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WORKING FOR WETLANDS REHABILITATION PROGRAMME, LIMPOPO

BASIC ASSESSMENT REPORT
JUNE 2019

Agriculture, Forestry and Fisheries
Environmental Affairs
Water Affairs and Sanitation

Working for Wetlands

EXPANDED PUBLIC WORKS PROGRAMME
Creating opportunities towards human fullfilment

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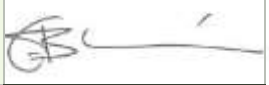
Reviewer signature		Approver signature	
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Title	Project Leader	Title	Manager

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NEMA requirements for Basic Assessment Reports		aurecon
Appendix 1	**Content as required by NEMA**	**Page**
3(1)	A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -	
(a)	(i) details of the EAP who prepared the report; and	Section 8.2 and Appendix F
	(ii) details of the expertise of the EAP, including curriculum vitae;	
(b)	the location of the activity, including-	Section 1.1.1
	(i) the 21 digit Surveyor General code of each cadastral land parcel;	
	(ii) where available, the physical address and farm name;	
	(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	N/A
(c)	a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is-	Figure 1 and Chapter 6
	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	N/A
	(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	N/A
(d)	a description of the scope of the proposed activity, including-	
	(i) all listed and specified activities triggered and being applied for; and	Chapter 2
	(ii) a description of the activities to be undertaken, including associated structures and infrastructure;	Section 5.2
(e)	a description of the policy and legislative context within which the development is proposed including -	Chapter 2
	(i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and	
	(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 5.1
(g)	a motivation for the preferred site, activity and technology alternative;	Chapter 5
(h)	a full description of the process followed to reach the proposed preferred alternative within the site, including -	Section 5.3
	(i) details of all the alternatives considered;	
	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Chapter 4 and Appendix B
	(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	
	(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 6
	(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Chapter 7
	(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 3.2
	(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 7

	(viii) the possible mitigation measures that could be applied and level of residual risk;	
	(ix) the outcome of the site selection matrix;	N/A
	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and	Section 5.3
	(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	N/A
(i)	a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including -	Chapter 3 and 7
	(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	
	(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	
(j)	an assessment of each identified potentially significant impact of risk, including -	Chapter 7
	(i) cumulative impacts;	
	(ii) the nature, significance and consequences of the impact and risk;	
	(iii) the extent and duration of the impact and risk;	
	(iv) the probability of the impact and risk occurring;	
	(v) the degree to which the impact and risk can be reversed;	
	(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and	
	(vii) the degree to which the impact and risk can be avoided, managed or mitigated;	
(k)	where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Chapter 8
(l)	an environmental impact statement which contains -	
	(i) a summary of the key findings of the environmental impact assessment;	
	(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and	Provided in the project specific rehabilitation plans.
	(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Chapter 8
(m)	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the impact management outcomes for the development for inclusion in the EMPr;	
(n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	
(o)	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 3.3
(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 8.2
(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	Section 8.2
(r)	an undertaking under oath or affirmation by the EAP in relation to-	Appendix F
	(i) the correctness of the information provided in the report;	
	(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and	
	(iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	

(s)	where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t)	any specific information that may be required by the competent authority; and	N/A
(u)	any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A

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APPENDICES

FIGURES

TABLES

ABBREVIATIONS

ASD	Assistant Director: Wetlands Programmes
BAR	Basic Assessment Report
BGIS	Biodiversity Geographic Information Systems
CBA	Critical Biodiversity Area
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
LCP	Limpopo Conservation Plan
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EPWP	Expanded Public Works Programme
ESA	Ecological Support Area
GA	General Authorisation
GPS	Geographical Positioning System
IA	Implementing Agent
I&AP	Interested and Affected Party
NEMA	National Environmental Management Act (Act 107 of 1998) as amended
NFEPA	National Freshwater Ecosystem Priority Area
NHRA	National Heritage Resources Act (Act 25 of 1999)
NWA	National Water Act (Act 36 of 1998)
NWI	National Wetland Inventory Project
PPP	Public Participation Process
SMME	Small, Medium and Micro Enterprises
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WfWetlands	Working for Wetlands

GLOSSARY OF TERMS

Bedrock: The solid rock that underlies unconsolidated material, such as soil, sand, clay, or gravel (Cowden and Kotze, 2008).

Basic Assessment Report (BAR): A report as required in terms of the 2014 EIA Regulations, of the National Environmental Management Act, No. 107 of 1998 (NEMA) as amended, that describes the proposed activities and their potential impacts.

Biophysical: The biological and physical components of the environment (Cowden and Kotze, 2008).

Catchment: All the land area from mountaintop to seashore which is drained by a single river and its tributaries. Each catchment in South Africa has been subdivided into secondary catchments, which in turn have been divided into tertiary catchments. Finally, all tertiary catchments have been divided into interconnected quaternary catchments. A total of 1946 quaternary catchments have been identified for South Africa. These subdivided catchments provide the main basis on which catchments are subdivided for integrated catchment planning and management (Cowden and Kotze, 2008).

Development: The building, erection, construction or establishment of a facility, structure or infrastructure, *including associated earthworks* or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but *excludes any modification, alteration or expansion* of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and *excluding the redevelopment of the same facility in the same location, with the same capacity and footprint*.

Development Footprint: in respect of land, means *any evidence of physical alteration* as a result of the undertaking of an activity (NEMA,1998).

Environmental Assessment Practitioner (EAP): The individual responsible for the planning, management and coordination of the environmental impact assessments, strategic environmental assessments, environmental management plans and/or other appropriate environmental instruments introduced through regulations of NEMA.

Ecosystem Services or 'eco services': The services such as sediment trapping or water supply, supplied by an ecosystem (in this case a wetland ecosystem).

Environmental Impact Assessment (EIA): A study of the environmental consequences of a proposed course of action via the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

Environmental Management Programme (EMPr): A detailed plan of action to organise and co-ordinate environmental mitigation, rehabilitation and monitoring during the implementation and maintenance of interventions identified under the WfWetlands Programme such that positive impacts are enhanced, and negative impacts are avoided/minimised.

Expansion: The *modification, extension, alteration* or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the *capacity* of the facility or the *footprint* of the activity is increased.

Indigenous Vegetation: Vegetation consisting of indigenous plant species occurring naturally in an area, *regardless of the level of alien infestation* and where the topsoil has not been lawfully disturbed during the preceding ten years.

Interested and Affected Parties (I&APs): People and organisations that have interest(s) in the proposed activities, also referred to as stakeholders.

Environmental Impact: An environmental change caused by some human act.

Implementer: The person or organisation responsible for the construction of WfWetlands rehabilitation interventions.

Intervention: A method of wetland rehabilitation that aims to address the objectives of the particular wetland system, namely to restore the hydrological integrity of the system and support associated biodiversity. It can be in the form of a hard (structures made of hard materials which are fixed (e.g. a concrete weir) or soft intervention (e.g. re-vegetation).

Mitigation: Actions to reduce the impact of a particular activity.

Maintenance: The replacement, repair or the reconstruction of an existing structure within the same footprint, in the same location, having the same capacity and performing the same function as the previous structure ('like for like').

Maintenance Management Plan: A management plan for maintenance purposes defined or *adopted by the competent authority.* [For WfWetlands, this is called a Rehabilitation Plan.]

Public Participation Process (PPP): A process of involving the public in order to identify issues and concerns and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on or raise issues relevant to specific project matters.

Project: An area of WfWetlands intervention generally defined by a quaternary catchment or similar management unit such as a national park in which a single implementer operates.

Quaternary Catchment: "A fourth order catchment in a hierarchal classification system in which a primary catchment is the major unit" and that is also the "principal water management unit in South Africa" (DWS, 2011).

Rehabilitation: In the context of wetlands, refers to re-instating the driving ecological forces (including hydrological, geomorphological and biological processes) that underlie a wetland, so as to improve the wetland's health and the ecological services that it delivers.

Significant impact: An impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Wetland: "Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water and which in normal circumstances supports or would support vegetation typically adapted to life in saturated soils." (National Water Act, 36 of 1998) *and* "Land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants living there" (Cowden and Kotze, 2008).

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1 INTRODUCTION AND BACKGROUND

Working for Wetlands (WfWetlands) is a government programme managed by the Natural Resource Management (NRM) Programme of the Department of Environmental Affairs (DEA), and is a joint initiative with the Departments of Water and Sanitation (DWS), and Agriculture, Forestry and Fisheries (DAFF). In this way the programme is an expression of the overlapping wetland-related mandates of the three parent departments, and besides giving effect to a range of policy objectives, it also honours South Africa's commitments under several international agreements, especially the Ramsar Convention on Wetlands.

The programme is mandated to protect pristine wetlands, promote their wise-use and rehabilitate those that are damaged throughout South Africa, with an emphasis on complying with the principles of the Expanded Public Works Programme (EPWP) and using only local Small, Medium and Micro Enterprises (SMMEs). The EPWP seeks to draw significant numbers of unemployed people into the productive sector of the economy, gaining skills while they work and increasing their capacity to earn an income.

Due to the nature of the project, it is important to note that the very objectives of the WfWetlands Programme are to improve both environmental and social circumstances. The legislation protecting the environment in South Africa was not written with the intention of preventing wetland rehabilitation efforts, but rather of curtailing development in sensitive environments.

Throughout this report there will therefore be sections which guide the reader to understand how the minimum legal requirements (as required by the amended 2014 Environmental Impact Assessment (EIA) Regulations) will be met. It is important to note that the planning cycle of the WfWetlands Programme occurs annually, and continuously builds on existing information (dating back to the early 2000s). Each project cycle occurs within three phases (Refer to Section 3.1), with Phase 1 and Phase 2 occurring prior to implementation. Figure 1 on the following page provides an overview of how Phase 1 and 2 relate to the basic assessment process.

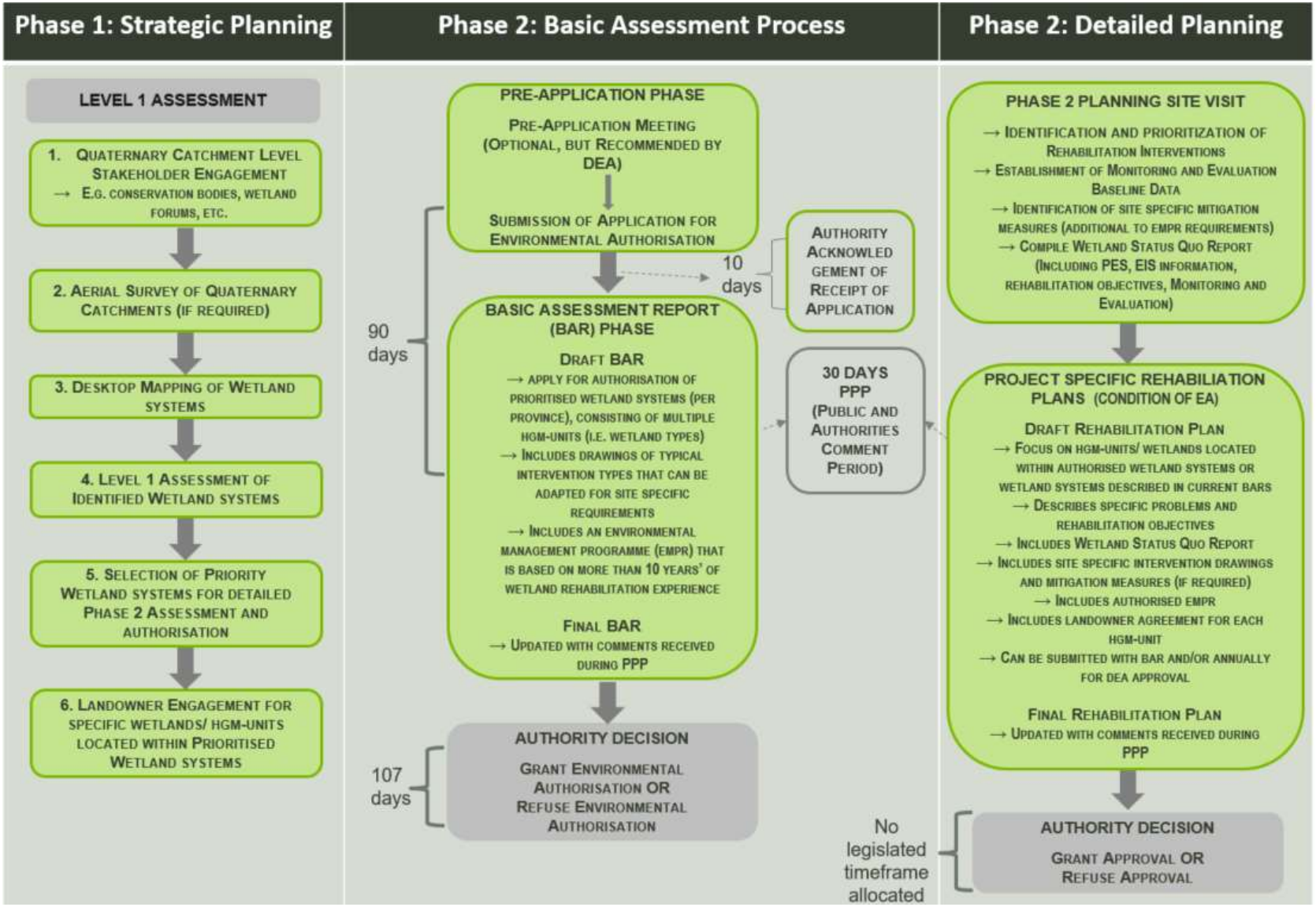


Figure 1: Overview of Phase 1 and 2 as part of the planning process.

1.1 Introducing the Project

The WfWetlands Programme is currently managing 48 WfWetlands Projects countrywide, including projects in the Limpopo Province. WfWetlands has actively been rehabilitating wetlands in the Limpopo Province since the early 2000s. Annually, the programme applies for Environmental Authorisation for a number of wetland systems for which rehabilitation plans are compiled during the course of the year. During 2018, only one new wetland system, Soutini-Baleni, was identified for rehabilitation purposes as rehabilitation efforts will continue within the wetland systems that received Environmental Authorisation during previous years. The Soutini-Baleni wetland was brought under the attention of the WFWetlands team in 2018 as a comment by the Chief of Mutale during the 30-day public participation comment period for the WFWetlands programme. The Chief made a request to the WFWetlands to include the wetland in their planning programme to undertake wetland rehabilitation activities at Soutini-Baleni. The wetland is a mineral hot spring that is culturally significant and used as a traditional Tsonga salt mining site. It is located approximately 20km southeast from the town of Giyani, and also falls within the borders of the Giyani Municipal District. The district is bordered in the east by the Kruger National Park, in the south by the Groot Letaba River and in the north by the Shingwedzi River, (Derwent, 2013).

1.1.1 Project Location

Table 1 below provides information on the location of the Soutini-Baleni wetland, as well as property details.

Table 1: Project details for Soutini-Baleni

Project Name	Soutini-Baleni	**Wetland System**	**Soutini-Baleni**
Quaternary Catchment	B82G	**Property Number**	Portion 24 of Farm 465
Property Size (ha)	37.787	**SG code**	T0LT00000000046500024
Lat (DDMMSS)	23° 25’ 9.87600’’S	**Long (DDMMSS)**	30° 54’ 42.84000’’E

1.1.2 Project Team

The team from Aurecon South Africa (Pty) Ltd (Aurecon), in partnership with GroundTruth, comprises of Design Engineers and Environmental Assessment Practitioners (EAPs) who undertake the planning, design and authorisation components of the project. The team is assisted by an external team of Wetland Specialists[1] who provide scientific insight into the operation of wetlands and expert local knowledge of the wetlands. The project team is also complimented by the Assistant Director for Wetlands Programme (ASDs) who are each responsible for a province.

The project team for the Limpopo Province includes the following professionals:

Table 2: Planning Team for Limpopo Province

Role	Representative	Company
ASD	Collin Silima	Department of Environmental Affairs, Natural Resource Management Programmes
EAP	Franci Gresse	Aurecon
Engineer	Cilliers Blaauw	Aurecon
Wetlander	Anton Linström	Wet-Earth Eco-Specs

[1] These Wetland Specialists are also referred to as Wetlanders in the Programme, and the two terms are used interchangeably. The individuals are selected based on their expertise in the province, and their involvement in the Wetland Society of South Africa.

Ms Franci Gresse acts as the EAP for the Limpopo Province and has been part of the WfWetlands Programme since 2010. Ms Gresse's signed EAP declaration and curriculum vitae (CV) can be found in **Appendix F.**

Specialist input is provided within this BAR by the provincial wetland specialist, however a specialist report does not accompany the report. A detailed assessment is however provided by a wetland specialist for the relevant rehabilitation plan. These assessments are undertaken in terms of the WET-Health methodology.

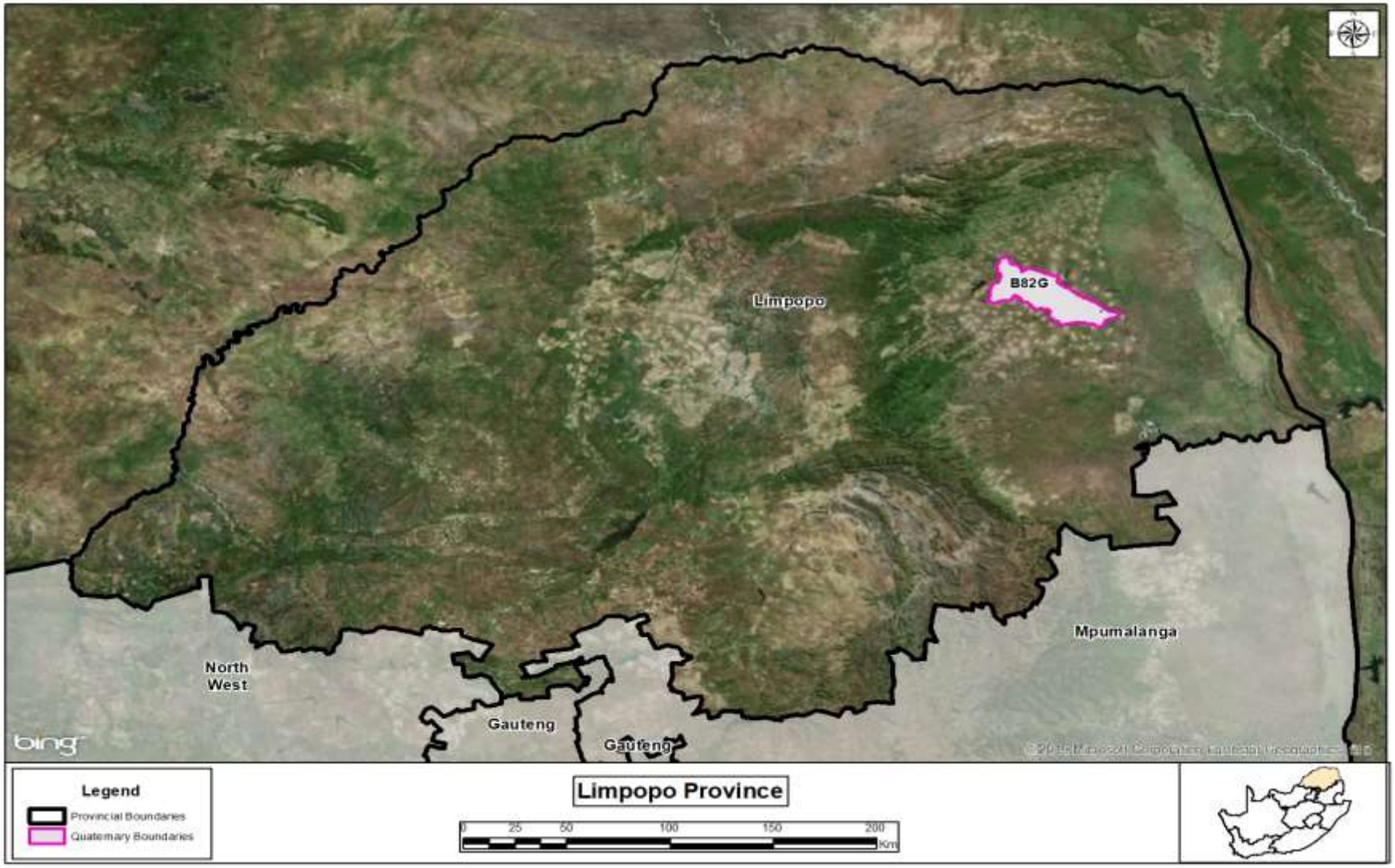


Figure 2: Locality map showing the location of quaternary catchments included in this BAR.

2 LEGAL AND PLANNING CONTEXT

One of the core purposes of the WfWetlands Programme is the preservation of South Africa's valuable wetland systems through rehabilitation and restoration.

South Africa has rigorous and comprehensive environmental legislation aimed at preventing degradation of the environment, including damage to wetland systems. The following legislation is of relevance:

- The National Environmental Management Act, No. 107 of 1998 (NEMA), as amended
- The National Water Act, No.36 of 1998 (NWA)
- The National Heritage Resources Act, No. 25 of 1999 (NHRA)

Development proposals within or near any wetland system are subject to thorough bio-physical and socio-economic assessment as mandatory processes of related legislation. These processes are required to prevent degradation of the environment and to ensure sustainable and environmentally conscientious development.

2.1 Relevant Legislation

There are a host of legal and policy documents and guidelines to consider when undertaking such a project. **Table 3** provides an overview of all the relevant legislation.

Table 3: Relevant Legislation, policies and guidelines considered in preparation of the Basic Assessment Report

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Legislation			
Conservation of Agricultural Resources Act (Act 43)	The WfWetlands Programme is a rehabilitation proposal that aims to protect and conserve South Africa's wetland ecosystems. As such the listed legislation, policies and guidelines are all of relevance to the project.	Department of Agriculture, Forestry & Fisheries	1983
Constitution of South Africa (Act 108)		National Government	1996
National Environmental Management Act (107) (NEMA) (as amended)		Department of Environmental Affairs	1998
National Environmental Management: Biodiversity Act (Act 10)		Department of Environmental Affairs	2004
National Heritage Resources Act (Act 25)		National Heritage Resources Agency	1999
National Water Act (Act 36)		Department of Water and Sanitation	1998
National Guidelines			
EIA Guideline Series, in particular: • Guideline 5 – Companion to the NEMA EIA Regulations, 2010 (DEA, October 2012)	The WfWetlands Programme is a rehabilitation proposal that aims to protect and conserve South Africa's wetland ecosystems. As such the listed legislation, policies	Department of Environmental Affairs	2012 - 2014

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
• Guideline 7 – Public Participation in the EIA process, 2012 (DEA, October 2012) • Guideline 9 – Guideline on Need and Desirability, 2010 (DEA, October 2014)	and guidelines are all of relevance to the project.		
Provincial Bylaws, Frameworks, Plans and Policies			
Provincial Gazette for Limpopo No. 1333, Vol. 14 (GN 92 of 2007)	GN 92 of 2007 declares sites as provincial (Limpopo Province) heritage sites. As such the GN is of relevance to the project.	Limpopo Provincial Government Department of Sport, Arts and Culture	2007
Limpopo Conservation Plan Version 2	The WfWetlands Programme is a rehabilitation proposal that aims to protect and conserve South Africa's wetland ecosystems. As such the listed legislation, policies and guidelines are all of relevance to the project.	Limpopo Department of Economic Development, Environment & Tourism	2013
Limpopo Provincial Heritage regulations, No.103	The Limpopo Provincial Heritage Resources Authority (LIHRA) is responsible for the identification, conservation and management of heritage resources in the province.	Limpopo Heritage Resource Authority (LIHRA)	2003
International Conventions			
Convention on Biological Diversity	The WfWetlands Programme is a rehabilitation proposal that aims to protect and conserve South Africa's wetland ecosystems. As such the listed legislation, policies and guidelines are all of relevance to the project.		
New Partnership for Africa's Development (NEPAD)			
The Ramsar Convention			
The World Summit on Sustainable Development (WSSD)			
United Nations Conventions to Combat Desertification			

2.1.1 National Environmental Management Act, No. 107 of 1998 (NEMA)

The implementation of various interventions aimed at wetland rehabilitation require Environmental Authorisation (EA) from the Department of Environmental Affairs (DEA) in terms of Regulations pursuant to NEMA, as amended. It has been determined together with DEA that a **Basic Assessment Report (BAR)** will be prepared for each Province where work is proposed by the WfWetlands Programme In addition, **rehabilitation plans** have been prepared for each project area. The rehabilitation plans describe the combination and number of interventions selected to meet the rehabilitation objectives for each Wetland Project, as well as an indication of the approximate location and approximate dimensions of each intervention. **Appendix A** provides a description of the typical intervention types that are used for wetland rehabilitation purposes. The rehabilitation plans also provide site photographs of the general landscape as well as photographs of the proposed locations for each intervention.

The WfWetlands Programme is not a development proposal
It is important to note that the very objectives of the WfWetlands Programme are to **improve both environmental and social circumstances**. The WfWetlands Programme **gives effect to a range of policy objectives of environmental legislation**, and also **honours South Africa's commitments under several international agreements**, especially the Ramsar Convention on Wetlands. The legislation protecting the environment in South Africa was not written with the intention of preventing wetland rehabilitation efforts, but rather of curtailing development in sensitive environments. It is important to remember that **the WfWetlands Programme is not a development proposal,** and although this programme technically requires Environmental Authorisation in terms of Regulations pursuant to NEMA, such environmentally positive rehabilitation projects should not need to be assessed for negative environmental impact. Therefore, legislative processes aimed at preventing negative environmental impact through development are really not applicable to a project of this nature and the **project activities that trigger Listing Notices are only being undertaken to benefit the environment**.

2.1.1.1 Listed Activities

The following listed activities, as shown in **Table 4**, have been identified as being applicable to the proposed rehabilitation interventions:

Table 4: Listed activities triggered by the proposed Soutini-Baleni project

Listed activity	Description of project activity that triggers listed activity
Listing Notice 1 (GN R983, as amended)	
Activity 12: The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres in size; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	In order to achieve the objectives of wetland rehabilitation, changes must be made to artificial drainage lines or eroding water channels if the wetland system is to be returned to its original status. The following may be necessary: • The construction of concrete or gabion weirs within watercourses (wetlands); • The formalisation of stream crossings to ensure that the integrity of the wetland system downstream and upstream of the crossings are protected from further degradation; and

Listed activity	Description of project activity that triggers listed activity
	• The construction of walkways in public wetlands to limit human impact, and to form part of the educational component of the project.
Activity 19: The infilling or depositing of any material of more than 10 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving – (b) is for maintenance purposes undertaken in accordance with a maintenance management plan	In order to implement the proposed rehabilitation interventions, soil would need to be moved as part of the site preparation and/or construction activities, for example: • Excavations may be required to build weirs, etc.; • Erosion channels may be filled with rocks or soil; • Eroded embankments may need to be sloped for MacMat R to be applied, etc.
Listing Notice 3 (GN R985, as amended)	
Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. Limpopo ii. Within critical biodiversity areas identified in bioregional plans;	In order for WfWetlands to achieve rehabilitation objectives, the removal of alien invasive species will be required. The wetland falls with a CBA 1 area
Activity 14: The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs - (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse **e. Limpopo** i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; or	In order to achieve the objectives of wetland rehabilitation, changes must be made to artificial drainage lines or eroding water channels if the wetland system is to be returned to its original status. The following may be necessary: • The construction of concrete or gabion weirs within watercourses (wetlands); • The formalisation of stream crossings to ensure that the integrity of wetland systems downstream and upstream of the crossings are protected from further degradation; and • The construction of walkways in public wetlands to limit human impact, and to form part of the educational component of the project. The wetland falls with a CBA 1 area and the Kruger National Park is about 1.5km from the wetland.

Listed activity	Description of project activity that triggers listed activity
(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;	

2.1.2 National Water Act, No. 36 of 1998 (NWA)

In terms of Section 39 of the NWA, a General Authorisation[2] (GA) has been granted for certain activities that usually require a Water Use License; as long as these activities are undertaken for wetland rehabilitation. These activities include '*impeding or diverting the flow of water in a watercourse*[3]' and '*altering the bed, banks, course or characteristics of a watercourse*[4]' where they are specifically undertaken for the purposes of rehabilitating[6] a wetland for conservation purposes. The WfWetlands Programme is required to register the 'water use' in terms of the GA.

2.1.3 National Heritage Resource Act, No. 25 of 1999 (NHRA)

Sections 27, 28 and 34 of the NHRA pertains to the protection of national and provincial heritage sites, protected areas, and structures older than 60 years, and prohibits any impacts to these resources. Section 38 of the NHRA requires that any person who intends to undertake a development as categorised in the NHRA must at the very earliest stages of initiating the development notify the responsible heritage resources authority, namely the South African Heritage Resources Agency (SAHRA) or the relevant provincial heritage agency. These agencies would in turn indicate whether or not a full Heritage Impact Assessment (HIA) would need to be undertaken.

The Soutini-Baleni wetland system included in this application, is a formally declared Natural Heritage site (General Notice 92 of 2007). It is a traditional Tsonga salt manufacturing site which provides valuable resources to the local communities and is considered culturally significant. A heritage specialist, Mr Stephen Gaigher of G&A Heritage, was thus appointed to undertake a Heritage Impact Assessment (**Appendix D**) to identify and assess potential impacts on heritage resources within the wetland system. The requirements of the NHRA are tabulated below, as well as an indication of their applicability to this project (refer **Table 5**).

Table 5: Applicability of NHRA requirements in terms of the proposed wetland rehabilitation activities

NHRA Section	Applicability to WfWetlands
Section 34: Preservation of buildings older than 60 years	No buildings older than 60 years occur within the wetland system.
Section 35: Archaeological, paleontological and meteor sites	Not applicable according to the heritage specialist.
Section 36: Graves and burial sites	Applicable due to a single grave site identified in the area adjacent to the wetland system.
Section 37: Protection of public monuments	Not applicable according to the heritage specialist.

[2]Government Notice No. 1198, 18 December 2009
[3]Section 21(c) of the NWA, No. 36 of 1998
[4]Section 21(i) of the NWA, No. 36 of 1998

NHRA Section	Applicability to WfWetlands
Section 38(1): Development categories	
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;	A cattle fence has been proposed around the spring at Soutini-Baleni to protect it against trampling and overgrazing. This fence would exceed the 300m threshold.
(b) the construction of a bridge or similar structure exceeding 50m in length;	The typical wetland rehabilitation interventions used by WfWetlands do not meet the requirements of the definition of a bridge as adopted by the South African Institution of Civil Engineering[1]. Furthermore, even though some of the rehabilitation interventions (namely gabion and concrete weirs, see Appendix A) extend across former wetland areas, none of these structures would exceed the threshold of 50m in length. This listing is therefore not considered to be applicable to the WfWetlands Programme.
(c) any development or other activity which will change the character of a site - (i) exceeding 5 000m2 in extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;	The WfWetlands Programme aims toward restoration and involves wetland rehabilitation measures to restore the natural wetland system by addressing erosion problems and threats to ecological functioning (i.e. maintaining the natural character of the site). The Programme therefore does not constitute a development or an activity that will change the character of a site, but rather involves interventions to reclaim important natural systems at risk of being lost to anthropogenic impact. This Listing is therefore not considered to be applicable to the WfWetlands Programme.
(d) the re-zoning of a site exceeding 10 000m2 in extent; or	The WfWetlands Programme does not require that any of the project areas be rezoned. This Listing is therefore not considered to be applicable to the WfWetlands Programme.
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,	The WfWetlands Programme does not constitute any other category of development provided for in regulations by SAHRA. It is a Government rehabilitation initiative. This Listing is therefore not considered to be applicable to the WfWetlands Programme.

[1] "A structure erected over a depression, river, watercourse, railway line, road or other obstacle for carrying motor, railway, pedestrian or other traffic or services and having a length of 6m or more, measured between and abutment faces along the centre line of the road at girder-bed level, expect that road-over-rail or rail-over-road structure are always classed as bridges." (COLTO, 1998).

3 METHODOLOGY

3.1 Approach to the Project

In order to manage the **WfWetlands Programme**, wetlands have been grouped into "projects", and each **Wetland Project** encompasses several smaller wetland systems which each are divided into smaller, more manageable and homogenous wetland units. These Wetland Projects may be located within one or more quaternary catchments within a Province.

Each Wetland Project is managed in three phases (as shown in the flow diagram in **Figure 3**) over a two-year cycle. The first two phases straddle the first year of the cycle and involve planning, identification, design and authorisation of interventions. The third phase is implementation, which takes place during the second year.

In order to undertake these three phases, a collaborative team has been established as follows. The **Programme Team** currently comprises two subdirectories: a) Implementation and After Care and b) Planning, Monitoring and Evaluation. The Assistant Directors for Wetlands Programmes (ASDs)[5] report to the Implementation and After Care Deputy Director and are responsible for the identification and implementation of projects in their regions. The Programme Team is further supported by a small team that fulfil various roles such as Geographical Information Systems (GIS) and training. Independent Design Engineers and Environmental Assessment Practitioners (EAPs) are appointed to undertake the planning, design and authorisation components of the project. The project team is assisted by a number of wetland specialists who provide scientific insight into the operation of wetlands and bring expert and often local knowledge to the project teams. They are also assisted by the landowners and implementers who have valuable local knowledge of these wetlands.

The first phase is the identification of suitable wetlands which require intervention. The purpose of Phase 1 and the associated reporting is to identify:

- Priority catchments and associated wetlands/ sites within which rehabilitation work needs to be undertaken; and
- Key stakeholders who will provide meaningful input into the planning phases and wetland selection processes, and who will review and comment on the rehabilitation proposals.

Phase 1 commences with a catchment and wetland prioritisation process for every province. The Wetland Specialist responsible for a specific province undertakes a desktop study to determine the most suitable wetlands for the WfWetlands rehabilitation efforts. The involvement of Provincial Wetland Forums[6] and other key stakeholders is a critical component of the wetland identification processes since these stakeholders are representative of diverse groups with shared interests (e.g. from government institutions to amateur ecological enthusiasts). This phase also involves initial communication with local landowners and other Interested and Affected Parties (I&APs) to gauge the social benefits of the work. Aerial surveys of the areas in question may be undertaken, as well as limited fieldwork investigations or site visits to confirm the inclusion of certain wetland projects or units. Once wetlands have been prioritised and agreed on by the various parties, specific rehabilitation objectives are determined for each wetland following a rapid wetland assessment undertaken by the Wetland Specialist.

[5] Also referred to as Provincial Coordinators (PCs).

[6] Where possible, the most recent provincial Wetland Forum minutes are included in Appendix E.

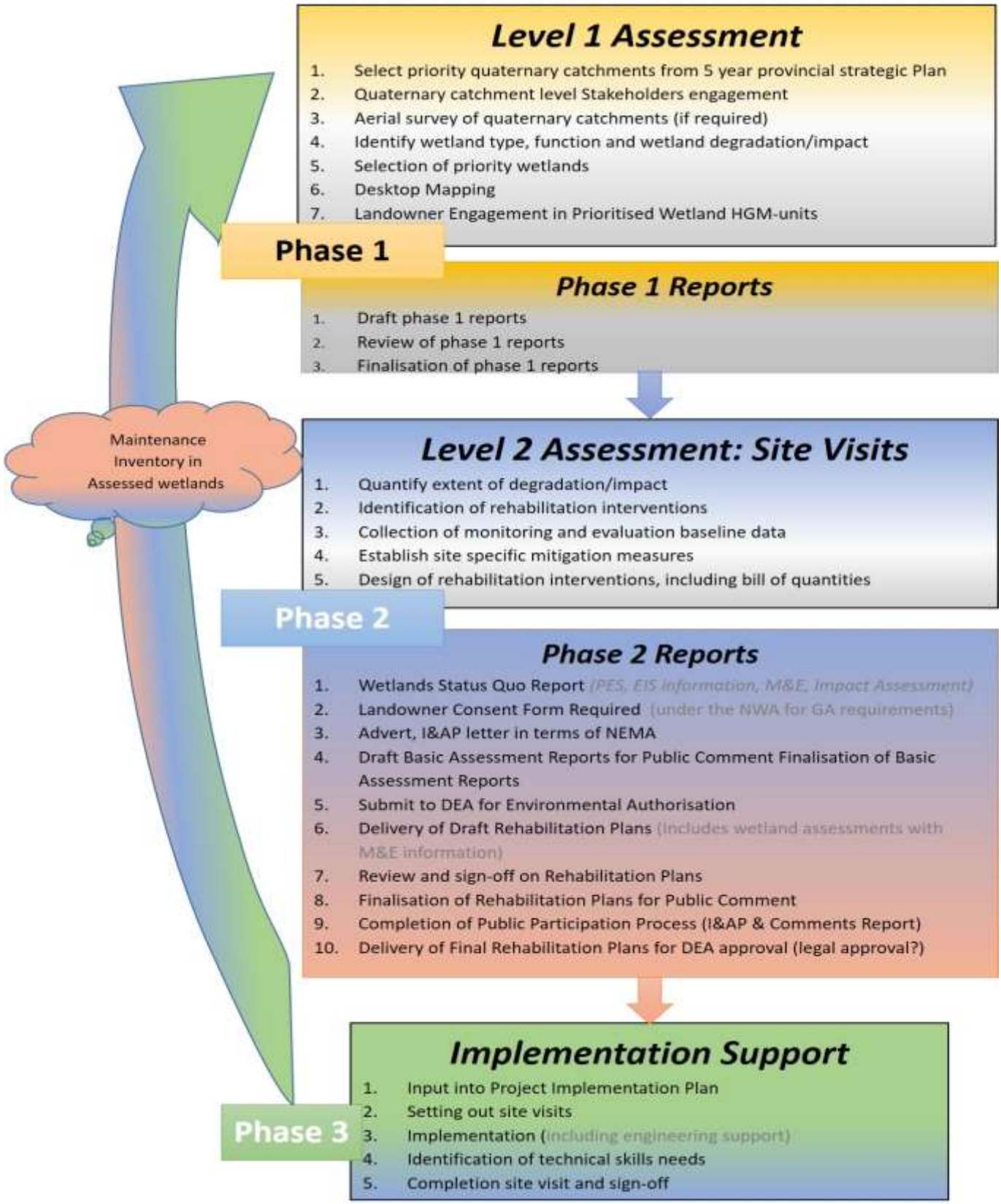


Figure 3: The Working for Wetlands planning process.

Phase 2 requires site visits attended by the fieldwork team comprising a Wetland Specialist, a Design Engineer, an EAP, and an ASD. Other interested stakeholders or authorities, landowners and in some instances the Implementing Agents (IAs) may also attend the site visits. This allows for a highly collaborative approach, as options are discussed by experts from different scientific disciplines, as well as local inhabitants with deep anecdotal knowledge. While on site, rehabilitation opportunities are investigated. The details of the proposed interventions are discussed, some survey work is undertaken by the engineers, and Global Positioning System (GPS) coordinates and digital photographs are taken for record purposes. Furthermore, appropriate dimensions of the locations are recorded in order to design and calculate quantities for the interventions. At the end of the site visit the rehabilitation objectives together with the location layout of the proposed interventions are agreed upon by the project team.

During Phase 2, monitoring systems are put in place to support the continuous evaluation of the interventions. The systems monitor both the environmental and social benefits of the interventions. As part of the Phase 2 site visit, a maintenance inventory of any existing interventions that are damaged and/or failing and thus requiring maintenance is compiled by the ASD, in consultation with the Design Engineer.

Based on certain criteria and data measurements (water volumes, flow rates, and soil types); the availability of materials such as rock; labour intensive targets; maintenance requirements etc., the interventions are then designed. Bills of quantity are calculated for the designs and cost estimates made. Maintenance requirements for existing interventions in the assessed wetlands are similarly detailed and the costs calculated. The Design Engineer also reviews and, if necessary, adjusts any previously planned interventions that are included into the historical rehabilitation plans.

Phase 2 also requires that Environmental Authorisations are obtained before work can commence in the wetlands during Phase 3. Provincial level BARs and project specific rehabilitation plans are prepared. The rehabilitation plans include details of each intervention to be implemented, preliminary construction drawings and all necessary documentation required by applicable legislation. The rehabilitation plans are considered to be the primary working document for the implementation of the project via the construction/ undertaking of interventions listed in the Plan.

Phase 3 commence upon approval of the BARs and wetland rehabilitation plans by DEA. The work detailed for the project would be implemented within a year followed by on-going monitoring. It is typically at this point in the process when the final construction drawings are issued to the Implementing Agents (IAs). Seventeen IAs are currently employed in the WfWetlands Programme and are responsible for employing contractors and their teams (workers) to construct the interventions detailed in each of the rehabilitation plans. For all interventions that are based on engineering designs (typically hard engineered interventions), the Design Engineer is required to visit the site before construction commences to ensure that the original design is still appropriate in the dynamic and ever-changing wetland system. The Design Engineer assist the IAs in pegging and setting-out interventions. Phase 3 concludes with the construction of the interventions, but there is an on-going monitoring and auditing process that ensures the quality of interventions, the rectification of any problems, and the feedback to the design team regarding lessons learnt.

Landowner consent is an important component of each phase in each Wetland Project. The flow diagram, **Figure 3**, demonstrates the point at which various consent forms must be approved via signature from the directly affected landowner. The ASDs are responsible for undertaking the necessary landowner engagement and for ensuring that the requisite landowner consent forms required as part of Phase 1 and 2 of this project are signed. Without these signed consent forms the WfWetlands Programme will not be able to implement rehabilitation interventions on the affected property.

3.2 Impact Assessment Methodology

This section outlines the proposed method for assessing the significance of the potential environmental impacts during the construction and operational phase.

For each impact, the **EXTENT** (spatial scale), **MAGNITUDE** and **DURATION** (time scale) is described. These criteria were used to ascertain the **SIGNIFICANCE** of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the BAR represents the full range of plausible and pragmatic measures but does not necessarily imply that they will be implemented.

The tables on the following pages show the scale used to assess these variables and defines each of the rating categories.

Table 6: Assessment criteria for the evaluation of impacts

Criteria	Category	Description
Spatial influence of impact	**Regional**	Beyond a 10 km radius of the candidate site.
	Local	Between 100 m and 10 km radius of the candidate site.
	Site specific	On site or within 100 m of the candidate site.
Magnitude of impact (at the indicated spatial scale)	**High**	Natural and/ or social functions and/ or processes are *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very Low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact (temporal)	**Construction period**	From commencement up to 2 years after construction
	Short Term	From 2 to 5 years after construction
	Medium Term	From 5 to 15 years after construction
	Long Term	More than 15 years after construction

The **SIGNIFICANCE** of an impact is derived by taking into account the temporal and spatial scales and magnitude. The means of arriving at the different significance ratings is explained in **Table 7**.

Table 7: Definition of significance ratings

Significance ratings	Level of criteria required
High	• High magnitude with a regional extent and long term duration • High magnitude with either a regional extent and medium term duration or a local extent and long term duration • Medium magnitude with a regional extent and long term duration
Medium	• High magnitude with a local extent and medium term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long term duration
Low	• High magnitude with a site specific extent and construction period duration • Medium magnitude with a site specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long term duration
Very low	• Low magnitude with a site specific extent and construction period duration • Very low magnitude with any combination of extent and construction or short term duration
Neutral	• Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the **PROBABILITY** of this impact occurring as well as the **CONFIDENCE** in the assessment of the impact, was determined using the rating systems outlined in **Table 8** and **Table 9**, respectively. It is important to note that the significance of an impact should always be considered in connection with the probability of that impact occurring. Lastly, the **REVERSIBILITY** of the impact is estimated using the rating system outlined in **Table 10**.

Table 8: Definition of probability ratings

Probability ratings	Criteria
Definite	Estimated greater than 95 % chance of the impact occurring.
Probable	Estimated 5 to 95 % chance of the impact occurring.
Unlikely	Estimated less than 5 % chance of the impact occurring.

Table 9: Definition of confidence ratings

Confidence ratings	Criteria
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

Table 10: Definition of reversibility ratings

Reversibility ratings	Criteria
Irreversible	The activity will lead to an impact that is in all practical terms permanent.
Reversible	The impact is reversible within 2 years after the cause or stress is removed.

3.3 Assumptions and Limitations

3.3.1 Assumptions

In undertaking this investigation and compiling the BAR, the following have been assumed:

- The strategic level investigations undertaken during Phase 1 are acceptable and robust.
- The information provided by the applicant and specialists is accurate.
- The scope of this investigation is limited to assessing the over-all environmental impacts that have been identified over time since the WfWetlands Programme commenced in the early 2000's. Additional site specific impacts/ mitigation measures, focusing on the Wetland Unit and proposed intervention, was identified during the planning phase and are included in the applicable rehabilitation plan.

4 PUBLIC PARTICIPATION PROCESS

South African legislation and guidelines have formalised stakeholder engagement in the BAR process and refer to it as the Public Participation Process (PPP). PPP forms an integral component of the environmental impact assessment process and enables I&APs to identify issues, concerns, and suggestion through the review of documents/ reports at various stages throughout the BAR process as described in Chapter 6 of GN R982, as amended. For more detail on the PPP undertaken to date (e.g. copies of advertisements, poster locations, comments received, etc.), please refer to **Appendix B**.

Table 11: Public Participation Process

Activity	Description
Pre-application	
Advertisements	Adverts were placed in the national newspapers: *Die Rapport* (in Afrikaans) on **11 February 2019** and *Sunday Times* (in English) to allow I&APs the opportunity to register their interest in the project.
Site Posters	Posters, notifying I&APs of the proposed rehabilitation projects, were placed at the entrance to the Park and at the local library.
Register of I&APs	The existing provincial I&AP database (from previous planning cycles) has been updated with information from new I&APs responding to advertisements and site notices throughout the application process. Proactive identification of I&APs, municipal representatives, organs of state, competent authorities and surrounding landowners were also undertaken to update the database specific to the new planning year.
Basic Assessment Process	
Availability of BAR for public comment	The BAR were made available for a 30 day comment period from 11 February 2019 to 14 March 2019 on Aurecon's website: http://aurecongroup.com/en/public-participation.aspx. In response to comments that were received from DEA, it was agreed to make the BAR available for public comment for a second time, with the applicable rehabilitation plans. The 30 day comment period is from **7 June 209 to 8 July 2019.** All competent authorities received an electronic copy (i.e. CD) of the BAR and Rehabilitation Plans to review and comment on. Registered I&APs were able to contact Mr Simamkele Ntsengwane if they had problems accessing the documents. Mr Simamkele Ntsengwane can be contacted at Tel: 021 526 9560 and/or Email: Simamkele.Ntsengwane@aurecongroup.com.
Written Notification	Written notification was given on 11 February 2019 to all registered I&APs regarding the availability of the BAR and on 7 June 2019 regarding the availability of the BAR and rehabilitation plans for public comment.
Register of I&APs	The register for I&APs will continue to be updated during the Basic Assessment Process.
Comments	All comments received during the first public comment round in included in a Comments and Response Report (CRR) and is available in **Appendix B5**, with copies of the original comments received. Registered I&APs who submitted comments will receive a copy of the CRR.

Following the 30 day public comment period, the BAR and rehabilitation plans will be updated by incorporating any additional I&AP comments received on the reports (where relevant). All comments will be recorded and responded to in a second CRR which will be circulated to all who have provided comment. The updated BAR and rehabilitation plans will then be submitted to DEA for their decision-making process. Once DEA has made their decision on the proposed project, all registered I&APs will be notified of the outcome of the decision within fourteen (14) calendar days of the decision and the right to appeal projects.

5 PROJECT DESCRIPTION

5.1 Need and Desirability: National Importance of the WfWetlands Programme

South Africa is a dry country but is endowed with exceptionally rich biodiversity. The nation has a pressing reason to value the water-related services that wetlands provide. It is estimated that by 2025, South Africa will be one of fourteen African countries classified as "*subject to water scarcity*" (UNESCO, 2000). The conservation of wetlands is fundamental to the sustainable management of water quality and quantity, and wetland rehabilitation is therefore essential to conserving water resources in South Africa.

The guiding principles of the NWA recognise the need to protect water resources. In responding to the challenge of stemming the loss of wetlands and maintaining and enhancing the benefits they provide, government has recognised that, in order to be truly effective, strategies for wetland conservation need to include a combination of proactive measures for maintaining healthy wetlands, together with interventions for rehabilitating those that have been degraded. These objectives are currently being expressed in a coordinated and innovative way through the WfWetlands Programme.

Working for Wetlands pursues its mandate of wetland protection, wise use and rehabilitation in a manner that maximises employment creation, supports small emerging businesses, and transfers skills amongst **vulnerable** and **marginalised** groups. In the 15 years since 2004, the WfWetlands Programme has invested just under R1.1 billion in wetland rehabilitation and has been involved in over 1 500 wetlands, thereby improving or securing the health of over 70 000 hectares of wetland environment. The WfWetlands Programme has a current budget of just over R 130 million, of which approximately 35% is allocated directly to paying wages. Being part of the EPWP, the WfWetlands Programme has created more than 34 000 jobs and over 3.2 million person-days of paid work. The local teams are made up of a minimum of 55% women, 65% youth and 2% disabled persons.

Wetlands are not easy ecosystems to map at a broad scale as they are numerous, often small and difficult to recognise and delineate on remotely sensed imagery such as satellite photos. The WfWetlands Programme houses the National Wetlands Inventory Project (NWI) which aims to provide clarity on the extent, distribution and condition of South Africa's wetlands. The project clarifies how many and which rivers and wetlands have to be maintained in a natural condition to sustain economic and social development, while still conserving South Africa's freshwater biodiversity.

The National Freshwater Ecosystem Priority Areas (NFEPA) has used the NWI data to produce the most comprehensive national wetland map to date, called the NFEPA Atlas. This atlas enables the planning of wetland rehabilitation on a catchment scale.

Other activities that form part of the WfWetlands Programme include:

- Raising awareness of wetlands among workers, landowners and the general public; and
- Providing adult basic education and training, and technical skills transfer (in line with the emphasis of the EPWP on training, the WfWetlands Programme has provided 250 000 days of training in vocation and life skills).

5.2 Activities to be undertaken

The successful rehabilitation of a wetland requires that the cause of damage or degradation is addressed, and that the natural flow patterns of the wetland system are re-established (flow is encouraged to disperse rather than to concentrate). Approximately 800 interventions are implemented every year in the WfWetlands Programme. Examples of typical interventions are provided in detail in **Appendix A.** The following points provide a summary of the objectives, and activities.

The key objectives of implementing interventions include:

- Restoration of hydrological integrity (e.g. raising the general water table or redistributing the water across the wetland area);
- Recreation of wetland habitat towards the conservation of biodiversity; and
- Job creation and social upliftment.

Typical activities undertaken within the projects include:

- Plugging artificial drainage channels created by development or historical agricultural practices to drain wetland areas for other land use purposes;
- Constructing structures (gabions, berms, weirs) to divert or redistribute water to more natural flow paths, or to prevent erosion by unnatural flow rates that have resulted from unsustainable land use practices or development; and
- Removing invasive alien or undesirable plant species from wetlands and their immediate catchments (in conjunction with the Working for Water initiative).

Methods of wetland rehabilitation may include hard engineering interventions (see Section 5.3 and **Appendix A)** such as:

- Earth berms or gabion systems to block artificial channels that drain water from or divert polluted water to the wetland;
- Concrete and gabion weirs to act as settling ponds, to reduce flow velocity or to re-disperse water across former wetland areas thereby re-establishing natural flow paths;
- Earth or gabion structure plugs to raise channel floors and reduce water velocity;
- Concrete or gabion structures to stabilise head-cut or other erosion and prevent gullies;
- Concrete and/or reno mattress strips as road crossings to address channels and erosion in wetlands from vehicles; and
- Gabion structures (mattresses, blankets or baskets) to provide a platform for the growth of desired wetland vegetation.

Soft engineering interventions (see Section 5.3 and **Appendix A)** also offer successful rehabilitation methods, and the following are often used together with the hard engineering interventions:

- The use of biodegradable or natural soil retention systems such as eco-logs, MacMat-R plant plugs, grass or hay bales, and brush-packing techniques;
- The re-vegetation of stabilised areas with appropriate wetland and riparian plant species;
- Alien invasive plant clearing, which is an important part of wetland rehabilitation (this is supported by the Working for Water Programme).
- The fencing off of sensitive areas within the wetland to keep grazers out and to allow for the re-establishment of vegetation;
- In some instances, the use of appropriate fire management and burning regimes. The removal of undesirable plant and animal species; and
- In some wetlands, it may be possible to involve the community to develop a management plan for wise use within a wetland. This can involve capacity building through educating and training the community members who would monitor the progress. A plan could involve measures such as rotational grazing with long term benefits for rangeland quality.

5.3 Alternatives

"Alternatives", in relation to a proposed activity, refers to different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

a) the property on which or location where it is proposed to undertake the activity;
b) the type of activity to be undertaken;
c) the design or layout of the activity;
d) the technology to be used in the activity;
e) the operational aspects of the activity; and
f) the option of not implementing the activity.

Due to the WfWetlands Programme not being a development proposal, the use of alternatives as normally applied in terms of the NEMA is not appropriate. As explained earlier in Chapter 3, a comprehensive phased approached is applied each year to identify wetlands with a high rehabilitation priority (Phase 1), rehabilitation objectives for each wetland unit and the most appropriate interventions to achieve these objectives (Phase 2). During Phase 3, these interventions are again scrutinised during setting-out to consider changes that have occurred within the landscape since the original planning took place. Should any significant changes be required to the intervention, the Project Team will be informed by the engineer to ensure that the proposed design changes would not compromise the rehabilitation objectives identified for the specific wetland. For more information on how alternatives are being considered for the WfWetlands Programme, please refer to **Table 12**.

Table 12: Approach to alternatives for the WfWetlands Programme

Alternative	Applicability to WfWetlands
Site Alternatives	All quaternary catchments within the province are considered for possible wetland rehabilitation work in the earlier stages of the WfWetlands Programme (Phase 1 catchment and wetland prioritisation processes), and only those that meet the prioritisation criteria are selected for the current planning cycle. Wetlands within the selected Quaternary Catchments undergo a similar prioritisation process, which includes a consultation component with the relevant stakeholders and interest groups, and the Wetland Projects presented in this report are those that are finally selected. Wetland Units within each Wetland Project are investigated by the Wetland Specialist and these are selected based on their suitability in terms of the overall WfWetlands Programme objectives[7]. The earlier site selection processes to determine feasible and reasonable Wetland Projects are described in detail in Section 3.1. **All wetland site alternatives have therefore already been considered in the earlier phases of the WfWetlands Programme, and only the preferred wetland systems (site locations) are presented here.** For the purpose of this report, no feasible or reasonable wetland site alternatives exist.
Other Alternatives	One form of alternative considered during the WfWetlands Programme is a design alternative, where all possible intervention options that may achieve a desired rehabilitation objective are contemplated during the Phase 2 field work component of a particular Wetland Unit. The design team comprising a Wetland Specialist, a Design Engineer, an EAP, and an ASD (and in some instances other interested stakeholders such as authorities and/or landowners who may attend the site visit) will discuss and select the most appropriate intervention option for a particular problem. **Each of the intervention options selected, as well as the determination of the most appropriate location for these within the Wetland Unit are therefore based on expert opinion and are thus considered to be the most suitable and effective interventions to achieve the rehabilitation objectives for the wetland.**

[7] Wetland conservation and poverty reduction through job creation and skills development amongst vulnerable and marginalised groups.

Alternative	Applicability to WfWetlands
No-Go Alternative	If the no-go alternative is pursued, the prioritised wetland will continue to deteriorate, resulting in an overall negative impact on aquatic and terrestrial ecosystems, habitats and species of conservation significance. **In the absence of rehabilitation, the important role of the wetland in flood attenuation, nutrient retention and water quality amelioration, as well as ecological services will not be realised.** In many instances the current degradation results in severe erosion, which may impact on the agricultural or land use potential of adjacent sites, as well as result in sedimentation and eutrophication impacts for downstream users.

6 BASELINE DESCRIPTION OF THE PROJECT

6.1 Limpopo Project: Background

WfWetlands has been rehabilitating wetlands in the Limpopo province for over ten years. The Soutini-Baleni project focusses on wetlands within the B82G catchment and was identified as a new project during the 2018/2019 planning cycle. The study area is situated south-west of Giyani, near Baleni Camp. It falls under the Mopani District Municipality, Greater Tzaneen Local Municipality, Limpopo Province. The land has a fairly high concentration of relatively large wetlands between Letsitele and Thabina River in the south west of the catchment, (Visioning the future of the Letaba catchment – the 12 Integrated Units of Analysis (IUAs) in perspective, 2018 [online]). The wetland is located in the upper reaches of the catchment on the Pietersburg plateau and Lowveld hydrogeological region where slopes are gentle, and rainfall is higher, (The South African State of Rivers Report: Letaba and Luvuvhu Rivers, 2018 [online]). The most culturally and geo-hydrologically interesting systems that occur in the catchment are the two thermal spring systems one at Eiland (Hans Merensky Nature Reserve) and the other (Soutini-Baleni) close to the banks of Klein Letaba River in its middle reaches (DWAFF, 2006 [Figure 5.1]). This wetland is particularly culturally significant and is thought to be one of the few remaining undeveloped hot springs in South Africa where traditional Tsonga salt making activities take place (See Figures 4-6), (Provincial Gazette for Limpopo No. 1333, 2007).

6.2 Biophysical Environment

The table below provides an overview of the biophysical environment of the Soutini-Baleni wetland system and quaternary catchment B82G.

Please refer to **Appendix C** for a selection of maps that show the location and biodiversity sensitivity of the above wetland system.

6.2.1 Quaternary catchment B82G

Quaternary Catchment B82G	
General description	Quaternary catchment B83G is located east of Giyani, Limpopo Province and falls within the Levuvhu and Letaba water management area (WMA). (SANBI BGIS, 2018)
Climate	The climate of the area is typical of the Savanna biome. There is little rainfall throughout the year. It is a summer rainfall area with very dry winters and is generally frost-free, although frost sometimes occurs in the low-lying areas. The mean monthly minimum and maximum temperatures are 9˚C and 32.1˚C in June and January, while the annual average is 22.2˚C; and the mean annual precipitation is 527mm, (Soutini-Baleni Phase 2: Wetland Status Quo Report, 2017).
Geology and topography	The area is largely underlain by leucocratic biotite granite of vaalian age and sparse portions of grey biotite gneiss and migmatite of the goudplaats gneiss, (Soutini Baleni Phase 2: Wetland Status Quo Report, 2017). The quaternary catchment is characterised by red soils with high base status. The soils are classed as freely drained, structureless soils. The thermal spring system occurs in the Pietersburg plateau and lowveld hydrogeological region, (SANBI BGIS, 2018).
Terrestrial ecology	The quaternary catchment falls within the Savanna Biome and is characterised by the Lowveld Rugged Mopaneveld vegetation type which is not listed as a threatened ecosystem (SANBI BGIS, 2018).
Aquatic ecology	According to the 2014 PES for South African rivers, the Klein Letaba River has a PES of 'D', indicating that the system has been largely modified due to a large loss of natural habitat, biota and basic ecosystem functions (Soutini-Baleni Phase 2: Wetland Status Quo Report, 2017).

Land use	The main land uses in the quaternary catchment consist of subsistence farming.
Soutini-Baleni Wetland System	
Location	The wetland system is on the southern bank of the Klein Letaba River, approximately 40 km south-east of Giyani in Limpopo, on land belonging to the Mahumani Traditional Authority. (GN 92 of 2007).
District and Local municipality	Mopani District Municipality Greater Tzaneen Local Municipality
Reason for selection	The Soutini-Baleni wetland system was brought to the attention of WfWetlands by Hosi Mahumani. Upon investigation, it was determined that the wetland system consists of multiple warm water mires (i.e. thermal springs), which are globally recognised as rare. These mires are currently under threat from erosion and overgrazing and the decision was made by the Working for Wetlands management team to include the Soutini-Baleni wetland system in the 2018-19 planning phase to rehabilitate and protect this unique system.
Wetland type and size	The Soutini-Baleni wetland system consists of 12 mires that are fed by warm water (up to 34ºC) and can also be referred to as thermal springs. Peat domes have formed over the spring "eye" and has a thickness of 0.3 – 1.2m (see photos below). These mires are globally rare and there is an estimate of 50 thermal springs in South Africa, some with organic deposits. Besides the mires, a valley bottom wetland is situated adjacent to the larger mire and drains into an ephemeral stream which transects the study area. This ephemeral stream has significant bank erosion problems (Linström, 2019).  
Conservation status (terrestrial and aquatic)	The wetland falls within a type 1 Critical Biodiversity Area due to the site being located within 1km of the Klein Letaba River, its functionality as a river connectivity corridor and the habitat type (i.e. Lowveld Rugged Mopaneveld). The area is also listed as an EBA1 area, indicating its importance with regards to climate change resilience. (SANBI BGIS, 2018) The closest protected area to the wetland is the Kruger National Park, which is approximately 1.5 km east from the wetland.
Land use	The main land use within the wetland systems is salt-mining, tourism and grazing.

Wetland problems	The wetland's catchment has been impacted and changed due to overgrazing and trampling. Bare surfaces have formed and are contributing to sedimentation in the wetland area. Cattle tracks, a road crossing and donga erosion (head-cut erosion), etc. has also affected the hydrology, geomorphology and vegetation of the area (see photos below).  
Rehabilitation objectives	During Phase 2 planning, interventions would be identified to achieve the following rehabilitation objectives: • Re-instatement of more natural water distribution and retention patterns that would improve the overall functioning of the wetland and associated habitat for important wetland-dependant biota; • Raising of the water table to rehydrate areas adjacent to drainage channels; and • Promote habitat integrity.

6.3 Cultural and Heritage Environment[8]

The mire is culturally significant due to its mythical character and is a traditional Tsonga salt manufacturing site on the bank of the Klein Letaba River which provides valuable resources to the local communities.

Salt is mainly mined during the dry season, usually starting in May after consulting the ancestral spirits. The mining activity commences with the construction of filters that are made from mopane (*Colophospermum mopane*) branches and bark. A sieve is constructed with supple mopane rods and dry grass between four forked poles. The sieve is filled with clay from an anthill to form a cone shape with only a small hole (usually covered with grass or leaves) left in the middle for water to drip through (Figure 4).

Figure 4: Filters constructed from mopane branches and bark.

[8] The information contained in this section is based on the HIA compiled by Mr Stephan Gaigher of G&A Heritage. Please refer to Appendix D for a copy of the HIA.

Soil is collected at the edge of the wetland and taken back to the camp where it is mixed with an equal amount of river sand to improve filtration. This mixture is placed in the filters before water from the river is poured over it. The leached water is captured in a container that is placed beneath the cone opening (Figure 5).

Figure 5: Soil collected from the wetland's edge is mixed with river sand before being placed in the filters.

The filtered water is then boiled slowly over a fire to evaporate the water and allow the salt to crystallise (Figure 6). Finally, the damp salt is collected and placed on a flat surface in a cone shape to dry completely. According to archaeologists, the salt collectors may sometimes place coals on the cone to form a hard crust, place it on dry grass which is then burnt or placed in the sun to dry before baking it in a clay pot in the fire.

Figure 6: After the filtered water has been boiled, the salt crystals are collected and dried for future use.

The heritage specialists also found several concentrations of potshards and ash around the wetland as well as the remains of an old hut (Figure 7). The hut remains is located next to a large donga that is threatening the site. It is believed that this site was occupied during the early first millennium.

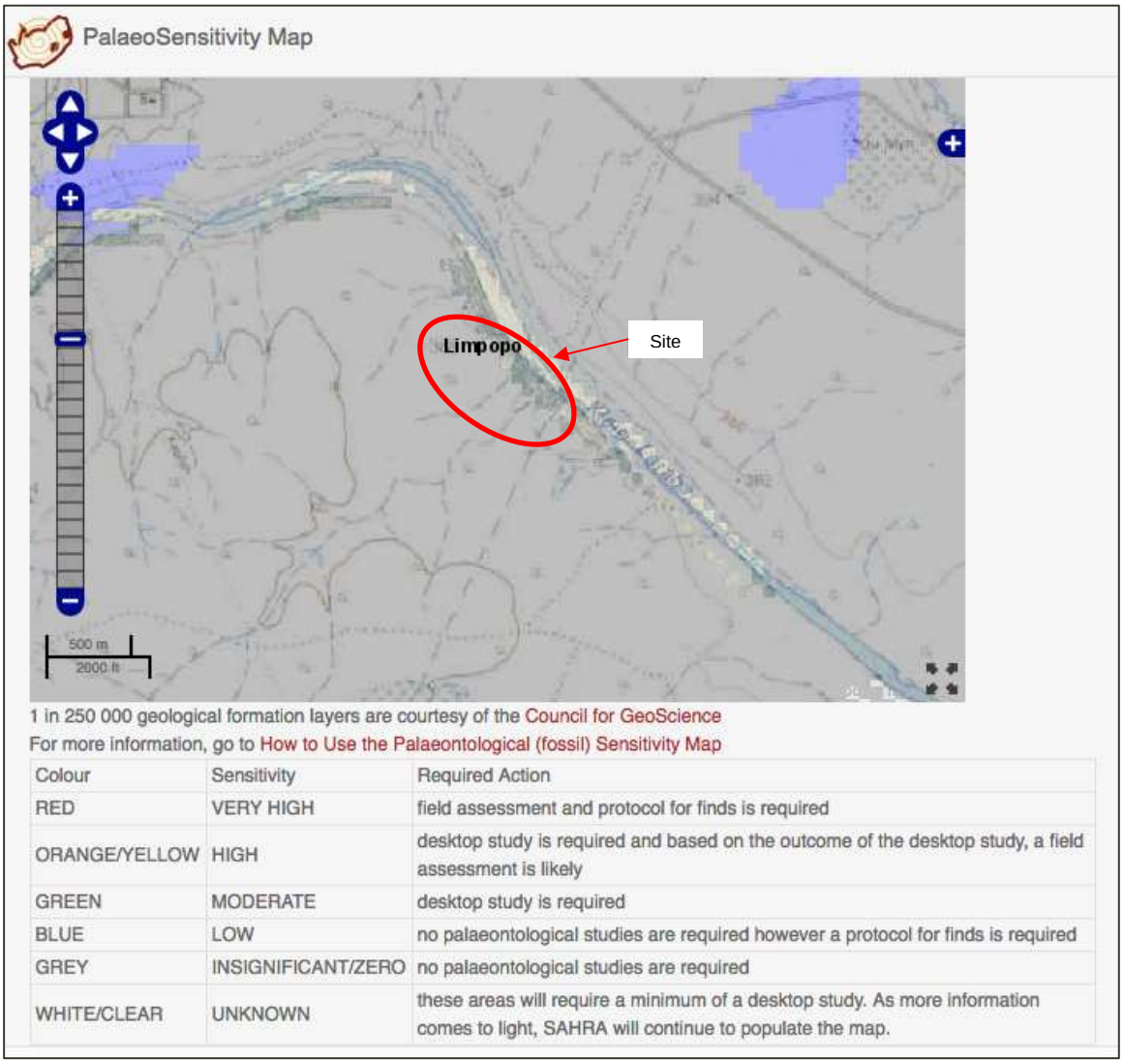
Figure 7: Pot shards where found at several locations around the wetland, as well as the remains of an old hut (indicated by the yellow circle).

Figure 8: Pot shards where found on the edge of the donga that is eroding close to the site.

A grave marker was also identified in the area adjacent to one of the wetlands. The writing on the marker was unfortunately too faded to determine names and dates.

Figure 9: Grave marker located more than 30m away from the Soutini-Baleni wetland system boundary.

With regards to palaeontological resources, the site is located in an area that is not considered sensitive by the South African Heritage Resource Agency (Figure 10).



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 10: Palaeontological sensitivity map of the site – note that the entire area is grey due to an insignificant/zero sensitivity rating by SAHRA (Gaigher, 2019).

6.4 Socio-economic Environment

Table 13 below provides a summary of the socio-economic profile of the local municipalities within which the proposed wetland rehabilitation projects will take place. Being part of the EPWP, the WfWetlands Programme has created more than 34 000 jobs and over 3.2 million person-days of paid work by using local SMMEs to implement the approved wetland rehabilitation plans. Local teams generally consist of a minimum of 65% women, 55% youth and 2% disabled persons.

The EPWP focus on local unemployed people with the intent of making them part of the productive economic sector, assist with skills development and increase their capacity to earn an income. In terms of basic education and training of adults and skills transfer, the WfWetlands Programme has provided 250 000 days of training in vocation and life skills.

Table 13: Economic profile of the Greater Giyani Municipality

Population	
Young (0-14)	36,8%
Working age (15-64)	57,4%

Elderly (65+)	5,8%
Dependency ratio	74,2
Level of education (aged 20+)	
No schooling	25%
Higher education	7,1%
Matric	20,7%
Level of Employment (%)	
Unemployment rate	47%
Youth Unemployment rate	61,2%
Economic Profile (annual)	
No income	15,7%
R1 - R4,800	9,6%
R4,801 - R9,600	17,1%
R9,601 - R19,600	21,8%
R19,601 - R38,200	18,7%
R38,201 - R76,4000	7,2%
R76,401 - R153,800	4,3%
R153,801 - R307,600	3,3%
R307,601 - R614,400	1.6%
R614,001 - R1,228,800	0,3%
R1,228,801 - R2,457,600	0,1%
R2,457,601+	0,1%

Source: http://www.statssa.gov.za/?page_id=993&id=greater-giyani-municipality

The anticipated benefit of the WfWetlands Programme nationally is presented below in **Table 14.**

Table 14: Socio-economic value of the national WfWetlands Programme

Aspect	Response
What is the expected capital value of the activity on completion?	R 130 000 000
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	~ 120[9]
What is the expected value of the employment opportunities during the development and construction phase?	~R54.4 million in wages
What percentage of this will accrue to previously disadvantaged individuals?	~70%

[9] Employment opportunities are created only during the construction phase and for many of the projects there are already EPWP teams (team size averages around 20-35 individuals) working on them. However, Working for Wetland principles ensure that a very large percentage of those employed are from local communities.

7 IMPACT ASSESSMENT

The WfWetlands Programme has been rehabilitating wetlands across South Africa since the early 2000s and the teams are considered to be specialists when it comes to working in sensitive wetland environments. Their significant experience and knowledge is actively being transferred to Implementing Agents and Contractors not only verbally by the provincial ASDs, but also through training and the use of important tools such as the Environmental Management Programme (EMPr). It must be noted that the EMPr (**Appendix E**) is considered a living document and is updated on a regular basis to incorporate lessons learned and/or in response to changing environments (legal, biological, etc.). In addition, the requirements of the EMPr are supplemented with site specific mitigation measures, included in the relevant rehabilitation plan, as identified by the wetland specialist and EAP during the Phase 2 planning site visits.

This chapter focuses on the key potential impacts (direct, indirect and cumulative) that have been identified for the WfWetlands Programme over time. For each impact assessed, mitigation measures have been proposed to reduce and/or avoid negative impacts and enhance positive impacts. These mitigation measures are also incorporated into the EMPr to ensure that they are implemented during the planning/pre-construction, construction and operational phases. The EMPr forms part of the BAR (**Appendix E**), and as such its implementation will become a binding requirement should environmental authorisation be received from DEA.

The following subsections assess each impact according to the construction and operational phase in which they are likely to occur. It should be highlighted that this assessment does not consider the decommissioning of the proposed interventions. The purpose of the implementation of a specific intervention is to rehabilitate the affected wetland system and prevent further degradation. Furthermore, many of the soft interventions are made from biodegradable materials (see **Appendix A**). If these begin to degrade, they will not have a negative impact on the system. The hard interventions serve as a more permanent feature within the wetland, as the sensitive environments (which includes dispersive soils in some of them, for example) could be negatively impacted by new soil disturbance activities when removing interventions. Maintenance surveys are undertaken by WfWetlands and if a hard structure should begin to lose its function/ require maintenance, the intervention would be reconsidered either for maintenance, or the need to redesign the structure in response to landscape changes.

Please note that no roads will be constructed to provide access to wetlands for rehabilitation purposes. Only existing roads will be used.

7.1 CONSTRUCTION PHASE

7.1.1 Job creation

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	One of the primary objectives of the WfWetlands Programme is to create jobs and to teach transferrable skills to unemployed members of the local community so that they can be drawn into the permanent job market. The potential impact of this is significant and has a number of indirect positive impacts such as improvement in quality of life of the workers, increased spending in the local economy and the support of small business in the local area. Cumulatively, the impact of the WfWetlands projects is judged to be of high positive significance. The programme has a budget of just over R130 million per annum, has created in the region of 34 000 jobs and transferred skills to numerous previously unskilled persons. Should the project not be authorised or implemented, the potential jobs would not be created. Where projects already have active teams implementing interventions, this would have a high negative impact as the contractors would not be able to keep their teams busy. Where projects do not have			

	active teams, the impact would however be neutral as the impact would not be worse against the baseline, i.e. jobs would not be taken away, they just would not be created.		
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**
Type	Positive	Positive	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	High
			Zero
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (+)**	**HIGH (+)**	**High (-)**
			Neutral
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			
○ Ensure that the required project workers are sourced from local communities and that maximum employment numbers are maintained throughout the project duration. ○ Project implementers to support local businesses (e.g. local quarry owners to obtain rock for gabions) where possible.			

7.1.2 Fire risk

Phase	Pre-Construction	**Construction**	Operational	Decommissioning
Impact description	Construction usually takes place in the dry months when the danger of veld fires is highest. There is a possibility that construction workers could light a fire on site that could become out of control. The risk of this happening is assessed to be low, although the significance in terms of the economic damage that could be caused (especially in a commercial forestry area) is high. Adequate site supervision would considerably mitigate this impact. Fires are part of a natural biophysical cycle in most ecosystems and are therefore likely to still occur without the construction activities of the WfWetlands construction teams taking place.			
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**	
Type	Negative	Negative	Negative	
Extent	Site Specific	Site Specific	Site Specific	
Magnitude	Medium	Low	Low	
Duration	Short-term	Short-term	Short-term	
Significance	**MEDIUM (-)**	**LOW (-)**	**LOW (-)**	
Probability	Unlikely	Unlikely	Likely	
Confidence	Sure	Sure	Sure	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
○ Ensure that workers are aware of the potential for fires and the damage that could be caused. ○ Ensure that a fire response procedure is in place and that all dry season work is organized in liaison with the landowners so that it fits into their firebreak/fire protection programme.				

7.1.3 Nuisance impacts

Phase	Pre-Construction	**Construction**	Operational	Decommissioning
Impact description	Construction can result in nuisance impacts, particularly for landowners. These impacts include: • Noise from construction activities, personnel and vehicles. • An increase in the amount of litter being generated. • Dust. • Security concerns such as theft or leaving gates open. • Non-use of sanitation facilities. • Temporary loss of access to areas due to construction activities. Given the isolated working environment (i.e. far from communities and public routes), the relatively few number of people on site and constant supervision by the project implementer, the above impacts are likely to be of low magnitude. Should the project not be authorised or implemented, no nuisance impacts would occur.			

	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**
Type	Negative	Negative	Neutral
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Zero
Duration	Short-term	Short-term	Long-term
Significance	**LOW (-)**	**VERY LOW (-)**	**NEUTRAL**
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Reversible	Reversible	Reversible

Mitigation measures

- All site workers to undergo environmental induction training ("toolbox talks") before undertaking work so that they are aware of the various environmental requirements.
- Landowners should be consulted regarding the placement of stockpile sites and toilets as well as access routes. This must be indicated on the site camp layout plan.
- Ensure that closed gates are kept closed. When in doubt, the landowner should be consulted.
- Follow the EMPr with regard to sanitation facilities, waste management, noise and site management
- Utilise local labour wherever possible to reduce potential friction within the community caused by bringing outside personnel in.
- Ensure that all workers wear the yellow/blue attire indicative of WfWetlands personnel so that they are not mistaken for trespassers.

7.1.4 Heritage resources

Phase	Pre-Construction	**Construction**	Operational	Decommissioning
Impact description	**Iron age deposit site:** Several concentrations of pot shards and ash around the wetland as well as the remains of an old hut were found at location 23°25'13" S 30°54'52" E. The hut remains is located next to a large donga that is threatening the site. It is believed that this site was occupied during the early first millennium. Potential impacts on heritage resources can thus be linked to disturbances to this site and the discovery of sub-surface remains of heritage sites during the construction phase. *Cumulatively, this impact was rated as being of high significance. However, this can be mitigated to have a low negative cumulative impact.*			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Neutral
Extent	Regional	Regional	Regional
Magnitude	High	Low	Zero
Duration	Medium-term	Medium-term	Long-term
Significance	**Medium (-)**	**Low (-)**	**NEUTRAL**
Probability	Probable	Unlikely	Definite
Confidence	Sure	Sure	Sure
Reversibility	Irreversible	Reversible (partly)	Irreversible

Mitigation measures

- Undertake an archaeological excavation at site 23°25'13" S 30°54'52" E (under a permit issued by SAHRA) prior to the commencement of implementing an intervention at the site.
- All site staff shall be informed of the possibility of the occurrence of subsurface heritage resources and the procedures to be undertaken should such finds occur.
- Should any artefact or suspected artefact (e.g. ash deposits, animal/human bone concentrations, ceramic fragments/ pot shards and formal stone concentrations), or any site of cultural significance be encountered during construction:
  - The Contractor must immediately stop work within a 50m radius of the site and immediately alert the relevant authorities.
  - The area around the discovery (with a 50m radius buffer) shall be cordoned off until such time that work is authorised to proceed. Public access to the site must be limited.
  - Should human remains be discovered, the South Africa Police Services (SAPS) and the provincial heritage authority10 shall be notified immediately.
  - Excavated sites where artefacts have been discovered shall not be refilled without appropriate instructions have been received from the provincial heritage authority.
  - Media statements shall only be released as agreed upon with the relevant authorities[11].

Phase	Pre-Construction	**Construction**	Operational	Decommissioning
Impact description	**Cattle fence:** According to the specialist assessment, the proposed cattle fence will be a low impact activity which will not impact on the heritage value of the site.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Neutral
Extent	Local	Local	Local
Magnitude	Low	Low	Zero
Duration	Medium-term	Medium-term	Long-term
Significance	**Low (-)**	**Low (-)**	**NEUTRAL**
Probability	Unlikely	Unlikely	Definite
Confidence	Sure	Sure	Sure
Reversibility	Reversible (partly)	Reversible (partly)	Irreversible

[10] The heritage specialist recommended that the SAPS and the heritage consultant be contacted in the case of human remains being discovered. This recommendation has however been amended by the EAP to ensure compliance with Section 36(6) of the National Heritage Resources Act (Act 25 of 1999) which states that *"…any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority…"*

[11] The heritage specialist's recommendation required that the heritage practitioner should indicate when media statements may be issued.

Mitigation measures
No additional mitigation measures were identified by the heritage specialist.

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	**Grave Site:** A single grave site was identified at the location 23°25'13" S 30°54'52" E, outside the proposed rehabilitation footprint. However, according to the specialist assessment, this site should not be impacted on by the proposed wetland rehabilitation activities – especially since the proposed activities would mainly involve the placement of rock packs in erosion channels to trap sediment. *Cumulatively, this impact was rated as being of high significance. However, this can be mitigated to have a low negative cumulative impact.*			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Neutral
Extent	Local	Local	Regional
Magnitude	Low	Low	Zero
Duration	Medium-term	Medium-term	Long-term
Significance	**Medium (-)**	**Low (-)**	**NEUTRAL**
Probability	Probable	Unlikely	Definite
Confidence	Sure	Sure	Sure
Reversibility	Irreversible (barely)	Irreversible (partly)	Irreversible

Mitigation measures

- A buffer of 25m radius shall be applied to the grave site and shall be a no-go area.
- No rocks may be collected on site. All rocks shall be sourced from a licenced borrow pit or in compliance with Section 7.1.8.
- Should any artefact or suspected artefact (e.g. ash deposits, animal/human bone concentrations, ceramic fragments/ pot shards and formal stone concentrations), or any site of cultural significance be encountered during construction:
  - The Contractor must immediately stop work within a 50m radius of the site and immediately alert the relevant authorities.
  - The area around the discovery (with a 50m radius buffer) shall be cordoned off until such time that work is authorised to proceed. Public access to the site must be limited.
  - Should human remains be discovered, the South Africa Police Services (SAPS) and the provincial heritage authority shall be notified immediately.
  - Excavated sites where artefacts have been discovered shall not be refilled without appropriate instructions have been received from the provincial heritage authority.
  - Media statements shall only be released as agreed upon with the relevant authorities[12].

7.1.5 Worker safety

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	Alien clearing requires very specific training and involves high risk equipment such as chainsaws. It sometimes involves large trees and therefore extreme caution needs to be exercised. Crime and poor water quality could also have a negative impact on worker safety and health, especially in urban areas. Furthermore, workers may also come into contact with dangerous animals such as snakes or even predators when working in conservation areas.			

	If the interventions are not implemented, the construction workers will not be affected by the dangers associated with working within the selected wetlands.		
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Zero
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (-)**	**LOW (-)**	**NEUTRAL**
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			
○ All site workers to undergo specific safety training before undertaking this work so that they are aware of the various risks and measures to be taken in emergency situations. ○ Where required, security teams must be provided to protect the teams on site. ○ Follow Occupational Health and Safety requirements. ○ Personal Protective Equipment (PPE) shall be worn at all times on site.			

7.1.6 Flora and fauna

Phase	Pre-Construction	**Construction**	Operational	Decommissioning
Impact description	Habitat disturbance Habitat disturbance during the construction stage is typically temporary. In addition, most species are relatively tolerant of disturbance and would be able to utilise the similar alternative habitat available in the study area. The area of habitat loss is also likely to be small and limited to the immediate surroundings of the intervention being constructed. Disturbance of protected species Construction activities could potentially result in disturbance to habitats required by protected species. It can however be almost completely mitigated by liaising with the appropriate conservation bodies whose local representatives can advise on appropriate measures and construction timeframes. Disturbance of avifauna The area is highly utilised by cattle as well as people (i.e. the herders and salt collectors). Furthermore, the proposed wetland rehabilitation activities will be focused on degraded wetlands for a short amount of time to improve habitat quality and the integrity of the ecosystem. Furthermore, no bird species of conservation concern was observed during the planning site visit by the wetland specialist. Alien species invasion A potential construction-related impact on vegetation is the possibility of an increase in alien invasive species due to disturbance and weed seeds being brought in with borrow and construction material. The no-go alternative would mean that the positive impacts identified above would not be realised. Continued wetland degradation and habitat loss is likely to result in exponential increase in the significance of the no-go alternative, leading to an eventual loss of biodiversity and disruption of floral and faunal ecosystems. In addition, it would also negatively affect the achievement of conservation objectives for the area.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Low
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (-)**	**LOW (-)**	**MEDIUM (-)**
Probability	Definite	Definite	Likely
Confidence	Certain	Certain	Sure
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			
○ Should any protected species need to be removed or relocated, the appropriate permits shall be required. These activities shall take place under strict guidance from the ASD and/or appropriate authority. ○ Should any protected species occur on site, the ASD and project manager or implementer must liaise prior to site establishment with the relevant conservation body to determine measures required during the construction period to limit potential disturbances to protected species. ○ Implement the provisions of the EMPr regarding stockpiling borrowed material and rehabilitation after construction.			

7.1.7 Aquatic ecosystems

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<u>Temporary alteration to stream flow patterns</u> Construction must often take place in areas that are permanently wet. This requires that water be diverted away from working areas, leading to temporary alterations in the current drainage characteristics. Water diversion is typically done using sand bags to slow/block flow and then a pump to remove water and discharge it further downstream. This can result in a slight drying in the working areas and may affect aquatic organisms. This will however be of a temporary nature and is unlikely to significantly alter flow patterns. <u>Sedimentation</u> Construction activities can result in additional sediment ending up in the water course (e.g. due to earthworks or breakage of sandbags used to divert water away from working areas). Sediment can result in silt build-up downstream, increase the turbidity of the water and result in habitat changes. However, as wetlands are typically low-energy systems, much of the excess sediment is likely to be trapped before it is washed far downstream. Also, given the limited nature of the earthworks, sedimentation is not anticipated to occur to a significant degree. <u>Pollution of water-courses</u> Construction activities close to a water-course/wetland carry the attendant risk that construction-related pollutants could end up in the wetland system. Typical pollutants include hydrocarbons (e.g. from fuel leaks, shutter oil and lubricating fluid spills), litter, cement and contaminated wash-down water. <u>Disturbance of wetland vegetation and stream banks</u> Some disturbance to stream banks and wetland vegetation will be inevitable in order to construct the proposed interventions. This impact generally occurs on a small scale and can be mitigated via good management practices. Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts would include desiccation, erosion, channel incision, etc.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (-)**	**LOW (-)**	**MEDIUM (-)**
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			

- Work shall predominantly take place during low rainfall periods.
- No foreign vegetation matter (e.g. mulch) shall be allowed on site (especially from alien species).
- Soils shall be stockpiled according to the different soil layers as per the soil profile in order not to mix layers of leached and organic soils.
- Stockpiles and revegetated areas shall be covered with mulch or cloth (geotextile) and kept moist.
- Implement the provisions of the EMPr regarding stockpile location and site management.
- Sandbags used to temporarily divert water shall be in a good condition to prevent additional sedimentation and/ or failure.
- Sand/ earth to fill the bags shall be obtained from and returned to existing excavation points where feasible.
- Soil required for the construction of interventions shall be stabilised as per the engineer's recommendations to counteract dispersive tendencies.
- Water abstracted above the General Authorization limits must be authorized by DWS prior to such abstraction taking place.

7.1.8 Sourcing borrow material

Phase	Pre-Construction	**Construction**	Operational	Decommissioning
Impact description	Borrow material (earth and rocks) may not be collected on site and must be sourced elsewhere. This can have a negative biophysical impact to the area where it is sourced. The quantities required are not such that they require a borrow pit licence. Costs increase the further one gets from site and therefore borrow material is sourced as close to site as possible. Sources include existing borrow areas on neighbouring farms, decommissioned dam walls (younger than 60 years) and man-made berms which are no longer required. Should the borrow material not be required, the potential impact would be neutral.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Zero
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (-)**	**LOW (-)**	**NEUTRAL**
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible

Mitigation measures
○ Implement the provisions of the EMPr. ○ Any quantities in excess of the minimum requirements for a borrow pit licence will require authorisation through Department of Mineral Resources. ○ Borrow areas will need to be properly re-sloped and re-vegetated after use.

7.1.9 Working in peatlands

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	Peatlands are sensitive ecosystem types and construction activities could degrade the soils if not properly mitigated, resulting in habitat destruction, loss of carbon storage capacity and water retention ability of the system. The direct impact of working within peatlands is the potential harm that can be caused through incorrect management on site. Note that the proposed rehabilitation interventions required for the Soutini-Baleni wetland, will not require the removal or extraction of peat or peat soils. The proposed interventions affecting the mires requires the placement of brush on top of them as protection against grazers. One of the interventions also allows for the establishment of a cattle fence – but again, this will not require any peat or peat soils to be removed or extracted. For more detail on these interventions, please refer to the Soutini-Baleni Rehabilitation Plan. By not implementing interventions in peatlands, sensitive environments would be lost, and carbon would be released into the atmosphere. In addition, once peatlands are dried out, they become hydrophobic and prone to fires that are very difficult to manage and stop.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (-)**	**LOW (-)**	**HIGH (-)**
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible

Mitigation measures
• Mitigation measures included in the EMPr shall be implemented. • Topsoil stockpiles should be protected from drying out as per the requirements of the EMPr. • No fires are permitted on site.

7.1.10 Potential impact on visitors to the salt works

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	The following potential impacts on tourism have been considered: <u>Accessibility to the salt works</u> The road to the salt works could potentially be closed off due to construction activities, preventing visitors from reaching the salt works. <u>Visitor safety</u> Construction sites could potentially be dangerous to unauthorised visitors. Access would thus need to be carefully managed.			

	Disturbance to sense of place The proposed rehabilitation activities will not be taking place at the salt works and should not be visible from the salt works. However, there is a risk that visitors may feel that the sense of place have been disturbed as a result of the construction activities taking place. Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts would include desiccation, erosion, channel incision, etc. which would continue to threat the area's sense of place, as well as accessibility to visitors.

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Local
Magnitude	Low	Zero	Medium
Duration	Construction period	Construction period	Long term
Significance	**VERY LOW (-)**	**NEUTRAL**	**MEDIUM (-)**
Probability	Probable	Probable	Probable
Confidence	Sure	Sure	Sure
Reversibility	Reversible	Reversible	Irreversible

Mitigation measures

- Mitigation measures included in the EMPr shall be implemented.
- The layout plan shall take into account that tourists may be visiting the salt works.
- Litter and general waste shall be managed in accordance with the requirements of the EMPr.
- No material shall be placed in the roads and no vehicles shall block access to the salt works. Should this be required, approval must be obtained from the relevant authorities first.
- Visitors to the salt works should be informed at the Ivory Route Information Office of the wetland rehabilitation activities taking place and the positive objectives that will be achieved as a result.
- A notice board shall be displayed at the site, providing contact details for the WfWetlands Programme, the Implementing Entity and emergency contact details (see Chapter 6 of the EMPr).
- A detailed complaints register shall be kept and maintained on site as per Section 4.3 of the EMPr.
- A detailed incident register shall be kept and maintained on site as per Section 6.2 of the EMPr.

7.2 OPERATIONAL PHASE

7.2.1 Changes in land use

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	The increase in wetland area may have both positive and negative impacts for landowners. Wetlands are often utilised for grazing during the dry season and an increase in wetland area will thus improve grazing conditions for the farmer. However, the increase in wet areas may also make previously accessible areas inaccessible for farming purposes. The extent and magnitude of this impact will depend to a large degree on how much value each individual landowner places on wetland conservation. It is however assumed that if the landowner is willing to allow wetland rehabilitation to take place on their property that they see the value in the WfWetlands Programme and are willing to accept the increase in wetland area. Potential positive impacts associated with increased wetland area and improved grazing conditions would not be realised should rehabilitation activities not be implemented. Furthermore, drained wetlands are often more susceptible to erosion, resulting in the removal of fertile topsoil and thereby reducing the agricultural potential of the site.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Positive and Negative	Positive and Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium
Duration	Long-term	Long-term	Long-term
Significance	**LOW (+)** / **MEDIUM (-)**	**MEDIUM (+)** / **LOW (-)**	**MEDIUM (-)**
Probability	Definite	Definite	Likely
Confidence	Certain	Certain	Sure
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			
○ Ensure good access for landowners in the form of crossing points, where such measures be of the lowest impact type and design possible. ○ Provision of watering points for stock to minimise extensive trampling in the wetlands (especially in the wetter times of year).			

7.2.2 Increased water storage and reduced treatment costs

Phase	Pre-Construction	Construction	**Operational**	Decommissioning
Impact description	Wetlands can offer valuable stream flow regulation and filtration services. By restoring wetland area, it is likely that downstream users will benefit by having a more reliable and possibly cleaner source of water. In addition, by addressing erosion, wetland rehabilitation can decrease the amount of sediment downstream. This can help to reduce water treatment costs for downstream users and will also reduce the sedimentation of downstream water storage facilities such as dams. The no-go alternative would mean that the positive impacts identified above would not be realised. In addition, the water retention and storage potential of the system and catchment would continue to decrease, while damage to properties and infrastructure resulting from flood events would increase. Furthermore, with lower water quality in the systems, more human treatment processes (i.e. water treatment plants) would be required to ensure that water is fit for human use which would require significant engineering and procurement cost.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Positive	Positive	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (+)**	**MEDIUM (+)**	**MEDIUM (-)**
Probability	Definite	Definite	Definite
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			
○ No mitigation measures are proposed			

7.2.3 Reduced soil erosion

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	By reducing exposed ground surfaces and surface runoff velocity, the sediment load in surface runoff is reduced, thereby contributing to better water quality in the sub-catchment area. If the proposed interventions are not implemented, erosion would continue and even accelerate over time. This would reduce the agricultural potential of farmland, as well as increase damages to properties and infrastructure during flood events.			
	Pre-Mitigation	**Post-Mitigation**	**No-go alternative**	
Type	Positive	Positive	Negative	
Extent	Site Specific	Site Specific	Site Specific	
Magnitude	Medium	Low	Medium	
Duration	Long-term	Long-term	Long-term	
Significance	**MEDIUM (+)**	**MEDIUM (+)**	**MEDIUM (-)**	
Probability	Definite	Definite	Definite	
Confidence	Certain	Certain	Certain	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
○ No mitigation measures are proposed				

7.2.4 Employment opportunities

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	Ideally, the skills learned by the project team during the construction phase – such as how to work with concrete, build gabions etc. – can be used to assist them to find permanent employment. If the interventions are not implemented, and the teams are not provided with these skills, the impact will be neutral as there will be no change to the *status quo*.			
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**	
Type	Positive	Positive	Positive	
Extent	Site Specific	Site Specific	Site Specific	
Magnitude	Medium	Low	Zero	
Duration	Long-term	Long-term	Long-term	
Significance	**MEDIUM (+)**	**MEDIUM (+)**	**NEUTRAL**	
Probability	Definite	Definite	Definite	
Confidence	Certain	Certain	Certain	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
○ No mitigation measures are proposed				

7.2.5 Public safety

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	Interventions such as gabion weirs, for example, could potentially be used for stream crossings or a swimming hole by local communities which could potentially have serious health and safety risks. However, the purpose of the rehabilitation interventions is not to provide watering holes or public infrastructure, but to trap sediment (i.e. filling up dongas, erosion channels, etc.) and reduce overland flow-velocities. It is possible that even if the interventions are not implemented, the individuals who might be at risk from the use of the wetlands would still be at risk in degraded wetlands. It is even possible that degraded systems could have hidden risks such as stuck branches or boulders that could become dislodged.			

	Pre-Mitigation	Post-Mitigation	No-go Alternative
Type	Negative	Negative	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (-)**	**LOW (-)**	**MEDIUM (-)**
Probability	Definite	Definite	Likely
Confidence	Certain	Certain	Certain
Reversibility	Irreversible	Irreversible	Irreversible

Mitigation measures

- Consult with landowners and the local community to ensure that they are aware of, and educated in, the ecological values and sensitivity of the wetland environments, as well as the exact location of the intervention structures to be implemented.

7.2.6 Ecosystem functioning

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<u>Restoring wetland corridors</u> In areas where wetlands have been artificially drained, restoration can result in the re-wetting of areas and link up previously wet areas, thus creating and extending a network of wetland areas. These wetland corridors can provide valuable refuges for wetland species and allow for greater ecosystem connectivity. <u>Changes in water quality and quantity</u> More natural stream flow patterns within the wetland, as well as an improvement in water quality and quantity (due to improved ecosystem services) can be expected after rehabilitation. This improvement in water quality and a more reliable supply of water is particularly important given the water scarcity that faces South Africa. Should the proposed interventions not be implemented, the wetland systems selected as priority wetlands for rehabilitation, would continue to degrade. This degradation would lead to a loss in ecosystem services, and could result in large downstream impacts such as flooding.			

	Pre-Mitigation	Post-Mitigation	No-go Alternatives
Type	Positive	Positive	Negative
Extent	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium
Duration	Long-term	Long-term	Long-term
Significance	**MEDIUM (+)**	**HIGH (+)**	**MEDIUM (-)**

Probability	Definite	Definite	Likely
Confidence	Certain	Certain	Sure
Reversibility	Irreversible	Irreversible	Irreversible
Mitigation measures			
○ ***Note:*** The interventions identified for the proposed rehabilitation project were identified during a screening process that was undertaken to ensure that the most suitable intervention was identified, developed and assessed for each rehabilitation site. During this screening process, the project team also took into account environmental, social and economic considerations, as well as the rehabilitation objectives identified for the wetland. ○ Should these interventions not be implemented, the current rate of degradation at the assessed wetlands would continue and in some cases even result in the permanent loss of the integrity and functioning of these systems. It would also not be possible to achieve the rehabilitation objectives identified for the wetlands. Without the implementation of wetland rehabilitation as part of the WfWetlands project, the overall programme objectives[12] and the EPWP requirements would not be realised. ○ No mitigation measures are proposed.			

7.2.7 Flora and fauna

Phase	Pre-Construction	Construction	**Operational**	Decommissioning
Impact description	Increased habitat Increasing the wetland area through rehabilitation will result in an increase in habitat for wetland-dependent species. Increased biodiversity A large proportion of the natural vegetation in the greater area has already been lost agricultural activities. Restoring wetland habitat will help to increase the species richness of the overall area by encouraging the re-establishment of wetland species. Change in species composition In wetlands that have been subject to desiccation, plants that are tolerant of drier conditions are likely to have become established. With the restoration of the wetland, these species are likely to be replaced with wetland-adapted vegetation. This change in composition reflects a shift back to historical species composition and is thus considered positive. Should the interventions not be implemented, the positive benefits described above would not be realised. The fauna and flora would respond to the wetland degrading and would likely result in a loss of biodiversity.			
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**	
Type	Positive	Positive	Negative	
Extent	Site Specific	Site Specific	Site Specific	
Magnitude	Medium	Low	Medium	
Duration	Long-term	Long-term	Long-term	
Significance	**MEDIUM (+)**	**MEDIUM (+)**	**MEDIUM (-)**	
Probability	Definite	Definite	Definite	
Confidence	Certain	Certain	Certain	
Reversibility	Irreversible	Irreversible	Irreversible	

[12] Wetland conservation and poverty reduction through job creation and skills.

Mitigation measures
○ ***Note:*** The interventions identified for the proposed rehabilitation project were identified during a screening process that was undertaken to ensure that the most suitable intervention was identified, developed and assessed for each rehabilitation site. During this screening process the project team also took into account environmental, social and economic considerations, as well as the rehabilitation objectives identified for the wetland. ○ Should these interventions not be implemented, the current rate of degradation at the assessed wetlands would continue and in some cases even result in the permanent loss of the integrity and functioning of these systems. It would also not be possible to achieve the rehabilitation objectives identified for the wetlands. Without the implementation of wetland rehabilitation as part of the WfWetlands project, the overall programme objectives and the EPWP requirements would not be realised. ○ No mitigation measures are proposed.

7.2.8 Working in peatlands

Phase	Pre-Construction	Construction	**Operational**	Decommissioning
Impact description	Peatlands, only covering 3% of the Earth's land, store a third of the global soil carbon (Joosten 2010). This means that as an **indirect positive impact**, undertaking this rehabilitation project would ensure that carbon is stored in the soils and not released into the atmosphere as a greenhouse gas, which has been shown to contribute to global warming.			
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**	
Type	Positive	Positive	Negative	
Extent	Local	Local	International	
Magnitude	Low	Medium	High	
Duration	Long-term	Long-term	Long-term	
Significance	**LOW (+)**	**MEDIUM (+)**	**HIGH (-)**	
Probability	Definite	Definite	Likely	
Confidence	Certain	Certain	Certain	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
• No mitigation measures are proposed.				

7.2.9 Potential impact on visitors to the salt works

Phase	Pre-Construction	Construction	**Operational**	Decommissioning
Impact description	The proposed rehabilitation activities would not only improve ecosystem function and biodiversity, but also the general sense of place due to the visual improvements to the area (i.e. vegetated surfaces, no erosion dongas, increased numbers of avifauna, etc.). Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts would include desiccation, erosion, channel incision, etc. which would continue to threat the area's sense of place, as well as accessibility to visitors.			
	Pre-Mitigation	**Post-Mitigation**	**No-go Alternative**	
Type	Positive	Positive	Negative	
Extent	Site Specific	Site Specific	Local	
Magnitude	Low	Low	Medium	

Duration	Long term	Long term	Long term
Significance	**MEDIUM (+)**	**MEDIUM (+)**	**MEDIUM (-)**
Probability	Probable	Probable	Probable
Confidence	Sure	Sure	Sure
Reversibility	Reversible	Reversible	Irreversible
Mitigation measures			
• No mitigation measures are proposed.			

8 CONCLUSION AND WAY FORWARD

8.1 Conclusion

Based on the above, it is the opinion of the EAP that the positive long-term bio-physical and socio-economic aspects of the project as a whole greatly outweigh the minor negative construction related impacts, particularly since effective mitigation measures to reduce the negative impacts exist. There are no indications to suggest that the preferred alternative will have a significant detrimental impact on the environment. Instead, a long-term positive impact is anticipated. This is discussed in further detail below:

Construction Phase:

It is most likely that all identified construction related impacts would be limited to the duration of this phase. Impacts on the bio-physical environment are generally considered to be of **Medium (-)** to **Low (-)** significance, which can be reduced to **Low (-)** and **Very Low (-)** with the implementation of appropriate mitigation measures. Construction related impacts can generally be very effectively managed through the implementation and regular auditing of an EMPr. Although several sites of heritage value are located within the study area, only one site will be directly affected by the proposed anti-erosion measures, namely the cattle fence within the wetland, the anticipated impact on heritage resources is **Medium (-)** which can be mitigated to **Low (-)**. The impact on the socio-economic environment is expected to be **Medium** to **High (+)** due largely to the creation of jobs and up-skilling of local workers.

Operational Phase:

Potential Operational Phase related impacts for both the bio-physical and socio-economic environments are generally considered to be of **Medium to High (+)** significance. These positive impacts are expected to arise due to the following:

- Improved wetland habitat for red data species;
- Improved wetland services (which has benefits for downstream as well as local users); and
- Empowering of local community.

The impacts detailed above in **Chapter 7** are summarised below in **Table 15**.

Table 15: Impact summary table

COLOUR KEY			
High Negative	Red	Neutral	White
Medium Negative	Orange	Low Positive	Light Blue
Low Negative	Yellow	Medium Positive	Blue
Very Low Negative	Light Yellow	High Positive	Green

Construction Phase: Description of Impact	Significance of Impact		
	Preferred Alternative		No-Go
	No Mitigation	With mitigation	
Job creation	Medium (+)	High (+)	High (-) / Neutral
Fire risk	Medium (-)	Low (-)	Low (-)
Nuisance impacts	Low (-)	Very Low (-)	Neutral
Impact on heritage resources: Iron age deposit site	Medium (-)	Low (-)	Neutral
Impact on heritage resources: Cattle fence	Low (-)	Low (-)	Neutral
Impact on heritage resources: Grave site	Medium (-)	Low (-)	Neutral
Worker safety	Medium (-)	Low (-)	Neutral
Flora and fauna	Medium (-)	Low (-)	Medium (-)
Aquatic ecosystem impacts	Medium (-)	Low (-)	Medium (-)
Sourcing borrow material	Medium (-)	Low (-)	Neutral
Working in peatlands	Medium (-)	Low (-)	High (-)
Potential impact on visitors to the salt works	Very Low (-)	Neutral	Medium (-)
Operational Phase: Description of Impact			
Changes in land use	Low (+) / Medium (-)	Medium (+) / Low (-)	Medium (-)
Increased water storage and reduced treatment costs	Medium (+)	Medium (+)	Medium (-)
Reduced soil erosion	Medium (+)	Medium (+)	Medium (-)
Employment	Medium (+)	Medium (+)	Neutral
Public safety	Medium (-)	Low (-)	Medium (-)
Ecosystem functioning	Medium (+)	High (+)	Medium (-)
Flora and fauna	Medium (+)	Medium (+)	Medium (-)
Working in peatlands	Low (+)	Medium (+)	High (-)

Construction Phase: Description of Impact	Significance of Impact		
	Preferred Alternative		No-Go
	No Mitigation	With mitigation	
Potential impact on visitors to the salt works	Medium (+)	Medium (+)	Medium (-)

8.2 Level of Confidence in Assessment and Recommendation of the EAP

Based on the information provided in this report, the outcome of the impact assessment and the supporting documentation it is the recommendation of the EAP that authorisation be granted for the following reasons:

a) The proposed rehabilitation activities are likely to have significant positive bio-physical and socio-economic benefits, not just for the local community for the whole country.

b) Effective mitigation measures exist to manage the limited negative impacts that were identified.

c) The proposed rehabilitation activities are in line with the principles of NEMA (in particular: people and their needs – particularly women and children – are placed at the forefront of development via the EPWP; the development can be considered to be socially, environmentally and economically sustainable; the environmental impacts of the activity are not unfairly distributed and the potential environmental impacts have been assessed and evaluated).

d) The WfWetlands Programme is an important part of the government's EPWP and given that the impacts of the proposed activities are not likely to be detrimental to the environment, this programme should be supported in the spirit of co-operative governance.

It is recommended that the following conditions should be included by the Department of Environmental Affairs in the Environmental Authorisation (should a positive decision be reached):

- Mitigation measures listed in this BAR should be referenced as conditions of approval.
- Construction activities must take place in accordance to the requirements of the attached EMPr, which also includes general requirements from the WfWetlands Best Management Practices Plan.
- Regular auditing of the EMPr must take place.

With regards to period for which the EA would be required, a validity period of 5 years is requested to allow for the implementation of the rehabilitation plan over multiple years – depending on the availability of budget.

Please find a signed EAP declaration signed in **Appendix E**.

8.3 Way Forward

The work proposed in the above-mentioned wetland systems are further detailed in a project specific Rehabilitation Plan, consisting of work that is planned for the following years' implementation cycle.

Each Rehabilitation Plan include a detailed description of the wetland system, the problems affecting the wetland as well as the proposed rehabilitation strategy. Input into this report is provided by the project engineer, wetland specialist, EAP, and WfWetlands ASD. The Rehabilitation Plan also include the engineering drawings and bill of quantities of the specific intervention planned to address the site-specific issue.

A general Environmental Management Programme (EMPr) (**Appendix D**) is included in both the BAR and Rehabilitation Plan and provides a set of guidelines and requirements for the implementing teams to ensure that each intervention does not do unnecessary harm to the environment. Where site-specific mitigation measures are required, these are included in the intervention booklets provided as an annexure to the Rehabilitation Plan.

9 REFERENCE LIST

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