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Water and Sanitation
REPUBLIC OF SOUTH AFRICA



NATIONAL DEVELOPMENT PLAN
Our Future - make it work

Eutrophication Management Strategy into Practice

PSC Meeting 3 – Technical Presentation

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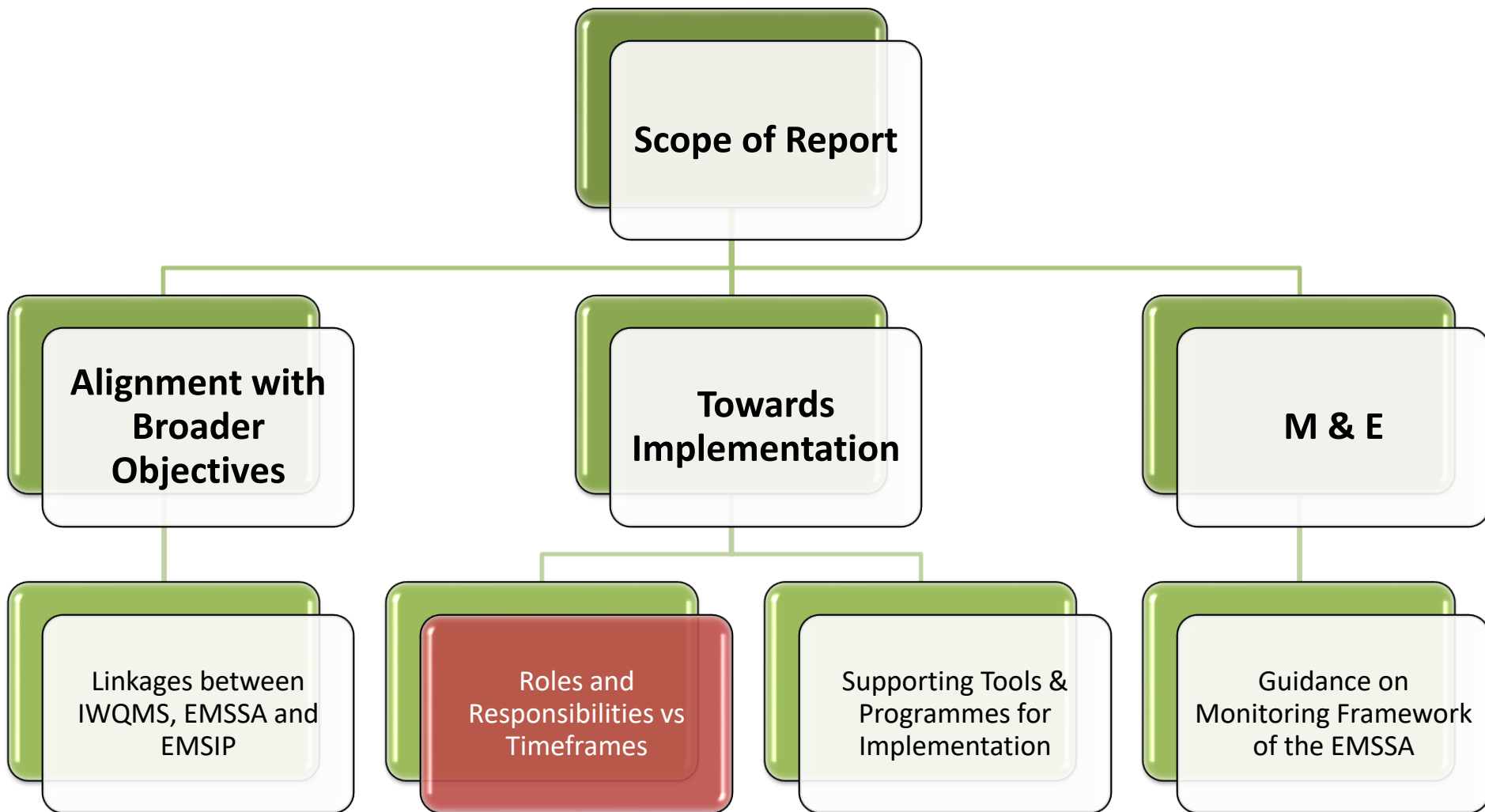
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PURPOSE OF EUTROPHICATION MANAGEMENT STRATEGY INTO PRACTICE (EMSIP)

- A plan of action that needs to be adopted and implemented by the water sector in South Africa to achieve the NWRS goals and objectives
- Supports the Eutrophication Management Strategy for South Africa (EMSSA) and provides structured way to articulate how this strategy can be pragmatically implemented
- Arrangement and translation of gaps, required actions, and interventions identified during the development of EMSSA into measurable outcomes
- Strengthening the eutrophication management function
- Improving eutrophication information management
- Mobilising the sector on eutrophication management
- Prioritising inclusion of eutrophication in catchment management plans
- Providing guidance on the implementation of the EMSSA

LAYOUT OF THE EMSIP REPORT



RECAP: EUTROPHICATION MANAGEMENT POLICY & STRATEGY

EUTROPHICATION MANAGEMENT POLICY

<i>Policy statements in support of the CHIEF OBJECTIVES for eutrophication management in South Africa</i>	
POLICY STATEMENT 1	Application of management instruments for environmental compliance in eutrophication management
POLICY STATEMENT 2	The mitigation hierarchy for decision-making on eutrophication
POLICY STATEMENT 3	The differentiated approach for the control of excessive nutrient-loading
POLICY STATEMENT 4	The application of the precautionary principle
POLICY STATEMENT 5	The Receiving Water Quality Objectives Approach applied to eutrophication management
POLICY STATEMENT 6	A life cycle view on nutrient-loading
POLICY STATEMENT 7	Incentive based regulation
POLICY STATEMENT 8	Nature-based solutions
POLICY STATEMENT 9	The application of the Best Practicable Environmental Option
POLICY STATEMENT 10	Holistic eutrophication management
POLICY STATEMENT 11	Eutrophication management responsibility and accountability
POLICY STATEMENT 12	Monitoring
POLICY STATEMENT 13	Information management
POLICY STATEMENT 14	Water resource assessment and planning to inform decision-making
<i>Policy statements in support of the COMPLEMENTING OBJECTIVES for eutrophication management in South Africa</i>	
POLICY STATEMENT 15	Resourcing of eutrophication management
POLICY STATEMENT 16	Promotion of eutrophication-related research
POLICY STATEMENT 17	Transparency
POLICY STATEMENT 18	Technical capacity to take eutrophication management action
POLICY STATEMENT 19	Cooperative eutrophication management



EUTROPHICATION MANAGEMENT STRATEGY

CORE STRATEGIES		
① Source Directed Management	② Resource Directed Management	③ Remediation Directed Management
OPERATIONAL STRATEGIES		
PLAN stage ↓	① Assessment	
	② Forward planning	
	③ Goal setting	
	④ Intervention planning	
DO stage ↓	① Best management practice	
	② Water use authorisation & conditional regulation	
	③ Incentive-based regulation	
CHECK stage ↓	① International & trans-boundary resource quality status & trend monitoring and reporting	
	② Domestic resource quality status & trend monitoring and reporting	
	③ Management performance monitoring and reporting	
	④ Data acquisition and information management	
ACT stage ↻	① Retroactive action	
	② Enforcement	
	③ Management review	
SUPPORTING STRATEGIES		
① Technical capacity building to give impetus to eutrophication management	② Research & technology development to address eutrophication-related challenges	③ Collaboration & management participation

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ROLE-PLAYERS AND RESPONSIBILITIES

DWS

- Ensure water is protected, used, developed, conserved, managed, and controlled in a sustainable and equitable manner, for the benefit of all persons. Implementation of NWA, 1998 (Act 36 of 198)

DALRRD

- Responsible for the implementation of the CARA 1983 (Act 43 of 1983) and agricultural policy

DFFE

- Responsible for the implementation of the NEMA (Act 107 of 1998) and for conducting EIAs of listed activities

DMRE

- Responsible for regulation and control of mining waste

COGTA

- Responsible for promotion of an integrated and coordinated system of disaster management, with a special emphasis on prevention and mitigation, by national, provincial, and municipal organs of state, statutory functionaries, other role players and communities.

MISA

- Provides technical support to targeted municipalities, which improve infrastructure planning, implementation, as well as operations and maintenance

MUNICIPALITIES (WSAs)

- Responsible for implementation of the Water Services Act 108 of 1997 (WSA) which provides the legislative framework to manage the access and delivery of water services

WATER MANAGEMENT INSTITUTES

- Responsible for implementation of the Water Services Act 108 of 1997 (WSA) which provides the legislative framework to manage the access and delivery of water services

Proto/CMAs

- Responsible for alignment with NWRS and IWQM, and must ensure that, at the catchment scale, effective co-ordination of planning and implementation takes place between the relevant government departments

Private Sector, NGOs, NPOs

Responsible for strengthening eutrophication awareness creation campaigns sector wide.

TOWARDS IMPLEMENTATION

Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
CORE STRATEGIES	SOURCE DIRECTED MANAGEMENT	Develop and implement (an) approach(s) to ensure that the conditions in water use authorisations, including those that specify Waste Discharge Standards (WDSs), ensure compliance to statutory RDMs, specifically RQOs.	DWS Head Office (HO) and Regional Offices (RO), Proto-CMA, CMAs		
		Evaluate and/ or develop model by-laws, in support of local government, to limit excessive nutrient-loading and to protect raw water quality	COGTA, Water Service Authorities (WSA), DWS: (Water Services Regulation (WSR), Economic Regulation, Sanitation Services)		
		Develop and gazette water management regulations for impacting sectors (<i>e.g.</i> feedlots, industries, etc.) that also contribute towards anthropogenic eutrophication	DWS: Regulation, DALRRD, DTI		
		Compile and publish specific sector offset policies for wetlands and for water quality to enable the rolling out of offsetting for eutrophication management	DWS, DFFE		
		To evaluate the suitability and/ or effectiveness of those measures that deal with the control and regulation of sources of anthropogenic eutrophication – consideration must be given to the development and publication of such regulations	DWS: Regulation		
		LONG-TERM (Over 5 years)			
		Develop and implement a Diffuse Source Management Strategy for South Africa that harmonise with, and support the Eutrophication Management Strategy for South Africa	DWS: Mining and Industrial Waste Regulation (MIWR), WRC		
		Develop and implement sector-specific action plans to reduce diffuse source pollution (in support of the Diffuse Source Management Strategy for South Africa	DWS: MIWR, Sanitation Services, DOH, water sector (<i>i.e.</i> Agriculture, Industrial, <i>etc.</i>)		

Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
CORE STRATEGIES	RESOURCE DIRECTED MANAGEMENT	Operationalise the Receiving Water Quality Objectives (RWQOs) Approach and achieve compliance to the requirements of the Water Resource Class(es) (RQOs and Reserves) and/ or supporting RWQOs/ Water Quality Planning Limits (WQPLs). Better integration between Source and Resource Directed Management is essential	DWS: Water Resource Classification (D: WRC), Reserve Determination (D: RD), and Compliance Monitoring and Enforcement (CME)		
		Gazette regulations to protect high yield water source areas, particularly the strategic water source areas (<i>i.e.</i> strategic surface water source and critical groundwater recharge areas)	DWS: Regulation, DFFE		
		In cases where the enabling legislation allows for the making of regulations that could assist with the protection of water resources against the effects of anthropogenic eutrophication, but such regulations do not exist, consideration must be given to the development and publication of such regulations.	DWS: Resource Protection and Waste (RP&W)		
		LONG-TERM (Over 5 years)			
		Support SDG 6.3.2D and internalise reporting on the fitness-for-use of South Africa's water resources.	DWS: RQIS. RO to support RQIS		

Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
CORE STRATEGIES	REMEDIATION DIRECTED MANAGEMENT	Establish a <i>“Remediation Working Group”</i> to initiate the development of the necessary instruments and to guide remedial activities	DWS, RO, Proto/CMAs, DFFE, WQM Forum (WQM-F), Anti-Pollution Task Team (APTT)		
		Develop and implement a dedicated Remediation Guidelines for South Africa to guide the removal of contaminants from, amongst others, soil, surface water, groundwater, and sediment, that may also exacerbate eutrophic conditions in receiving water resources	DWS, DFFE		
		Investigate the implementation of financial provision, in conjunction with the WDCS, to cover the cost of remedial action	DWS: (RP&W, Economic and Social Regulation (ESR)), NT		
		Develop a risk-based approaches to prioritise remedial action	DWS: (MIWR, Compliance Monitoring and Enforcement (CME), Source Coordination), DFFE		
		Develop rule-based best management practice measures to inform remedial action	DWS: MIWR, WRC, DFFE, SANBI		
		LONG-TERM (Over 5 years)			
		Develop and implement a programme to remediate priority impoundments and water resources, in accordance with relevant geographical water quality management strategies and thematic plans, utilising revenue from the WDCS	DWS: (RO, Source Coordination, SDS) Proto/CMAs, DFFE		

DISCUSSION

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Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
OPERATIONAL STRATEGIES	PLAN	Determine statutory RDMs, <i>i.e.</i> Water Resource Class(es) (and RQOs/ Reserves), for outstanding significant water resources	DWS – D: Water Resource Classification (D: WRC) and D: RD		
		Determine/review Resource Water Quality Objectives (RWQOs)/ Water Quality Planning Limits (WQPLs), based on the South African Water Quality Guidelines, in support of statutory RDMs, specifically the RQOs	RWQOs by Proto/CMAs, and WQPLs by the DWS: Water Quality Planning (WQP)		
		Develop and roll-out the methodologies to determine Nutrient Load Objectives (NLOs) (e.g. developing Total Maximum Daily Loads)	DWS: Source Coordination, SDS, WRC		
		Establish and implement geographical water quality management strategies and thematic plans for three priority WMAs (Crocodile (west) Marico, upper Vaal, and Upper Olifants) first, followed by the establishment and implementation of water quality management strategies and plans for the remaining WMAs. Waste load accounting, goal setting, and water quality allocation plan development constitute important components of this process	DWS: RP&W, Proto/CMAs		
		LONG-TERM (Over 5 years)			
		Influence Water Services Development Plans (WSDPs), Integrated Development Plans (IDPs), and any other relevant strategies, plans or frameworks to reflect eutrophication management priorities and management requirements	DWS: WSR, WSA, COGTA		
		Establish and implement geographical water quality management strategies and thematic plans for the remaining WMAs.	DWS: RO, Proto/CMA,		

Strategies	Type of Strategies	Prioritized Actions	Authorities
SHORT-TERM (0-5 years)			
OPERATIONAL STRATEGIES	DO	Promote the reduction, recycling and re-use of excessive nutrient-load containing waste and/or wastewater, and faecal sludge in accordance with relevant geographical water quality management strategies and thematic plans	DWS: (Sanitation Services, RO), Proto/CMA, WSA, Dep. Education (DoE)
		Gazette uniform mandatory national Waste Discharge Standards (WDSs), specifically revising all eutrophication-related standards, in support of water use authorisations	DWS: RPW
		Address shortcomings with respect to the authorisation conditions of some ELUs that cause, or may potentially cause, excessive nutrient-loading and anthropogenic eutrophication	DWS: Water Use Authorization (WUA), Proto/CMA
		Develop and implement a protocol to differentiate between water users in terms of risk. The differentiated control and management of sources of excessive nutrient-loading will enable the prioritisation of action and resources	DWS: CME, Proto-CMA, CMA
		Develop and implement a protocol for an integrated licencing processes to streamline authorisations, including CMA engagement. Efficient authorisation is vital to effective eutrophication control and management	DWS: WUA, DMRE, DFFE
		Finalise Waste Discharge Charge System (WDCS) strategy for implementation nationally, including waste discharge charges for nutrient-loading	DWS: MIWR
		Implementation of WDCS strategy	DWS: (RP&W, ESR), Proto/CMAs
		Establish financial incentives to promote water reuse and recycling, including the reuse of municipal wastewater, when the water budget allows for it	DWS: ESR, Local Government, Water Users, WSA, COGTA
		Develop and publish a National Pollution Register, which, amongst others, shows compliance to nutrient standards	DWS: Source Coordination, CME

Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
OPERATIONAL STRATEGIES	DO	Promote cleaner production and technologies, specifically to combat anthropogenic eutrophication (e.g. <i>phosphate removal detergents</i>)	DWS: (Sanitation Services, SDS), Proto/CMAs, Local Government, WSA, Dep. Science and Innovation (DSI) WRC, DTI, DMRE, COGTA		
		Investigate and establish stormwater quality measures to control nutrients ingress	WSA, COGTA		
		Investigate and establish measures and controls for diffuse pollution	DWS: RO to support WSAs		
		LONG-TERM (Over 5 years)			
		Implement (a) management system(s) to support an integrated licensing approach	DWS: WUA		
		Develop and implement sectoral off-setting policies for water quality and wetlands, based on the Overall Policy on Environmental Offsetting in South Africa	DWS, DFFE		
		Develop a publicly accessible register of all offsets to facilitate compliance monitoring	DWS, DFFE		

Strategies	Type of Strategies	Prioritized Actions	Authorities
SHORT-TERM (0-5 years)			
OPERATIONAL STRATEGIES	CHECK	Ensure the availability of back-to-back laboratory services to support eutrophication management on a continuous basis	DWS: RQIS
		Undertake routine national eutrophication monitoring, considering the recommendations of the Review of the South African Water Resource Monitoring Network report	DWS: RQIS
		Realign/ establish regional eutrophication monitoring programmes, in cooperation with all relevant role-players, and undertake routine regional eutrophication monitoring	DWS (RQIS & RO), Proto/CMAs
		Undertake appropriate flow measurements, as part of the national and regional eutrophication monitoring programmes, to enable nutrient load monitoring and apportionment on a WMA and sub-catchment basis	DWS: Hydrology, RQIS, RO, CMAs, WSA
		Consider and, where desirable, develop and implement citizen science eutrophication monitoring programmes, in support of other resource quality monitoring programmes	DWS (RO, RQIS), CMAs RQIS to provide support
		Consider and, where necessary, introduce and mainstream advanced technology to monitor eutrophication, <i>e.g.</i> remote sensing, drone technology, etc	DWS (RQIS & RO), CMAs, WRC, WSA
		Achieve and ensure compliance to the requirements of all water use authorisations, specifically including water users that contribute, or may potentially contribute, towards anthropogenic eutrophication	DWS: (CME, Regional offices) and CMAs
		Improve the effectiveness and efficiency of the water quality data management system(s) through the implementation of the findings of the Data Management Strategy. Good data management is a prerequisite for effective eutrophication management	DWS: IP, RQIS
		Update and gazette regulations to compel water users to register and upload waste discharge water quality and volumetric data, specifically data and information that will aid eutrophication management, on the Integrated Regulatory Information System (IRiS), or alternative system(s)	DWS: WARMS, Municipal Wastewater Quality Monitoring (MWwQM)

Strategies	Type of Strategies	Prioritized Actions	Authorities
SHORT-TERM (0-5 years)			
OPERATIONAL STRATEGIES	CHECK	Expand IRiS to capture data and information from water users that monitor the disposal of waste/ discharge of water containing waste for compliance monitoring purposes. The availability of suitable data and information will improve the management of eutrophication	DWS: MWwQM, CME
		Generate and compile annual national eutrophication related compliance monitoring status reports	DWS: SDS
		Generate and compile biennial national eutrophication status reports	DWS: SDS
		Generate and compile annual catchment eutrophication status report(s)	DWS: RO, RQIS (to provide support)
		Learn from the SDG Programme, and expand South Africa’s domestic monitoring programmes, in support of effective eutrophication planning, regulation, and management, to incorporate the useful concepts from the SDG Programme	DWS: RQIS
		Harmonise the systems and approaches being used across sector departments and catchments for resource water quality data and information management	DWS: Water Resource Information (WRI)
		Structures, such as the National Water Quality Management Forum, the Anti-Pollution Task Team and the Water Quality Management Steering Committee, must be utilised as platforms for regular reporting, performance tracking and deliberating	DWS: RP&W
		The DWS will be responsible for the national assessment of water quality, and will report annually to Parliament on the state of eutrophication in the country, including WSA’ Green Drop performance	DWS: WEM
		Law review to enforce monitoring within the municipal water value chain, especially monitoring and submission of data by commercial and industrial activities that discharge to municipal sewer network systems	COGTA, WSA, DWS: (MWwQM, Regulation, Policy & Strategy)
		LONG-TERM (Over 5 years)	
		Government to ensure the harmonisation of data and information systems pertaining to <u>source control</u> , especially with respect to land use that contribute towards anthropogenic eutrophication	DWS: WRI, entire water-sector

Strategies	Type of Strategies	Prioritized Actions	Authorities
SHORT-TERM (0-5 years)			
OPERATIONAL STRATEGIES	ACT	Committee structures, such as the National Water Quality Management Forum, the Anti-Pollution Task Team, and the Water Quality Management Steering Committee, must be utilised as platforms to effect improvement	DWS: RP&W
		Achieve compliance to the requirements of in-water resource water quality objectives, <i>i.e.</i> the RQOs and supporting RWQOs/ WQPLs, to ensure fitness-for-use of receiving water resources through the implementation of adaptive, systems-based catchment eutrophication management, and adjust the control of impacts on the trophic status of receiving water resources	DWS: CME, MIWR, Source Coordination
		Implement programmes to rehabilitate and manage resource water quality “hotspots” in priority catchments, in accordance with the relevant geographical water quality management strategies and thematic plans (if justified, utilising revenue from the WDCS)	DWS: (ESR, RO, WQP), Proto/CMAs
		Undertake targeted compliance monitoring and enforcement of key polluting sectors, specifically those that contribute to anthropogenic eutrophication	DWS: CME, WQM-SC/APTT
		Turn around the performance/ functionality of five, currently non-compliant/ dysfunctional, large WwTWs and initiate an accompanying publicity campaign, followed by a programme to address remaining non-compliant/ dysfunctional WwTWs	DWS: CME, WSR
		Roll-out of intervention plans to address priority non-compliant industries	DWS: RO, CMAs
		Restructure the grant funding mechanisms and conditions for water supply and sanitation so as to ensure a focus on maintaining and restoring existing infrastructure, rather than the construction of new infrastructure. Where appropriate new and innovative technology should be considered	DWS: (WSR, ESR), COGTA, WSA, NT, MISA
		Establish a mechanism for applying Administrative Penalties	DWS: ESR, Dept. of Justice
		Standardise and enforce required Operation and Maintenance (O&M) budgeting and expenditure for eutrophication management	DWS: ESR, NT, COGTA, MISA, SALGA



Strategies	Type of Strategies	Prioritized Actions	Authorities
LONG-TERM (Over 5 years)			
OPERATIONAL STRATEGIES	ACT	Continuous update on the water resources eutrophication status	DWS: RQIS

Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
SUPPORTING STRATEGIES	TECHNICAL CAPACITY BUILDING TO GIVE IMPETUS TO EUTROPHICATION MANAGEMENT	Develop and implement a programme for recruiting and retaining experienced and qualified technical and managerial staff with technical qualifications	DWS: HR, COGTA, Dept. International Relations and Cooperation (DIRCO), Dept. Public Service and Administration (DPSA)		
		Invest in good training programmes to ensure continuous learning and a clear professional development path for incumbents. This will require the reviving (and inclusion of an introductory section on eutrophication) of some of the old water quality training programmes, such as the Water Quality Management Orientation Course.	DWS: Knowledge Management, RPW, SDS		
		Define (and reinstate in some cases) career paths with defined training and on the job experience to build a cadre of sector professionals	DWS: LA, HRD, WSA, CMAs		
		Provide bursaries and/ or leadership pertaining to water quality management at tertiary institutions	DWS: LA		
		Establish and strengthen eutrophication awareness creation campaigns at the national, WMA and municipal levels	WQMF, APTT, DWS (RO, Water Services Operational Support, Sanitation Services), CMAs, NGO's and NPO's		
		LONG-TERM (Over 5 years)			
		There is a shortage of specific critical skills within various institutions, across the water value chain, <i>i.e.</i> limnology, engineering skills, artisans, socio-economic, environmental health, and management skills, which also negatively impact the management of eutrophication. The demands for these skills should be addressed	Water sector, DPSA, EWSETA		
		Develop and implement a capacity building programme for officials in DWS, CMAs and other sector departments, and for the private sector and civil society on systems based, adaptive IWQM, applicable legislation and law enforcement	DWS: (SDS, RP&W), Dept. High Education and Training (DHET), (Institutions of Higher Learning)		
		The DWS' Learning Academy initiative in conjunction with on-the-job training and mentorship has made strides in filling the skills gap within the water sector and should continue to receive the necessary support	DWS: LA, water sector		

Strategies	Type of Strategies	Prioritized Actions	Authorities
SHORT-TERM (0-5 years)			
SUPPORTING STRATEGIES	RESEARCH AND TECHNOLOGY DEVELOPMENT TO ADDRESS EUTROPHICATION-RELATED CHALLENGES	Promote, demonstrate, validate and encourage the use of alternative sanitation, such as water-less and off-grid sanitation solutions, and urine-diversion toilets. This potentially includes the development of strategies and regulations to mainstream appropriate sanitation technology	WRC, WSA, COGTA, DWS: Sanitation Services
		Investigate recent innovative treatment technologies to improve water quality	DWS: SDS
		Develop and demonstrate appropriate domestic and industrial wastewater, and faecal sludge treatment technologies for cost effectiveness, energy efficiency and beneficiation	WRC, DWS (Sanitation Services, Water Services Planning)
		Continue to do research on land use impacts on water linked ecosystems and raw water quality	DWS, WRC
		Test a suit of information and communication technology, and citizen science tools for data sourcing	DWS: (RO, RQIS), CMAs
		Review all relevant guidelines and R&D products to understand where eutrophication training modules need to be developed around new knowledge	DWS: Source Coordination
		LONG-TERM (Over 5 years)	
		DWS and the WRC will lead the sector in developing national eutrophication research, and innovation	DWS, WRC

Strategies	Type of Strategies	Prioritized Actions	Authorities		
SHORT-TERM (0-5 years)					
SUPPORTING STRATEGIES	COLLABORATION AND MANAGEMENT PARTICIPATION	Participate and strengthen intra-departmental structures for IWQM to also address the management of eutrophication, including the National Water Quality Management Forum (NWQMF), the Anti-Pollution Task Team (APTT) and the Water Quality Management Steering Committee (WQM-SC), to ensure efficient coordination and joint action, supported by regular reporting	DWS: (WEM, RO), CMAs		
		Nominate Eutrophication Management Champion(s), preferably at both Head and Regional Office levels	DWS, RO		
		Strengthen and foster strategic sector partnerships, and enable active participation of civil society	DWS, RO, CMAs		
		Establish and support Catchment Management Forums	DWS RO, CMAs		
		LONG-TERM (Over 5 years)			
		Provide eutrophication support to Integrated Water Quality Catchment Management and Integrated Regional Water Monitoring Committees	DWS, RO, CMAs		
		Provide eutrophication support to the Inter-Governmental Task Team on IWQM), once established	Water sector, DMRE, DOH, CMFs		
		Provide eutrophication support to the Regional Water Quality Functional Management Committees, once established	DWS		
		Provide eutrophication support to the Water Quality Functional Management Committee, once established	DWS		

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