt with and the impacts can be transferred to the future. Lack of rehabilitation leads to damage of water resource and land use. Mines take out Financial provisioning with insurance companies, but they still do not rehabilitate and the expense is left with the government. There is a huge cost associated with rehabilitating our river systems, we must be able to act with speed and not negotiate with the polluter and there must be serious repercussions so serial offenders.

We Have not adapted to include climate change and land use, demographics have changed, there is emergence of new pollutants and the current standards must evolve with new development. We can never prosecute offenders because our labs are not accredited. Monitoring systems are also not working we therefore can't remediate without monitoring. We won't run out of water in the future but it won't be fit for use because the quality has deteriorated and the cost of treatment is escalating.

WAY FORWARD (DM Mahlobo)

1. Prevent pollution at source.
4. Control input of hazardous components in our water sources
5. Polluter must pay, Waste Discharge charge System and Waste Discharge Charge System must be implemented in 2022.
6. Pollution must stop, our land use management is poor, and we can't continue to stay in filth.
7. All water users must self-regulate, produce report of compliance with their license.
8. Blue- Green drop is for all water users not just municipalities, internal audits must be done, and the minister must give a report on water quality each year.
9. Capacity in the Department has hollowed out over time, we need to produce more knowledge workers and give young people more opportunities.
10. Invest in smart technology, embrace remote sensing at the comfort of our home create Geo mapping and have more time for leisure
11. Start giving incentives for those complying
12. Water is more polluted than before, we must embrace water mix, promote reclamation and water reuse- we don't have a drop to waste, create grey water economy.

6.2 STATE OF POLLUTION IN SOUTH AFRICA

1. The state of South Africa's water resources is deteriorating. This observation has been observed in different river catchments with the impact on habitat, biota, from and how quickly or slowly aquatic life recovers from the impacts introduced to a particular system. Some of the areas of concern highlighted in the State of the River Report presentation include the Upper Crocodile West, the Vaal, and the Olifants catchments that are generally in a poor condition (***Refer to figure 1***).

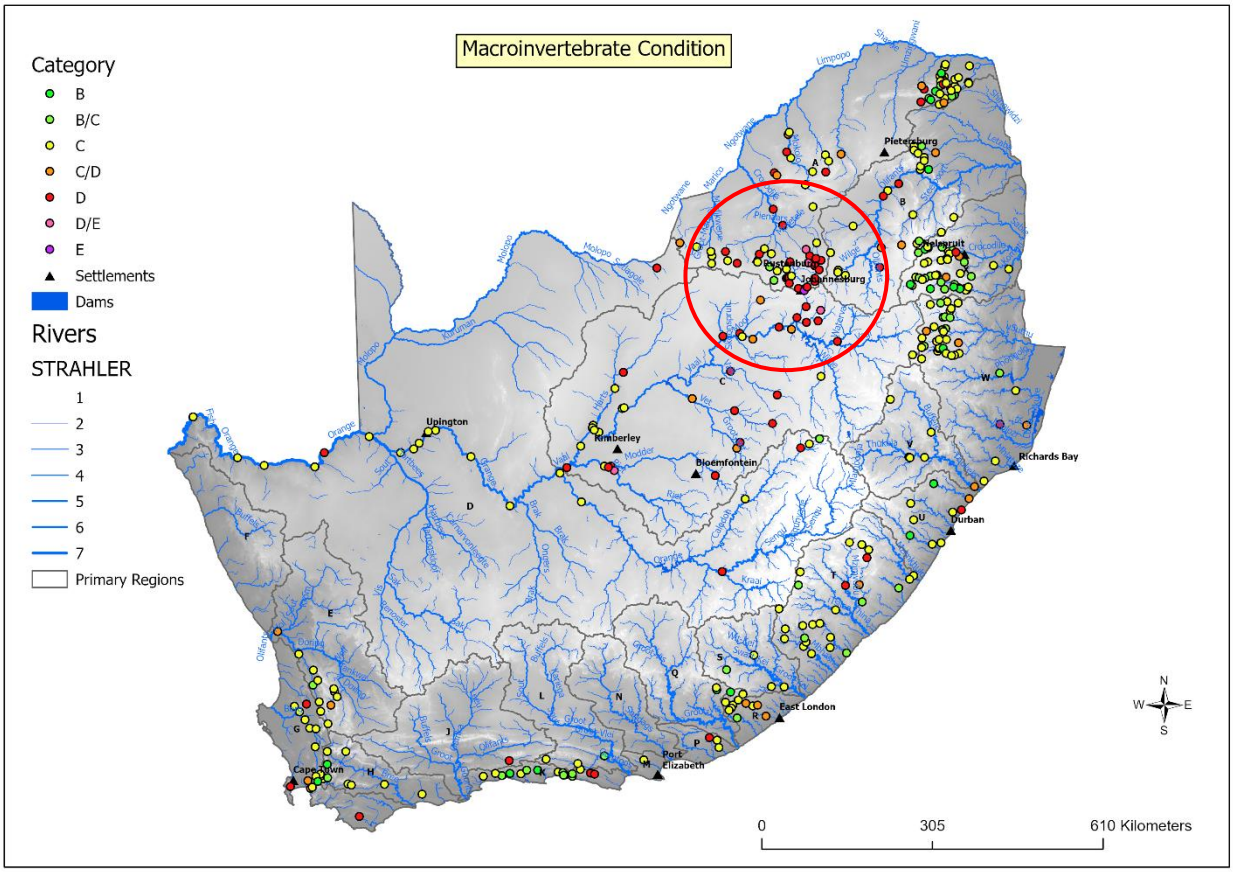

Figure 1: *The State of Rives in South Africa. Area circled in red represents river systems of concern*.

The state of South Africa dams is also deteriorating observed in the levels of eutrophication in dams. Over 60% of South African dams are within the hypertrophic (37.7%) and eutrophic(28.2%) state while only 33% of South African dams fall within the mesotrophic and oligotrophic state. **Figure 2** below shows how the state of dams has deteriorated from 2016 to 2020.

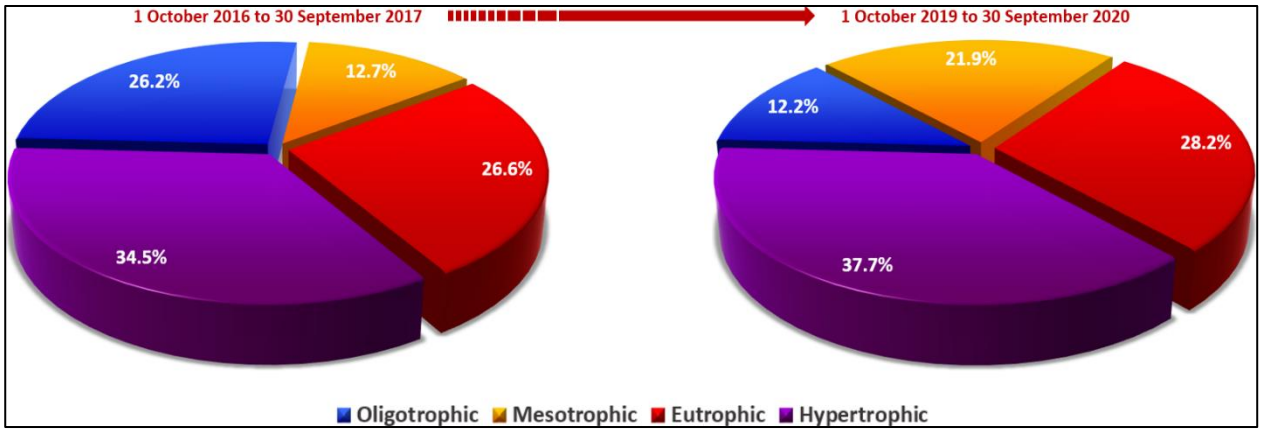

Figure 2: *Tropic status of 393 dams in South Africa.*

6.3 MAJOR CONTRIBUTORS TO POLLUTION IN SA

a) Point Sources such as mining, industry and WWTWs. Some of the intervention on impacts of WWTWs and the water treatment sector include the re-introduction of the green drop and blue drop incentives.

b) Non-point sources such as agricultural diffuse and poor land use management (the booming of informal settlements).

6.4 KEY RESOLUTIONS AND INTERVENTIONS

The key resolutions for Commission 6 have been addressed in three parts namely:

a) Review Regulation Approach by augmenting some of the systems such as the Water Services Improvement Plan (DWS 10 point plan) and DWS Anti-pollution Action Plan (**Refer to Annexure 1**)
b) Water Quality Management Improvements
c) Partnerships: Towards Water Quality Improvement

6.4.1 Specific actions and resolutions are as follows:

- Partnerships (financial and technical) and collaboration across organs of state, communities, academia and the industry. Ensuring that the right people are in these partnerships to enhance solutions. Such as the treating and curbing of pollution at source and working with industries to ensure compliance to municipal bylaws (examples tanneries, abattoirs that discharge into WWTWs thus do not have water use licences). Reinforcing funds set aside by industries for pollution penalties and encouraging industries to use these funds to improve wastewater treatment and compliance to WULs or discharge limits.
- Strengthen intergovernmental relations with DFFE on the introduction of a National Programme for Cleaning, waste management in communities, tire dumping levies and collaboration with waste pickers for the picking of plastic.
- Updating of South African Water Quality Standards to include methods for sampling microplastics and other emerging pollutants.
- Have an efficient and coordinated water quality monitoring programmes and strengthen monitoring data an information systems. This will enable the successful implementation of the Waste Discharge Charge System.
- Introduction of fit for purpose technology such as remote sensing, the use of drones and real time water quality monitoring and reporting that can assist with water resource management, monitoring of water resources. Introducing a phased reduction of water quality limits for industries to comply with.
- The centralization and storage of collected data in the water sector to assist in water resource management.
- National borehole registration programme crucial. Ensuring the protection of groundwater as a future/current water source in SA.
- Change of mindset through education and collaborations.
- Research on emerging pollutants and equipping the country with the correct skills and laboratories.
- Change/review of policy for adaptation purposes such as the inclusion of climate change, land use management and population demographics.
- Change of regulation including more regular review of water use licences to accommodate new emerging information.
- Consideration of legislation review (NWA) to include fines and penalties as a way of regulation.
- Capacity building and building of skills to assist in water quality issues impacting on the country's water resources.
- Introducing more incentives in regulation - raw water pricing, including waste discharge levy

- Self-regulation for all water users that are licenced while the Department plays an oversight role on this aspect to quickly identify areas that require attention.
- Water reclamation and reuse including the implementation of WC/WD measures.
- Improvement security around WWTWs. Instead of focusing on appointing more security, formalize certain sectors such as illegal mining, the harvesting of water from wastewater streams, and the production of methane from waste dumps
- The DWS needs to have access into the rehabilitation fund from DMRE that was reserved for mines through the DMRE. DWS to also work with DFFE to access funds through the NEMA Financial Provision Regulations. This will assist with the challenges of Acid Mine Drainage, and the rehabilitation of water resources impacted by mine water. Dealing with historic pollution through the tracing of previous owners and operators of abundant mines and industries.
- Introducing of offsetting as a policy measure of regulation.
- Introduction of programs such as Adopt a River in communities to assist in protection, rehabilitation, and cleaning of rivers.
- Improving Compliance Monitoring and Enforcement protocols and procedures to ensure that polluters are held accountable for the pollution on water resources. Aspects such as capacity building of CME officials on evidence collection, sampling, working with forensic laboratories need to be improved to assist with possible prosecutions of water related crimes.
- A shift from fossil fuel energy to renewable energy within water treatment plants such that plants are able to operate optimally during periods of load-shedding or power failure from Eskom or vandalism.

6.5 ACTION PLAN

***Table 1**: Summary of key actions for Commission 6*

Action	Target Date	Responsibility	KPI
Catchment based WQ recovery plans	30 June 2022	CMA/Proto	Improve WQ by 60% within 36 months
Partnerships with Industry to improve WQ (Framework)	90 days	BUSA & DWS	Framework developed between DWS and private sector -BUSA
		DTIC	W & S Reindustrialization master plan
Establish a Working for Sanitation programme	12 months	DWS & DFFE	• Aesthetical Upgrades of WWTWs • Construction appropriate technologies
Include all Commission 6 recommendations in the DWS APTT Action Plan as well as the WS Improvement Plan	2 months	DWS	Improve WQ by 60% within 36 months

6.6 TOWARDS IMPLEMENTATION

1. Shifting Paradigms (As depicted in **figure 3**). This refers to how best government and the industry can work together in curbing the pollution of water resources.
2. Explore incentives which will assist in expanding the incentive-based regulation approach.
3. The fight against vandalism should not primarily be increasing of security, but ensuring industrial reforms (incl. formalising illegal/informal mining).

4. The Water Research Commission to assist with assessment of appropriate and smart technology to enhance water quality.
5. Revival of Adopt-a-River (& Wetlands) programmes.
6. Through Partnerships Support the bold target of the DWS Anti-Pollution Action Plan: *Have* Catchment-based Water Quality Recovery Plans in place by June '22, with set target of improving the water quality by 60% over the period of 3 years.

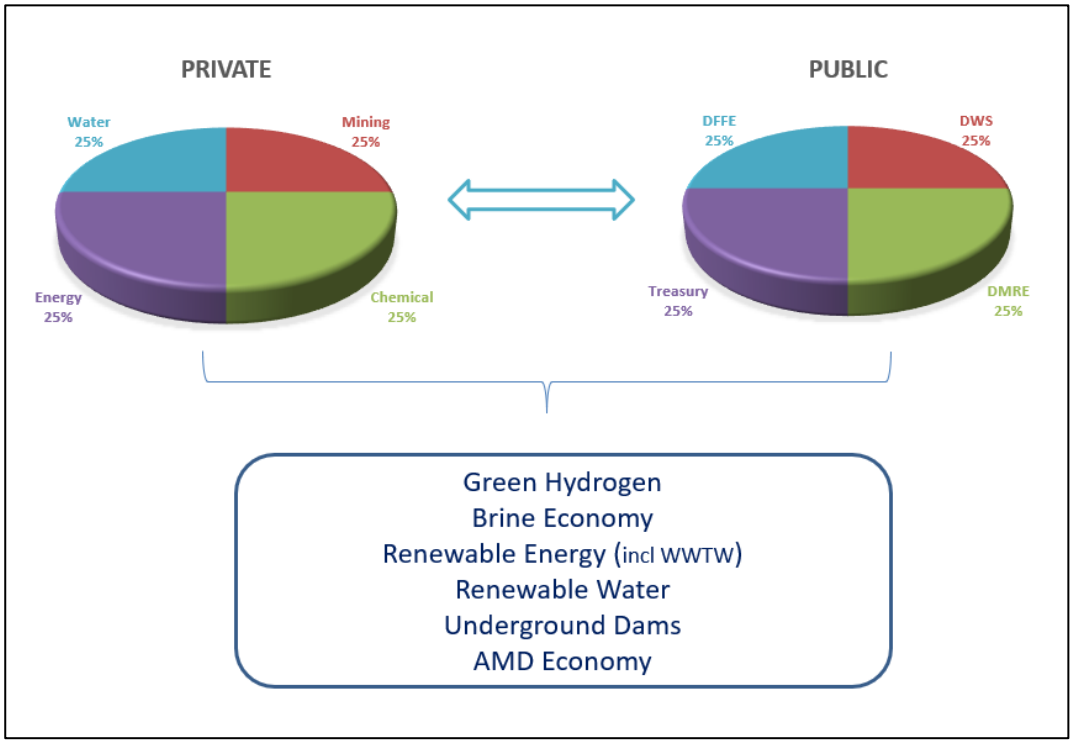

***Figure 3**: Shifting the Paradigm from Pollution to Renewable Resources*

Annexure A: DWS Anti-Pollution Task Team Action Plan

Task	Expected Outcomes	Action Step Descriptions	Time Frame	Resources Required
1. OVERSEEING THE VISION AND STRATEGIC DIRECTION FOR IWQM	A core group of water quality champions that would collectively enable IWQM & wall to wall resource protection	Draft Submission to Minister on the Establishment of the Task Team	Short Term	✓ Human and Financial Resources Top Management buy in and support Deputy Minister's support and guidance.
		Appointment Letters of the Task Team Members	Short Term	
		Guidance Meeting with Deputy Minister	Short Term	
	Approved Action Plan for the Operation of the Task Team and the SteerComm	Inception Meeting with appointed Task Team Members	Short Term	
		Approved Action Plan	Short Term	
	A proposed Integrated Water Quality Management Structure	Draft a proposed structure to ensure integrated WQM within the Department	Medium Term[1]	
	Establishment of WQMF in the Regions	Rolling out WQMF to the regions	Medium Term	
	Fully implemented Integrated Water Quality Management Strategy. (2017 version)	Improved communication and co-ordination between all relevant role players e.g RBIG projects	Short to Medium Term	
2. AN EFFICIENT AND COORDINATED WATER QUALITY MONITORING PROGRAMME FOR THE DEPARTMENT	Re-aligned and coordinated water quality monitoring programmes	Assessment of monitoring done by regions	Short Term	✓ Human and financial resources ✓ All Regional Heads and Water Quality Managers to be involved in the process. ✓ Top Management buy in and support
		All regions to have laboratory contracts in place.		
	Monitoring Points at all strategic points	Identification of monitoring duplication and gaps	Short Term	
		Introduction of level 1, 2, 3 & 4 monitoring points	Short Term	

[1] Activities highlighted in green have been concluded/finalized.

Task	Expected Outcomes	Action Step Descriptions	Time Frame	Resources Required
		Re-alignment of current water quality management programmes to be in line with the strategic WQ objectives	Long Term	
	Operationalize structures in Regions in the Regions	Operationalize Integrated Regional Monitoring Committee	Short to Medium Term	
	The use of technology as an early warning system (to be changed) to deal with pollution promptly	Investigate technologies to be used as early warning such as remote sensing	Long Term	
3. STRENGTHEN MONITORING DATA AND INFORMATION MANAGEMENT	Information Systems that are current and accessible to support adaptive water quality management	Assessment of which regions are using WMS and challenges encountered.	Short Term	✓ Laboratory contracts to be in place. ✓ WMS champions for each region ✓ Top Management buy in and support
		Appointment of WMS champions	Short Term	
		Assessment of data and identification of the data gaps in the system	Short Term	
		Upload WQM data on WMS for all regions	Ongoing	
		Upload WQM data on IRIS for all regions		
		Re-alignment of WMS with other systems with the Department e.g. IRIS, NIWIS, GIS, WARMS etc.	Long Term	
	The use of technology as an early warning system (to be changed) to deal with pollution promptly	Collaborate and co-ordinate with external institutions in terms of the latest development and technologies to monitor trends in emerging pollutants e.g. EDCs and microplastics etc.	Long Term	
		Using remote sensing to monitor certain WQ parameters in areas not covered by monitoring programmes.	Long Term	
4. PRICING AND INCENTIVE	Fully implemented polluted pays principle.	Drafting of a Funding Model for Pollution Incidents and Socio economic costing of	Medium to Long Term	✓ Human and Financial Resources

Task	Expected Outcomes	Action Step Descriptions	Time Frame	Resources Required
SYSTEMS THAT SUPPORT IWQM		Remediation and Rehabilitation of long term pollution impacts		✓ Top Management Buy in
		Implementation of the Waste Discharge Charge System in 3 priority catchments	Long Term	
		Development of regulations for administrative penalties	Long Term	
		Using existing grants including RBIG to deal with maintenance issues that affect water quality	Short to Medium Term	
5. IDENTIFICATION OF WATER QUALITY PROBLEMS AND HOTSPOTS	Report on water quality hotspots in the country based on certain variables	Assessment of data currently available in the department	Short Term	✓ Human and Financial Resources for monitoring and reliable data ✓ Laboratory contracts to be in place. ✓ Top Management buy in and support. ✓ Catchment Champions
		Identification of gaps in terms of data and possible solutions/interventions	Short Term	
		Interpretation of data and Identification of water quality hotspots based on available data	Short Term	
		Classify and Map Risks/Hotspots	Short Term	
		Map Risks	Short Term	
		Report on water quality hotspots	Short Term	
6. IMPLEMENTATION OF KEY PROJECTS THAT WILL HAVE A DIRECT LINK TO IMPROVING THE WATER QUALITY IN THE COUNTRY.	Improved Water Quality in all Catchments	Approval of Integrated Water Quality Management (IWQM) Policy	Medium Term	✓ Top Management buy in and support ✓ Financial Resources to appoint Professional Service Provider (PSPs) ✓ Chief Directorate: CME
		Approval of the Mine Water Policy	Medium Term	
		Approval of the unconventional gas (fracking) regulations	Long Term	
		Development of regulations for protecting strategic water source areas	Long Term	

Task	Expected Outcomes	Action Step Descriptions	Time Frame	Resources Required
		Development of Regulation related to compulsory National Standards for Process Controllers	Long Term	
		Regulations on ELUs (to enable the Department to introduce new conditions)	Long Term	
7. STRENGTHEN WQM REGULATION, COMPLIANCE AND ENFORCEMENT	Reduced pollution and improved water quality in all rivers.	Update register/inventory for all WWTWS, Mines, Landfills and Industries in Country	Short Term	✓ Top Management buy in and support ✓ Financial Resources ✓ Sector Department Collaboration
		Intervention Plans for non-compliant WWTWs (water plants	Short to Medium Term	
		Intervention Plans for Mines (AMD) and industries)		
		Revival of the blue drop and green drop and implementation of its recommendations	Short Term	
		Priority implementation of IRIS	Short Term	
		Monitor compliance to RQOs	Short Term	
		Improvement of Water Use Authorisation conditions	Medium to Long Term	
		Validation and Verification of existing activities authorized under the Water Act of 1956	Medium Term	
	Action plan to address the WQ challenges or hotspots.	Action plan to address the hotspots	Medium to Long Term	
8. WELL CAPACITATED WATER QUALITY OFFICIALS	Formalised training for all Top Management Officials and External Stakeholders	Top Management training of IWQM	Short Term	✓ Human and Financial Resources
		Training of Law enforcement agency and municipal officials	Medium Term	
	Formalised training for all Water Quality Management officials	Establishment of Water Quality training committee	Done	
		Assessment of capacity needs and gaps	Short to Medium Term	

Task	Expected Outcomes	Action Step Descriptions	Time Frame	Resources Required
		Drafting of formal training programme for Water Quality Officials eg Water Quality Orientation Course , Tukkies 1 & 2 etc	Medium Term	
		Improved water quality capacity e.g appointment of inspectors, engineers, scientists etc.	Medium to Long Term	