water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

DEVELOPMENT OF THE NATIONAL EUTROPHICATION STRATEGY

INCEPTION REPORT

PROJECT NO: RDM/00/IHS/SDC/0120

Prepared by:

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Chief Directorate: Water Ecosystems

Department of Water and Sanitation

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June 2020

FINAL

This report should be cited as: Department of Water and Sanitation, 2020. *National Eutrophication Strategy. Report 1.0. Inception Report*. Sources Directed Control. Report No: RDM/00/IHS/SDC/0120. Pretoria, South Africa

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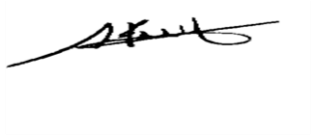
APPROVAL

***Title**:*	***Inception Report***
***Author(s)**:*	*Directorate: Sources Directed Control*
***Study Name**:*	***Development of the National Eutrophication Strategy***
***Report No**:*	
***Status of Report**:*	***Final Issue: June 2020***

DEPARTMENT OF WATER AND SANITATION

Chief Directorate: Water Ecosystems

Approved for DWS by:



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Director: Sources Directed Control

Ms T.B Nyamande (Project Manager)

Date: 26 June 2020

DOCUMENT STATUS

Project	**Department of Water and Sanitation-In-House Project: *National Eutrophication Strategy***
Document Title	Inception Report
Document Version	Final
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Report No.	01
Date	June 2020

ACKNOWLEDGEMENTS

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No.	Regional Office	Name	Designation/Directorate
1.	**Kwazulu-Natal**	Ms Manisha Maharaj	Planning and Information
2.	**Northern Cape**	Mr Mmereki Mokgadi	Water Sector Data Management
3.	**Western Cape**	Mr Bentley Engelbrecht	Planning and Information
4.	**Limpopo**	Mr Adolph Maredi	Planning and Information
5.	**Free State**	Ms Dephney Kabini	Planning and Information
6.	**North West**	Ms Rachel Mpe	Scientist Production
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EXECUTIVE SUMMARY

The word 'eutrophic' comes from the Greek word '*eutrophos'* meaning well-fed (OECD, 1982). Department of Water Affairs (DWA) (1986), supported by Rossouw *et al*. (2008) described eutrophication as the enrichment of water with plant nutrients which promotes excessive growth of algae and aquatic macrophytes. Whereas, van Ginkel (2011) described eutrophication as a process of nutrient enrichment and the associated excessive plant growth such as algae and macrophytes in water bodies, which can be seen as either a natural aging process in the aquatic ecosystems or accelerated by human impacts.

The two main eutrophication sources are point and diffuse (also known as non-point) sources of pollution. The point sources are associated with pipeline discharge of effluent from facilities such as Waste Water Treatment Works (WWTWs) and industrial discharges; whereas diffuse sources of pollution emanate mainly from the atmospheric deposition process (nutrients leaching from certain rocks and soils), settlements (urban, peri-urban and informal) and agricultural run-off (DWA, 1986).

Eutrophication was recognized as a threat to South African surface waters almost seven (7) decades ago and the first impacts thereof became apparent in the 1950s and reaching problematic levels in the 1960s (Walmsley and Butty, 1980; Zohary *et al.,* 1988; and van Ginkel, 2011).

Since the early 1990s, water pollution has worsened in almost all rivers in Africa, Asia (44% in China) and Latin America. The deterioration of water quality is expected to further escalate over the next decades and this will increase threats to human health (U.S EPA, 1998).

Eutrophication leads to a progressive deterioration of water quality and other undesirable changes that interfere with water use, by reducing its suitability for use (DWA, 1986). It constitutes a major threat to the provision of raw potable and irrigation water in South Africa (SA), being largely dependent on impounded water in order to ensure water supply (Harding, 2008). Poor water quality impacts on crop yields and makes crops vulnerable to import restrictions from countries with strict quality standards (DWS, 2017b). High levels of nutrients and algal blooms in the Breede and Berg River systems is a critical risk threatening international markets in the Western Cape (Cullis *et. al.*, 2018). The severity of algal blooms causes contamination in the rivers, resulting in livestock and wild animal deaths in the Kruger National Park, SA (van Ginkel, 2011); a big threat to the tourism, recreation and property value sectors. Eutrophication has a number of side effects with undesirable ecological and economic consequences that include increased autotroph biomass, species

compositional shifts, reductions in biodiversity, potential production of algal toxins, oxygen depletion, taste and odour (Griffin, 2017).

The 2002 survey has indicated that Department of Water and Sanitation (DWS) (then Department of Water and Forestry (DWAF) regional offices currently lack the capability to implement desirable eutrophication management programmes for water resources under their jurisdiction, as desired by published policy and prescribed by the National Environment Management Act (NEMA) and the National Water Act (NWA) legislations (DWAF, 2003). The issue of eutrophication had not received adequate attention previously, which could have been one of the reasons the situation exacerbated even more. An urgent need to rectify this situation was therefore identified, that led the DWS to revise, update and consolidate its policies and strategies and came up with the Integrated Water Quality Management (IWQM) Policies and Strategies for South Africa in 2016 and 2017 respectively. The IWQM Strategy emphasised eutrophication as an issue of priority amongst others such as salinization, Acid-Mine Drainage, urban pollution and sedimentation. It further sets out the prioritized strategic objectives and actions that need to take place to achieve the vision and mission for water quality management in SA. The strategic action relevant to the study is the development of the strategic action plans to reduce point and non-point (diffuse) sources of water pollution (DWS, 2017), resulting in nutrient rich water streams/lakes with high algal biomass.

In 2019, the Directorate; Sources Directed Control within the Chief Directorate: Water Ecosystem of the DWS reinstated a project (as was initially started in 2002 and was never completed) with the objective to develop the National Eutrophication Strategy. The project is aimed at the development of the National Eutrophication Strategy and putting the Strategy into Practice (the actual implementation of the strategy). The development of the National Eutrophication Strategy is given effect to the strategic objectives and actions identified in the existing IWQM Policy (2016) and IWQM strategy (2017). Eutrophication management is one of the more pressing water quality challenges that form an IWQM Policy statement. The need to manage the eutrophication problem as an issue of priority was amongst others identified by the IWQM Strategy. Chapter 3 of the NWA entails the protection of the water resources, as aligned with the other strategic policies such as the Sustainable Development Goals (SDG6), National Water Resources Strategy Third Edition (NWRS-3), the National Water and Sanitation Master Plan (NW&SMP) and the Resource Directed Measures (RDM). The Department's approach to the protection of the water resources is two-pronged: the RDM and Source Directed Controls (SDC). The SDC sets controls to prevent water quality pollution and degradation. RDM set the goals for resource protection and are informed by

the Water Resource Classification system, which allows for different levels of protection for different water resources. The RDM also make provision for the water resource classification and the determination of the Reserve (the water quantity and quality needed to maintain aquatic ecosystems as well as the water required to meet basic human needs) and Resource Quality Objectives (RQOs). In the absence of the RQOs, certain catchments have implemented the agreed Resource Water Quality Objectives (RWQOs).

The main objectives of the National Eutrophication Strategy include the following:

1. To promote the allocation of resources (human, financial and technical) to deal with the problem;
2. To operationalize the IWQM Strategy i.e. provide the country with appropriate direction on how eutrophication should be controlled and managed;
3. To monitor and report on the national status on coordinated efforts/intervention towards effective management of Eutrophication problem;
4. To promote the development of the national Eutrophication centred capacity through activities such as training, research and awareness campaigns; and
5. To promote localisation of interventions which entails amongst others: implementation of catchment assessment, monitoring stakeholder engagement and implementation of catchment actions. It should also spell out the role of DWS, Water Management Areas (WMAs), Catchment Management Agencies (CMAs), water boards, local authorities, water users (*i.e.* agricultural, mining and industrial sectors).

Purpose and Layout of the Report

The inception phase is intended to define the extent of work and associated cost as well as to provide the opportunity for the identification, assessment, interpretation of the nature and scope of the project and to document all the relevant information available to support the National Eutrophication Strategy. **Section 1** of Inception Report presents a brief background information of the study followed by **Section 2** which describes the scope of work and priorities of the project. **Section 3** presents the Capacity building. The proposed budget, time schedule and project procedure are presented on **Section 4** followed by **Section** 5 which outlines the reporting method.

Project Structure and Priorities

The Study consists of the following key components:

- Component 1: Project Inception;
- Component 2: Situation assessment and gaps analysis;

- Component 3: Development of a National Eutrophication Strategy;
- Component 4: Putting Strategy into practice;
- Component 5: External Review;
- Component 6: Stakeholder Consultation and Communication;
- Component 7: Project Management and Administration; and
- Component 8 Project Closure.

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ABBREVIATIONS AND ACRONYMS

Acronym	Meaning
CMA	Catchment Management Agency
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
IWQM	Integrated Water Quality Management
NWA	National Water Act
NWRS-3	National Water Resource Strategy version 3
NW&SMP	National Water and Sanitation Master Plan
PMC	Project Management Committee
PSC	Project Steering Committee
RDM	Resource Directed Measures
RQOs	Resource Quality Objectives
SA	South Africa
SDC	Sources Directed Control
TTT	Technical Task Team
WQM	Water Quality Management

1. INTRODUCTION

1.1. Overview

This inception Report describes the proposed work to be coordinated by the Directorate: Source Directed Control of the Chief Directorate: Water Ecosystems, for the development of the **National Eutrophication Strategy**. This project is entirely reliant on activities performed within the Department, the CMAs and other institutions within the water sector.

The project is aimed at the development of the National Eutrophication Strategy and putting the Strategy into Practice. The development of the National Eutrophication Strategy is giving effect to the strategic objectives and actions identified in the **Integrated Water Quality Management (IWQM) Policy (2016) and IWQM strategy (2017);** the Strategy into Practice report entails the actual implementation of the strategy, which will highlight the need for the **Integrated Water Quality Management Plan** for the catchments. Eutrophication management is one of the pressing water quality challenges that form an IWQM Policy statement. The need to manage the eutrophication problem as an issue of priority was one of the key issues identified by the IWQM Strategy.

There are a lot of identified existing and current studies conducted by different institutions, around management of eutrophication in SA which contribute towards the need for its prioritization. Factors that hindered the implementation of the previous initiatives aimed at addressing eutrophication problem to ensure proper coordination of the strategy will be taken into account.

1.2. Aim of the Project

The main aim of this project is to develop the National Eutrophication Strategy which provides guidance to the DWS and the water sector at large, on strategies to avoid, reduce, mitigate and manage the effects of eutrophication of SA's water resources.

The key objectives in support of the aim are to:

- promote the allocation of resources (human, financial and technical) to deal with the protection and rehabilitation of the water resources.
- provide the country with appropriate direction on how eutrophication should be controlled and mitigated;
- review, update and formalise the National Eutrophication Strategy. The eutrophication

strategy must include current management imperatives, as well as changes to water and related environmental legislation made over recent years;

- review and identify the eutrophication sources and align the management options already developed in different management structures;
- review relevant national and international eutrophication related information and identify gaps in current eutrophication approaches, instruments and practices in South Africa at all levels (local, provincial and national), for both government and the water sector at large;
- monitor and report on the national status of the problem;
- include mechanisms and actions for the Department to facilitate and monitor the roll-out of the strategy and ensure co-ordination between the various role-players with the aim of developing and giving effect to the National Eutrophication Strategy;
- capacitate and consult a wide group of stakeholders on eutrophication concepts and principles, and on the project and its outcomes; and
- ensure accurate and efficient feedback and communication within the whole water sector.

Project Focus

The project focus is to include:

- Rivers, dams, aquifers, wetlands and estuaries within a catchment;
- Perennial and non-perennial systems;
- Trans-boundary systems;
- Eutrophication in all its aspects (biological, physical, chemical, aesthetic, toxicological etc.); and
- Water quantity, in-stream and riparian habitat and biota, in so far as it relates to water quality.

1.3. Purpose of the Report

The primary purpose of this phase is to allow the scope of work to be clearly defined from the onset. The inception phase is intended to provide the opportunity for the identification, assessment and interpretation of the nature and scope of the project as well as to document all the relevant information available to support the determination of the National Eutrophication Strategy. This Inception Report will form the basis of the Scope of Work required for the rest of the project.

1.4. Project Structure and Priorities

The study consists of the following components:

- Component 1: Project Inception;
- Component 2: Situation assessment and gaps analysis;
- Component 3: Development of a National Eutrophication Strategy;
- Component 4: Putting Strategy into practice;
- Component 5: External Review;
- Component 6: Stakeholder Consultation and Communication;
- Component 7: Project Management and Administration; and
- Component 8 Project Closure.

1.5. Previous and Current Studies

The list of reports of previous and parallel studies done by the DWS and the water sector in relation to eutrophication is indicated on the Gap Analysis Report, which is part of the series of reports produced during project planning. The data and information produced during those studies will serve as a baseline for the development of the National Eutrophication Strategy.

2. SCOPE OF WORK

2.1. Project Inception Phase

The inception phase tasks include but are not limited to:

- the definition of project scope;
- identification of the potential Eutrophication hotspots;
- identification of the role-players;
- outlining the project deliverables;
- outlining the study budget;
- the development of a stakeholder engagement plan; and
- outlining capacity building and mentorship program;
- Project timeline/road map.

2.2. Situation Assessment and Gap Analysis

In this task, the existing literature, reports, models, maps, aerial photographs and any other relevant information that are supportive to the development of the National Eutrophication Strategy, will be reviewed. This component should identify current as well as emerging eutrophication issues, integration problems and challenges. The root

causes of these challenges should be identified and documented.

Data and information gaps will be identified and measures to address the gaps will be explained. The report has categorised the identified information based on components such as point and non-point sources of pollution which have been laid as baseline information in the study area.

It is anticipated that this component will run concurrently with the inception phase as the outcome of the gap analysis will guide the rest of the project programme. This component therefore includes the following:

- Gather and organise information on current and emerging eutrophication trends, approaches, challenges faced and possible solutions;
- Standardise on eutrophication related terminology to be used during the project; and
- This component should further consult and assess international and national Water Quality Management (WQM) policy, strategies, practices, approaches, concepts and other related information in order to formulate the policy, strategy and actions. Local case studies such as the Hartbeespoort Rehabilitation / Remediation Pilot project, which display key concepts that could inform the strategy, should be included in the survey.

Deliverables

A Report on eutrophication challenges in South Africa and their causes;

- A Literature Survey Report of an international, national and any other applicable policies, strategies, practices, approaches, concepts and other related information;
- A Literature Database and electronic copies of literature; and
- A Glossary of eutrophication related terminology should be produced.

2.3. Development of a Eutrophication Strategy

The development of the National Eutrophication Strategy is the major component of the study. It entails assessing and agreeing on what will be needed in order to implement the WQM Policy (2016). The strategy is giving effect to the WQM Policy (2016) and must define what needs to be done by the Department and the larger water sector in order to achieve IWQM. As part of the development of the Strategy, the eutrophication process, roles and responsibilities with respect to functional mandates must be defined at the appropriate level.

The details of “who, when and by whom” specific actions are to be undertaken and

addressed by the IWQM Plan for a specific catchment, of which the "Strategy into Practice" component will provide a link with the catchment operational plans. In defining the National Eutrophication Strategy, alignment with relevant executive policies and strategies, including the NWRS-3 and the NW&SMP, will be essential.

The National Eutrophication Strategy will be a country strategy and as such must give clear and adequate direction to other scales of strategy development and implementation. A wide range of aspects should be considered in the development of the strategy. These aspects may relate to, but are not limited to:

- the application of regulatory, financial, self-regulation, effective remediation and advanced technology;
- research and innovation, communication, capacity building and empowerment;
- use state of system indicators such as aquatic biological indices and remote sensing tools mechanisms for integration and co-operation; and
- various thematic water quality issues, such as nutrient enrichment. Various emerging aspects, such as water quality offsetting, identification of eutrophication hotspots, the use of buffer zones, and the management of complex organic compounds, should also be considered.

A first version of the strategy must be developed within the first year of the study with the final edition to be produced towards the end of the project. Lessons learnt and any relevant additional information obtained during the course of the project should be used to produce the final version of the strategy.

Deliverables

This component aims to achieve:

- A National Eutrophication Strategy (first and final edition); and
- A "User-friendly" version of the strategy for communication.

2.4. Putting Strategy into Practice

The strategy must lead to action and must be very clear on the roles, responsibilities and mandates within and among water institutions and the water sector at large. This component should entail the following:

- Developing actions that would provide the detail necessary to turn the National Eutrophication Strategy into action;
- Clearly defining the roles and responsibilities of the various eutrophication role players (co-operative governance) in the Department and larger water sector in undertaking

those actions; and

- Developing mechanisms and platforms for monitoring, integration and reporting on the progress/outcomes of those actions and the success of the strategy.

In defining how the strategy will be converted into practice, priority actions should be highlighted and possible risks should be identified. The actions should not only be relevant to the DWS, but to all other relevant sectors and should also align to other actions that have been put in place to implement related executive policies and strategies. Roles, responsibilities and timeframes for undertaking the actions required to give effect to the strategy may be updated as the project proceeds.

Given the large number of sectors that play a role in eutrophication, integration and co-operation will need to be a facilitated process and recommendations for co-ordination platforms for the achievement of the integration component of the National Eutrophication Strategy must be provided.

To insure that the strategy leads to action, **a monitoring** and **reporting system** will also be required. The format of reporting on progress and outcomes should satisfy the needs of SA's constitutional requirements under Section 24. The system should include the use of indicators that not only measure progress but also meaningfully measure the success of the strategy. Stakeholder consultations should be used to provide inputs to this component.

Deliverables

This component aims to achieve the following:

- Define the approach in order to achieve the desired product;
- To put Strategy into Practice detailing the actions, the roles and responsibilities, timeframes, and the co-ordination structures, and development of framework and different editions or reports;
- Development and testing of an organized method (system) for monitoring and reporting on the conversion of strategy into practice and the realization (and success) of the National Eutrophication Strategy;
- A report recommending organisational improvements (functions and structures) for Eutrophication; and
- Concept Work Plans for relevant officials

2.5. External Review

An external reviewer will be appointed to review study outputs and deliverables. The reviewer will be confirmed through the project management team. Once the eutrophication development process has been completed, the reviewer will be included in team workshops and through key steps in the study process, including the review of the final draft deliverables.

2.6. Stakeholder Consultation and Communication

Stakeholder engagement process as required by Batho Pele Principles *i.e.* transparency and access to information will take place throughout the duration of the project. The Historically Disadvantaged Individuals (HDIs) will be considered and consulted sufficiently.

A database of all stakeholders that need to be consulted must be compiled. All the comments received during the process must be documented. The scope of the communication and liaison services to be provided by the Project Management Committee (PMC) will include, but not be limited to the following:

- Consolidated stakeholder database;
- Establishment, in consultation with the Department's top management, of appropriate institutional arrangements to facilitate the progress of the project;
- Public meetings: minimum of two sets at a central venue;
- Project Steering Committee (PSC) meetings (minimum of two meetings); and
- Technical Task Team (TTT): monthly meetings or meet as the need arises to discuss the deliverables or milestones.
- Existing river/catchment/ estuary fora

External stakeholders are encouraged to play a major role in the Sub-Task Teams where their expertise will be needed and during the implementation phase.

The stakeholder process for this project can be summarized as follows:

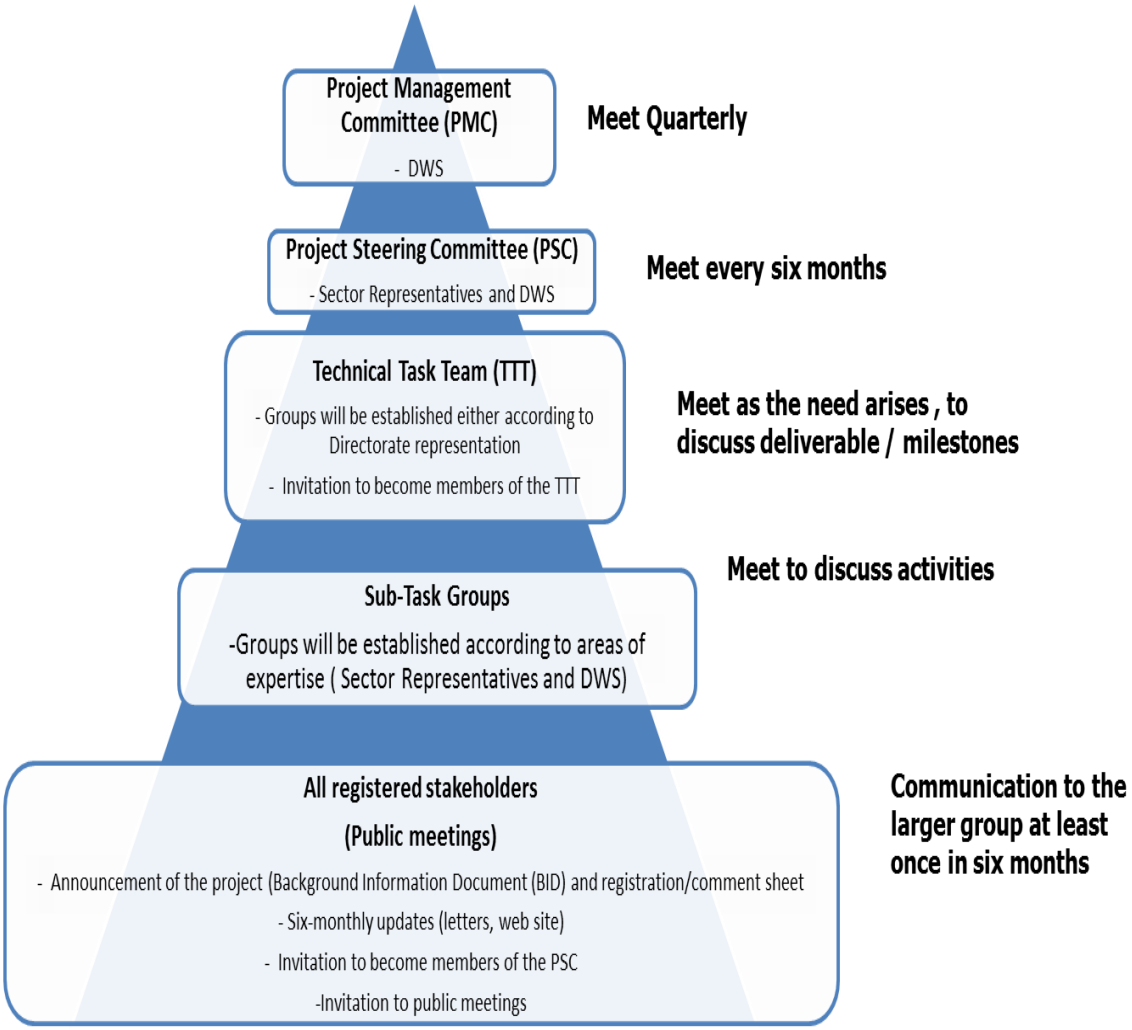

Figure 1: Summary of the Stakeholder process

Deliverables

This component aims to achieve the following:

- A stakeholder consultation and communication strategy;
- A project Information Management System, designed to share large deliverables for comment by stakeholders;
- Issues and responses register to deal with input received on all project deliverables needs to be maintained during the project life;
- Detailed stakeholder database as well as consultation database (date of consultation, purpose, number of attendees, etc.);
- Capacity building of key role-players and stakeholders;
- All web page content, including graphical content, necessary to introduce, illustrate and/or explain project information, progress and deliverables. The said web page

content will need to be periodically updated and will be utilized by the departmental administrator to populate a web page on the Departmental Web Site throughout the project period;

- A newsletter and/or Background Information Document for each of the PSC meetings and Public Workshop/s; all in colour with graphical content, where appropriate, needed at key milestones to communicate study information and progress to study stakeholders;
- A public "communication event", with accompanying event documentation (invitations, programme, presentation catalogue and summary of key outcomes).
- PowerPoint presentations; and
- Project deliverables.

2.7. Project Management and Administration

The component deals with the management of the project processes as follows:

- The TTT: these meetings will be held on a monthly basis or when the need arises. This team will be comprised of the DWS Officials who are directly involved / tasked to carry out certain milestones / deliverables of the project.
- The PMC: these meetings will be held on a quarterly basis or when the need arises;
- The PSC: a minimum of two meetings throughout the project period. PSC will be comprised of the TTT, PMC members and members from various sectors with interest in the project. The role of the PSC is to provide strategic direction and guidance on the study process and task. It also serves as representatives of the stakeholder bodies and organisations and report back to them on an on-going basis regarding the study decisions and results. Venues will be communicated upon the announcement of the meeting(s); and
- Consolidated issues and response registers / reports.

2.8. Project Closure

Project Administrators must ensure that all the deliverables stated, including meeting records, databases, presentation materials are in place and submitted to the Department's Top Management before the end of the project.

Deliverables

This component aims to achieve the following:

- The DWS Supply Chain Management project close-out report, detailing overall project

performance;

- Technical close-out report; and
- Final presentation summarizing the project outcomes.

3. CAPACITY BUILDING

In order to ensure skills transfer within the DWS, capacity building will be offered at 3 different levels, namely:

- mentorship programme and/or engagement of Graduate Trainees on the process of development;
- capacity building workshops; and
- Stakeholder empowerment sessions, if a need arises.

Ms Koleka Makanda is a newly appointed Production Scientist in DWS, under a Directorate: Water Resource Classification and has been identified for a structured mentorship programme. This programme will be aligned to the skills and developmental needs of identified Officials responsible of water resources management. The mentorship programme is designed in a way that will allow the mentee to have scientific technical tasks and responsibilities whose output will feed into the overall technical milestones/deliverables of the project. The Graduate Trainees within the department are required to be exposed to scientific work to enable them to achieve their professional registration. Exposing them to this process will help them to accumulate the credits needed for their registration.

The capacity-building workshops will cater for a larger group and will consist of DWS (Head and Provincial offices) and the CMAs. The workshops will provide an overview of the study and the topics to be covered for such workshops will be finalised by the PMC. The participation of relevant DWS officials will ensure active sharing of ideas and contribute to the broadening of the Water Ecosystems skills base by being intensively involved in the day-to-day running of the project.

Provision will also be made for stakeholder empowerment sessions if needs arises in order to capacitate stakeholders so that they can fruitfully participate in the study and in other stakeholder engagement platforms such as the PSC and Public meetings.

4. PROJECT PROCEDURE

4.1. Time Schedule

The project will be initiated during the 2020/2021 financial year and will be concluded within 24 months from the date of initiation. The first version of the strategy will be completed within the first year of the project. The time remaining will be used to finalise all the other relevant deliverables, with the view of incorporating the lessons learnt during this time into the final edition of the strategy and strategy into practice towards the end of the project contract.

4.2. Project Program

A breakdown of project deliverables as per financial year is given in table

Table 1: Deliverables and the estimated timeframe to complete tasks and submit reports

Component No.	**Deliverables**	***Estimated Timeframe** (months)
1. Project Inception	Inception Report (Final)	5
2. Situation Assessment and gaps analysis	A Report on eutrophication challenges in South Africa and their causes; and a Literature Survey Report of international, national and any other applicable policies, strategies, practices, approaches, concepts and other related information	
3. Development of a National Eutrophication Strategy	National Eutrophication Strategy (first edition)	10
	National Eutrophication Strategy (final edition)	
	Summary User-friendly version of the strategy	
4. Putting Strategy into practice	Strategy into Practice Report (First Edition)	5
	Strategy into Practice Report (Final Edition)	

Component No.	Deliverables	*Estimated Timeframe (months)
5. Capacity Building	Detailed capacity-building report (which includes the mentorship, capacity building workshops and stakeholder empowerment sessions)	Throughout the project life-cycle
6. External Review	An external reviewer will be identified to review study outputs and deliverables	1
7. Stakeholder Consultation and Communication	Communication Strategy (Final)	Throughout the project life-cycle
	Stakeholder Issues and Responses Register	
8. Project Management and Administration	Organisational Report (Final)	Throughout the project life-cycle
9. Project Closure	Project close-out report (Final)	3
	An electronic database/library of all available information collected	

*The estimated timeframe indicates the period during which a particular task should be carried out and the final report be submitted to the top management.

- Lastly, one unbound copy of each final deliverable, one electronic copies in MS Word format on a CD are also to be supplied.

4.3. Indicative Budget

Table 2: Goods and Services budget - Cost Estimates Table

Responsibility	Objective	Item	Estimated Cost (excluding VAT)
Directorate: Sources Directed Control	Water Ecosystems	Venues and Facilities for Stakeholders Engagement; External Review	R386 000.00

Table 3: Cost Estimates

Component / activity	Amount (R)
Stakeholder Consultation and communication: 2x Public meetings @ R70 000.00 per meeting 2x Specialists / sectoral workshops @ R63 000.00 per meeting	 140 000.00 126 000.00
External Review	120 000.00

5. REPORTING

The Project Administrators shall produce at least the following project management outputs:

- Progress reports, technical memoranda and other material necessary to properly inform the top management and other stakeholders. The build-up of the Departmental monthly progress reports required, will document:
  - ✓ the progress of work against the project deliverables;
  - ✓ actual expenditure against cash flow estimates;
  - ✓ significant findings and outcomes thereof;
  - ✓ corrective actions taken in respect of work programme; and
  - ✓ cash flow estimates.
- Ensure that a complete record of proceedings of the project management meetings is maintained and appropriately archived;
- The technical reports will be provided after each defined deliverable and will need to be approved by the top management: These reports will be used as supporting documents to write the main report;
- All first draft reports shall be circulated to the PMC and PSC for their comments and inputs. The Administrators must allow four weeks in the project programme for the review of documents;
- Copies of the main bound final reports are to be submitted for approval.

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APPENDICES

Appendix 1: Project Plan

Component	Deliverables	Directorate / Designation	Technical Task Team Members	Sub-Task Members (Specialization)	*Estimated Timeframe (months)
Project Planning	Compile a Draft Stakeholder database	Director: SDC	Ms Tovhowani Nyamande		**Apr-June 2019**
	Project Plan; Convene a PMC meeting	Director: SDC			**Jul-Sep 2019**
	Draft a Project Steering Committee (PSC)'s ToR; Updated stakeholder database	Director: SDC			**Oct-Dec 2019**
	Compile draft Inception Report	Production Scientist: SDC	Mr Samkele Mnyango		**Jan-Mar 2020**
Project Inception	Inception Report (Final)	Production Scientist: SDC			**Apr-Jun 2020**
Situation Assessment and gaps analysis	A Report on eutrophication challenges in South Africa and their causes	Production Scientist: RQIS	Mr Elijah Mogakabe	Mr Sazi Mthembu	**Jan-Mar 2020**
		Deputy Director: WRP&W ; Environmental Officer (Production)	Mr Willy Mosefowa	Ms Chocky Tshenkeng	
	Climate Change	Scientific Manager: Climate Change	Ms Pumza Dubula		
	National Eutrophication Monitoring Programme	Production Scientist: RQIS	Mr Elijah Mogakabe	Ms Noloyziso Mbiza	

Component	Deliverables	Directorate / Designation	Technical Task Team Members	Sub-Task Members (Specialization)	*Estimated Timeframe (months)
	Hartbeespoort Dam Project (Lessons learned)	Hartbeespoort Dam Regional: Kuperoord	Mr Peet Venter		
	Wastewater Regulation	DD: Wastewater Services Regulation – Green Drop	Ms Mpho Morokane		
	Literature Review - applicable policies, strategies, practices, approaches, concepts and information	Deputy Director: WRP&W; Environmental Officer (Production)	Mr Willy Mosefowa	Ms Chocky Tshenkeng	
	Climate Change	Scientific Manager: Climate Change	Ms Pumza Dubula		**Jan-Mar 2020**
	Policy	DD: Policy (Water Quality)	Mr Tendamudzimu Rasikhanya		
	Strategy	DD: Water Sector Strategy Coordination	Ms Mahadi Mofokeng		
Development of a National Eutrophication Strategy	National Eutrophication Strategy (first edition)	Deputy Director: WRP&W ; Environmental Officer (Production)	Mr Willy Mosefowa	Ms Chocky Tshenkeng	**Apr-Dec 2020**

Component	Deliverables	Directorate / Designation	Technical Task Team Members	Sub-Task Members (Specialization)	*Estimated Timeframe (months)
		Scientific Manager: IWRP	Mr Pieter Viljoen	Mr Jurgo Van Wyk	
	Summary User-friendly version of the strategy	Scientific Manager: IWRP		Mr Geert Grobler	
Putting Strategy into practice	Strategy into Practice Report (First Edition)	Production Scientist: IWRP		Ms Lebo Mosoa	**Jan-Feb 2021**
	Wetlands Coordination	Production Scientist: IWRP	Ms Jacqueline Jay		
	Sanitation Management	DD: Sanitation	Ms Lusanda Agbasi		
	Wastewater Regulation	DD: Wastewater Services Regulation – Green Drop	Ms Mpho Morokane		
	Monitoring coordination	DD: Integrated Water Resource Management Support	Ms Nolusindiso Jafta		
	Strategy into Practice Report (Final Edition)	DD: Compliance Monitoring & Investigations	Mr Resenga Shibambo		
Capacity Building	Detailed capacity-building report (which includes the mentorship, capacity building workshops and stakeholder empowerment sessions)	Scientific Manager: Water Resource Classification	Mr Mkhevu Mnisi		**Throughout the project life-cycle**

Component	Deliverables	Directorate / Designation	Technical Task Team Members	Sub-Task Members (Specialization)	*Estimated Timeframe (months)
		(WRC)			
	A Mentee under Mr Mkhevu Mnisi (a Mentor)	Production Scientist: WRC	Ms Cornelia Koleka Makanda		**Throughout the project life-cycle**
External Review	**An external reviewer will be identified to review study outputs and deliverables**	1	1		**Mar 2021**
Stakeholder Consultation and Communication	Communication Strategy Report	DD: Communication Services	Ms Candice Mahlangu		**Throughout the project life-cycle**
	Stakeholder Issues and Responses Register	Production Scientist: RD	Mr Molefi Mazibuko		**Throughout the project life-cycle**
Project Coordination and Administration	Organisational Report (Final)	Director: SDC	Ms Tovhowani Nyamande		**Mar 2021**
Project Closure	Project close-out report (Final)				**Mar 2021**

*The estimated timeframe indicates the period during which a particular task should be carried out and the final report be submitted to the top management.

Appendix 2: Project Steering Committee Members

Title	Last Name	First Name	Company	Position
Dr	Harding	W.R (Bill)	DH Environmental Consulting (Pty) Ltd	Aquatic Specialist
Dr	Thornton	Jeffrey	International Environmental Management Services Ltd	Managing Director
Mr	Makwela	Matome	Chamber of Mines	
Ms	Gabriel	Mary-Jean	Department of Agriculture, Land Reform and Rural Development	Director: Water Use & Irrigation Development
Ms	Mjadu	Nomvuso Patricia	Department of Agriculture, Land Reform and Rural Development	
Mr	Nethononda	Bradley	Department of Environment, Forestry and Fisheries (DEFF)	Control Environmental Officer Grade B
Mr	van Wyk	Jurgo	Department of Water and Sanitation	Scientific Manager: Integrated Water Resource Planning (IWRP)
Ms	Mosoa	Lebo	Department of Water and Sanitation	Production Scientist: IWRP
Mr	Venter	Petrus	Department of Water and Sanitation	Deputy Director: Water RM-Hartebeespoort Dam
Mr	Atwaru	Yakeen	Department of Water and Sanitation	Director: Reserve Requirements
Mr	Majola	Kwazikwakhe	Department of Water and Sanitation	Scientific Manager: Reserve Requirements
Ms	Weston	Barbara	Department of Water and Sanitation	Scientific Manager: Reserve Requirements
Mr	Matseba	Ephraim	Department of Water and Sanitation	Gauteng Region
Mr	Mukhawana	Mxolisi	Department of Water and Sanitation	Scientific Manager: Information Programme
Ms	Mpe	Rachel	Department of Water and Sanitation	Geohydrologist
Ms	Nyamande	Tovhowani	Department of Water and Sanitation	Director: Sources Directed Control
Mr	Chabedi	Tefo	Eskom Holdings SOC Limited	Senior Advisor
Mrs	Liefferink	Mariette	Federation for a Sustainable Environment (FSE)	Chief Executive Officer

Prof.	Tempelhoff	Johann	FSE - North West University (NWU)	
Ms	Mpanza	Mbalenhle	FSE - University of Johannesburg	
Prof.	Solomon	Michael	FSE - University of Cape Town (UCT)	
Mr	Mafejane	Ariel	Johannesburg Water	Infrastructure Services
Dr	Riddell	Eddie	Sanparks	Manager: Water Resources, Conservation Services
Mr	Van Staden	Jan	Breede Gouritz CMA	
Ms	Bushula	Thembela	Breede Gouritz CMA	
Mr	Buthelezi	Phakamani	Overberg Water	
Dr	Ubomba-Jaswa	Eunice	Water Research Commission (WRC)	
Mr	Nomquphu	Wandile	WRC	
Ms	Fundzo	Nwabisa	Department of Water and Sanitation	
Mr	Mnyango	Samkele	Department of Water and Sanitation	Production Scientist: Sources Directed Control
Mr	Mazibuko	Molefi	Department of Water and Sanitation	Production Scientist: Reserve Determination
Mr	Mogakabe	Elijah	Department of Water and Sanitation	Production Scientist: RQIS
Mr	Mosefowa	Willy	Department of Water and Sanitation	Deputy Director: WRP&W
Ms	Dubula	Pumza	Department of Water and Sanitation	Scientific Manager: Climate Change
Ms	Morokane	Mpho	Department of Water and Sanitation	Deputy Director: Wastewater Services Regulation (Green Drop)
Mr	Rasikhanya	Tendamudzimu	Department of Water and Sanitation	Deputy Director: Policy (Water Quality)
Ms	Mofokeng	Mahadi	Department of Water and Sanitation	Deputy Director: Strategy Coordination
Mr	Viljoen	Pieter	Department of Water and Sanitation	Scientific Manager: IWRP
Ms	Jay	Jacqueline	Department of Water and Sanitation	Production Scientist: IWRP
Ms	Agbasi	Lusanda	Department of Water and Sanitation	Deputy Director: Sanitation
Ms	Jafta	Nolusindiso	Department of Water and Sanitation	Deputy Director: Integrated Water Resource Management Support

Mr	Shibambo	Resenga	Department of Water and Sanitation	Deputy Director: Compliance Monitoring & Investigations
Mr	Mnisi	Mkhevu	Department of Water and Sanitation	Scientific Manager: Water Resource Classification
Ms	Makanda	Koleka	Department of Water and Sanitation	Production Scientist: Water Resource Classification
Ms	Mahlangu	Candice	Department of Water and Sanitation	Deputy Director: Communication Services
Mr	Mthembu	Sazi	Department of Water and Sanitation	Production Scientist: RQIS
Ms	Tshenkeng	Chocky	Department of Water and Sanitation	Environmental Officer (production): WRP&W
Ms	Mbiza	Noloyiso	Department of Water and Sanitation	Production Scientist: RQIS
Mr	Grobler	Geert	Department of Water and Sanitation	Scientific Manager: IWRP
Ms	Maharaj	Manisha	Department of Water and Sanitation	KZN: Planning and Information
Mr	Mokgadi	Mmereki	Department of Water and Sanitation	Northern Cape: Water Sector Data Management
Mr	Engelbrecht	Bentley	Department of Water and Sanitation	Western Cape: Planning and Information
Mr	Maredi	Adolph	Department of Water and Sanitation	Limpopo: Planning and Information
Ms	Kabini	Dephney	Department of Water and Sanitation	Free State: Planning and Information
Mr	Macevele	Stanford	Department of Water and Sanitation	Mpumalanga: Institutional Establishment
Ms	Nyama	Jeanette	Department of Water and Sanitation	Gauteng: Institutional Establishment
Ms	Mgca	Nombuyiselo	Department of Water and Sanitation	Eastern Cape: Institutional Establishment