



WORKING FOR WETLANDS REHABILITATION PROGRAMME, KWAZULU-NATAL

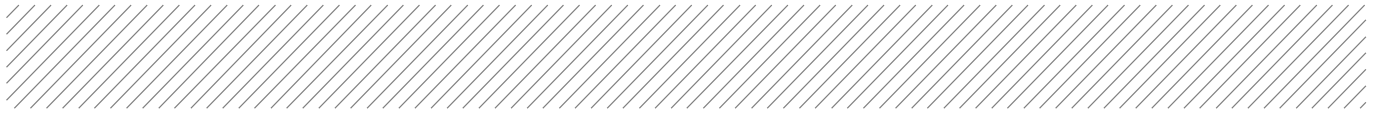
BASIC ASSESSMENT REPORT OCTOBER 2019



Agriculture, Forestry and Fisheries
Environmental Affairs
Water Affairs and Sanitation



EXPANDED PUBLIC WORKS PROGRAMME
Creating opportunities towards human fulfillment



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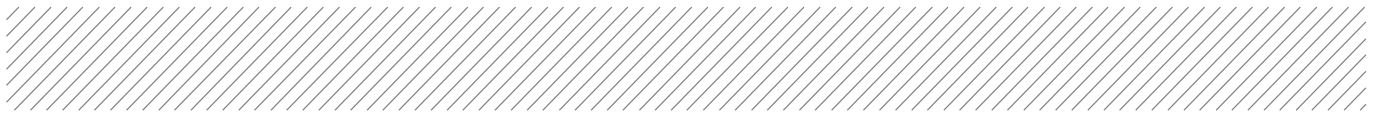
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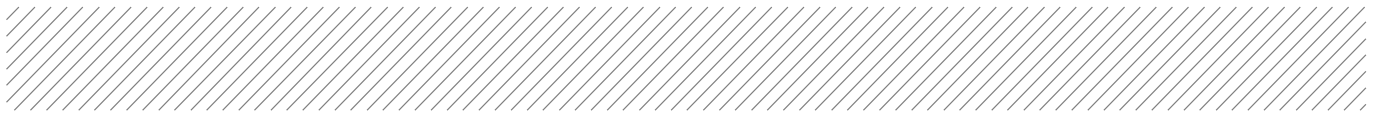
Please note that this report was previously made available for public comment in February 2019 and June 2019. Due to an unforeseen delay during the submission of the finalised reports to the Department of Environmental Affairs, the application for Environmental Authorisation lapsed, and a new application has been lodged with the Department. All comments received during the first application has been incorporated in the Public Participation Report (Appendix B).

NEMA requirements for Basic Assessment Reports

Appendix 1	Content as required by NEMA	Section
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 (ii) details of the expertise of the EAP, including curriculum vitae;	Section 8.2 and Appendix D
(b)	the location of the activity, including- (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;	Section 1.1.1 N/A
(c)	a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Figure 1 and Chapter 6 N/A 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 (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	Chapter 2 Section 5.2
(e)	a description of the policy and legislative context within which the development is proposed including - (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;	Chapter 2
(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 - (i) details of all the alternatives considered;	Section 5.3
	(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
(h)	(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 - (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;	Chapter 3 and 7
(j)	an assessment of each identified potentially significant impact of risk, including - (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;	Chapter 7
(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 (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Provided in the project specific rehabilitation plans.
(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;	Chapter 8
(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- (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;	Appendix E



(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

EIA Screening Tool

Regulation 16(1)(v) of the Environmental Impact Assessment Regulations (Government Notice Regulation 982, 2014, as amended) requires that an application for environmental authorisation be accompanied by a report that has been generated by the national web based environmental screening tool.

This tool became operational on 4 October 2019 (Government Notice 42561 of 5 July 2019) and screens proposed sites for environmental sensitive features. In addition, the screening tool identifies specialist studies that may be applicable to the proposed site and/or development and should be undertaken during the application process. Should any of these assessments not be applicable the Environmental Assessment Practitioner can provide a motivation to this regard for the competent authority to consider.

Applicability of Screening Tool Results

Table A below provides a list of all specialist studies that were identified by the screening tool (see Appendix F) for developments undertaken in watercourse.

It is however **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 impacts associated with developments**.

The very **objective** of the WfWetlands Programme is to **improve both environmental and social circumstances**, while also **giving effect to a range of policy objectives** of environmental legislation, and **honouring 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**.

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.

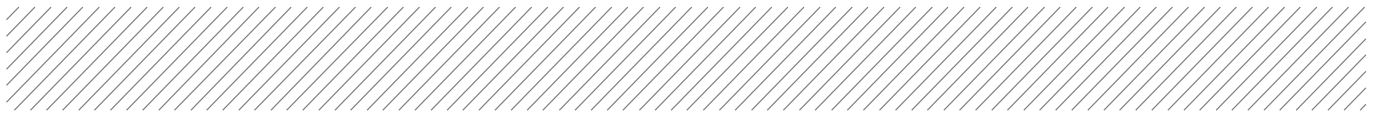
Table A: Screening tool results and applicability of specialist assessments for wetlands W32H-03 to 13

Specialist Assessment	Applicable Themes	EAP motivation for Applicability
Landscape/ Visual	Civil aviation Defence	The objective of the proposed interventions is to rehabilitate a degraded wetland. These interventions are visually non-obtrusive and were designed with a minimum footprint. Please refer to Appendix C of the iSimangaliso Wetland Rehabilitation Plan for the proposed intervention designs. <u>This specialist study is therefore not considered to be applicable to the WfWetlands Programme.</u>

Specialist Assessment	Applicable Themes	EAP motivation for Applicability
Archaeological and cultural heritage	Archaeological and cultural heritage ¹	Final comments have been received from Amafa, the provincial heritage authority, and is available in Appendix B5. <u>Amafa has no objections to the proposed rehabilitation interventions and do not require a heritage assessment to be undertaken.</u>
Palaeontology	Palaeontology	Final comments have been received from Amafa, the provincial heritage authority, and is available in Appendix B5. <u>Amafa has no objections to the proposed rehabilitation interventions and do not require a palaeontological assessment to be undertaken.</u>
Terrestrial biodiversity Aquatic biodiversity	Terrestrial biodiversity Aquatic biodiversity Plant species	The objective of the proposed interventions is to rehabilitate degraded wetlands, which would help to improve the resilience of biodiversity to climate change etc. Furthermore, the wetland specialists consider habitat, aquatic ecology and associated wetland fauna and flora species in their assessments. Please refer to Sections 6.2.1 and 7.2, as well as Appendix A of the iSimangaliso Wetland Rehabilitation Plan for more information on the expected benefits to biodiversity. Note that limited, short term, disturbances are expected during the construction phase, however, appropriate mitigation measures (that are based on more than 15 years' experience with wetland rehabilitation and assistance of Mr Carl Myhill of the iSimangaliso Wetland Park) have been identified and are included in the Environmental Management Programme. <u>These additional specialist studies are therefore considered not to be applicable to the WfWetlands Programme since:</u> (a) the objective of the proposed project is to restore and improve the functioning and ecosystem services provided by the identified wetlands; (b) these benefits have been assessed in the Status Quo report included in Annexure A of the iSimangaliso Wetland Rehabilitation Plan; (c) potential impacts (see Chapter 7) are known based on more than 15 years' experience rehabilitating wetlands in the KwaZulu-Natal Province; and (d) appropriate mitigation measures are included in the iSimangaliso Wetland Rehabilitation Plan and Environmental

¹ This theme was identified for only Wetland S32E-03 due to its proximity to an important wetland.

Specialist Assessment	Applicable Themes	EAP motivation for Applicability
		Management Programme (as confirmed with the wetland specialist).
Hydrology		<p>The objective of the proposed interventions is to rehabilitate degraded wetlands, including restoring the natural hydrology of the affected wetlands. Interventions are identified (with the assistance of Mr Carl Myhill of the iSimangaliso Wetland Park) and designed to have a minimum footprint, while achieving maximum environmental benefit to the wetlands.</p> <p>Please refer to Sections 6.2.1 and 7.2, as well as Annexure A of the iSimangaliso Wetland Rehabilitation Plan for more information on the expected benefits in terms of wetland hydrology. Note that limited, short term, disturbances are expected during the construction phase, however, appropriate mitigation measures (that are based on more than 15 years' experience with wetland rehabilitation) have been identified and are included in the Environmental Management Programme.</p> <p><u>Since the WfWetlands Programme is not proposing a development, but wetland rehabilitation interventions that would restore the natural hydrology of the degraded wetlands (as discussed in Annexure A of the iSimangaliso Wetland Rehabilitation Plan), a hydrology impact assessment is not considered to be applicable.</u></p>
Socio-economic	Agriculture	<p>The WfWetlands Programme 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. 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 (see Section 5.1).</p> <p>Furthermore, iSimangaliso is a protected area that does not allow agricultural activities. No impact on agricultural resources is thus expected to occur.</p> <p><u>This specialist study is therefore not considered to be applicable to the WfWetlands Programme.</u></p>
Animal species Plant species	Terrestrial biodiversity	<p>The proposed wetland rehabilitation interventions are in degraded wetlands that are being rehabilitated to improve wetland health (including plant and animal species, environmental services, etc.).</p>



Specialist Assessment	Applicable Themes	EAP motivation for Applicability
	Aquatic biodiversity Plant species	<p>Furthermore, the wetland specialists consider habitat, aquatic ecology and associated wetland fauna and flora species in their assessments. The occurrence of sensitive species is unlikely, and none were identified during the site visit with the wetland specialist and Mr Carl Myhill of the iSimangaliso Wetland Park. However, should any species be identified during the implementation of the proposed interventions, specific protection/ mitigation measures included in the iSimangaliso Wetland Rehabilitation Plan and Environmental Management Programme. Please refer to Sections 6.2.1 and 7.2, as well as Appendix A of the iSimangaliso Wetland Rehabilitation Plan for more information on the expected benefits to biodiversity.</p> <p><u>These specialist studies are therefore not considered to be applicable to the WfWetlands Programme.</u></p>



CONTENTS

1	INTRODUCTION AND BACKGROUND	1
1.1	Working for Wetlands Programme	1
1.2	Introducing the Project	4
2	LEGAL AND PLANNING CONTEXT	7
2.1	Relevant Legislation	7
3	METHODOLOGY	12
3.1	Approach to the Project	12
3.2	Impact Assessment Methodology	15
3.3	Assumptions and Limitations	17
4	PUBLIC PARTICIPATION	18
4.1	Public Participation Process	18
5	PROJECT DESCRIPTION	19
5.1	Need and Desirability: National Importance of the WfWetlands Programme	19
5.2	Activities to be undertaken	19
5.3	Alternatives	21
6	BASELINE DESCRIPTION OF KWAZULU-NATAL PROJECTS	23
6.1	KZN Project: Background	23
6.2	Biophysical Environment	23
6.3	Cultural and Heritage Environment	26
6.4	Socio-economic Environment	26
7	IMPACT ASSESSMENT	28
7.1	Construction Phase	29
7.2	Operational Phase	37
7.3	No-Go Option	41
8	CONCLUSION AND WAY FORWARD	43
8.1	Conclusion	43
8.2	Level of Confidence in Assessment and Recommendation of the EAP	44
8.3	Way Forward	45
9	REFERENCES LIST	46



APPENDICES

Appendix A: Typical Interventions

Appendix B: Public Participation Report

- Appendix B1: DEA Communication
- Appendix B2: Landowner Agreements
- Appendix B3: Written Notification
- Appendix B4: Proof of Delivery
- Appendix B5: Comments and Responses

Appendix C: Maps

Appendix D: EMPr

Appendix E: Additional information

- Appendix E1: EAP declaration and CV
- Appendix E2: Specialists declaration and CV
- Appendix E3: Wetland Forum Minutes

Appendix F: Screening Tool Report

FIGURES

Figure 1: Overview of Phase 1 and 2 as part of the planning process	3
Figure 2: Locality map showing the location of quaternary catchment included in this BAR	6
Figure 3: The Working for Wetlands planning process	13

TABLES

Table 1: Project details	4
Table 2: Farm details for KwaZulu-Natal projects	4
Table 3: Project Team for KwaZulu-Natal Province	5
Table 4: Relevant Legislation, policies and guidelines considered in preparation of the Basic Assessment Report	7
Table 5: Listed activities triggered by the proposed KwaZulu-Natal Projects	9
Table 6: Assessment criteria for the evaluation of impacts	15
Table 7: Definition of significance ratings	16
Table 8: Definition of probability ratings	16
Table 9: Definition of confidence ratings	17
Table 10: Definition of reversibility ratings	17
Table 11 Public Participation Process	18
Table 12: Approach to alternatives for the WfWetlands Programme	21
Table 13: Economic profile of the Mtubatuba Local Municipality	26
Table 14: Socio-economic value of the national WfWetlands Programme	27
Table 15: Impact summary table	44



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), 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.

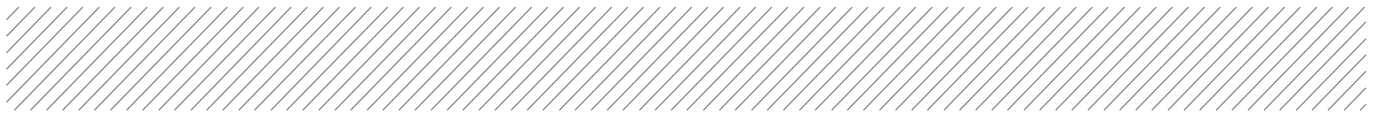
Project: An area of WfWetlands intervention generally defined by a quaternary catchment or similar management unit such as a national park in which a single implementer operates.

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

1.1 Working for Wetlands Programme

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.

The planning cycle of the WfWetlands Programme continuously builds on existing information (dating back to the early 2000s). The planning cycle for each project occurs over three phases (these are unpacked in greater detail with timeframes in Section 3.1 of this report):

- Phase 1: Strategic Planning

Priority wetland systems requiring rehabilitation are identified during Phase 1 of the WfWetlands Programme. Catchment and wetland prioritisation assessments are undertaken by the provincial Wetland Specialist/s to identify priority catchments and associated wetlands within which rehabilitation work needs to be undertaken. A review is undertaken to determine local knowledge and identify existing studies of the quaternary catchments in the province. The Programme's current five-year strategic plans are further used as a guide to identify priority wetlands, as well as data from the National Freshwater Ecosystem Priority Areas (NFEPA) project. Decisions on priority areas are further informed by input from wetland forums, biodiversity/ conservation plans, municipalities, state departments and various other stakeholders.

- Phase 2: Environmental Authorisation (Basic Assessment) and Detailed Planning

Once the wetland projects have been identified, a Basic Assessment process is undertaken to obtain Environmental Authorisation to undertake the typical Listed Activities associated with implementing the wetland rehabilitation interventions. Simultaneously to the process, the planning team undertakes the detailed planning of the rehabilitation efforts, including site work, intervention design and the compilation of a Rehabilitation Plan. This plan is submitted to the authorities to ensure that the actual interventions proposed comply with the conditions of authorisation and Listed Activities originally applied for.

- Phase 3: Implementation

An implementation team carry out the rehabilitation work as described by the Rehabilitation Plan, and as set out by the Engineering team, who return to sign off the rehabilitation work once complete. The project is then further investigated for rehabilitation opportunities in the next planning cycle, or the next project is identified through the Phase 1 process.

Figure 1 provides an overview of tasks associated with Phase 1 and Phase 2, including the basic Assessment Process.

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. However, despite its intentions, this same legislation does apply to the proposed activities required for wetland rehabilitation. 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.

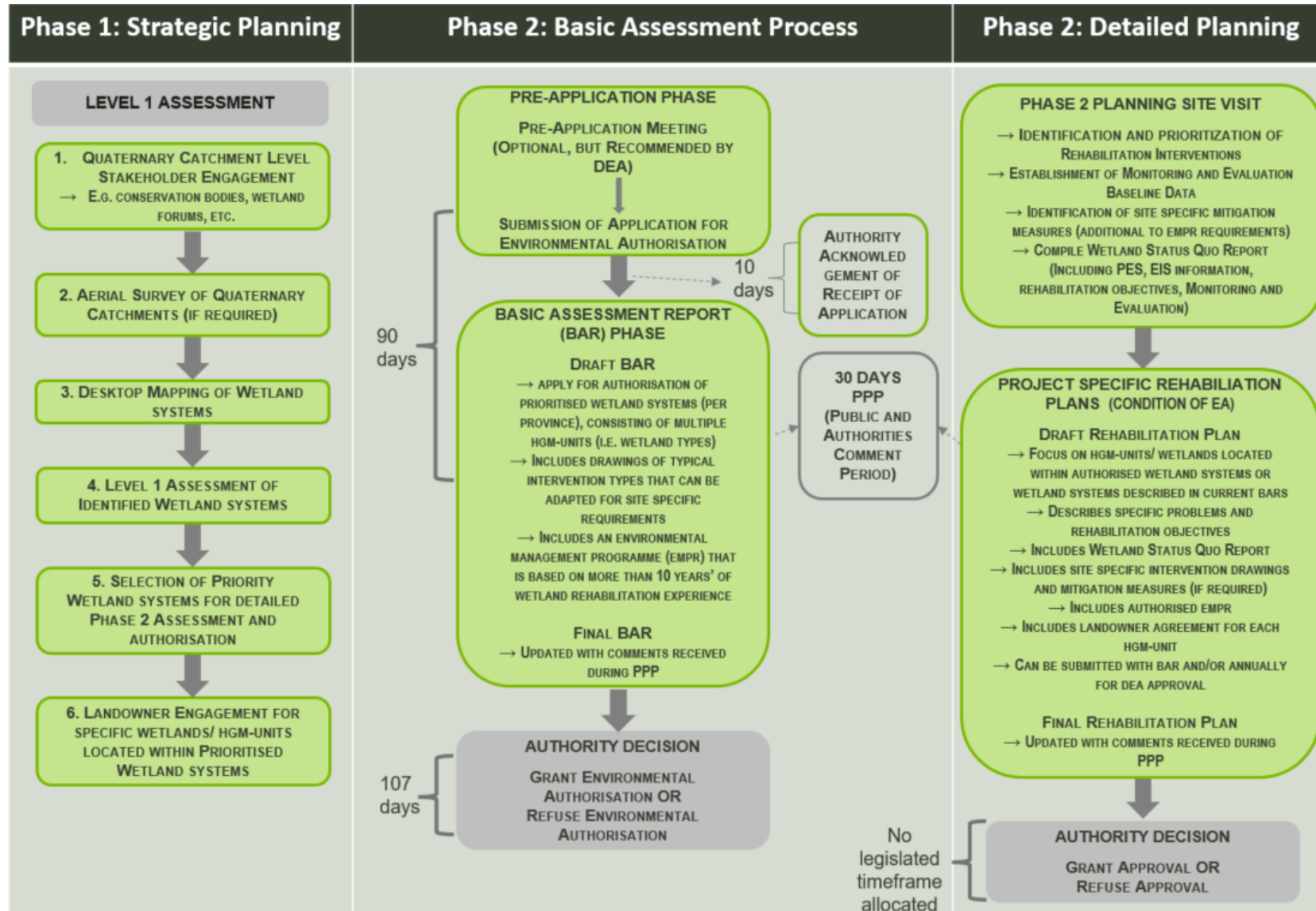


Figure 1: Overview of Phase 1 and 2 as part of the planning process

1.2 Introducing the Project

The WfWetlands Programme is currently managing 48 WfWetlands Projects countrywide, including projects in the KwaZulu-Natal Province. WfWetlands has actively been rehabilitating wetlands in the KwaZulu-Natal province since the early 2000s. The iSimangaliso Wetland Park was an obvious priority given that it is one of the outstanding natural wetland and coastal sites of Africa, is a protected area and is recognised as a UNESCO World Heritage Site and contains four RAMSAR sites. A major threat to the park is damage to the hydrology and salinity of the wetland system including reduction in the water supply by the transformation of the upper reaches by agriculture, and historical land uses such as forestry.

1.2.1 Project Location

Table 1 below provides information on the location of the iSimangaliso wetlands.

Table 2: Project details

Project Name	Wetland System	Wetland Number	Lat (DDMMSS)	Long (DDMMSS)
KZN Maputaland	iSimangaliso	W32H-03 to 13	28°18'28.00"S	32°23'45.00"E

Table 2 below provides information on the property details.

Table 3: Farm details for KwaZulu-Natal projects

Project Name	Wetland System	Property Number	21 digit SG code	Property Size (ha)
KZN Maputaland	iSimangaliso	17459	N0HV00000001745900000	78602.011
		REM/13702	N0GV00000001370200000	2790.838
		17393	N0GV00000001739300000	3053.025
			& Communal Property	

1.2.2 Project Team

The **WfWetlands Programme Team** currently comprises two subdirectories:

- a) Implementation and After Care and
- b) Planning, Monitoring and Evaluation.

These sub directorates are supported by Assistant Directors for Wetlands Programmes (ASDs)², and the ASDs are responsible for the identification and implementation of projects in their regions. The WfWetlands 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** from Aurecon South Africa (Pty) Ltd (Aurecon), in partnership with GroundTruth, comprises 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 Specialists³ who provide

² Also referred to as Provincial Coordinators (PCs).

³ 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.

scientific insight into the operation of wetlands and expert local knowledge of the wetlands. The Project Team is also complimented by the ASDs who are each responsible for a province.

The members of the Project Team for the KwaZulu-Natal Province includes the following professionals:

Table 4: Project Team for KwaZulu-Natal Province

Role	Representative	Company
ASD	Mbali Goge	Department of Environmental Affairs
EAPs	Claire Blanché	Aurecon
Engineer	Ryan Domleo and Khwezi Mncwabe	GroundTruth
Wetlander	Craig Cowden and Steven Ellery	GroundTruth

The delivery of the final basic assessment reports (BARs) and rehabilitation plans are managed by Aurecon's Cape Town office where Ms Claire Blanché provided the role of the main EAP. Ms Blanché was part of the WfWetlands Programme since 2012 and delivery of this report, but left the employment of Aurecon since the compilation of this report. For this reason, a signed EAP declaration and curriculum vitae (CV) for Ms Franci Gresse has been included in Appendix E.

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.

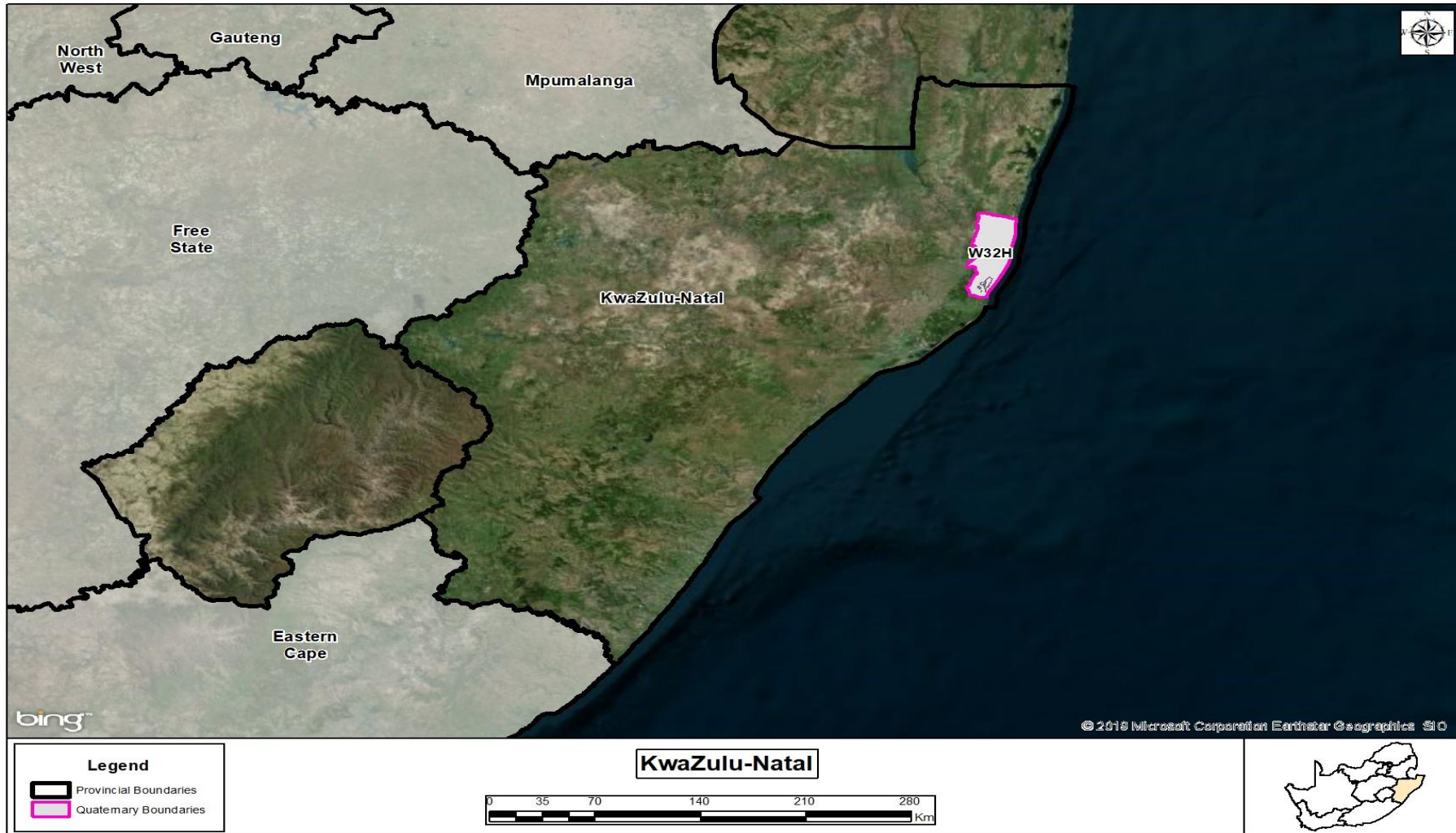


Figure 2: Locality map showing the location of quaternary catchment included in this BAR

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.

Memorandum of Understanding for Working for Wetlands Programme

A Memorandum of Understanding (MoU) has been entered into between DEA, DAFF and DWS for the WfWetlands Programme. Through co-operative governance and partnerships, this MoU aims to streamline the authorisation processes required by the National Environmental Management Act (Act 107 of 1998), the National Water Act (Act 36 of 1998), and the National Heritage Resources Act (Act 25 of 1999) to facilitate efficient processing of applications for authorisation of wetland rehabilitation activities.

2.1 Relevant Legislation

There are a host of legal and policy documents and guidelines to consider when undertaking such a project.

Table 5 provides an overview of all the relevant legislation.

Table 5: 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			
The Constitution of South Africa (Act 108 of 1996)	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.	National Government	1996
National Environmental Management Act (Act 107 of 1998) (NEMA) (as amended)		Department of Environmental Affairs	1998
The National Water Act (Act 36 of 1998) (NWA)		Department of Water and Sanitation	1998
Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA)		Department of Agriculture, Forestry & Fisheries	1983
National Heritage Resources Act (Act 25 of 1999) (NHRA)		SA National Heritage Resources Agency	1999
World Heritage Conventions Act (Act 49 of 1999) (WHCA)		Department of Environmental Affairs	1999
The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA)		Department of Environmental Affairs	2004
National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEM:PA)		Department of Environmental Affairs	2003

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Guidelines			
EIA Guideline Series, in particular: <ul style="list-style-type: none"> Guideline 5 – Companion to the NEMA EIA Regulations, 2010 (DEA, October 2012) Guideline 7 – Public Participation in the EIA process, 2012 (DEA, October 2012) Guideline 9 – Guideline on Need and Desirability, 2010 (DEA, October 2014) 	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 Environmental Affairs	2012 - 2014
Provincial Bylaws, Frameworks, Plans and Policies			
KwaZulu-Natal Environmental Management Framework	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.	KwaZulu-Natal Department of Agriculture and Rural Development	2014
KwaZulu-Natal Biodiversity Plan		KwaZulu-Natal Department of Agriculture and Environmental Management	2014
International Conventions			
The Ramsar Convention 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.		
United Nations Conventions to Combat Desertification			
New Partnership for Africa's Development (NEPAD)			
The World Summit on Sustainable Development (WSSD)			

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 in different project areas 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 6**, have been identified as being applicable to the proposed rehabilitation interventions:

Table 6: Listed activities triggered by the proposed KwaZulu-Natal Projects

Listed activity	Description of project activity that triggers listed activity
Listing Notice 1 (GN R983, as amended)	
<p>GN 983: Activity 19: The infilling or depositing of any material of more than 10 m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 m³ from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving –</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan</p>	<p>The infilling, excavation, removal or moving of material such as soil and rock may be required in the wetland (within the definition of a watercourse) during the rehabilitation activities, for example for:</p> <ul style="list-style-type: none"> • Infilling, excavation, removal or moving of material to construct weirs, berms or diversion channels etc. • Infilling, excavation, removal or moving of material in channels to address erosion problems or alter flow. • Eroded embankments may need to be sloped for stabilisation products such as gabion mattresses or geotextiles to be applied, etc. • Former forestry, agricultural or access roads through the wetland may need to be removed or stabilised or altered (culverts added) to reinstate flow regimes.

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

In terms of Section 39 of the NWA, a General Authorisation⁴ (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*⁵' and '*altering the bed, banks, course or characteristics of a watercourse*⁶' where they are specifically undertaken for the purposes of rehabilitating⁶ 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

⁴Government Notice No. 1198, 18 December 2009

⁵Section 21(c) of the NWA, No. 36 of 1998

⁶Section 21(i) of the NWA, No. 36 of 1998

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 requirements of the NHRA are tabulated below, as well as an indication of their applicability to this project (refer Table 6).

Table 6: Applicability of NHRA requirements in terms of the proposed wetland rehabilitation activities

NHRA Section	Applicability to WfWetlands
Section 27: National heritage sites and provincial heritage sites	
<p>(18) No person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.</p>	<p>The iSimangaliso Wetland Park was listed for its outstanding natural values as a UNESCO World Heritage Site in December 1999, the first in South Africa at the time. iSimangaliso was chosen for meeting three of the ten natural and cultural values recognised by the Convention:</p> <ol style="list-style-type: none"> 1. Outstanding examples of ecological processes (criterion vii) 2. Superlative natural phenomena and scenic beauty (criterion ix) 3. Exceptional biodiversity and threatened species (criterion x) <p>Although excavations are proposed in this heritage site, these are intended to improve the ecological functioning of the wetland, thereby promoting rather than impacting on the three criteria for which the heritage site was chosen.</p> <p><u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u></p>
Section 28: Protected areas	
<p>(3) No person may damage, disfigure, alter, subdivide or in any other way develop any part of a protected area unless, at least 60 days prior to the initiation of such changes, he or she has consulted the heritage resources authority which designated such area in accordance with a procedure prescribed by that authority.</p>	<p>The iSimangaliso Wetland Park is a protected area, and a UNESCO World Heritage Site. The rehabilitation activities planned in the wetland are aimed at improving rather than impacting on the heritage status (this is not a development project but rather a rehabilitation effort).</p> <p><u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u></p>
Section 34: Structures	
<p>(1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority</p>	<p>No structures or parts of structures older than 60 years will be altered or demolished during the proposed wetland rehabilitation activities in this Province. <u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u></p> <p>However, should it be determined during the site-specific planning phase that the rehabilitation activities could potentially impact on structures older than 60 years, then the mandatory specialist assessment and permitting processes as prescribed by the authority will be undertaken prior to any rehabilitation work commencing.</p>
Section 38(1): Development categories	
<p>(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;</p>	<p>No roads or other linear infrastructure will be constructed for wetland rehabilitation purposes. <u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u></p>

NHRA Section	Applicability to WfWetlands
(b) the construction of a bridge or similar structure exceeding 50m in length;	No bridges or similar structures will be constructed for wetland rehabilitation purposes. 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 000m ² 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 natural wetland systems 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.] <u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u>
(d) the re-zoning of a site exceeding 10 000m ² in extent; or	The WfWetlands Programme does not require that any of the project areas be rezoned. <u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u>
(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. <u>This Listing is therefore not considered to be applicable to the WfWetlands Programme.</u>

It is important to note that even though the proposed WfWetlands Programme activities in this Province do not require any procedures as prescribed by the heritage authority in terms of the NHRA, there is always the possibility that new heritage resource discoveries could be made during the rehabilitation activities. Should any archaeological and/ or heritage resources be exposed during the implementation of the interventions, the Implementation Team will follow the process described in the Environmental Management Plan (Appendix D of the rehabilitation plans). This process includes ceasing the implementation of all interventions in the immediate areas, cordoning off the discovery, notifying the relevant Heritage Authorities of the discovery, and following their recommendations to investigate or secure the discovery.

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 are each 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.

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 particular province undertakes a desktop study to determine the most suitable wetlands for the WfWetlands rehabilitation efforts. The involvement of Provincial Wetland Forums 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 land-owners 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.

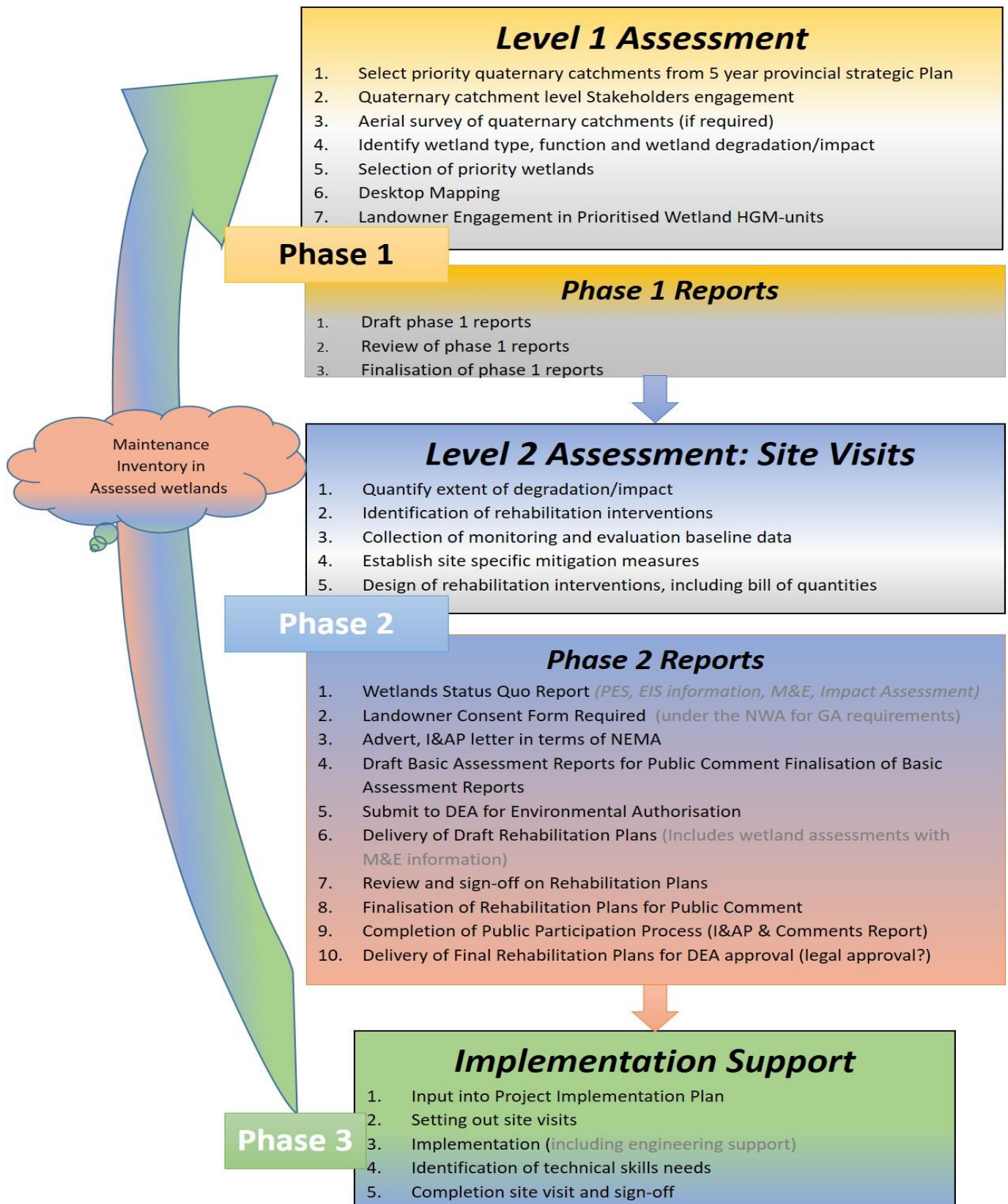


Figure 3: The Working for Wetlands planning process

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 EIR represents the full range of plausible and pragmatic measures but does not necessarily imply that they will be implemented.

Tables 6-10 on the following pages show the scale used to assess these variables, and defines each of the rating categories.

Table 7: 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 100m 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 <i>severely</i> altered
	Medium	Natural and/ or social functions and/ or processes are <i>notably</i> altered
	Low	Natural and/ or social functions and/ or processes are <i>slightly</i> altered
	Very Low	Natural and/ or social functions and/ or processes are <i>negligibly</i> altered
	Zero	Natural and/ or social functions and/ or processes remain <i>unaltered</i>
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 8**.

Table 8: Definition of significance ratings

Significance ratings	Level of criteria required
High	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 9** and **Table 10**, respectively. It is important to note that the significance of an impact should always be considered in concert with the probability of that impact occurring. Lastly, the **REVERSIBILITY** of the impact is estimated using the rating system outlined in **Table 11**.

Table 9: 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 10: 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 11: 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 has been assumed:

- The strategic level investigations undertaken during Phase 1 are acceptable and robust.
- The information provided by the applicant and wetland 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

4.1 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 12 Public Participation Process

Activity	Description
Pre-application	
Advertisements	Adverts were placed in the Zululand Observer 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 14 October 2019 to 12 November 2019 on Aurecon's website: http://aurecongroup.com/en/public-participation.aspx . 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 October 2019 to all registered I&APs 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 application process is included in a Comments and Response Report (CRR) (available in Appendix B5), with copies of the original comments received.

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 1 300 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 225 000 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 **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 **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 approach 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 take into account 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 13**.

Table 13: Approach to alternatives for the WfWetlands Programme

Alternative	Applicability to WfWetlands
Site Alternatives	<p>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 objectives⁷. The earlier site selection processes to determine feasible and reasonable Wetland Projects are described in detail in Section 3.1.</p> <p>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.</p>
Other Alternatives	<p>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.</p>

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

Alternative	Applicability to WfWetlands
<p>No-Go Alternative</p>	<p>If the no-go alternative is pursued, the prioritised wetlands 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 these wetlands 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.</p>

6 BASELINE DESCRIPTION OF KWAZULU-NATAL PROJECTS

6.1 KZN Project: Background

The WfWetlands Programme has focussed efforts in the iSimangaliso Wetland Park for a number of years, with historical work occurring in Maputaland quaternary catchments W31L and W32B. More recently rehabilitation efforts have been focussed in quaternary catchment W32H. During the 2013/2014 planning cycle, rehabilitation was implemented on both the Eastern (W32H-01) and Western (W32H-02) shores of the iSimangaliso Wetland Park. The problems identified then included incorrect placement roads, abandoned borrow pits and alien invasive species.

This planning cycle offers more work on the Western Shores within the same quaternary catchment (W32H). The iSimangaliso Wetland Park Management have identified more rehabilitation work addressing much of the same problems for this planning cycle, typically old forestry roads that are affecting flow regimes, old borrow pits that require rehabilitation, and infestations of alien invasive plant species. Based on recommendations made by the iSimangaliso Wetland Park Land Care Management Department and on the findings and prioritisation during the desktop analysis, eleven (11) wetlands that cover approximately 3300ha were selected for rehabilitation in this planning cycle. These systems form part of the Maputaland coastal plain wetland complex which is very well connected to the local water table, and therefore the interaction between groundwater and surface water is constant – giving rise to such a large extent of wetland.

The following wetland systems were identified in the KwaZulu-Natal Province and will be the focus of this Basic Assessment Process:

- Quaternary catchment W32H:
 - Wetland W32H-03 – Floodplain complex (699ha)
 - Wetland W32H-04 – Hillslope seep (17.96ha)
 - Wetland W32H-05 – Floodplain complex (66.79ha)
 - Wetland W32H-06 – Hillslope seep (1.47ha)
 - Wetland W32H-07 – Unchannelled valley bottom (49.97ha)
 - Wetland W32H-08 – Unchannelled valley bottom (14.8ha)
 - Wetland W32H-09 – Depression (5.77ha)
 - Wetland W32H-10 – Unchannelled valley bottom (5.95ha)
 - Wetland W32H-11 – Unchannelled valley bottom (21.45ha)
 - Wetland W32H-12 – Depression (5.78ha)
 - Wetland W32H-13 – Floodplain complex (2411.40ha)

6.2 Biophysical Environment

The table below provides an overview of the biophysical environment of the iSimangaliso Wetland Park Western Shores system and quaternary catchment W32H. Please refer to **Appendix C** for a selection of maps that show the location and biodiversity sensitivity of the above listed wetland systems. Also see the applicable rehabilitation plan for detailed descriptions of the wetlands, wetland problems, rehabilitation objectives and proposed rehabilitation interventions.

6.2.1 Quaternary catchment W32H and associated wetlands

Quaternary Catchment W32H	
General description	The iSimangaliso Wetland Park was classified as a UNESCO World Heritage site in 1999 and is the third largest protected area in South Africa (Heritage tours, 2018). The park encompasses a variety of wetlands including approximately 25% of South Africa's peatlands and four Ramsar wetland sites. The catchments associated with most wetlands located within the iSimangaliso Wetland Park are difficult to define for a number of reasons. Possibly the most important reason is the fact that these wetlands are part of the Maputaland coastal plain wetland complex which extends from south of St Lucia to as far north as Kosi Bay area (Watkeys et al. 1993). These wetlands are characterised by complex groundwater interactions as they lie at low elevations and very close to sea level. According to Macfarlane et al. (2007), the Maputaland coastal plain is characterised by highly complex surface-groundwater interactions which confounds the delineation and definition of wetland catchments in these areas as wetlands are fed both by their topographically defined catchments as well as by a much larger catchment feeding the regional water table. The hydraulic contribution from these two sources is likely to vary from wetland to wetland and as such this complicates the definition of catchment extent and catchment associated impacts. To avoid repetition, the descriptions of each wetland catchment will be limited to their topographically defined catchment. The Western Shores of the iSimangaliso Wetland Park are located within quaternary catchment W32H. The Quaternary catchment falls within the Usutu to Mhlathuze Water Management Area.
Climate	The catchment falls within the subtropical climatic zone of Africa. It experiences weather systems from both tropical and temperate regions. Light rainfall is experienced during the winter months (May to July) and contributes 20% of the annual rainfall in the region. In both summer and spring thunderstorms are created that produce rainfall, this is experienced most heavily in the spring months (Heritage tours, 2018). The Mean Annual Precipitation (MAP) is 1200mm. The annual average temperature is 21.5°C (IDP 2013/2014).
Geology and topography	The Lubombo Mountains are situated on the north-west boundary of iSimangaliso and is located between two pre-Cambrian elements: The Kaapvaal Craton and Mozambique belt. The upland sites of the mountain have lithic soils in the west and ferruginous soils in the east (IDP 2013/2014). It comprises of undulating plains which is on average high in elevation. Most of the wetlands are (seeps and depressions) are underground fed with the valley bottom wetlands receiving both ground water and surface flow. A prominent scarp occurs on the western shore of the estuary. The majority of the Maputaland coastal plain is underlain by late Mesozoic and Quaternary sequences which naturally lack mineral wealth and often weather to form very coarse, sandy substrates (Watkeys et al. 1993). These sandy substrates are often characterised by poor cation exchange capacities and by high hydraulic conductivities meaning that the surface-groundwater interaction is complex and difficult to define as water moves easily through the sandy substrates.
Terrestrial ecology	The iSimangaliso Wetland Park (which is mapped as an IBA) supports in excess of 500 bird species and is one of the most important breeding areas for waterbirds in Southern Africa. Several IUCN Red Data species and numerous endemic species can be found in the park. Red Data plants include <i>Warburgia salutaris</i> , <i>Lumnitzera racemosa</i> and <i>Diospyros rotundifolia</i> with only known population of the climbing orchid <i>Vanilla roscheri</i> found in the park. Other plant species of not include the localised forest-edge climber <i>Ceropegia arenaria</i> the <i>Ficus bubu</i> (fig tree spp.) with <i>Brachystelma vahrmeijeri</i> present in the grassland areas. Of the mammals, hippopotamus <i>Hippopotamus amphibius</i> , aardwolf <i>Proteles cristatus</i> , aardvark <i>Orycteropus afer</i> , pangolin <i>Manis temminckii</i> and suni <i>Neotragus moschatus</i> occur naturally. Also, of note is that Black rhinoceros <i>Diceros bicornis</i> has been re-introduced to the park with significant habitat for this species also found adjacent the parks borders. There are eight known Red Data fish species that occur, including freshwater mullet <i>Myxus capensis</i> and Sibayi goby <i>Silhouettea sibayi</i> . Reptiles include the two local endemic lizards i.e. the coastal dwarf burrowing skink <i>Scelotes vestigifer</i> and Setaro's dwarf chameleon <i>Bradypodion setaroi</i> with the

	<p>endangered gaboon adder <i>Bitis gabonica</i> to be found in the forest leaf litter. Significantly, the park plays host to KwaZulu-Natal's largest population of crocodile <i>Crocodylus niloticus</i>. Five butterfly species are endemic to the park.⁸</p> <p>The site falls largely in an Ecological Support Area, and a small portion of the site falls within a Critical Biodiversity Area (CBA).</p> <p>The quaternary catchment falls within the Wetland Biome and is characterised by Subtropical Freshwater Wetlands: Short Grass/ Sedge Wetlands on the northern boundary which is listed as a Least Threatened ecosystem. The site also has Subtropical Alluvial Vegetation which is Critically Endangered ecosystem. (SANBI BGIS, 2018).</p> <p>The quaternary catchment also falls within the Indian Ocean Coastal Belt Biome, and is characterised by Maputaland Coastal Belt ecosystem, which is an Endangered ecosystem.</p> <p>The site is also characterised by the KwaZulu-Natal Coastal Forest vegetation which is a Forest biome and an Endangered ecosystem.</p>
Aquatic ecology	<p>The quaternary catchment is associated with a moderately modified Present Ecological State (PES) (Grundling, 2014). According to the National Freshwater Ecosystem Priority Area (NFEPA) project, there are numerous wetland classification in the catchment including: Donut wetland, Floodplain wetland, Valleyhead seep, Flat, Channelled valley-bottom wetland and estuaries wetland. Majority of the wetlands belong to the Indian Ocean Coastal Belt Group 1 and is classified as Least threatened.</p>
Land use	<p>The catchment is substantial in size and activities include among others conservation (iSimangaliso Wetland Park), subsistence farming (livestock and crops), commercial farming (limited), tourism and forestry. The iSimangaliso Wetland Park is characterised by large complexes of wetland area that have been rehabilitated for over 15 years. A large extent of these wetland areas was located on forestry land and as such were significantly degraded. Therefore there is a lot of old remnant forestry infrastructure that is still nested within wetland habitat.</p>
<i>iSimangaliso Wetland System</i>	
Location	<p>The wetland system is located within the St Lucia river floodplain and abuts the borders of the iSimangaliso Wetland Park (Aurecon, May 2014). Khulu village is approximately 8 km south west of the site and St Lucia approximately 7km south east of the site.</p>
District and Local municipality	<p>uMkhanyakude District Municipality Mtubatuba Local Municipality</p>
Reason for selection	<p>The iSimangaliso Wetland Park was an obvious priority given that it is one of the outstanding natural wetland and coastal sites of Africa, is a protected area and is recognised as a UNESCO World Heritage Site and contains four RAMSAR sites. A major threat to the park is damage to the hydrology and salinity of the wetland system including reduction in the water supply by the transformation of the upper reaches by agriculture, and historical land uses such as forestry.</p>
Wetland type and size⁹	<p>The iSimangaliso system consist of several wetland types, namely: Estuarine wetland, Indian Ocean Coastal Belt Group 1_Flat Unchannelled valley-bottom wetland, Indian Ocean Coastal Belt Group 1_Depression, Indian Ocean Coastal Belt Group 1_Unchannelled valley-bottom wetland, Indian Ocean Coastal Belt Group 1_Valleyhead seep and Indian Ocean Coastal Belt Group 1_Floodplain wetland.</p> <p>The consolidated size of iSimangaliso wetland is approximately 328 000 ha.</p>

⁸ <http://www.birdlife.org.za/get-involved/join-birdlife-south-africa/item/546-sa128-isimangaliso-wetland-park>

⁹ The approximate size of each wetland system is provided as the intention is to positively influence the entire area through the implementation of smaller interventions. Since the specific interventions required to address specific problems are only determined during Phase 2 site visits, the actual intervention footprints will only be available for inclusion in the rehabilitation plans which will also be made available to registered I&APs for review before being submitted to DEA for approval.

Conservation status (terrestrial and aquatic)	The system is located within a UNESCO World Heritage Site containing four RAMSAR sites, the iSimangaliso Wetland Park is a formal protected area and also falls within the Indian Ocean Coastal Belt Group 1 Floodplain, a NFEPA wetland. The entire iSimangaliso Wetland Park has been mapped as an ecological support area (ESA) and the nearest national protection area expansion strategy (NPAES) focus area is located directly adjacent the iSimangaliso Wetland Park border in the west and south of the catchment (SANBI, 2017). The area is classified as an Important Bird Area (IBA)
Land use	Historically the wetland was cultivated for agricultural purposes, however, this system now falls within a protected area although parts are subject to some level of livestock grazing and reed harvesting (GroundTruth, June 2017).
Wetland problems	Predominant issue is the interference of natural drainage and flow patterns as a result of a number of forestry access tracks that were constructed through the wetland system when the property was previously used for forestry purposes.

6.3 Cultural and Heritage Environment

As the project aims to rehabilitate wetlands threatened by erosion, no impact is expected to occur on cultural or historic features. However, should any such features be identified during the Phase 2 site visit, a heritage specialist will be consulted, and the relevant heritage authorities will be notified.

6.4 Socio-economic Environment

Table 14 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 27 000 jobs and over 3 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 55% 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 14: Economic profile of the Mtubatuba Local Municipality

Population	
Young (0-14)	39.4%
Working age (15-64)	56.2%
Elderly (65+)	4.4%
Dependency ratio	78%
Level of education (aged 20+)	
No schooling	19.9%
Higher education	5.7%
Matric	28.4%
Level of Employment (%)	
Unemployment rate	39%
Youth Unemployment rate	46.9%

Economic Profile (annual)	
No income	13.5%
R1 - R4,800	5.4%
R4,801 - R9,600	10.9%
R9,601 - R19,600	22.5%
R19,601 - R38,200	23%
R38,201 - R76,4000	11.1%
R76,401 - R153,800	6.3%
R153,801 - R307,600	4.4%
R307,601 - R614,400	2.2%
R614,001 - R1,228,800	0.4%
R1,228,801 - R2,457,600	0.2%
R2,457,601+	0.1%

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

The anticipated benefit of the WfWetlands Programme nationally is presented below in **Table 15**.

Table 15: 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 ¹⁰
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%

¹⁰ 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 2000's and 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 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 focus 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 D**), 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 approximately R130 million per annum, has created in the region of 27 000 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				
<ul style="list-style-type: none"> 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 cause 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 protected area of great tourism value) is high. This risk is not however any greater than the risk of a tourist causing the same harm. Adequate site supervision would considerably mitigate this impact.			
	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	Unlikely	
Confidence	Sure	Sure	Sure	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
<ul style="list-style-type: none"> • 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	<p>Construction can result in nuisances to visitors to the park as a result of disturbance to wildlife. Construction nuisances include:</p> <ul style="list-style-type: none"> • Noise from construction activities, personnel and vehicles. • A decrease in wildlife activity in the immediate vicinity of the work. • Non-use of sanitation facilities. • Temporary loss of access to areas due to construction activities. • A greater potential for dust and litter. <p>Given the isolated working environment (i.e. distance from residential communities and public routes outside the Park), the relatively few construction staff on site, and the constant supervision by the project implementer, the above impacts are likely to be of low magnitude.</p> <p>Should the project not be authorised or implemented, no nuisance impacts would occur.</p>			
	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				
<ul style="list-style-type: none"> • 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

Please note that AMAFA issued a decision on the application on 25 June 2019 during the previous application. AMAFA's letter, which includes additional mitigation measures, has been included in the iSimangaliso Rehabilitation Plan for the teams to comply with during the implementation phase should Environmental Authorisation be received. A copy of this decision is also available in **Appendix B4** of this report.

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p>The iSimangaliso Wetland Park is a UNESCO World Heritage site, but is recognised for its natural elements rather than anthropological content. There are no known heritage resources located within the wetlands on the Western Shores where the rehabilitation is planned (or where rehabilitation work has been undertaken in the wetland in previous years).</p> <p>Given the low likelihood of heritage sites being disturbed and provided that construction is immediately stopped should a heritage resource be encountered then the magnitude of this impact should be low.</p> <p>Should the interventions not be implemented, natural weathering would still occur. However, given the low potential of heritage resources in the area, this is anticipated to remain neutral for the no-go alternative.</p>			
	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	VERY LOW (-)	NEUTRAL	NEUTRAL	
Probability	Definite	Definite	Definite	
Confidence	Sure	Sure	Sure	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
<ul style="list-style-type: none"> Should any heritage resource or suspected resources be identified during the Phase 2 planning site visit, a suitably qualified heritage specialist shall be consulted. Should any artefact or suspected artefact (including fossils and grave sites), or any site of cultural significance be encountered during construction, then the Contractor must immediately stop work in the vicinity of the artefact and alert the relevant authorities. The area around the discovery shall be cordoned off until such time that work is authorised to proceed. 				

7.1.5 Worker safety

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p>The biggest impact to worker safety is potential dangerous encounters with wildlife such as hippopotamus, buffalo, elephant, crocodile, rhinoceros, and snakes.</p> <p>Alien clearing requires very specific training and involves high risk equipment such as chainsaws. It sometimes involves working with large trees and therefore extreme caution needs to be exercised from falling branches/trunks.</p> <p>If the interventions are not implemented, the construction workers will not be affected by the dangers associated with working within the selected wetlands.</p>			
	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	HIGH (-)	MEDIUM (-)	NEUTRAL	
Probability	Definite	Definite	Definite	
Confidence	Certain	Certain	Certain	
Reversibility	Irreversible	Irreversible	Irreversible	
Mitigation measures				
<ul style="list-style-type: none"> 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. Trained and armed game guards must accompany teams on site at all times. 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	<p><u>Habitat disturbance</u> 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.</p> <p><u>Disturbance of protected species</u> 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.</p> <p><u>Alien species invasion</u> 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.</p> <p>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.</p>				
	Pre-Mitigation		Post-Mitigation		No-go Alternative
	Type	Negative	Negative	Negative	Negative
	Extent	Site Specific	Site Specific	Site Specific	Site Specific
	Magnitude	Medium	Low	Low	Low
Duration	Long-term	Long-term	Long-term	Long-term	
Significance	MEDIUM (-)	LOW (-)	MEDIUM (-)	MEDIUM (-)	
Probability	Definite	Definite	Likely	Likely	
Confidence	Certain	Certain	Sure	Sure	
Reversibility	Irreversible	Irreversible	Irreversible	Irreversible	
Mitigation measures					
<ul style="list-style-type: none"> Should any protected species need to be removed or relocated, then 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	<p><u>Temporary alteration to stream flow patterns</u></p> <p>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.</p>			
	<p><u>Sedimentation</u></p> <p>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.</p>			
	<p><u>Pollution of water-courses</u></p> <p>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.</p>			
	<p><u>Disturbance of wetland vegetation and stream banks</u></p> <p>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.</p>			
	<p>Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts would include desiccation, erosion, channel incision, etc.</p>			
	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				
<ul style="list-style-type: none"> • 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 Work within conservation areas

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	The wetlands fall within a conservation area which requires a more astute attitude on the part of the implementers to the surrounding environment and the possible negative impacts they can have on it.			
	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				
	<ul style="list-style-type: none"> • Close cooperation is required with the conservation authorities. Any specific requirements need to be included in the applicable wetland rehabilitation plan. • Implement the provisions of the EMPr. 			

7.1.9 Working in peatlands

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p>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 even though the proposed rehabilitation interventions require the removal of redundant roads that are crossing peat wetlands, peat and peat soils will not be extracted or removed during implementation.</p> <p>By removing the roads, natural flow patterns will be restored, protecting the peatlands from drying out. Once dried out, peatlands become hydrophobic and prone to fires that are very difficult to manage and stop.</p>			
	Pre-Mitigation	Post-Mitigation	No-go Alternative	
Type	Negative	Negative	Negative	
Extent	Site Specific	Site Specific	Site Specific	
Magnitude	Medium	Low	High	
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.

7.2 Operational Phase

7.2.1 Increased water storage and reduced treatment costs

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p>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.</p> <p>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.</p>			
	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				
<ul style="list-style-type: none"> • No mitigation measures are proposed 				

7.2.2 Reduced soil erosion

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p>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.</p> <p>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.</p>			
	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				
<ul style="list-style-type: none"> No mitigation measures are proposed 				

7.2.3 Employment opportunities

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p>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.</p> <p>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 <i>status quo</i>.</p>			
	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				
<ul style="list-style-type: none"> No mitigation measures are proposed 				

7.2.4 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				
<ul style="list-style-type: none"> 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 objectives¹¹ and the EPWP requirements would not be realised. No mitigation measures are proposed. 				

¹¹ Wetland conservation and poverty reduction through job creation and skills.

7.2.5 Flora and fauna

Phase	Pre-Construction	Construction	Operational	Decommissioning	
Impact description	<p><u>Improved habitat</u> Improving the wetland area through rehabilitation will result in an increase in quality habitat for wetland-dependent species. This is a positive impact, especially in light of the fact that the wetlands are utilised by the unique and diverse fauna and flora.</p> <p><u>Increased biodiversity</u> A large proportion of the natural vegetation in the greater area has already been lost to forestry and agriculture. Restoring wetland habitat will help to increase the species richness of the overall area by encouraging the re-establishment of wetland species.</p> <p><u>Change in species composition</u> 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.</p> <p>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.</p>				
	Pre-Mitigation		Post-Mitigation		No-go Alternative
	Type	Positive	Positive	Positive	Negative
	Extent	Site Specific	Site Specific	Site Specific	Site Specific
Magnitude	Medium	Low	Medium	Medium	
Duration	Long-term	Long-term	Long-term	Long-term	
Significance	MEDIUM (+)	MEDIUM (+)	MEDIUM (+)	MEDIUM (-)	
Probability	Definite	Definite	Definite	Definite	
Confidence	Certain	Certain	Certain	Certain	
Reversibility	Irreversible	Irreversible	Irreversible	Irreversible	
Mitigation measures					
<ul style="list-style-type: none"> 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. 					

7.2.6 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	Negative	Negative	Negative	
Extent	Local	Local	International	
Magnitude	Medium	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				
<ul style="list-style-type: none"> 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. 				

7.3 No-Go Option

Phase	Pre-Construction	Construction	Operational	Decommissioning
Impact description	<p><u>Ecosystem functioning</u> Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts include desiccation, erosion, channel incision etc.</p> <p><u>Flora and Fauna</u> 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.</p> <p><u>Socio-economic/ Employment</u> The no-go alternative would mean that the positive impacts identified above would not be realised.</p> <p><u>Changes in land use</u> Potential positive impacts associated with increased wetland area and improved grazing conditions will 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.</p> <p><u>Reduced water storage and treatment costs</u> 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.</p>			

	<p><u>Reduced soil erosion</u></p> <p>The no-go alternative would mean that the positive impacts identified above would not be realised. Erosion would continue and even accelerate over time, reducing the agricultural potential of farms, as well as increasing damages to properties and infrastructure during flood events.</p> <p><u>Flood attenuation</u></p> <p>As mentioned before, wetlands function as a buffer during flood events by reducing the flow velocity of floods and retaining some of the water. Should the wetlands continue to degrade this important function/ service would be reduced in and/or removed from the catchment and the negative impact of floodwater would increase significantly, e.g. the risk of damage to road infrastructure would increase, as well as flooding of towns/ dwellings located in close proximity to watercourses and/or wetlands.</p>	
	Pre-Mitigation	Post-Mitigation
Type	Negative	Negative
Extent	Site Specific	Site Specific
Magnitude	Medium	Low
Duration	Long-term	Long-term
Significance	HIGH (-)¹²	HIGH (-)
	MEDIUM (-)¹³	MEDIUM (-)
Probability	Definite	Definite
Confidence	Certain	Certain
Reversibility	Irreversible	Irreversible
Mitigation measures		
<ul style="list-style-type: none"> Note: If the no-go alternative is pursued, then the operational-related impacts will not be realised. However, the overall impact of the no-go option on the aquatic ecosystem is likely to be negative, especially in the long-term as rehabilitation activities will not take place and the existing problems (such as erosion) in the wetland will continue. Over time these existing problems are likely to have a greater negative impact than the short-term and fairly minor construction related impacts. 		

¹² Significance for ecosystem functioning

¹³ Significance for fauna and flora, socio-economic/employment, changes in land use, reduced storage and treatment costs, reduced soil erosion and public safety.

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 EMP. Although iSimangaliso is a world heritage site, excavations proposed in this heritage site are intended to improve the ecological functioning of the wetland, thereby promoting rather than impacting on the three criteria for which the heritage site was chosen, therefore the anticipated impact on heritage resources is **Very Low (-)** which can be mitigated to **Neutral**. 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 16**.

Table 16: 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 (+)	Medium (-) Neutral
Increased awareness of wetland importance	Medium (+)	High (+)	Medium (-)
Fire risk	Medium (-)	Low (-)	Neutral
Nuisance impacts	Low (-)	Very Low (-)	Neutral
Impact on heritage resources	Very Low (-)	Neutral	Neutral
Worker safety	High (-)	Medium (-)	Neutral
Flora and fauna	Medium (-)	Low (-)	Medium (-)
Aquatic ecosystem impacts	Medium (-)	Low (-)	Medium (-)
Work within conservation areas	Medium (-)	Low (-)	Neutral
Working in peatlands	Medium (-)	Low (-)	High (-)
Operational Phase: Description of Impact			
Changes in land use	Low (+)	Medium (+)	Medium (-)
	Medium (-)	Low (-)	
Increased water storage and reduced treatment costs	Medium (+)	Medium (+)	Medium (-)
Reduced soil erosion	Medium (+)	Medium (+)	Medium (-)
Employment	Medium (+)	Medium (+)	Neutral
Ecosystem functioning	Medium (+)	High (+)	High (-)
Flora and fauna	Medium (+)	Medium (+)	Medium (-)
Working in peatlands	Low (+)	Medium (+)	High (-)

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 REFERENCES LIST

Heritage & Tours 2018. St Lucia, Kwazulu-Natal, South Africa. [ONLINE]

Available at: <https://stluciasouthafrica.com/iSimangaliso-wetland-park/> [Accessed 16 January 2019]

Heritage & Tours 2018. St Lucia, Kwazulu-Natal, South Africa. [ONLINE]

Available at: <https://iSimangaliso.com/useful-information/climate/>

http://www.shakabarker.co.za/Wetland_Tours

<https://whc.unesco.org/en/list/914>

Mtubatuba Local Municipality. Five year plan. Integrated Development Plan, 2013/2014 review.

Wetland Status Quo Report: Maputaland and iSimangaliso Wetland Park. Prepared by Ixhaphozi Enviro Services. Author: Piet-Louis Grundling

Mucina, L. and Rutherford, M.C. (eds). 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. SANBI.

SANBI Biodiversity GIS. 2018. *BGIS Map Viewer KwaZulu-Natal Biodiversity Conservation Plan*. [ONLINE]

Available at: <http://bgis.sanbi.org>. [Accessed 16 January 2019]

Working for Wetlands. 2014. Final Basic Assessment Report: Kwazulu-Natal Province, Aurecon South Africa (Pty) Ltd. Report No: 8807a, DEA ref: 14/12/16/3/3/1/1133. April 2014

Working for Wetlands. 2017. Maputaland Phase 1: Wetland Rehabilitation Planning Report. Prepared GroundTruth, on behalf of Aurecon South Africa (Pty) Ltd as part of the planning phase for the Working for Wetlands Rehabilitation Programme. Report No. GTW561-KZN-Maputaland-PH1-2017.

Appendix A

ENGINEERING BOOKLET

Working for Wetlands: Examples of Interventions



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Contents

1	INTRODUCTION	2
2	PROCESS FOR SELECTION	2
3	TYPICAL INTERVENTIONS	3
3.1	Weirs	3
3.1.1	Concrete weirs	3
3.1.2	Stone masonry weirs	3
3.1.3	Gabion weirs	3
3.2	Earthworks	4
3.2.1	Cut and fill	4
3.2.2	Earth berms	4
3.2.3	Earth plugs	4
3.2.4	Dam walls	4
3.2.5	Roads	4
3.3	Rock packs	4
3.3.1	Rock packs (in channel)	4
3.3.2	Rock packs (on slope)	5
3.4	Road crossings	5
3.5	Biodegradable or natural soil retention systems	5
3.5.1	Brush packs	5
3.5.2	Ecologs	5
3.5.3	MacMat-R	5
3.5.4	Geocells lining	6
3.5.5	Silt fence	6
3.6	Vegetation management	6
3.6.1	Revegetation	6
3.6.2	Alien invasive plant clearing	6
3.7	Alternative measures	6

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1 INTRODUCTION

Each year during a Phase 2 planning site visit, a team consisting of an Engineer, a Wetland Specialist, the Working for Wetlands Provincial Coordinator and an Environmental Assessment Practitioner (EAP) plan a series of interventions to rehabilitate a priority wetland. These interventions are selected in a methodological manner, to specifically use the knowledge of the catchment to address the identified wetland problems.

The purpose of this document is to provide an overview of the typical interventions that are designed for the Working for Wetlands Programme. The site-specific details and drawings of the proposed interventions for each planning year will be included in the project rehabilitation plans, which shall be approved by the Department of Environmental Affairs prior to any construction commencing.

2 PROCESS FOR SELECTION

The choice of the combination of the most appropriate interventions necessary to achieve a certain rehabilitation objective is a rigorous exercise, and the decision is informed by several criteria.

- **Environmental** – E.g. Hydrology, geology and soils, seasonal influences, vegetation and site-specific constraints;
- **Engineering** – E.g. Biophysical aspects, risk and liability, construction material selection;
- **Social** – E.g. Labour quota requirements, health and safety, availability of materials, skills levels and opportunity for skills development; and
- **Rehabilitation objective(s)** – E.g. Stabilisation of head-cuts and erosion gullies, elevation of water table, eco-services, biodiversity value, sediment trapping eradication of problem species (among others), etc.

From these criteria, the choice is then made to implement either a “hard” or “soft” intervention. Hard engineering intervention may include, for example:

- 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 are often used together with the hard engineering interventions and could include, for example:

- 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

Typical interventions are further described in the following section, and typical engineering drawings are included in Appendix A1.

3 TYPICAL INTERVENTIONS

3.1 Weirs

A dam-type structure placed across a watercourse. Weirs are used to address head-cut and/ or channel erosion by trapping sediment and raising the local water table to encourage overland flow (i.e. rewetting a wetland).

3.1.1 Concrete weirs

Concrete is used to construct weirs in high energy areas, such as active headcuts. They are impermeable and effectively trap sediment as well as water, reducing the flow velocity. For this reason, they are also used to raise the local water table. Selection of this intervention depends on the availability of appropriate foundation material and the volume of water moving through the wetland catchment. The construction of concrete weirs also provides an opportunity for skills transfer and development.



3.1.2 Stone masonry weirs

Stone masonry structures are built using an option similar to brickwork. Individual stones are used to build a solid structure using a mixture of cement and sand as the bonding mortar between them. The use of these, as any other hard structure, should be considered in cases where the desired outcomes require the strength of concrete, while at the same time a rougher finish to the surface of the structure or a more natural appearance is desired.



3.1.3 Gabion weirs

Gabion weirs comprise packed stone or rock in wire baskets. The configuration of the gabion baskets can result in the structure performing a similar function to a concrete or stone masonry weir in trapping sediment and reducing flow-velocities. Although gabion basket is permeable and allows for a measure of water to pass through the structure. Vegetation and other biota can also establish in/around the habitat they create. The construction of gabion weirs is more labour intensive than concrete weirs and thus favoured where site conditions are suitable. Some negative aspects associated with gabions: rock is not always readily available, they are vulnerable to vandalism and corrosive elements in some waters; and trampling by cattle and humans (this can be alleviated by concrete capping the gabions).



3.2 Earthworks

Earthworks interventions are characterised by their use of earth (soil or rock) that is moved to form features that will restore natural overland flow. All earthworks have a high labour requirement for implementation and are a common intervention in the Working for Wetlands Programme.

3.2.1 Cut and fill

Cut and fill is applicable where earth can be moved from one place to another to make the ground more level and restore natural overland flow. An example is in areas which have been impacted by ridge/ furrow farming and involve cutting the “ridges” and filling the “furrows” wherever possible.

3.2.2 Earth berms

Earth berms are typically an earth mound used to divert or retain water flow. Berms can be specified across a road to prevent water channelling along the road, or can be used to divert polluted water away from a wetland. Existing berms can also be removed in areas already impacted by farming which have used berms to divert or contain water. Berms are usually considered suitable in low flow areas, but can be susceptible to cattle trampling if not properly vegetated or capped with rocks.



3.2.3 Earth plugs

Similar to earth berms (3.2.2), plugs are suitable for low flow areas and involve the plugging of channel floors to reduce the water velocity.



3.2.4 Dam walls

Earthen dam walls in areas used for farming can be removed / breached to restore natural flow along a channel.

3.2.5 Roads

Old roads can cause impacts within a wetland and can be removed to restore natural overland flow.

3.3 Rock packs

The packing of rocks within a channel or across a slope can dissipate energy, slow down water velocity and trap sediment. Rock packing is a labour-intensive practice which is favourable for employment purposes.

3.3.1 Rock packs (in channel)

Rock packs in channel are used as sediment traps which slow down flow velocities and prevent erosion in the upstream section of the channel. A filter material such as geofabric is typically incorporated into the rock pack to prevent fine material from moving through it.



3.3.2 Rock packs (on slope)

When placed on a slope, rock packs are used to slow run-off and trap sediment to enhance vegetation re-growth.

3.4 Road crossings

Road crossings can address deep tracks and numerous channels which form when vehicles travel through a frequently wet area or on a steep slope. These involve either concrete and/or reno mattress strips being laid down as tracks for the vehicles. Reno specifically allows for the flow of water across the tracks which is applicable specifically in low lying areas of a wetland.



3.5 Biodegradable or natural soil retention systems

Sometimes biodegradable or natural soil retention systems are used to serve as sediment traps. These allow natural vegetation to establish, and in doing so supports the stabilisation of an area.

3.5.1 Brush packs

Brush packing involves the placing of branches and heavy vegetation on a relatively flat eroded surface to slow down water velocities which in turn promotes sedimentation and increased opportunity for vegetation to re-establish itself. The placing of thorny tree species, such as *Acacia*, also discourages animals from using the area as a pathway.



3.5.2 Ecologs

Ecologs are tightly wrapped cylinders of fibre held together with mesh wire. The fibre is typically derived from coconuts and is bio-degradable. Ecologs are used to stabilise minor watercourses with a relatively minor change in level from the top to the bottom of the slope. They act as small sediment traps and allow natural vegetation to establish in the fibre.



3.5.3 MacMat-R

MacMat-R is a mesh reinforced three-dimensional geomat that is applied for erosion control. The three-dimensional mesh structure traps sediment which in turn promotes the re-establishment of vegetation. MacMat-R is typically applied on a wet exposed face which has a gentle slope across it.



3.5.4 Geocells lining

The geocells are used for erosion control, soil stabilization and channel protection. This can be done using concrete or earth infill. The concrete infill is suitable for high inflow channels and earth infill is usually used on low inflow channels.



3.5.5 Silt fence

This intervention reduces and stops erosion in dongas with small catchment areas by means of cheap and easily constructed structure. The structure requires vertical posts to be knocked into the ground, followed by netting being draped across and tied firmly to the vertical posts.



3.6 Vegetation management

The presence of alien invasive plants, or lack of vegetation cover can have significant impacts on riparian areas as well as the flow of water instream.

3.6.1 Revegetation

Revegetation of degraded areas within wetlands using appropriate wetland and riparian plant species can improve the hydrological integrity of the system by stabilising soils and will re-establishing wetland habitat. For each site-specific intervention, the Wetland Specialist will recommend the measures required to revegetate the area (e.g. species, planting requirements, monitoring, etc.).

3.6.2 Alien invasive plant clearing

Alien invasive plants affect the ecological functioning of wetlands and therefore clearing is an important part of wetland rehabilitation. Clearing is undertaken in conjunction with the Working for Water Programme which also prioritise job creation and upliftment of local communities.



3.7 Alternative measures

In some previous occurrences, alternative measures that add value to the use of the wetland system have been included in the Working for Wetlands Programme, such as:

- Fencing;
- Boardwalks;
- Bird hides;
- Floating wetlands; and
- Fish ladders.

However, as these interventions are generally an exception rather than the rule, more information will be provided on them in the reports in which they are planned for.



WORKING FOR WETLANDS

Guideline on Generic Intervention Structures for Wetland Rehabilitation Purposes



SOFT OPTIONS

DRAWING No. SHEET No. DRAWING DESCRIPTION

109664-STD-01	Sheet 1 of 6	LIST OF DETAILS
109664-STD-01	Sheet 2 of 6	ECOLOGS
109664-STD-01	Sheet 3 of 6	ROCK PACKS
109664-STD-01	Sheet 4 of 6	ROAD STRIPS
109664-STD-01	Sheet 5 of 6	BERMS
109664-STD-01	Sheet 6 of 6	MACMAT / MACMAT-R

NOTES

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- SOIL FOR BERMS AND BACKFILL TO BE COMPACTED IN 100mm LAYERS AT OPTIMUM WATER CONTENT

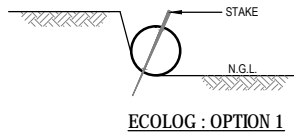
DISPERSIVE SOILS:
(ONLY APPLICABLE IN AREAS WITH DISPERSIVE SOILS):

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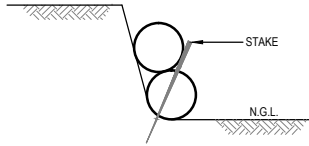
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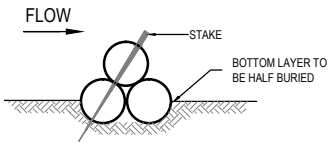
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					A.MNYAKA		ENGINEER	DESCRIPTION	LIST OF DETAILS
					DESIGNED		DATE	DRAWING No.	109664 - STD-01
					D.TOWNSHEND				1 OF 6
					VERIFIED				REV
					F.NAGDI				A



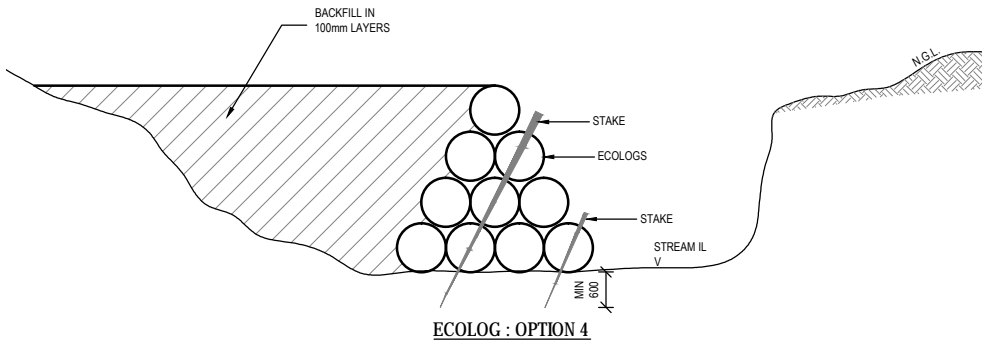
ECOLOG : OPTION 1



ECOLOG : OPTION 2



ECOLOG : OPTION 3



ECOLOG : OPTION 4

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ECOLOGS:

- WOODEN PEGS USED TO ANCHOR ECOLOGS ARE TO BE NO LESS THAN 40mm DIA AND 1000mm IN LENGTH.
- PEGS SHOULD PROTRUDE NO LESS THAN 60mm FROM THE SOIL @ 1000 c/c.

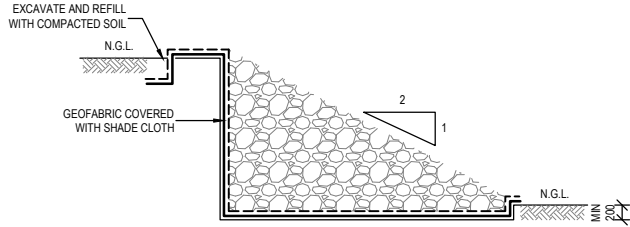
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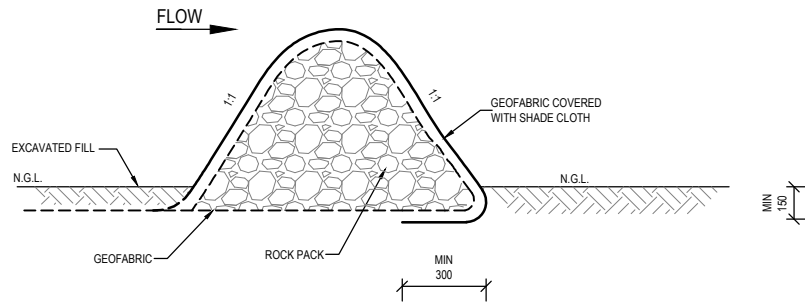
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NOT TO SCALE	A4
DRAWN	
A.MNYAKA	
DESIGNED	
D.TOWNSHEND	
VERIFIED	
F.NAGDI	

PRELIMINARY	
NOT FOR CONSTRUCTION	
APPROVED	DATE
ENGINEER	

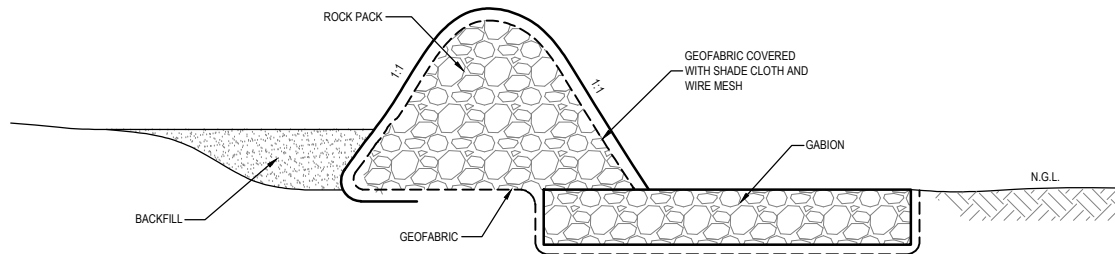
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TITLE	STANDARTD DETAILS
DESCRIPTION	ECOLOGS
DRAWING No.	109664 - STD-01
	2 OF 6
	REV A



ROCK PACK : OPTION 1



ROCK PACK : OPTION 2



ROCK PACK : OPTION 3

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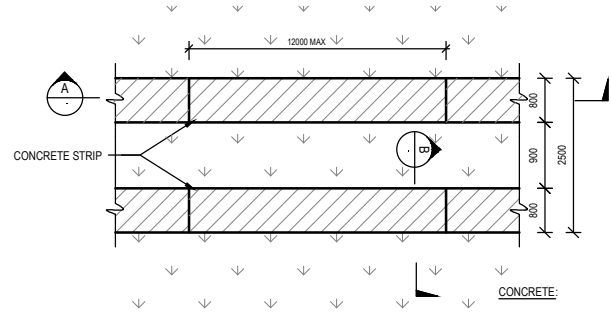
- ROCK PACKS:**
- 100mm -200mm STONE TO BE USED IN ROCK PACKS
 - STONE MUST BE NON-FRILABLE AND INSOLUBLE, e.g. GRANITE, BASALT, LIMESTONE OR SANDSTONE
 - ROCK PACKS PLACED ACROSS A STREAM TO BE TIED MIN 1m INTO EACH BANK.

CLIENT	REV	DATE	REVISION DETAILS	APPROVED
Working for Wetlands	A	29/10/2013	ISSUED FOR INFORMATION	D.TOWNSHEND

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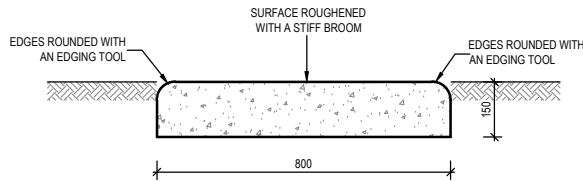
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PROJECT	TITLE	DESCRIPTION	DRAWING No.	REV
WORKING FOR WETLANDS	STANDARTD DETAILS	ROCK PACKS	109664 - STD-01	A
			3 OF 6	

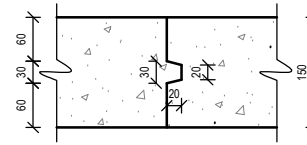


PLAN OF CONCRETE STRIP

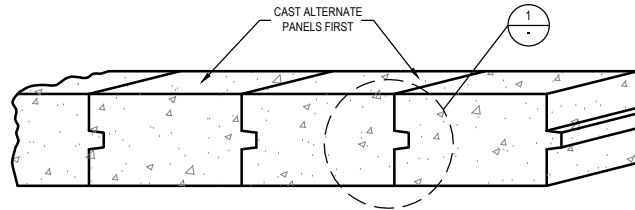
1. ALL BUTTRESS WEIR STRUCTURES TO USE MIN 20MPa CONCRETE MIX:
 1 BAG CEMENT
 95L SAND
 100L STONE
 27L WATER



SECTION B (CONCRETE STRIP)
1:20



DETAIL 1 (SCHEMATIC VIEW OF JOINT BETWEEN PANELS)
1:10



SECTION A (SCHEMATIC VIEW OF JOINT BETWEEN PANELS)
1:10

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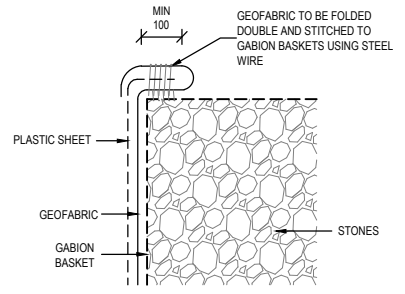
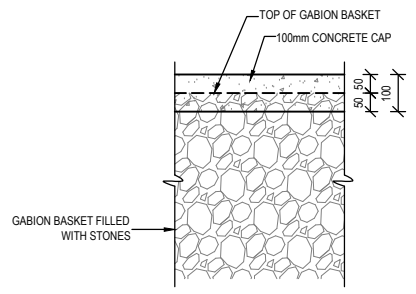
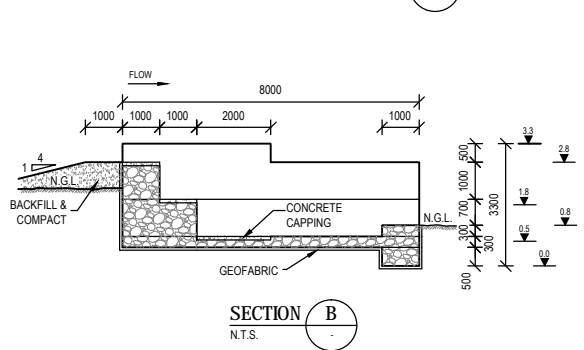
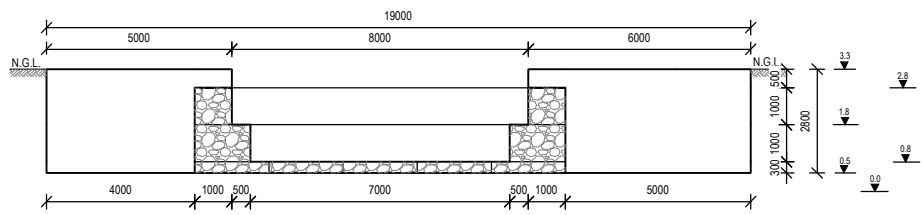
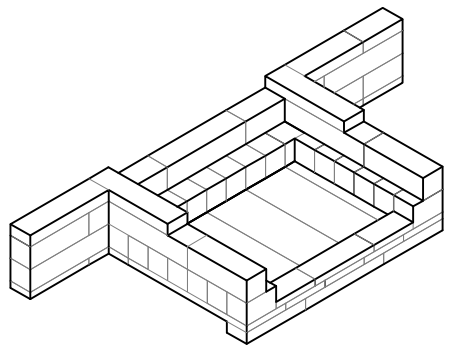
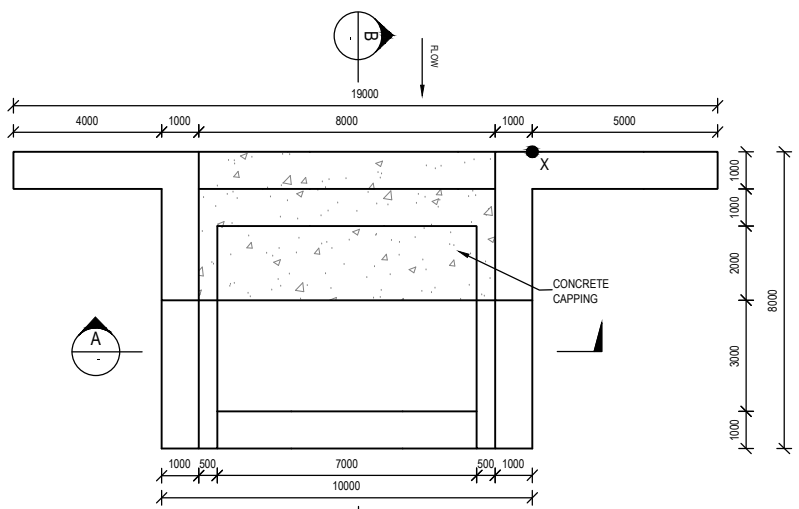
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					DRAWN		APPROVED	TITLE	STANDARTD DETAILS
					A.MNYAKA		ENGINEER	DESCRIPTION	ROAD STRIPS
					DESIGNED		DATE	DRAWING No.	109664 - STD-01
					D.TOWNSHEND				4 OF 6
					VERIFIED				REV
					F.NAGDI				A



HARD OPTIONS

NOTE: CONFIGURATION AND DIMENSIONS OF STRUCTURE VARY ACCORDING TO SITE CONDITIONS



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- EARTHWORKS/ EARTH STRUCTURES :**
- ALL CUT AND FILL SLOPES TO BE NOT STEEPER THAN 1:4, UNLESS OTHERWISE SPECIFIED.
 - ALL EXPOSED DISTURBED SURFACES TO BE REVEGETATED, UNLESS OTHERWISE SPECIFIED. 100mm OF TOP SOIL TO COVER BERM. REVEGETATION TO BE UNDERTAKEN AT SUITABLE TIMING OF YEAR TO IMPROVE CHANCES OF TAKING.
 - SOIL FOR BERMS AND BACKFILL TO BE COMPACTED IN 100mm LAYERS AT OPTIMUM WATER CONTENT
- DISPERSIVE SOILS:**
(ONLY APPLICABLE IN AREAS WITH DISPERSIVE SOILS):
- IT IS CRITICAL TO ENSURE THAT THE FOUNDING SOIL NEVER DRIES OUT AND REMAINS AS UNDISTURBED AS POSSIBLE. THE BASE OF THE INTERVENTION SHOULD THEREFORE BE CONSTRUCTED AS SOON AS A PORTION OF EXCAVATION HAS BEEN FINISHED.
 - FILL MATERIAL TO BE GOOD QUALITY, WELL-GRADED GRAVEL OR CLAY (NOT DISPERSIVE CLAY FOUND IN PARTS OF THE FLOOD PLAIN).
 - ALL MATERIAL THAT IS EXCAVATED FROM THIS SITE AND RE-USED FOR BACKFILL SHALL BE WELL MIXED WITH 100kg OF LIME PER CUBIC METRE OF SOIL, AND PLACED AND COMPACTED AT OPTIMUM MOISTURE CONTENT.

- GABIIONS:**
- GABION BASKETS AND RENO MATTRESSES TO BE CONSTRUCTED OF DOUBLE TWISTED, HEXAGONAL, PVC COATED, GALVANISED WIRE MESH OF NOMINAL DIAMETER 80mm MESH, WITH 3.4mm o/d FRAME WIRE AND 2.7mm o/d MESH WIRE WITH PARTITIONS AT 1m CENTRES.
 - GEOFABRIC TO BE NON-WOVEN, NOT LESS THAN 195g/m², e.g. AG200.
 - 100mm - 200mm STONE TO BE USED IN ALL GABIIONS AND RENO MATTRESSES. STONE FILL MUST BE NON-FRIABLE & INSOLUBLE e.g. GRANITE, BASALT, LIMESTONE OR SANDSTONE.
 - ALL GABIIONS AND RENO MATTRESSES TO COMPLY WITH SANS-1200-DK.
 - CONCRETE CAPPING TO BE MINIMUM 15MPa & MIX:
1 BAG CEMENT
125L SAND
120L STONE
30L WATER
 - GEOFABRIC TO BE INSERTED AT ALL SOIL/MESH INTERFACES UNLESS OTHERWISE SPECIFIED.
 - GEOFABRIC TO HAVE WEEPHOLES PUNCHED THROUGH USING 10mm STEEL ROD AT APPROXIMATELY 4 HOLES/m².
 - 250µ PLASTIC SHEET TO BE USED ON THE UPSTREAM FACE OF ALL STRUCTURES UNLESS OTHERWISE SPECIFIED

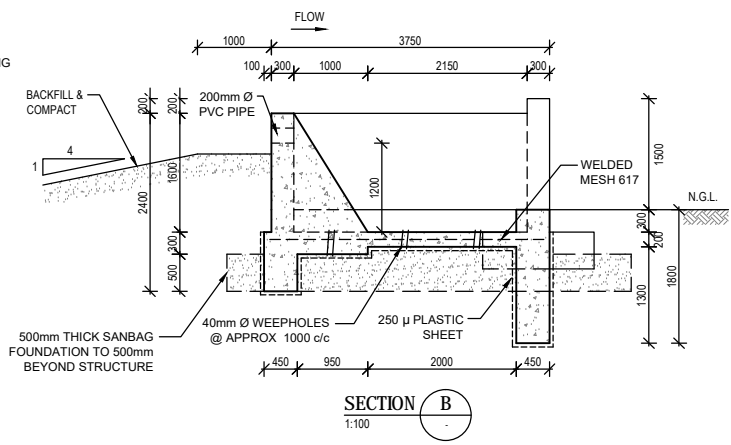
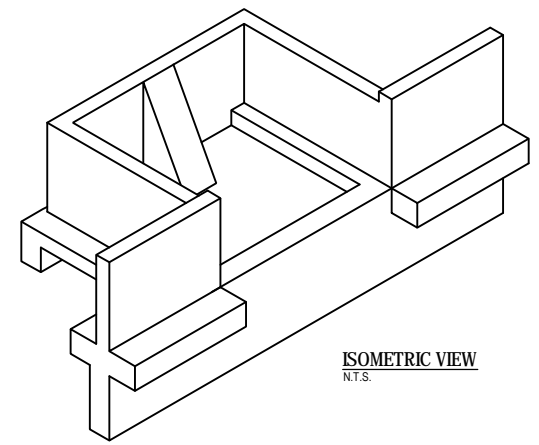
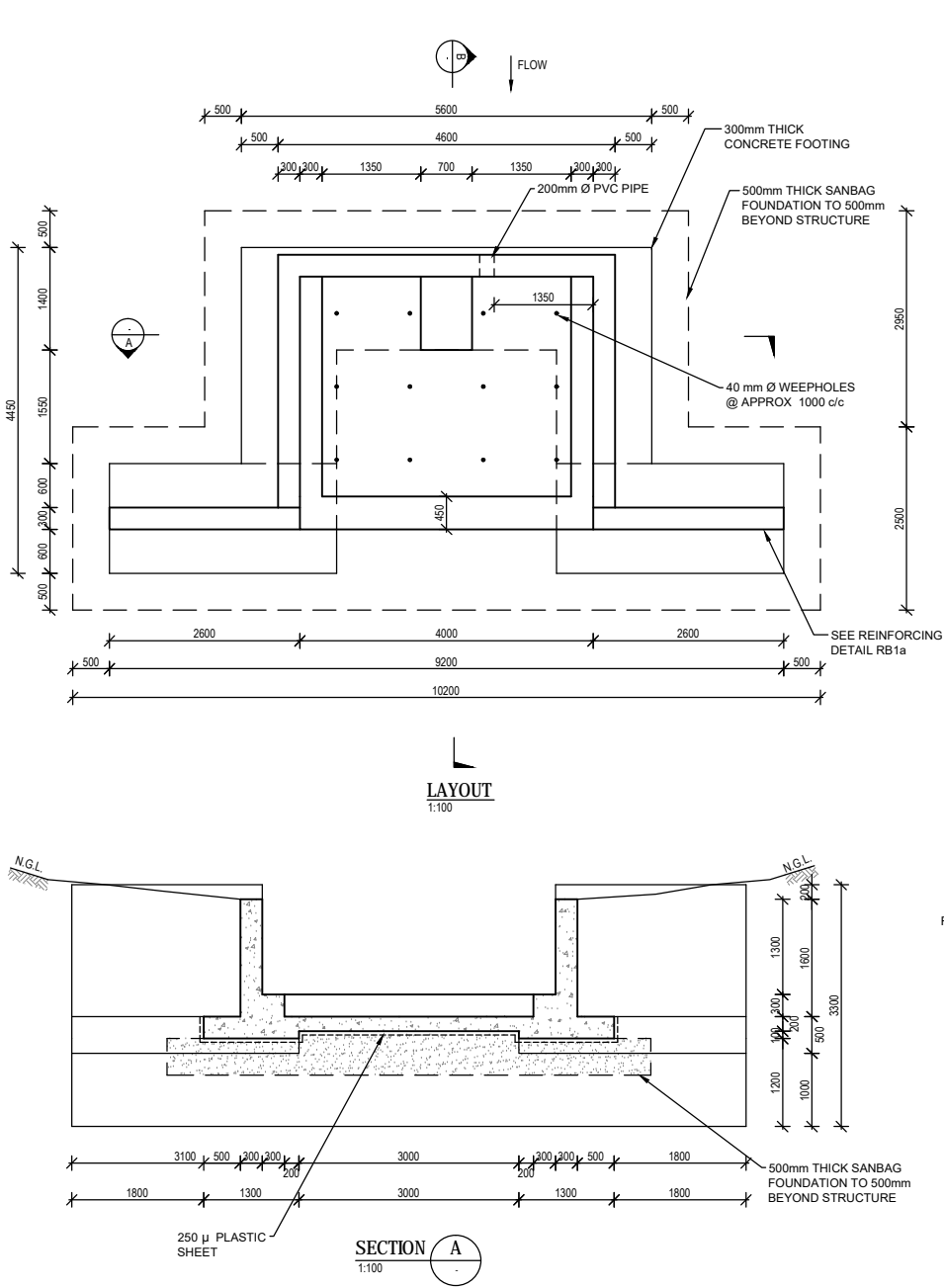


CLIENT	REV	DATE	REVISION DETAILS	APPROVED	SCALE	SIZE
Working for Wetlands	A	06/11/2013	ISSUED FOR INFORMATION	D.TOWNSHEND	NOT TO SCALE	A4
					DRAWN	
					A.MNYAKA	
					DESIGNED	
					D.TOWNSHEND	
					VERIFIED	
					F.NAGDI	

PRELIMINARY NOT FOR CONSTRUCTION	
APPROVED	DATE
ENGINEER	

PROJECT	WORKING FOR WETLANDS
PROVINCE	
INTERVENTION DESCRIPTION	TYPICAL : GABION WEIR
DRAWING No.	109664 - STD - 20

Plot Date: 12/11/2013 8:56:39 AM Office: ZACP1 File Name: P:\PROJECTS\109664 - WORKING - WETLANDS PLAN 2014-2017\ENGINEERING\03 PRI DEL'Z REFERENCE\DRAWING TEMPLATE\STDARD DE TAILLIS\109664-STD-2.DWG



NOTE: CONFIGURATION AND DIMENSIONS OF STRUCTURE VARY ACCORDING TO SITE CONDITIONS

- NOTES**
- AURECON ACCEPTS RESPONSIBILITY FOR THE ENGINEERING DESIGN TO THE EXTENT THAT THIS IS BASED ON AVAILABLE INFORMATION. THE AVAILABLE INFORMATION IS LIMITED TO WHAT COULD BE INTERPRETED DURING A SINGLE SITE VISIT OF NO LONGER THAN A FEW HOURS. NO GEOTECHNICAL, TOPOGRAPHICAL, GEOMORPHOLOGIC AND OTHER ENGINEERING RELATED SURVEYS HAVE BEEN UNDERTAKEN TO INFORM THE DESIGN. THIS IS NON-STANDARD ENGINEERING PRACTICE AND THEREFORE AURECON IS INDEMNIFIED BY THE CLIENT AND DOES NOT ACCEPT RESPONSIBILITY FOR THE ASSOCIATED RISK OF FAILURE FROM THE ABOVE LIMITATIONS OR ANY DAMAGES THAT MAY OCCUR.
 - AURECON IS INDEMNIFIED AGAINST ANY ASSOCIATED DAMAGES AND ACCEPTS NO LIABILITY ASSOCIATED WITH THE CONSTRUCTION AND IMPLEMENTATION OF ENGINEERING INTERVENTIONS DUE TO AURECON HAVING LIMITED CONTACT WITH THE IMPLEMENTER DURING THE CONSTRUCTION PHASE RESULTING IN OUR INABILITY TO DILIGENTLY SUPERVISE AND ASSESS ANY PROGRESS.

- EARTHWORKS/ EARTH STRUCTURES :**
- ALL CUT AND FILL SLOPES TO BE NOT STEEPER THAN 1:4, UNLESS OTHERWISE SPECIFIED.
 - ALL EXPOSED DISTURBED SURFACES TO BE REVEGETATED, UNLESS OTHERWISE SPECIFIED. 100mm OF TOP SOIL TO COVER BERM. REVEGETATION TO BE UNDERTAKEN AT SUITABLE TIMING OF YEAR TO IMPROVE CHANCES OF TAKING.
 - SOIL FOR BERMS AND BACKFILL TO BE COMPACTED IN 100mm LAYERS AT OPTIMUM WATER CONTENT.
- DISPERSIVE SOILS:**
(ONLY APPLICABLE IN AREAS WITH DISPERSIVE SOILS):
- IT IS CRITICAL TO ENSURE THAT THE FOUNDING SOIL NEVER DRIES OUT AND REMAINS AS UNDISTURBED AS POSSIBLE. THE BASE OF THE INTERVENTION SHOULD THEREFORE BE CONSTRUCTED AS SOON AS A PORTION OF EXCAVATION HAS BEEN FINISHED.
 - FILL MATERIAL TO BE GOOD QUALITY, WELL-GRADED GRAVEL OR CLAY (NOT DISPERSIVE CLAY FOUND IN PARTS OF THE FLOOD PLAIN).
 - ALL MATERIAL THAT IS EXCAVATED FROM THIS SITE AND RE-USED FOR BACKFILL SHALL BE WELL MIXED WITH 100kg OF LIME PER CUBIC METRE OF SOIL, AND PLACED AND COMPACTED AT OPTIMUM MOISTURE CONTENT.

- CONCRETE:**
- NOMINAL SIZE OF STONE AGGREGATE TO BE SIZE 19-26mm.
 - ALL CONCRETE TO BE MIN 30MPa CONCRETE MIX:
1 BAG CEMENT
65L SAND
85L STONE
21L WATER
 - CONCRETE TO BE PLACED IN 300mm LAYERS AND VIBRATED USING A CONCRETE VIBRATOR.
 - MIN 50mm COVER REQUIRED ON ALL CONCRETE REINFORCING AND MESH UNLESS OTHERWISE SPECIFIED.
 - 250µ PLASTIC SHEET TO BE PLACED UNDER STRUCTURE.
 - ALL CONCRETE WALLS TO BE FULLY SUPPORTED UNTIL THEY ARE BACKFILLED TO THE DESIGNED LEVEL.
 - ALL MESH REINFORCING TO HAVE 500mm OVERLAPS BETWEEN SHEETS
 - BUTRESSES AND WALLS TO BE CAST MONOLITHICALLY WITH FOOTING.
 - CONSTRUCTION JOINTS TO BE USED WHEREVER NEW CONCRETE IS CAST AGAINST PREVIOUSLY CAST CONCRETE.
 - IF REBAR OR MESH CROSSES A CONSTRUCTION JOINT, IT SHOULD BE CONTINUOUS THROUGH THE JOINT AND EXTEND 600mm INTO EACH SIDE.



CLIENT	REV	DATE	REVISION DETAILS	APPROVED	SCALE	SIZE	PRELIMINARY	PROJECT	WORKING FOR WETLANDS
Working for Wetlands	A	06/11/2013	ISSUED FOR COMMENT	D.TOWNSHEND	AS SHOWN	A4	NOT FOR CONSTRUCTION		
					DRAWN		APPROVED	PROVINCE	
					N.ALLIE		ENGINEER	DATE	
					DESIGNED			INTERVENTION DESCRIPTION	TYPICAL : CONCRETE WEIR
					O.MOTHELESI			DRAWING No.	109664 - STD - 21
					VERIFIED				
					D.TOWNSHEND				

REV
A

Appendix B

PUBLIC PARTICIPATION

Appendix B1: DEA Meeting Minutes

Appendix B2: Landowner Agreements

Appendix B3: Written Notification

Appendix B4: Proof of Mailing

Appendix B5: Comments and Responses

Working for Wetlands: KwaZulu-Natal Public Participation Report



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1 INTRODUCTION

The proposed interventions for wetland rehabilitation require the Working for Wetlands (WfWetlands) Programme to apply for environmental authorisation in terms of the Environmental Impact Assessment (EIA) Regulations (Government Notice (GN) Regulation (R) 982) of the National Environmental Management Act (Act 107 of 1998) (NEMA), as amended. To ensure that the Department of Environmental Affairs (DEA) can make an informed decision, based on a transparent and meaningful process, this Basic Assessment (BA) process must undergo a Public Participation Process (PPP).

This PPP must be undertaken in accordance with regulations 39-44 of the EIA Regulations. Additional guidance has also been incorporated from the Western Cape¹ Department of Environmental Affairs and Development Planning (DEA&DP) Guideline Document on Public Participation (March 2013).

This Public Participation Report (PPR) has therefore been compiled to collectively represent the consultation process that has been undertaken through the PPP. The following sections include:

- Section 2 A database of interested and affected parties (I&APs) has been created and updated over the last 13 planning years. This database will be updated and maintained throughout the BA process.
- Section 3 The consultation that was undertaken during the pre-application phase of the project is described in this section. Proof of advertisements, site notices and deliveries are available in Appendix B4.
- Section 4 Describes the consultation process that was undertaken during the BA phase. Proof of notification is available in Appendix B4.
- Section 5 Comments received during the PPP and responses provided have been summarised into a table in this section. All original comments and responses will be included in Appendix B5
- Section 6 This section explains the way forward once the public participation process has been completed.

2 I&AP DATABASE

A register of I&APs has been recorded for WfWetlands over the previous planning years undertaken by Aurecon. The existing national and provincial database has been updated with information from new I&APs responding to the advertisements and site notices throughout the application process. Proactive identification of I&APs, municipal representatives, organs of state, competent authorities and surrounding landowners was also undertaken to update the database specific to the new planning year.

Table 1 on the following page provides a summary of the I&AP database for the KwaZulu-Natal Province. Please note that contact details have been omitted for privacy reasons.

¹ These guidelines have been considered as best practice even though the project may be located outside of the province.

Table 1: I&AP Database

Stakeholder	Contact	Organisation
National Stakeholders	Mr Mark Anderson	Birdlife South Africa
	Ms Mpume Ntlokwana	Department of Agriculture Forestry & Fisheries
	Ms Serah Muobeleni	Department of Agriculture Forestry & Fisheries: Land Use and Soil Management
	Mr Stanley Tshitwamulomoni	Department of Environmental Affairs: Biodiversity Conservation
	Mr Danie Smit	Department of Environmental Affairs: Sensitive Environments
	Ms Naomi Fourie	Department of Water and Sanitation
	Dr Paul Meulenbeld	Department of Water and Sanitation
	Ms Jackie Jay	Department of Water and Sanitation
	Ms Barbara Weston	Department of Water and Sanitation
	Mr Kelvin Legge	Department of Water and Sanitation
	Mr Bongani Madikizela	Water Research Commission
	Ms Olga Jacobs	SANParks: Biodiversity and Social Projects
	Mr Steven Segang	Endangered Wildlife Trust
	Mr Ahmend Khan	Department of Environmental Affairs
	Mr Louwrens Ferreira	Department of Environmental Affairs
	Mr Wemer Roux	Department of Environmental Affairs
	Ms Kerry Morrison	Endangered Wildlife Trust
	Ms Tanya Smith	Endangered Wildlife Trust
	Morgan Griffiths	WESSA
	Mr Dumisani Mabona	Department of Environmental Affairs: Sensitive Environments
	Mr Umesh Bahadur	Department of Environmental Affairs: Working for Wetlands
	Mr Farai Tererai	DEA: Working for Wetlands: Manager: Planning, Monitoring and Evaluation
	Dr Piet-Louis Grundling	Department of Environmental Affairs: Working for Wetlands
	Mr Seoka Lekota	DEA: Biodiversity Conservation
	Ms Paballo Mohafa	DEA: World Heritage Compliance
	Ms Bernadet Pawandiwa	Amafa aKwaZulu-Natali
	Khosa Tsunduka	Department of Water and Sanitation

Stakeholder	Contact	Organisation
	Malaudzi Nkumbudzeni	Department of Water and Sanitation
	Lumka Kuse	Department of Water and Sanitation
	Xolani Hadebe	Department of Water and Sanitation
Provincial Stakeholders: State Authority	Mr Kwazi Hlongwane	Department of Agriculture, Forestry and Fisheries
	Mr Poovey Moodley	Department of Economic Development, Tourism and Environmental Affairs
	Mr Siyabonga Buthelezi	Department of Water and Sanitation
	Mr Andy Blackmore	Ezemvelo KZN Wildlife
	Mr Doug Burden	Duzi uMngeni Conservation Trust
	Ms Nonkululeko Mokeona	Department of Water and Sanitation
	Mr Angus Burns	World Wildlife Fund for Nature
	Ms Sue Viljoen	World Wildlife Fund for Nature
	Mr Lemson Betha	WESSA KZN
	Mr Dominic Wieners	Ezemvelo KZN Wildlife
	Mr Ivor Hoareau	Department of Water and Sanitation
	Krishnee Naidoo	Department of Water and Sanitation
	Caroline Fox	Ezemvelo KZN Wildlife
	Ms Phumelela Phenyane	Ezemvelo KZN Wildlife
	Landowner	Carl Myhill	Isimangaliso Wetland Park
Municipal Stakeholders	Mr Mondli Funeka	Mtubatuba Local Municipality
	Mr Bonga Ntanzi	Abaqulusi Local Municipality
	Mr Jerry Sibaya	Abaqulusi Local Municipality
	Mr S Chetty	Abaqulusi Local Municipality
	Ms Nokubonga Kunene	Abaqulusi Local Municipality
	Mr Velenkosi Fiki Hlabisa	Big Five Hlabisa Local Municipality
	Cllr CT Khumalo	Big Five Hlabisa Local Municipality
	Cllr HT Nkosi	Big Five Hlabisa Local Municipality
	Mr Solomon Mkhombo	Umkhanyakude District Municipality

Stakeholder	Contact	Organisation
General I&APs	Mr Sbusiso Emmanuel Bukhosini	Umkhanyakude District Municipality
	Ms Hlengiwe Shandu	Zululand District Municipality
	Ms MM Kunene	Zululand District Municipality
	Mr Inkosi Elphas Mzamo Buthelezi	Zululand District Municipality
	Brain Beyers	WESSA
	Ms Terry Calmeyer	ILISO Consulting Environmental
	Mr Gerhard Cilliers	Department of Water and Sanitation
	Mr Craig Cowden	GroundTruth
	Alex Dlamini	Invasive Alien Species Programme
	Mr Vaughan Koopman	Mondi Wetland Forum
	Mr Doug Mcfarlane	Eco-Pulse
	Mr Aldred Matsheke	KZN DEA
	Mr Greg Mullins	eThekwini Municipality
	Ms Joyce Pope	Umngeni Municipality
	Mr Damian Walters	Mondi Wetland Projects
	Ms Zama Madlala	RNR Conservancy
	Mr Sebenza Nduli	Private I&AP
	Mr Andreas Sithole	Hluhluwe Nature Reserve
	Mr Brent Cocoran	Mondi Group
	Mr Inkosi S Ngwane	Private I&AP
Mr Nick Stubbs	Private I&AP	
Mr Derek Watson	Private I&AP	
Mr ME Dladla	Private I&AP	
Ms Catherine Hanekom	Ezemvelo KZN Wildlife: Tembe Elephant Park	

3 PRE-APPLICATION PHASE CONSULTATION

Prior to the circulation of the draft Basic Assessment Report (BAR) and submission of the application form to DEA, the following measures were undertaken to ensure that the legislated 30-day public comment period will reach the relevant parties.

3.1 Pre-application meeting with DEA

A pre-application meeting was undertaken on 14 August 2019 to discuss a new application process for this project. Please refer to Appendix B1 for a copy of the correspondence received from DEA on this matter.

3.2 Landowner consultation

Landowner consultation is a vital component of the Working for Wetlands Programme Standard Operating Procedures. Landowners were consulted with during the planned Phase 1 and Phase 2 site visits, and Landowner Agreements must be signed prior to any construction commencing. Although it can be difficult to access landowner agreements for the full wetland system (some wetlands have more than 30 properties intersecting the wetland), landowner agreements have been obtained for work where targeted rehabilitation interventions are planned for the following implementation cycles. Landowner Agreements are included in Appendix B2.

3.3 Advertisements

An advertisement was placed in a local newspaper, *Zululand Observer*, to allow the public the opportunity to register their interest in the project. Proof of placement will be provided in the final report submitted to the Department upon completion of the 30-day public comment period. Please refer to **Figure 1** for a copy of the advertisement text.

3.4 Site notices

Site notices were fixed at the property boundaries of the affected wetland systems and at public areas such as libraries or municipal buildings. The text of the site notice in English is included in **Figure 2** and is followed by proof of placement of the site notices in the sub-section thereafter. The site notice was of a size and content required by the relevant guidelines. Proof of Placement will be provided in the final report submitted to the Department upon completion of the 30-day public comment period.

PUBLIC PARTICIPATION PROCESS: WORKING FOR WETLANDS PROGRAMME

Proposal: The Working for Wetlands (WfWetlands) Programme intends to rehabilitate a number of degraded wetlands within South Africa. The proposed wetland rehabilitation activities may require the construction of hard interventions, for instance gabion and concrete structures, as well as soft options such as re-vegetation and/ or alien plant removal. The number, type, scale and location of each of these interventions vary according to the nature and magnitude of the problem and the state of the wetland (i.e. the receiving environment).

Legal Framework: Authorisation is required in terms of the National Environmental Management Act (Act 107 of 1998), as amended, as described below:

A. National Environment Management Act, No. 107 of 1998 (NEMA), as amended: The rehabilitation proposals trigger a suite of activities which require Environmental Authorisation by means of a Basic Assessment (BA) process in terms of the 2014 Environmental Impact Assessment (EIA) Regulations (Government Notice Regulation (GN R) 982, as amended) pursuant to NEMA. Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the BA processes and separate provincial focused applications will be submitted to the Department of Environmental Affairs (DEA) as the competent authority. The Listed Activities that are relevant to each application in terms of the 2014 EIA Regulations are GN R 983 (as amended): 12, 19, 27 and 48 (Listing Notice 1), GN 984 (as amended): 24 (Listing Notice 2) and GN R 985 (as amended): 12, 14 and 23 (Listing Notice 3).

B. National Water Act, No. 36 of 1998 (NWA): In terms of Section 39 of the NWA, a General authorisation (GA) has been granted for certain activities that are listed under the Act that usually require a Water Use Licence; as long as these activities are undertaken for wetland rehabilitation and the primary purpose of the rehabilitation is for conservation purposes (i.e. GN R 1198 of 18 December 2009).

Opportunity to Participate: Notice is hereby given of a public participation process in terms of the NEMA EIA Regulations (2014) and the NWA (1998). Interested and Affected Parties (I&APs) are invited to register their interest for future correspondence to the people mentioned below and to submit comments on the Draft BA Reports and Rehabilitation Plans which will be made available for a 30-day public comment period in **October 2019**. Notification will be sent to all identified and registered I&APs prior to the start date of this comment period.

Province	Reports		Nearest City / Town(s)
	BAR	Rehabilitation Plan	
Eastern Cape	Yes	Amathole	Seymour
Gauteng	Yes	Gauteng North	Pretoria
KwaZulu-Natal	Yes	iSimangaliso	St Lucia
Limpopo	Yes	Soutini Baleni	Giyani

I&APs are requested to please refer to the relevant province and wetland project when registering, and provide their name, contact details and an indication of any direct business, financial, personal or other interest which they have to the contact person indicated below.

Contact: Simamkele Ntsengwane / Franci Gresse (of Aurecon)

E-mail: Simamkele.Ntsengwane@aurecongroup.com / franci.gresse@aurecongroup.com

Tel: 021 526 9560, **Fax:** 021 526 9500, or **Post:** P.O. Box 494, Cape Town, 8000



Agriculture, Forestry and Fisheries
Environmental Affairs
Water Affairs and Sanitation



Figure 1: Advertisement for the Working for Wetlands Programme 2017/2018 Planning Cycle

PUBLIC PARTICIPATION PROCESS: WORKING FOR WETLANDS PROGRAMME

KWAZULU NATAL CAPE PROVINCE

Proposal: The Working for Wetlands (WfWetlands) Programme intends to rehabilitate a number of degraded wetlands within South Africa. The proposed wetland rehabilitation activities may require the construction of hard interventions, for instance gabion and concrete structures, as well as soft options such as re-vegetation and/ or alien plant removal. The number, type, scale and location of each of these interventions vary according to the nature and magnitude of the problem and the state of the wetland (i.e. the receiving environment).

The following wetland rehabilitation projects are proposed in the **Eastern Cape** Province for the 2018/2019 planning cycle:

PROJECT	WETLAND SYSTEM	NEAREST TOWN(S)	LATITUDE (DDMMSS)	LONGITUDE (DDMMSS)
KZN iSimangaliso	iSimangaliso –Western Shores	St Lucia	28°18'28.00"S	32°23'45.00"E

Legal Framework: Authorisation is required in terms of the National Environmental Management Act (Act 107 of 1998), as amended, as described below:

A. National Environment Management Act, No. 107 of 1998 (NEMA), as amended: The rehabilitation proposals trigger a suite of activities which require Environmental Authorisation by means of a Basic Assessment (BA) process in terms of the 2014 Environmental Impact Assessment (EIA) Regulations (Government Notice Regulation (GN R) 982, as amended) pursuant to NEMA. Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the BA processes and separate provincial focused applications will be submitted to the Department of Environmental Affairs (DEA) as the competent authority. The Listed Activities that are relevant to each application in terms of the 2014 EIA Regulations are GN R 983 (as amended): 12, 19, 27 and 48 (Listing Notice 1), GN 984 (as amended): 24 (Listing Notice 2) and GN R 985 (as amended): 12, 14 and 23 (Listing Notice 3).

B. National Water Act, No. 36 of 1998 (NWA): In terms of Section 39 of the NWA, a General authorisation (GA) has been granted for certain activities that are listed under the Act that usually require a Water Use Licence; as long as these activities are undertaken for wetland rehabilitation and the primary purpose of the rehabilitation is for conservation purposes (i.e. GN R 1198 of 18 December 2009).

Opportunity to Participate: Notice is hereby given of a public participation process in terms of the NEMA EIA Regulations (2014) and the NWA (1998). Interested and Affected Parties (I&APs) are invited to register their interest for future correspondence to the people mentioned below and to submit comments on the Draft BA Reports and Rehabilitation Plans which will be made available for a 30-day public comment period in **October 2019**. Notification will be sent to all identified and registered I&APs prior to the start date of this comment period.

More information can be found in a 'context document' available for download from Aurecon's website (<http://aurecongroup.com/en/public-participation.aspx>).

Contact: Simamkele Ntsengwane / Franci Gresse (of Aurecon)

E-mail: Simamkele.Ntsengwane@aurecongroup.com / franci.gresse@aurecongroup.com

Tel: 021 526 9560 **Fax:** 021 526 9500, or **Post:** P.O. Box 494, Cape Town, 8000



Figure 2: Example of text included in the KwaZulu-Natal site notice

4 BASIC ASSESSMENT PHASE CONSULTATION

The Basic Assessment Report (BAR) for the Eastern Cape Province was made available for a 30-day public comment period from 11 February to 14 March 2019. However, in response to comments that were received from DEA, it was agreed to make the BAR available for a second public comment period with the applicable rehabilitation plans. The second 30-day comment period occurred from 7 June 2019 to 8 July 2019. Registered I&APs identified in the pre-application phase were notified of this comment period via post or email. The written notification provided to the I&APs is included in Appendix B2.

Due to an unforeseen delay during the submission of the finalised reports to the Department of Environmental Affairs, the application for Environmental Authorisation lapsed, and a new application has been lodged with the Department.

Hard and electronic copies were made available to selected organs of state and municipalities based on their internal requirements. I&APs are able to access the BAR on the Aurecon website: <http://www.aurecongroup.com/en/public-participation.aspx>. Proof of delivery and notification will be provided in Appendix B3 of the final BAR submitted to DEA for decision-making.

5 COMMENTS AND RESPONSES

Table 2 provides responses to all comments received during the February 2019 public comment period. All comments received during the June 2019 public comment period is available in Table 3. Responses have been provided by Aurecon, the applicant, or the wetland specialist (where appropriate). The original comments and responses are available in Appendix B5.

Table 2: I&AP Comments and Responses (11 February to 14 March 2019)

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
1	11 March 2019 Email Department of Environmental Affairs (Zamalanga Langa)	Comments on the draft Basic Assessment Report for the Working for Wetlands Programme in Isimangaliso Wetlands Park in KwaZulu Natal Province	
		The application for Environmental Authorisation (EA) and draft Basic Assessment Report (BAR) dated February 2019 and received by the Department on 11 February 2019, refer. This letter serves to inform you that the following information must be included to the final BAR:	
		A locality plan that indicates the sites or wetlands earmarked for rehabilitation must be provided. The locality plan and the project description must also be included in the EMPr. Kindly note that Google Earth maps will not be acceptable.	A locality plan that meets these requirements is provided in the BAR and Rehabilitation Plans.
		The BAR must include a map at an appropriate scale which superimposes the proposed activity and its associated structures, buildings and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should	Appendix C of the Rehabilitation Plan (Intervention Booklet) provides the details, design, location and coordinates of

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>be avoided, including buffers, CBAs, heritage sites, all “no-go” areas.</p>	<p>all proposed interventions, as well as maps. The associated rehabilitation plan also provides a project description and a locality plan of the proposed interventions.</p> <ul style="list-style-type: none"> ➤ No supporting onsite infrastructure or accommodation will be required. ➤ Please note that the entire site is sensitive since the purpose of the project is to rehabilitate degraded wetlands.
		<p>Kindly ensure that the co-ordinates of the wetlands identified for rehabilitation purposes that are included in the final BAR are provided in the format: degrees, minutes, and seconds, using the Hartebeesthoek94 WGS84 co-ordinate system. A list of the co-ordinates must also be provided under Appendix 3 of the application form.</p>	<p>The co-ordinates of the wetlands identified for rehabilitation purposes are included in the final BAR and under Appendix 3 of the application form. These are provided in the format: degrees, minutes, and seconds, using the Hartebeesthoek94 WGS84 co-ordinate system.</p>
		<p>Please also ensure that the Final BAR includes the period for which the Environmental Authorisation is required and the date on which the activity will be concluded as per the Appendix 1(3)(1)(q) of the NEMA EIA Regulations, 2014, as amended.</p>	<p>The period for which the Environmental Authorisation is required and the date on which the activity will be concluded is included in the BAR.</p>
		<p>Please ensure that all relevant listed activities are applied for, are specific and that it can be linked to the development activity or infrastructure as described in the project description.</p>	<p>Descriptions of interventions associated with the relevant listed activities have been updated to refer to interventions included in the associated rehabilitation plan(s). Note that the descriptions are slightly generic to allow for variations of the general</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
			intervention type in the rehabilitation plans.
		If the activities applied for in the application form differ from those mentioned in the final BAR, an amended application form must be submitted. Please note that the Department's application form template has been amended and can be downloaded from the following link https://www.environment.gov.za/documents/forms .	Where the activities applied for in the submitted application form differ from those tabled in the Draft BAR, then an amended application form will be submitted with the Final BAR, and the most recent amended application form template will be used.
		If the area to be rehabilitated are located in inaccessible areas with no definite access roads, the applicant must determine whether part of the rehabilitation activities will require the construction of access roads and whether this will trigger the applicable listed activities.	Existing access roads and tracks will be used by vehicles, and where this is not possible, the site will be accessed on foot under the escort of armed game guards. There are no current proposals to develop any new access roads, and certainly none that will trigger additional Listed Activities.
		Please note that Table 4 on pages 9-10 titled "Listed activities triggered by the proposed KwaZulu-Natal Projects" project includes Activity 24 of Listing Notice 2 (GN R984, as amended). This activity triggers a full scoping and EIA process, and not a Basic Assessment process. The EAP is required to determine the applicability of the activity, and if such activity is triggered, a new application for Environmental Authorisation must be lodged and followed for the proposed project.	The inclusion of this activity in the Table (Table 5, pages 9 and 10) was merely to indicate that it had been considered but was deemed to not apply given the exclusion. The activity will be removed to avoid any further confusion.
		The applicant must ensure that should there be any recommendations from SAHRA, that it must be included to form part of the EMPr and Rehabilitation Plan Documents.	An application was submitted via the SAHRIS website, however to date, no comment has been received. Should there be any recommendations from SAHRA (or AMAFA), then these will be included to form part of the EMPr and Rehabilitation Plan Documents.
		The final BAR must include an avifaunal impact statement from a qualified avifaunal specialist on	This is not a development project but rather a

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>the possible impacts on any important avifaunal species that may utilise the wetland system in iSimangaliso Wetland Park.</p>	<p>rehabilitation project. The iSimangaliso Wetland Park is a World Heritage Site and includes four Ramsar sites and is therefore of national and international importance to avifauna species reliant on wetland habitat in South Africa. The habitat potential of the Park relies on the natural integrity and function of the greater wetland system. Parts of the system require the implementation of the rehabilitation efforts as proposed by the Working for Wetlands Programme to retain and/or improve wetland function.</p> <p>The wetland specialists appointed to this project consider habitat, aquatic ecology and associated wetland fauna and avifauna species. The recommendations towards intervention options are aimed at meeting the wetland rehabilitation objectives set by these specialists, and therefore at improving habitat and opportunity for all reliant species, including avifauna. An Avifaunal Impact Statement, in addition to any impact statements provided by the appointed wetland specialist, is deemed to be unnecessary in this context.</p>
		<p>The wetland system is located within an iSimangaliso Wetland Park, an important tourism area. The social impact assessment must also include an assessment of potential impacts on tourism in the area. The report must also include a tourism impact statement.</p>	<p>This is not a development project but rather a rehabilitation project. The iSimangaliso Wetland Park is a World Heritage Site and includes four Ramsar sites and is one of the most important tourism</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>I. The following Activities applied for may trigger Section 19; S21 (c) and (i) of the National Water Act No. 36 of 1998: GN R. 983 Activities 12 (i)(ii)(a); 48 (i)(ii)(a); GN R 985 Activities 14</p>	<p>opportunities in South Africa. The tourism potential of the Park relies on the natural integrity and function of the greater wetland system. Parts of the system require the implementation of the rehabilitation efforts as proposed by the Working for Wetlands Programme to retain and/or improve wetland function.</p> <p>A Social Impact Assessment is largely aimed at identifying (amongst other things) negative impact to social aspects such as tourism. Given the project is aimed at rehabilitating wetlands, thereby improving tourism opportunities, such a study is deemed to be ineffective in this context. Further to this none of the roads that will be removed are open to tourists, and many of these roads where the work will be undertaken are not visible from any of the open tourist routes.</p> <p>The wetland specialists appointed to this project consider not only consider the tourist attractions of habitat, aquatic ecology and associated wetland fauna and avifauna species, but also consider the tourism and recreational potential of the wetland in question in their Wet-health assessment.</p> <p>I. Refer Section 2.1.2 of the BAR: In terms of Section 39 of the National Water Act, No. 36 of 1998, a General Authorisation (GA) has been</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>(i)(ii)(a)(c)(e)(i)(f)(hh), 23(i)(ii)(a)(c)(e)(i)(ee)(gg).</p> <p>II. The BAR must include a freshwater specialist study with the following terms of reference:</p> <ul style="list-style-type: none"> ➤ Desktop mapping of freshwater ecosystems within the Department of Water and Sanitation's (DWS) 500m Water Use Licence trigger area around the wetland system; ➤ Field-based assessments of the potentially impacted systems to determine likely impacts and risks that the proposed rehabilitation measures may have on the wetland system. ➤ Fish management method statement for any fish relocations if any. ➤ Identify and recommend measures for mitigating impacts on the receiving environment. 	<p>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' and 'altering the bed, banks, course or characteristics of a watercourse' where they are specifically undertaken for the purposes of rehabilitating a wetland for conservation purposes. The WfWetlands Programme is required to register the 'water use' in terms of the GA.</p> <p>II. This is not a development project but rather a rehabilitation project. The iSimangaliso Wetland Park is a World Heritage Site and includes four Ramsar sites and is therefore of national and international importance to aquatic and terrestrial species reliant on wetland habitat in South Africa. The habitat potential of the Park relies on the natural integrity and function of the greater wetland system. Parts of the system require the implementation of the rehabilitation efforts as proposed by the Working for Wetlands Programme to retain and/or improve wetland function.</p> <p>The wetland specialists appointed to this project consider habitat, aquatic ecology and associated wetland fauna and avifauna species. The wetland specialists provide desktop</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>The EAP must ensure that the terms of reference (TOR) for all the identified specialist studies must include the following:</p> <ul style="list-style-type: none"> ➤ A detailed description of the study's methodology; indication of the locations and descriptions of the development footprint, and all other associated infrastructures that they have assessed and are recommending for authorisations. ➤ Provide a detailed description of all limitations to the Studies. All specialist studies must be conducted in the right season and providing that as a limitation will not be allowed. ➤ Please note that the Department considers a 'No-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas. ➤ Should the specialist definition of No-go' area differ from the Departments definition; 	<p>mapping of the system in question, undertake field-based assessments which inform the Rehabilitation Plans, and identify and provide measures for these plans for mitigating any negative impacts for the construction of the interventions. The recommendations towards intervention options are aimed at meeting the wetland rehabilitation objectives set by these specialists, and therefore at improving habitat and opportunity for all reliant species, including aquatic species. A separate freshwater specialist study in addition to that provided by the wetland specialists is deemed to be unnecessary in this context.</p> <p>The terms of reference (TOR) for the Wetland Specialist is summarised in Section 3 of the General Methodology of the Rehabilitation Plan. The Wetland Specialist (GroundTruth) provided a Phase 2: Status Quo Assessment (Appendix A of the BAR) that included:</p> <ul style="list-style-type: none"> ➤ A detailed description of the study's methodology (Section 2); an indication of the locations and descriptions of the development footprint (Sections 3 and 5), and all other associated infrastructures that they have assessed and are recommending for authorisations (N/A - this is not a development

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>this must be clearly indicated. The specialist must also indicate the 'No-go' area's buffer if applicable.</p> <ul style="list-style-type: none"> ➤ All specialist studies must be final, and provide detailed/practical mitigation measures and recommendations, and must not recommend further studies for be completed post EA. <p>Should specialists recommend Specific mitigation measures, these must be Clearly indicated</p>	<p>proposal, interventions are provided in the Intervention Booklet: Appendix C of the Rehabilitation Plans).</p> <ul style="list-style-type: none"> ➤ A detailed description of all limitations to the study (Section 4). All specialist field work was conducted in the appropriate season. <p>It is important to note that:</p> <ul style="list-style-type: none"> ➤ The Specialist's definition of a 'No-Go' area concurs with that of the Departments definition. The specialist was required to indicate any 'No-Go' areas, as well as their buffers, if applicable. ➤ The Phase 2: Status Quo Assessment provided is the Final version. ➤ Detailed/practical mitigation measures and recommendations are provided in the Rehabilitation Plans (EMP) and specific mitigation per intervention (where required) is provided in the Intervention Booklet (Appendix C of the Rehabilitation Plan). ➤ No further studies are required to be completed post EA.
		<p>An original signed undertaking under oath or affirmation by the EAP (administered by a Commissioner of Oaths), must be included in the final BAR, as per Appendix 1(3)(r) of the EIA Regulations, 2014 (as amended), which states that the BAR must include:</p>	<p>An original signed undertaking under oath or affirmation by the EAP (administered by a Commissioner of Oaths), will be included in the Final</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p><i>'an undertaking under oath or affirmation by the EAP in relation to:</i></p> <ul style="list-style-type: none"> ➤ <i>the correctness of the information provided in the reports; the inclusion of comments and inputs from stakeholders and I&APs;</i> ➤ <i>the inclusion of inputs and recommendations from the specialist reports where relevant; and</i> <p><i>any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties"</i></p>	<p>BAR, as per Appendix 1(3)(r) of the EIA Regulations, 2014 (as amended), and as per the listed inclusions.</p>
		<p>It is indicated that site notices will be included in the Public Participation Report in the final BAR. Please ensure that these site notices are provided, in order to comply with the requirements of regulation 41 (2) (a) of the EIA Regulations, 2014.</p>	<p>Information pertaining to the site notices and their content is provided in Section 3.4 of this report.</p>
		<p>I. You are further reminded to provide proof to show that the registered interested and affected parties and organ of states received written notification of the proposed activities, as per the requirements of regulation 41 (2) (b) of the EIA Regulations, 2014. This proof may include any of the following:</p> <ul style="list-style-type: none"> ➤ e-mail delivery reports; ➤ registered mail receipts; ➤ courier waybills; <p>signed acknowledgements of receipt; and/or any other proof as agreed upon by the competent authority</p>	<p>Proof is provided in Appendix B4 of the Final BAR.</p>
		<p>Please ensure that comments from all relevant stakeholders are submitted to the Department with the final BAR.</p>	<p>A CRR is provided in section 5 of the Public Participation Report with all original comments received available in Appendix B5 of the final BAR.</p>
		<p>Please also ensure that all issues raised, and comments received during the circulation of the draft BAR from registered I&APs and organs of state which have jurisdiction (including this Department's Biodiversity & Conservation Branch and iSimangaliso Wetland Park Authority) in</p>	<p>Issues raised, and comments received during the circulation of the draft BAR from registered I&APs and organs of state which have jurisdiction (including this Department's</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>respect of the proposed activity are adequately addressed in the final BAR.</p>	<p>Biodiversity & Conservation Branch and iSimangaliso Wetland Park Authority) in respect of the proposed activity are adequately addressed in the final BAR where relevant. Where a comment has not been addressed in the BAR, then the response provided in the CRR (this table) will indicate the reason/motivation for this.</p>
		<p>Proof of correspondence with the various stakeholders must be included in the final BAR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The public participation process must be conducted in terms of Regulation 39, 40 41, 42, 43 and 44 of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.</p>	<p>All comments received (or any attempts to obtain comments) are included in this report. Proof is provided in Appendix B4 of the Final BAR.</p> <p>The public participation process has been conducted in terms of Regulation 39, 40 41, 42, 43 and 44 of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.</p>
		<p>The final BAR must comply with these comments and all other comments and conditions issued by the Department in relation to the proposed development</p>	<p>Issues raised, and comments received during the circulation of the BAR from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the final BAR where relevant. Where a comment has not been addressed in the BAR, then the response provided in the CRR (this table) will indicate the reason/motivation for this.</p>
		<p>A comments and Response report (C&R) must be submitted with the final BAR. The C&R report must incorporate all comments for this development. Please note that a response such as "Noted" is not</p>	<p>A CRR is provided in section 5 of the Public Participation Report with all original comments received</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		regarded as an adequate response to I&APs' comments.	available in Appendix B5 of the final BAR.
		The final BAR must indicate clearly the name of the newspaper that the advertisement for the draft BAR has been advertised in.	The details of the advertisement and the newspaper/s in which it was published are included in Section 3.3 of this PPR.
		The EAP is requested to contact the Department to make the necessary arrangements to conduct a site inspection prior to the submission of the final BAR.	A site inspection is currently being planned, and the details will be communicated to the case officer as soon as they are available.
		The BAR, specialist studies and EMPr must ensure compliance to the relevant appendices as outlined in the EIA Regulations, 2014 as amended.	The checklist titled "NEMA Requirements for Basic Assessment Reports" is provided on pages i-iii.
		<p>I. You are further reminded to comply with Regulation 19(1)(a) of the NEMA EIA Regulations, 2014, as amended, which states that:</p> <p><i>"Where basic assessment must be applied to an application, the applicant must, within 90 days of receipt of the application by the competent authority, submit to the competent authority - (a) a basic assessment report, inclusive of specialist reports, an EMPr, and where applicable a closure plan, which have been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority."</i></p>	Following an approval of an extension request we are following 19(1)(b).
		<p>II. Should there be significant changes or new information that has been added to the BAR or EMPr which changes, or information was not contained in the reports or plans consulted on during the initial public participation process, you are required to comply with Regulation 19(b) of the NEMA EIA Regulations, 2014, as amended, which states that:</p> <p><i>"the applicant must, within 90 days of receipt of the application by the competent authority, submit to the competent authority - (b) a notification in writing that the basic assessment report, inclusive of specialist reports an EMPr, and where applicable, a</i></p>	Following an approval of an extension request we are following 19(1)(b).

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p><i>closure plan, will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or Significant new information has been added to the basic assessment report or EMPr or, where applicable, a closure plan, which changes or information was not contained in the reports or plans consulted on during the initial public participation process contemplated in sub regulation (1)(a) and that the revised reports or, EMPr or, where applicable, a closure plan will be subjected to another public participation process of at least 30 days”.</i></p>	
		<p>Should you fail to meet any of the timeframes Stipulated in Regulation 19 of the NEMA EIA Regulations, 2014, as amended, your application will lapse.</p>	<p>The Working for Wetlands Programme endeavours to meet the timeframes stipulated in Regulation 19 of the NEMA EIA Regulations.</p>
		<p>You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department</p>	<p>Working for Wetland activities in the system in question will only commence on the receipt of an Environmental Authorisation for that system, and on approval of a Rehabilitation Plan for the relevant project.</p>
2	<p>3 May 2019 Email Ezemvelo KZN Wildlife (Nerissa Pillay)</p>	<p>WORKING FOR WETLANDS REHABILITATION PROJECT: ISIMANGALISO WORLD HERITAGE SITE: District Municipality: Umkhanyakude</p> <p>The Draft Basic Assessment Report for the abovementioned application has been received by Ezemvelo’s IEM Planning Division (Ezemvelo). Given that the proposed rehabilitation sites are located within the iSimangaliso World Heritage Site, Ezemvelo strongly recommends that this application be referred to the park’s ecologist (Caroline Fox) for further assistance and guidance.</p> <p>Should you require any clarity on the points raised, please do not hesitate to contact this office.</p>	<p>The iSimangaliso Park Team have been intimately involved in this planning, having assisted in the prioritisation of sites, and having attended the field visits. Thank you for the specific contact of the park ecologist from Ezemvelo. Ms Fox will be added to our I&AP database.</p>

Table 3: I&AP Comments and Responses (7 June 2019 – 8 July 2019)

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
1.	07 June 2019 Email Department of Water and Sanitation (Dr Wietsche Roets)	You are mentioning the GA1198 in your document, please ensure that you comply to the requirements set out in GA1198 and submit relevant registration documents to the relevant regional operations of DWS.	EAP: Thank you for your comment. The necessary General Authorisation approval process will be undertaken by the applicant.
2.	07 June 2019 Email Department of Water and Sanitation (Pieter Ackerman)	My comments include: 1. Hydrological and ecological connectivity must be catered for in the designs.	EAP: The rehabilitation objectives for the WfWetlands planning are to secure and improve the overall integrity of the systems, particularly focusing on maintaining and improving the hydrological conditions where possible. In turn the overall functioning of the systems and the conditions that support a range of wetland dependent fauna and flora will be secured and enhanced. During the planning phase, the wetland specialists assess the ecological status and characteristics of the wetland in terms of the Wet-Health methodology, taking into consideration hydrology, geomorphology, terrestrial ecology and vegetation). The findings of this assessment are then used to determine the rehabilitation objectives for the wetland as well as the most appropriate design intervention to achieve these objectives. The key purposes of implementing design interventions also include restoring hydrological integrity, raising the general water table and redistributing water across the wetland area and recreating wetland habitats towards the conservation of biodiversity.
		2. It must be monitored if and how the ecological category changed after rehabilitation.	EAP: The monitoring and evaluation of the wetland systems relies on collecting

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>PES of category D to PES of B.</p>	<p>relevant baseline information, with collected data including fixed point photographs. It also includes the number of wetlands rehabilitated, number of HGM units rehabilitated, hectare equivalent gained, and area secured. The Present Ecological State (PES) assessments compares current changes to the expected natural wetland properties. The ecological integrity or PES of the Wetlands were assessed based on perceived modifications to wetland hydrology, geomorphology and vegetation. These components of the ecological integrity of the wetland were assessed for the current status quo and post-rehabilitation.</p>
		<p>3. Scientific buffers must be included taking into account hydro-pedological flow drivers in the landscape</p>	<p>EAP: The wetland assessments undertaken by the wetland specialists are in accordance with the methodology prescribed by WET-EcoServices and WET-Health assessment techniques, which consider Hydrological, geomorphological and vegetation drivers. In addition, Ecological Importance and Sensitivity (EIS) assessments were also undertaken (see Section 2.1 of the Wetland Status Quo Assessments; Annexure A of the rehabilitation plans). Specifically, these assessments consider (amongst others):</p> <ul style="list-style-type: none"> • Regulatory and supporting benefits (including flood attenuation, streamflow regulation and water quality); • Biodiversity maintenance benefits;

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
			<ul style="list-style-type: none"> • Ecological importance and sensitivity; • Hydro-functional importance; • Wetland hydrology; • Wetland geomorphology and • Structural and compositional state of the vegetation.
		4. A guideline with concept designs must be compiled on how wetlands and pans can be re-created taking into account destruction of pans by mines.....OR a clear statement that the recreation is not possible in most cases.....In which cases can it work.	EAP: Your request has been forwarded to the Working for Wetlands management team to be addressed separately from the Basic Assessment process.
		5. A guideline with concept designs for constructed wetlands.	EAP: Your request has been forwarded to the Working for Wetlands management team to be addressed separately from the Basic Assessment process.
		6. Lessons learned	EAP: Wetland assessments are carried out in accordance with WET-Rehab-Evaluate, which include monitoring and evaluation facilitating the dissemination of lessons learnt and provide a means of reporting on the success of specific wetland rehabilitation initiatives. The monitoring and evaluation (M&E) of an identified wetland rehabilitation project's performance is therefore considered vital to inform the evaluation of wetland rehabilitation success.
		7. Re-introduction of plants and animals must be taken into account	EAP: The Wetland rehabilitation objectives consider the recreation of wetland habitat

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
			towards the conservation of biodiversity, which includes the re-introduction of plants.
		8. Environmental awareness training for protection of the system in future.	EAP: Noted. Other activities that form part of the WfWetlands programme include raising awareness of wetlands among landowners, workers and general public, providing education and training, and technical skills transfer. This involves capacity building through education and training community members who would monitor the progress of rehabilitated wetlands.
		9. Follow ups	EAP: During Phase 3 of the planning process, constructed interventions are visited by the Working for Wetlands Provincial Coordinator to monitor the functioning of the intervention and to determine if any maintenance is required. Follow-up visits are also required in terms of the monitoring and evaluation process that the Programme applies.
3.	20 June 2019 Letter Department of Agriculture, Forestry and Fisheries: Land Use and Soil Management (T.M Dlepu)	Reference is made to the DBAR submitted by Aurecon Environmental Consulting; on behalf of the applicant; Working for Wetlands. Department of Agriculture, Forestry and Fisheries (DAFF): Land Use and Soil Management (LUSM) acknowledges receipt of the DBAR for the proposed Working for Wetlands rehabilitation programme. Department of Agriculture, Forestry and Fisheries (Land Use and Soil Management) derive its mandate from Conservation of Agricultural Resources Act legislation, CARA (Act 43, 1983) it is administering; which aim to protect natural agricultural resources while	EAP: The Department's comments are acknowledged and appreciated. The Working for Wetlands Programme appointed Aurecon South Africa (Pty) Ltd to assist with the legal process of obtaining environmental authorisation in terms of the National Environmental Management Act (Act 107 of 1998), as amended. The Department's references to CARA and its important role in protecting wetlands is also acknowledged and appreciated. Prior to the commencement of wetland rehabilitation interventions, all landowners will be required to sign "landowner

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from EAP/ Applicant/ Specialist
		<p>maintaining the production potential of the land.</p> <p>The comments are as follows:</p> <ul style="list-style-type: none"> • Since the Kwa-Zulu Natal Wetland Rehabilitation Programme aims to rehabilitate wetlands; to improve water quality and quantity while promoting conservation; therefore, DAFF is in support of this Wetland Rehabilitation Programme. However, rehabilitation must be in line with CARA legislation, by ensuring that the control measures are implemented in every wetland project to control the spread of problematic declared Weeds and Invader plants. • It is brought to the attention of every landuser that, “Except on authority of a written permission by the executive officer, no landuser shall- <ul style="list-style-type: none"> ○ drain or cultivate any vlei, marsh or water sponge or a portion thereof on his farm unit; or cultivate any land on his farm unit within the flood area of a water course or metres horizontally outside the flood area of a water course • The Kwa-Zulu Natal Wetland Rehabilitation Programme will also restore biodiversity, while 	<p>agreement forms”. Copies of these agreements are available in the applicable rehabilitation plans.</p>

No.	Date of comment, format of comment, name of organisation/ I&AP	Comment	Response from Applicant/ Specialist EAP/
		<p>promoting ecological integrity for biological species; which include grazing livestock for adjacent communities.</p> <ul style="list-style-type: none"> The applicant must obtain a written consensus from the landowner(s) prior to the commencement of the proposed activity. 	

Please note that according to the SAHRA website (see Figure 4), Amafa has approved the proposed wetland rehabilitation activities in the iSimangaliso Wetland Park. No formal response has however been received from Amafa.

SAHRIS

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Heritage Cases

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Working For Wetlands- KwaZulu Natal

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CaseHeader
LocationInfo
Admin
Images

Status: Closed (Approved)

HeritageAuthority(s): Amafa
SAHRA

Case Type: Section 38 (8) - Statutory Comment Required

Development Type: Environmental Rehabilitation

ProposalDescription:
Working For Wetlands- KwaZulu Natal

Expanded Motivation:
 The WfWetlands Programme is currently managing 37 WfWetlands Projects countrywide, including projects in the KwaZulu-Natal Province ,Property numbers 1/14182, 14/14250, 15833, 17445, RE/7638, 49/17497, RE/7638, 1/9, 2/231, 9/408, 10/408, 11/408, 1/623, 4/623, 5/623,9/408, 1/5358, 6248. WfWetlands has actively been rehabilitating wetlands in the KwaZulu-Natal province since the early 2000s. Priority wetland systems requiring rehabilitation were identified during Phase 1 of the WfWetlands Programme. Working for Wetlands (WfWetlands) is a government programme 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) 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 Programme's current five year strategic plans were further used as a guide to identify wetlands, as well as data from the National Freshwater Ecosystem Priority Areas (NFEPA) project. Decisions on priority areas were informed by input from wetland forums, biodiversity/ conservation plans, municipalities, state departments and various other stakeholders.

ApplicationDate: Thursday, November 9, 2017 - 17:40

CaseID: 11908

Applicants: Working for Wetlands Programme

Consultants/Experts: Farai Tererai
Franci Gresse

OtherReferences:
ReferenceList:

Caselmages

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Figure 3: Screenshot of SAHRIS, indicating the project status as approved.

6 WAY FORWARD

Following the 30-day public comment period, the BAR will be updated by incorporating any I&AP comments received on the reports (where relevant). All comments will be recorded and responded to in this PPR which will be circulated to all who have provided comment. The updated BAR 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.

7 Appendices

Appendix B1 | DEA Meeting Minutes

Appendix B2 | Landowner Agreement(s)

Appendix B3 | Written Notification

Appendix B4 | Proof of Delivery

Appendix B5 | Comments

Appendix B1

DEA PRE-APPLICATION MEETING MINUTES

Meeting Record

Project number	113223	Meeting date	2019-08-14
Project name	Working for Wetlands Pre-application meeting: DEA	Recorded by	NX
Meeting/subject	Meeting minutes	Total pages	2

Present	Apology	Copy	Name	Organisation	Contact details
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Coenrad Agenbach (CA)	DEA	cagenbach@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dakalo Netshiombo	DEA	DNetshiombo@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiona Grimett (FG)	DEA	FGrimett@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Makhosazane Yeni (MY)	DEA	MYeni@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mmamohale Kabasa (MK)	DEA	MKabasa@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mpho Monyai (MM)	DEA	MMonyai@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Thando Booï (TB)	DEA	TBooi@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Thulisile Nyalunga (TN)	DEA	TNyalunga@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Zesipho Makhosayafana (ZM)	DEA	Zmakhosayafana@environment.gov.za
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Franci Gresse (FGr)	Aurecon South Africa (Pty) Ltd	Franci.Gresse@aurecongroup.com
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noluyolo Xorile (NX)	Aurecon South Africa (Pty) Ltd	Noluyolo.Xorile@aurecongroup.com

The following key notes provide a record of the meeting that took place at the Department of Environmental Affairs (DEA) in Pretoria at 10:00 am on Wednesday, 14 August 2019:

1. Purpose and Background

- A meeting with DEA was requested to discuss the re-application process requirements for the following Working for Wetlands projects: Eastern Cape, Gauteng, KwaZulu-Natal and Limpopo.
- The submission deadline of the Final Basic Assessment Reports for these projects were missed and the applications lapsed in June 2019.

2. Application Process Requirements

- DEA indicated that the Environmental Impact Assessment Regulation (Government Notice Regulation (GN R) 982 of 4 December 2014), as amended, does not allow for a re-application process for Basic Assessment application. The Department will thus consider these projects as new applications in terms of the Regulations. All requirements in terms of the Regulations for a Basic Assessment application must be followed.
- A copy of the key notes from the Pre-application meeting must be submitted to the Department with the application forms.

■ **Public Participation Process Requirements**

- Basic Assessment Reports were made available to the public twice during the original application process. No objections were received against the proposed rehabilitation projects.
- All Basic Assessment Reports must be made available for a 30-day public comment period during which time DEA will also provide comment.
- Comments received during the original application process from the Department should be addressed in the reports. Motivations must be provided when it is felt that comments are not applicable to the project.
- The option to use posters and adverts from the original application process was discussed. It was noted that the Regulations does not indicate timeframes within which these must be placed. It also does not require DEA's reference numbers to be shown on them.
- FGr was requested to send an email to IQ to determine if it is acceptable to use the posters and adverts from the original application process. Case officers should be copied in the email to IQ.

3. Timeframes

- A request to DEA IQ will be send by Friday, 16 August at the latest.
- Key notes from the meeting will be distributed to DEA as soon as possible.
- DEA requested that the key notes be distributed by Monday 26 August if Aurecon is unable to send it by Friday, 16 August since they will be at the IAIAAsa conference.

4. Site Visits

- Case officers will decide whether a site visit is needed after reviewing the Draft Basic Assessment Reports. If the case officers are of the opinion that the site is sensitive and/or are unclear about the content of the document, a site visit will be requested.
- It was requested that site visit requests be communicated to Aurecon as soon as possible (i.e. before the end of the public comment period if possible) to start with preparations for site visits and to clear diaries with the Provincial Coordinators to accompany the case officers to site.
- DEA confirmed that an agreement was reached with Millicent Solomons that the Working for Wetlands' (WfWetlands) Provincial Coordinators may accompany the case officers to site instead of the Environmental Assessment Practitioner.
- DEA indicated that a site visit to a rehabilitated wetland would be beneficial to assist the case officer with familiarising themselves with the interventions that are used by WfWetlands.

5. Way Forward

- Meeting minutes will be circulated to all attendees for review and approval.
- Aurecon will submit a query to DEA IQ regarding the use of the posters and adverts from the previous application process.

WORKING FOR WETLANDS: CONTEXT DOCUMENT

1. Introduction

Working for Wetlands (WfWetlands) is a government programme managed by the Natural Resource Management Programme (NRMP) of the Department of Environmental Affairs, 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.

2. Wetlands and their importance

Once considered valueless wastelands that needed to be drained or converted to more useful land use purposes, wetlands are now seen in an entirely different light. Today wetlands are more commonly perceived as natural assets and natural infrastructure able to provide a range of products, functions and services free of charge.

That which actually constitutes a wetland is often not fully understood. Common misconceptions have been that wetlands must be wet, must have a river running through them, or must always be situated in low-lying areas. The definition of a wetland is much broader and more textured: they are characterised more by soil properties and flora than by an abundance of water.

The National Water Act, No. 36 of 1998 defines a wetland as:

"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 land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil".

The Ramsar Convention defines wetlands as:

"areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6m" (Article 1, Ramsar Convention on Wetlands. 1971).

Wetlands can therefore be seasonal and may experience regular dry spells (sometimes even staying dry for up to several years), or they can be frequently or permanently wet. Wetlands can occur in a variety of locations across the landscape (**Plate A**), and may even occur at the top of a hill, nowhere near a river. A pan, for example, is a wetland which forms in a depression. Wetlands also come in many sizes; they can be as small as a few square metres (e.g. at a low point along the side of a road) or cover a significant portion of a country (e.g. the Okavango Delta).



Plate A: A large, seasonal wetland identifiable by the characteristic flora. This wetland contained no surface water at the time of the photograph

Wetland ecosystems provide a range of ecological and social services which benefit people, society and the economy at large:

- Improving the ecological health of an ecosystem by performing many functions that include flood control, water purification, sediment and nutrient retention and export, recharge of groundwater, as well as acting as vital habitats for diverse plant and animal species.
- Providing ecological infrastructure replacing the need for municipal infrastructure by providing the same or better benefit at a fraction of the cost, for example:
 - The movement of water in the landscape is slowed down by wetlands, which offers the dual benefit of flood control as well as a means of purification.
 - The slow movement of water allows heavier impurities to settle and phreatic vegetation and micro-bacteria the opportunity to remove pollutants and nutrients.
- Functioning as valuable open spaces and create recreational opportunities for people that include hiking along wetlands, fishing, boating, and bird-watching.
- Having cultural and spiritual significance for the communities living nearby. Commercially, products such as reeds and peat are also harvested from wetlands (**Plate B**).



Plate B: Commercial products made by locals from reeds harvested from wetlands

Wetlands are thus considered to be critically important ecosystems as they provide both direct and indirect benefits to the environment and society.

3. Wetland degradation

It has been estimated that originally over 10% of the Republic of South Africa (RSA) was covered by wetlands. However, this figure decreases significantly every year owing to unsustainable land-use practices. It is estimated that more than 50% of South Africa's wetlands have been destroyed through drainage of wetlands for crops and pastures, poorly managed burning regimes, overgrazing, disturbances to wetland soils, vegetation clearing as well as industrial and urban development (including mining activities).

Although wetlands are high-value ecosystems that make up only a small fraction of the country, they rank among the most threatened ecosystems in South Africa. According to a recent Council of Scientific Research (CSIR) study (Nel and Driver, 2012), South Africa's remaining wetlands were identified as the most threatened of all South Africa's ecosystems, with 48% of wetland ecosystem types being critically endangered, 12% endangered and 5% vulnerable. Only 11% of wetland ecosystem types are well protected, with 71% not protected at all.

The remaining wetland systems suffer from severe erosion and sedimentation, undesirable plant species and aquatic fauna infestations, unsustainable exploitation, artificial drainage and damming, and pollution. The continued degradation of wetlands will impact on biodiversity, ecological function, and the provision of ecosystem services with subsequent impacts on livelihoods and economic activity, as well as health and wellbeing of communities. In the absence of functional wetlands, the carbon cycle, the nutrient cycle and the water cycle would be significantly altered, mostly detrimentally.

Wetland conservation and rehabilitation should be at the heart of water management. It is necessary to prioritise South Africa's remaining wetlands such that those that offer valuable ecosystem services and are least impacted by current pressures or threats are offered immediate attention to avoid further loss, conversion or degradation.

4. The Working for Wetlands 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 National Water Act, No. 36 of 1998, 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 13 years since 2004, the WfWetlands Programme has invested just under R1 billion in wetland rehabilitation and has been involved in over 1,300 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 27 000 jobs and over 3 million person-days of paid work. The local teams are made up of a minimum of 55% women, 55% 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. Rehabilitation interventions

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. The key purposes 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 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 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.

6. Programme, projects and phases

In order to manage the **WfWetlands Programme**, wetlands have been grouped into “projects”, and each **Wetland Project** encompasses several smaller wetland systems which are each divided into smaller, more manageable and homogenous wetland units. A Wetland Project may be located within one or more quaternary catchments within a Province. The WfWetlands Programme is currently managing 37 Wetland Projects countrywide, and rehabilitation activities range from stabilising degradation to the more ambitious restoration of wetlands to their original conditions.

Each Wetland Project is managed in three phases (as shown in the flow diagram in **Plate C**) 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)¹ 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

¹ Previously referred to as Provincial Coordinators (PCs).

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 particular province undertakes a desktop study to determine the most suitable wetlands for the WfWetlands rehabilitation efforts. The involvement of Provincial Wetland Forums 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 land-owners 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.

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 comprises a reporting component where Rehabilitation Plans are prepared for each Wetland Project. 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 reviewed by various government departments, stakeholders and the general public before a specific subset of interventions are selected for implementation.

Landowner consent is an important component of each phase in each Wetland Project. The flow diagram, **Plate C**, 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.

These include:

- WW(0): Standard operating procedure,
- WW(1): Wetland survey and Inspection consent,
- WW(2): Terms and Conditions for carrying out wetland rehabilitation,
- WW(3): Wetland Rehabilitation Activities Consent,
- WW(4): Property Inspection Prior to Wetland Rehabilitation, and
- WW(5): Notification of Completion of Rehabilitation.

Without these signed consent forms the WfWetlands Programme will not be able to implement rehabilitation interventions on the affected property.

Phase 3 requires that certain Environmental Authorisations are obtained before work can commence in the wetlands (please see subsequent sections of this document for detail on Environmental Authorisations). Upon approval of the wetland Rehabilitation Plans by DEA, the work detailed for the project will be implemented within a year with on-going monitoring being undertaken thereafter. The Rehabilitation Plans are considered to be the primary working document for the implementation of the project via the construction/ undertaking of interventions² listed in the Plan.

It is typically at this point in the process when the final construction drawings are issued to the IAs. 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 will assist the IAs in pegging and setting-out interventions. The setting-out activities often coincide with the Phase 1 activities for the next planning cycle. 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.

² This could include soft options such as alien clearing or eco-logs, as well as hard structures for example weirs.

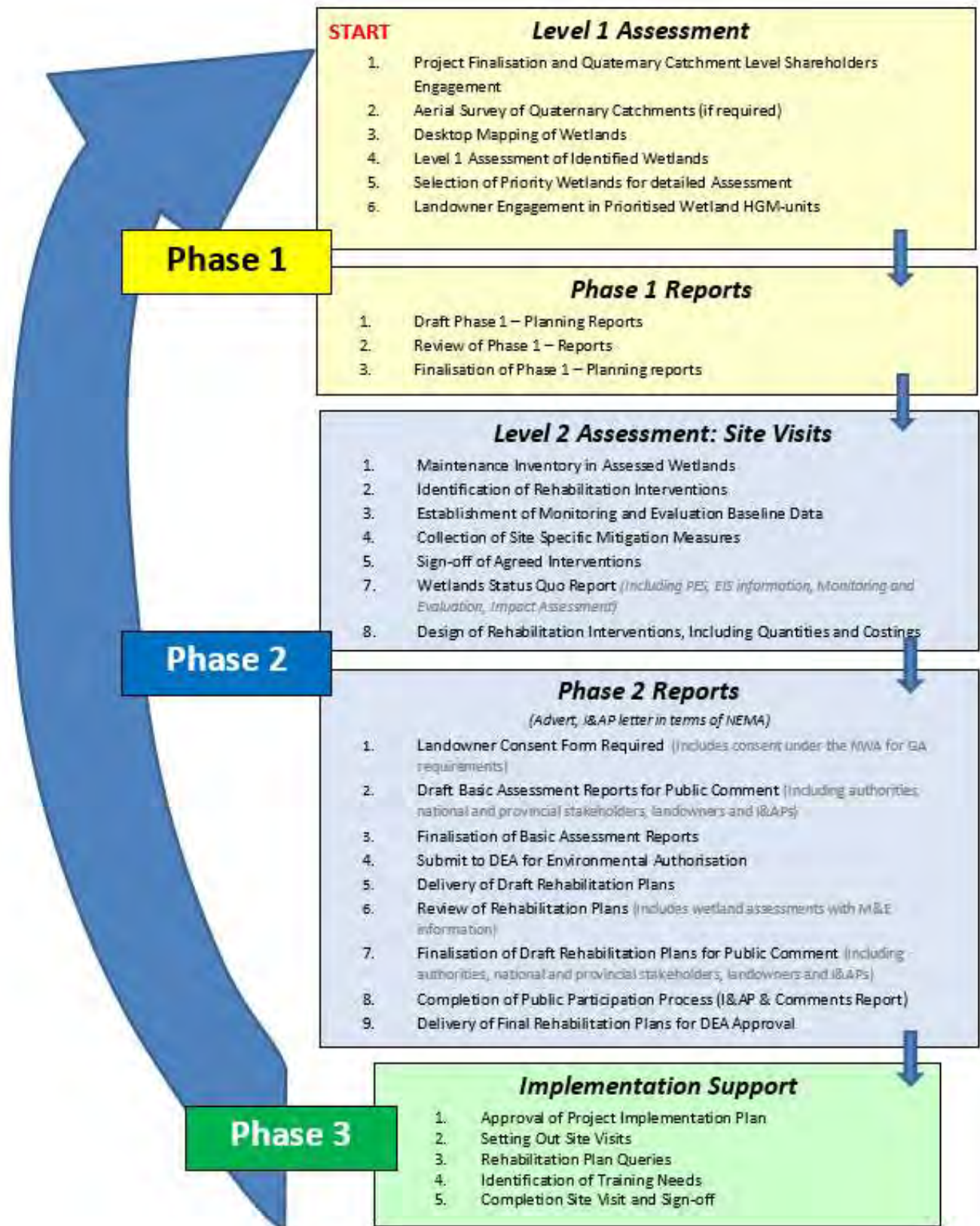


Plate C: The Working for Wetlands planning process (Phase 1 to Phase 3)

Rehabilitation work within floodplain systems

Based on lessons learnt and project team discussions held during the National Prioritisation workshop in November 2010 the WfWetlands Programme took an in-principle decision regarding work within floodplain systems.

Recognising the ecosystem services provided by floodplain wetlands and the extent to which they have been transformed, WfWetlands do not intend to stop undertaking rehabilitation work in floodplains entirely. Instead, WfWetlands propose to adopt an approach to the rehabilitation of floodplain areas that takes into account the following guiding principles:

- a) As a general rule, avoid constructing hard interventions within an active floodplain channel; and rather
- b) Explore rehabilitation opportunities on the floodplain surface using smaller (possibly more) softer engineering options outside of the main channel.

When rehabilitation within a floodplain setting is being contemplated, it will be necessary to allocate additional planning resources, including the necessary specialist expertise towards ensuring an adequate understanding of the system and appropriate design of the interventions.

7. Environmental legislation

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.

The WfWetlands Programme requires that both hard and soft interventions are implemented in the wetland system, and it is the activities associated with the construction of these interventions that triggers requirements for various authorisations, licenses or permits. However, it is important to note that the very objective of the WfWetlands Programme is 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.

Memorandum of Understanding for Working for Wetlands Programme

A Memorandum of Understanding (MoU) has been entered into between DEA, DAFF and DWS for the WfWetlands Programme. Through co-operative governance and partnerships, this MoU aims to streamline the authorisation processes required by the National Environmental Management Act (Act 107 of 1998), the National Water Act (Act 36 of 1998), and the National Heritage Resources Act (Act 25 of 1999) to facilitate efficient processing of applications for authorisation of wetland rehabilitation activities.

Table A: List of applicable legislation

Title of legislation, policy or guideline	Administering authority	Date
The Constitution of South Africa, Act No.108 of 1996	National Government	1996
National Environmental Management Act, No.107 of 1998	Department of Environmental Affairs	1998
The National Water Act, No. 36 of 1998	Department of Water and Sanitation	1998
Conservation of Agricultural Resources Act, No. 43 of 1983	Department of Agriculture, Forestry & Fisheries	1983
National Heritage Resources Act, No. 25 of 1999	National Heritage Resources Agency	1999
World Heritage Conventions Act, No. 49 of 1999	Department of Environmental Affairs	1999
The National Environmental Management: Biodiversity Act, No. 10 of 2004	Department of Environmental Affairs	2004
National Environmental Management: Protected Areas Act, No. 57 of 2003	Department of Environmental Affairs	2003
The Mountain Catchments Areas Act, No. 63 of 1970	Department of Water and Sanitation	1970
EIA Guideline Series, in particular: <ul style="list-style-type: none"> Guideline 5 – Companion to the NEMA EIA Regulations, 2010 (DEA, October 2012) Guideline 7 – Public Participation in the EIA process, 2012 (DEA, October 2012) Guideline 9 - Guideline on Need and Desirability, 2010 (DEA, October 2014) DEA&DP. 2013. Guideline on Public Participation (DEA&DP, March 2013). DEA&DP. 2013. Guideline on Alternatives (DEA&DP, March 2013). 	Department of Environmental Affairs	2012 - 2014
International Conventions, in particular: <ul style="list-style-type: none"> The Ramsar Convention Convention on Biological Diversity United Nations Conventions to Combat Desertification New Partnership for Africa's Development (NEPAD) The World Summit on Sustainable Development (WSSD) 	International Conventions	N/A

Of particular relevance in **Table A** is the following legislation and the WfWetlands Programme has put systems in place to achieve compliance:

- The National Environmental Management Act, No. 107 of 1998 (NEMA), as amended
 - In terms of the 2014 Environmental Impact Assessment Regulations pursuant to the NEMA, certain activities that may have a detrimental impact on the environment (termed Listed Activities) require an Environmental Authorisation (EA) from the DEA. The implementation of interventions will trigger NEMA Listing Notices 1 and 3 (G.N. R983 and G.N R985 as amended by R327 and R324 respectively). In order to meet the requirements of these Regulations, it is necessary to undertake a Basic Assessment (BA) Process and apply for an EA. This was previously undertaken on an annual basis per Province for each individual wetland unit. However as of 2014, applications were submitted (per Province) for wetland systems, allowing WfWetlands to undertake planning in subsequent years within these wetlands without having to undertake a BA process. The rehabilitation plans still however require approval from the competent authority (i.e. DEA).
 - **Basic Assessment Reports** (BARs) will be prepared for each Province where work is proposed by the WfWetlands Programme. These BARs will present all Wetland Projects that are proposed in a particular province, together with information regarding the quaternary catchments and the wetlands that have been prioritised for the next few planning cycles (anywhere from one to three planning cycles depending

on the information gained through the Catchment Prioritisation Process). The EA's will be inclusive of all Listed Activities that may be triggered and will essentially authorise any typical wetland rehabilitation activities required during the WfWetlands Programme implementation phase. Note that certain Listed Activities have been excluded from the Basic Assessment as they fall under the ambit of a 'maintenance management plan' in the form of the Rehabilitation Plan for each project and are therefore subject to exclusion. The impacts thereof have however been considered within the respective Rehabilitation Plans.

- A condition of the EAs is that **Rehabilitation Plans** will be prepared every year after sufficient field work has been undertaken in the wetlands that have an EA. These Rehabilitation Plans will be made available to registered Interested and Affected Parties (I&APs) before being submitted to DEA for approval. The Rehabilitation Plans will 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 (including footprint) of each intervention.
- The National Water Act, No.36 of 1998 (NWA)
 - In terms of Section 39 of the NWA, a General authorisation³ (GA) has been granted for certain activities that are listed under the NWA 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*⁴' and '*altering the bed, banks, course or characteristics of a watercourse*⁵' where they are specifically undertaken for the purposes of rehabilitating⁶ a wetland for conservation purposes. The WfWetlands Programme is required to register the 'water use' in terms of the GA.
- The National Heritage Resources Act, No. 25 of 1999 (NHRA)
 - In terms of Section 38 of the NHRA; 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. Should a permit be required for the damaging or removal of specific heritage resources, a separate application will be submitted to SAHRA or the relevant provincial heritage agency for the approval of such an activity. WfWetlands has engaged with SAHRA regarding the wetland planning process and has committed to achieving full compliance with the heritage act over the next few years.

³Government Notice No. 1198, 18 December 2009

⁴Section 21(c) of the NWA, No. 36 of 1998

⁵Section 21(i) of the NWA, No. 36 of 1998

⁶Defined in the NWA as "*the process of reinstating natural ecological driving forces within part of the whole of a degraded watercourse to recover former or desired ecosystem structure, function, biotic composition and associated ecosystem services*".

Appendix B2

LANDOWNER AGREEMENTS



South African National Biodiversity Institute Working for Wetlands Programme

Wetlands Survey and Inspection Consent

Property Details	
Property Type:	iSimangaliso Wetland Park
Farm Name:	Kleinspan & Tshametshe (iSimangaliso)
Surveyor-General Key:	
Province:	KZN
Unique Wetland Number:	

Owner Details	
Owner Name: <i>(Full Names/Full Registered Name)</i>	
Person Type:	<input type="checkbox"/> Company <input type="checkbox"/> Close corporation <input type="checkbox"/> Trust <input type="checkbox"/> Natural person
Registration/Identity Number:	<i>(Where applicable. For a trust, attach a copy of the latest letters of trusteeship issued by the Master of the High Court.)</i>
Owner's chosen address for delivery of notices and documents:	Postal Address : P/ Bag X05 St. Lucia 3936 Physical Address : The Dredger Harbor St. Lucia

I/We hereby consent to the Working for Wetlands Programme of the SA National Biodiversity Institute ("SANBI") and its appointed implementers undertaking a wetland survey and viability study, at no cost to myself, to identify possible work on my/our property for the Kleinspan & Tshametshe Project during the month of August 2010

I/We hereby agree to undertake a joint inspection of the property, at the request of SANBI. I/we hereby give ~~unhindered~~ ^{unhindered} access to surveyors to conduct the wetland survey and viability study, on the property described above of which I am the owner. Access to my/our property will be subject to prior arrangement by SANBI or its appointed implementers.

Name	AP Zolmanis	Position	CEO
Signature		Date	

Please fax or post this form to: The Planning, Monitoring and Evaluation Manager, Working for Wetlands, SA National Biodiversity Institute Private Bag X101, PRETORIA, 0001, Telephone: (012) 843 5200, Facsimile: (086) 555 9838	With a copy to:
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Subject to park rules, instructions from the designated iSimangaliso Trust Mr Carol Myhill & requirement to inform him two weeks prior to the proposed survey. The scope of works for the proposed survey also require our approval.



South African National Biodiversity Institute Working for Wetlands Programme

Property Inspection Prior to Wetland Rehabilitation

Property Details	
Property Type:	
Registration Division:	
Farm Number:	
Portion Number:	
Farm Name:	Kleinspan & Tshamezhe (iSincangaliso)
Surveyor-General Key:	001
Province:	KZN
Unique Wetland Number:	001

Intervention Number
(Where there is more than one intervention on different parts of the same property, please complete a separate form for each intervention.)

Owner Details				
Owner Name: (Full Names/Full Registered Name)				
Person Type:	Company	Close corporation	Trust	Natural person
Registration/Identity Number:	(Where applicable. For a trust, attach a copy of the latest letters of trusteeship issued by the Master of the High Court.)			
Owner's chosen address for delivery of notices and documents: (Same as on WFW001)	Postal Address: P/Bag 105 St. Lucia 3936	Physical Address: The Dredger Harbor St. Lucia		

Date of Inspection	10 & 11 Aug 2010
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Property Inspection Prior to Wetland Rehabilitation

*Mark the appropriate box with an X. Where necessary provide further information.
If a listed item does not apply to the farm/area where rehabilitation is being done, please state in the Remarks column.*

Condition of :	Present	Very Poor	Poor	Good	Excellent	Remarks
Roads				✓		
Footpaths						
Cattle Tracks						
Store Rooms/Buildings <i>(if to be used by contractors)</i>						
Interior/Exterior :						N/A.
Doors						
Windows						
Paint						
Erosion						
Fencing :				✓		
Fencing wire				✓		
Fencing posts				✓		
Fencing gates				✓		
Litter						NIL
Watering holes						X
Water collection points						X
Water houses/pumps						X
River/stream crossings				✓		
Invasive alien plants	✓					
Fire breaks	✓					
Other: <i>(Please state)</i>						
						N/A.

Landowner		Provincial Coordinator			
Name		Name		Name	
Signature		Signature		Signature	
Date		Date		Date	

Photos and additional information:

N/A.



South African National Biodiversity Institute Working for Wetlands Programme

Wetlands Rehabilitation Activities Consent

Property Details	
Property Type:	
Registration Division:	
Farm Number:	
Portion Number:	
Farm Name:	
Surveyor-General Key:	
Province:	KZN
Unique Wetland Number:	

Owner Details			
Owner Name: (Full Names/Full Registered Name)			
Person Type:	Company	Close corporation	Trust
Registration/Identity Number:	(Where applicable. For a trust, attach a copy of the latest letters of trusteeship issued by the Master of the High Court.)		
Owner's chosen address for delivery of notices and documents:	Postal Address : P/Bag x05 St. Lucia 3936	Physical Address : The Dredger Harbour St. Lucia	

Project Name:	
---------------	--

I/We hereby consent to the Working for Wetlands Programme of the SA National Biodiversity Institute and its appointed consultants to undertake the necessary legal processes under the National Water Act (36 of 1998) and the National Environmental Management Act, as amended (107 of 1998) in order to obtain the requisite authorizations. I/We further consent to the Working for Wetlands Programme of the SA National Biodiversity Institute and its appointed implementers undertaking the wetland rehabilitation activities listed in annexure "WFW 003A" attached hereto, for the project referred to above, subject to my/our approval of the activities detailed in the relevant Wetland Rehabilitation Plan, on the property described above of which I am the owner.

Name	Zakumis AV	Position	CEO
Signature		Date	

<p>Please fax or post this form to:</p> <p>The Planning, Monitoring and Evaluation Manager, Working for Wetlands, SA National Biodiversity Institute, Private Bag X101, PRETORIA, 0001, Telephone: (012) 843 5200, Facsimile: (086) 555 9838</p>	<p>With a copy to:</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------

** subject to i Summary's Approval in each document and Application before it is made.*

Wetland rehabilitation activities to be carried out

[Note: To be added to/amended as appropriate]

** Please note that new EIA regulations may be published from time to time and the listed activities provided below will be updated as required by the legal requirements at the time.

Activity number ¹ .	Activity description
1(d) X	The construction of facilities or infrastructure, including associated structures or infrastructure, for resorts, lodges, hotels or other tourism and hospitality facilities in a protected area contemplated in the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
1(k) X	The construction of facilities or infrastructure, including associated structures or infrastructure, for the bulk transportation of sewage and water, including storm water, in pipelines with - (i) an internal diameter of 0,36 metres or more; or (ii) a peak throughput of 120 litres per second or more.
1(m) X	The construction of facilities or infrastructure, including associated structures or infrastructure, for any purpose in the one in ten year flood line of a river or stream, or within 32 metres from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including - (i) canals; (ii) channels; (iii) bridges; (iv) dams; and (v) weirs.
1(v) X	The construction of facilities or infrastructure, including associated structures or infrastructure, for advertisements as defined in classes 1(a), 1(b), 1(c), 3(a), 3(b), 3(l) of the South African Manual for Outdoor Advertising Control.
3 X	The prevention of the free movement of sand, including erosion and accretion, by means of planting vegetation, placing synthetic material on dunes and exposed sand surfaces within a distance of 100 metres inland of the high-water mark of the sea.
4 X	The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic metres from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland.
5 X	The removal or damaging of indigenous vegetation of more than 10 square metres within a distance of 100 metres inland of the high-water mark of the sea.
6 X	The excavation, moving, removal, depositing or compacting of soil, sand, rock or rubble covering an area exceeding 10 square metres in the sea or within a distance of 100 metres inland of the high-water mark of the sea.
11 X	The decommissioning of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high-water mark of the dam covers an area of more than 10 hectares.
12 X	The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

¹ Activity number in Regulation 386 published in GN No. 386 of 21 April 2006 of the NEMA.



South African National Biodiversity Institute Working for Wetlands Programme

Terms and conditions for carrying out wetland rehabilitation on private land by or on behalf of the Working for Wetlands Programme of the South African National Biodiversity Institute

Definitions

1. In these terms and conditions, unless the context otherwise indicates:
 - 1.1 "**SANBI**" means the South African National Biodiversity Institute, established, organised and existing under the National Environmental Management: Biodiversity Act, No. 10 of 2004, and includes its Working for Wetlands Programme;
 - 1.2 the "**Wetland Rehabilitation Plan**" means the plan for the rehabilitation of the wetland prepared by or on behalf of SANBI to which these terms and conditions are attached;
 - 1.3 the "**Property**" means the immovable property described in the Wetland Rehabilitation Plan on which the wetland is situated and which wetland is proposed to be rehabilitated in terms of the Wetland Rehabilitation Plan;
 - 1.4 the "**Landowner**" means the owner of the Property;
 - 1.5 the "**Rehabilitation Works**" means all work required for the rehabilitation of the wetland on the Property which is set out in the Wetland Rehabilitation Plan;
 - 1.6 the "**In Principle Consent**" means any consent (under the National Water Act as well as the National Environmental Management Act, as amended) in principle given by the Landowner to SANBI prior to the preparation of the Wetland Rehabilitation Plan;
 - 1.7 "**Contractor/s**" means the independent person/s or entity/ies contracted by SANBI to carry out any survey of the Property and to perform or to assist with the performance of the Rehabilitation Works, and includes workers employed by the Contractor.

Agreement to Rehabilitation Works

2. The Landowner hereby agrees to the Rehabilitation Works being undertaken by or on behalf of SANBI on the basis set out in the Wetland Rehabilitation Plan, subject to these terms and conditions. This agreement constitutes the Landowner's consent to the Wetland Rehabilitation Plan, ^{as contemplated in any In Principle Consent.} By this agreement, the Landowner also consents to ^{all work that may have been done by or on behalf of SANBI for the Rehabilitation Works on these terms and conditions, prior to the date of signature of these terms and conditions by the Landowner.} *all work that may have been done by or on behalf of SANBI for the Rehabilitation Works on these terms and conditions, prior to the date of signature of these terms and conditions by the Landowner.*
3. SANBI will not charge the owner for its costs in preparing for and carrying out the Rehabilitation Works provided that the Landowner complies with all his/her obligations under these terms and conditions up to the date of completion of the Rehabilitation Works and at all times thereafter. However, the Landowner will be required to provide the support

Subject to the land owner term & conditions issued from time to time

and/or contributions to the Rehabilitation Works listed in the form attached hereto marked "WFW 004A".

Before the commencement of the Rehabilitation Works

4. The parties record that SANBI's representative has conducted an inspection of the Property with the Landowner to determine the general condition of the Property with regard to fencing, litter, erosion, quality of roads and any other aspects that may be affected by the Rehabilitation Works, and that the Wetland Rehabilitation Plan has been prepared on the basis of the results of this inspection and in consultation with the Landowner, which report has been completed and signed by SANBI's representative and the Landowner.
5. The Landowner is aware that SANBI may in its absolute discretion appoint contractor/s to assist or undertake the Rehabilitation Works and will determine the terms and conditions under which the contractors are contracted, and will be notified in writing of any contractors so appointed. *i Simangalala need to approve these appointments before work commences*
6. The Landowner shall provide SANBI or the contractors with ~~unhindered~~ access to the land as necessary for the completion or performance of the Rehabilitation Works. *subject to i Simangalala conditions and rules*
7. SANBI shall notify the Landowner of the approximate date on which Rehabilitation Works are likely to commence.
8. Should the Rehabilitation Works not commence within 6 (six) months of the Landowner being so notified, SANBI may, in its sole discretion, decide not to proceed with the Rehabilitation Works and, upon written notice to the Landowner to that effect, shall have no further obligation to do so.
9. In the event that the Rehabilitation Works are to be performed on a Property which has two or more land owners, or on adjoining land owned by different land owners, the performance of the Rehabilitation Works is subject to SANBI obtaining the consent to perform the Rehabilitation Works of all the applicable land owners. In the event that SANBI is unable to obtain consent from all the applicable land owners, SANBI reserves the right to terminate or reduce the scope of the Rehabilitation Works.

In the course of the Rehabilitation Works

10. SANBI will be responsible for all negotiations and dealings with the contractors to the extent that this may be necessary.
11. ~~The Landowner~~ ^{SANBI} must take all reasonable precautions to prevent injury to persons doing Rehabilitation Works on the land other than injuries that would normally be associated with the carrying out of the Rehabilitation Works.
12. ~~SANBI or its contractors~~ will not be liable for any acts or omissions in the execution of the Rehabilitation Works, whether negligent or not.
13. ~~The Landowner indemnifies SANBI and its contractors~~ from all claims from whatsoever cause arising resulting from the execution of the Rehabilitation Works except where those claims arise from the fraudulent or wilful conduct of SANBI or its contractors.
14. The Landowner must attend all joint inspections of which the Landowner is notified. ~~In the event of the Landowner failing to attend any inspection despite having prior notice thereof, the Landowner shall abide by any conclusions reached by SANBI pursuant to such an inspection.~~ *due* If, after any inspection, the parties agree that the Rehabilitation Works in an area is incomplete or inconsistent with the scope of the Rehabilitation Works as set out in the Wetland Rehabilitation Plan and that further work is required to complete the task,

SANBI will procure the completion of the Rehabilitation Works so that it is in accordance as set out in the Wetlands Rehabilitation Plan.

- Successors*
15. The Landowner shall not hinder or obstruct SANBI or its contractors in the execution of the Rehabilitation Works at any stage of the Rehabilitation Works.
 16. The Landowner shall notify SANBI of any fires that occur during the period of the Rehabilitation Works and shall endeavour to minimise the impact of such fires on the Rehabilitation Works. *SANBI acknowledges that iSimangaliso is required to burn from time to time as part of its conservation management process.*
 17. The performance of the Rehabilitation Works is at all times subject to sufficient budgeted funding allocated to that particular project in any given financial period. In the event that SANBI is unable to commence or continue with the Rehabilitation Works due to unforeseen circumstances or due to financial constraints on that particular project in any given financial period, SANBI may at any time before or during the commencement of the Rehabilitation Works cause the postponement of the Rehabilitation Works until such time as SANBI is again able to resume the Rehabilitation Works, or to reduce the scope of the Rehabilitation Works. *Where there is a ecological risk to the work, SANBI will mitigate this risk, regardless of budget.*

When the works have been completed *1/1/2010*

18. SANBI will notify the Landowner of completion of the Rehabilitation Works. SANBI or its contractor or authorised representative will as soon as possible thereafter carry out a joint inspection to determine the effectiveness of the Rehabilitation Works and shall furnish the Landowner with a certificate of completion of the Rehabilitation Works.
19. If SANBI is of the view *in concurrence with ISMA-2010* that the Rehabilitation Works has been completed to an acceptable standard, the Rehabilitation Works will be deemed to be completed ~~and the Landowner will be advised accordingly.~~ *and the Landowner will be advised accordingly.*
20. SANBI will inform the Landowner of the further maintenance (including the removal of alien vegetation) and rehabilitation measures that would mitigate problems that have been assessed in the quaternary catchment and recommend possible maintenance measures to be undertaken by the Landowner, with identified support, where applicable.
21. If the Landowner is dissatisfied with the Rehabilitation Works, the Landowner shall notify SANBI within 14 days of completion of the cause of dissatisfaction. If the Landowner fails to give such a notification to SANBI the Rehabilitation Works will be deemed to have been done in accordance with the Wetlands Rehabilitation Plan and to the full satisfaction of the Landowner. *unless required for post maintenance*
22. The Landowner shall not do anything (whether wilfully, negligently or otherwise) that *also require the post maintenance* ~~degrades or otherwise compromises the integrity and effectiveness of the rehabilitative structures forming part of the Rehabilitation Works, or~~ *degrades or otherwise compromises the integrity and effectiveness of the rehabilitative structures forming part of the Rehabilitation Works, or*
 - 22.1 ~~damages or otherwise compromises the integrity and effectiveness of the rehabilitative structures forming part of the Rehabilitation Works, or~~
 - 22.2 ~~degrades the wetland being rehabilitated on the Property, nor allow any other person to do so.~~

for one year after the completion of the works
The Landowner shall not effect any modifications and/or repairs to the rehabilitative structures without first having given SANBI prior written notice thereof and SANBI not, within 30 days of the date of that notice, having objected to those modifications and/or repairs. If SANBI does not object within the said 30 day period, the Landowner may proceed with such modifications and/or repairs.

In the event that the Landowner breaches his/her obligations in terms of this clause 22, SANBI shall be entitled to recover all of the costs of the Rehabilitation Works from the Landowner.

23. The Landowner shall notify SANBI immediately, in the event that the rehabilitative structures are destroyed or are damaged or require any material repair, and shall report to SANBI on the general state of the rehabilitative structures on SANBI's reasonable request.
24. The contract governed by these terms and conditions does not absolve the Landowner from complying with all applicable laws and regulations relating to the maintenance of wetlands on the Property. The Landowner shall, accordingly, observe and comply with all applicable laws and regulations in respect of the wetlands on the Property and the Rehabilitation Works and with all his/her obligations in terms of these terms and conditions.
25. The Landowner shall bind any lessees or occupants of the Property and his/her successors-in-title to the Property to the terms of the contract governed by these terms and conditions.

Addresses for Service and Notices

26. The parties choose *domicilium citandi et executandi* for all purposes under these terms and conditions, including for the giving of any notice to the other of them in respect of the Rehabilitation Works and/or otherwise under these terms and conditions:

The Landowner: at the Property

with a copy to any other address which may have been given for the Landowner in the In Principle Consent;

SANBI: c/o Working for Wetlands
Pretoria National Botanical Gardens
2 Cussonia Avenue
Brummeria
0184
PRETORIA

Either party may change his/her/its *domicilium citandi et executandi* by 14 (fourteen) days' prior written notice to the other of them, citing the name of the project which appears in the In Principle Consent.

All notices in terms of these terms and conditions shall be sent by registered post.

Dispute Resolution

27. If any dispute or difference shall arise between the parties concerning this Agreement, such dispute or difference shall be referred to mediation. The mediation shall be conducted in private by a sole mediator who is an independent person selected by the parties or, in the event that the parties cannot agree on a mediator, or if the selected mediator cannot perform his functions, a mediator or replacement mediator appointed by the Arbitration Foundation of South Africa (AFSA). The mediator may not make any decision which is binding upon the parties concerning the resolution of the dispute, the resolution of the dispute depending solely upon the parties achieving agreement. The parties shall bear the fees and costs of the mediator and the costs of the venue in equal shares.

The mediation will be terminated upon agreement in writing between the parties, or upon one or more parties withdrawing, or the mediator informing the parties that, in his opinion, no useful purpose will be achieved by continuing the mediation, or in the event of an agreement to resolve the dispute not being reached within thirty days of the first meeting with the mediator.

Should the mediation not have induced a settlement, any party to the dispute may, within fourteen days after receipt of the mediator's opinion, refer the dispute or difference to arbitration before an arbitrator nominated by the parties or, failing agreement between them within 7 (seven) days after the arbitration has been demanded, be an attorney or advocate of at least 10 (ten) years experience appointed by AFSA. The arbitrator shall have full and free discretion with regard to the proceedings. The arbitrator's decision shall be final and binding on the parties. The arbitrator may make an award as to his costs.

The provisions of the Arbitration Act, 42 of 1965 (as may be amended or replaced from time to time), shall apply to this arbitration.

The provisions of this clause 27 shall not debar either party from applying for or obtaining urgent interim relief from any competent Court.

Regard less of the outcome of the above, Simons' reserve the right to have to make draft in court. Z

General provisions

- 28. No variation of, or addition to or agreed cancellation of, these terms and conditions shall be of any force or effect unless it is reduced to writing and signed by or on behalf of the parties.
- 29. No waiver or indulgence by either of the parties of whatsoever nature shall be of any force of effect, including a waiver or indulgence in respect of this clause, unless it is reduced to writing and signed by and on behalf of the parties.
- 30. If any particular provision and/or term of these terms and conditions are found to be defective or unenforceable or is cancelled for any reason (whether by any competent Court or otherwise) then the remaining provisions and/or terms shall continue to be of full force and effect. Each provision and/or term of these terms and conditions shall accordingly be construed as entirely separate and separately enforceable in the widest sense from the other provisions and/or terms hereof.

[Signature] DP Zaccaro CEO

AGREED TO BY THE LANDOWNER BY HIS/HER EXECUTION OF THESE TERMS AND CONDITIONS at St Lucia on _____ 20__

in the presence of the undersigned witnesses:

As witness

Name		Name	
Capacity		Capacity	
Signature		Signature	
Date		Date	

Details of support and/or contributions to be provided by landowner :

Appendix B3

WRITTEN NOTIFICATION



14 October 2019

Dear Sir / Madam,

WORKING FOR WETLANDS REHABILITATION PROJECT
PUBLIC PARTICIPATION PROCESS:
AVAILABILITY OF BASIC ASSESSMENT REPORTS AND REHABILITATION PLANS FOR COMMENT

This letter is available in any of the official languages on written request.

Our previous communication of 06 June 2019 regarding the availability of the Draft Basic Assessment Reports (BARs) and Rehabilitation Plans for the above-mentioned project has reference.

Aurecon South Africa (Pty) Ltd is lodging new applications for Environmental Authorisation with the Department of Environmental Affairs (DEA) for the Eastern Cape, Gauteng, KwaZulu-Natal and Limpopo provinces. Due to an unforeseen delay during the submission of the finalised reports for these projects, the previous application lapsed, requiring new applications to be lodged with the Department. The June 2019 reports have subsequently been updated for the current 30-day public comment period required for the new application processes. All comments received during the previous application process are available in Appendix B of the Basic Assessment Reports.

1. BACKGROUND INFORMATION

WfWetlands is a government programme managed by the Natural Resource Management (NRM) directorate of the Department of Environmental Affairs (DEA), and is a joint initiative with the Department of Water and Sanitation (DWS) and the Department of Agriculture, Fisheries and Forestry (DAFF). The programme is mandated to rehabilitate damaged wetlands and to protect pristine wetlands throughout South Africa. Emphasis is placed on complying with the principles of the Expanded Public Works Programme (EPWP) which seeks to draw significant numbers of unemployed people into the productive sector of the economy, gaining skills while they work and increase their ability to earn an income.

The Aurecon team comprises Design Engineers and Environmental Assessment Practitioners (EAPs) who undertake the planning, design and authorisation components of the project. The Aurecon Team, in partnership with GroundTruth, is assisted by an external team of Wetland Specialists who provide scientific insight into the operation of wetlands and bring expert and often local knowledge of the wetlands. The project team is also complimented by the Assistant Director for Wetlands Programmes (ASDs) who are each responsible for provincial planning and implementation.

2. THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, NO. 107 OF 1998 (AS AMENDED) (NEMA)

2.1 Basic Assessment

In terms of the environmental management principles of NEMA certain activities that may have a detrimental impact on the environment (termed Listed Activities) require Environmental Authorisation (EA) from DEA. Many of the activities associated with the rehabilitation of the wetland are listed Activities in terms of Government Notice Regulation (GN R) 983 Listing Notice 1 and GN R985 Listing Notice 3 of NEMA (as amended):

- Listing Notice 1: Activities 12, 19, 27 and 48
- Listing Notice 3: Activities 12, 14 and 23

In terms of GN R982 (as amended), activities identified in Listing Notices 1 and 3 require a Basic Assessment (BA) process to be undertaken during which potential biophysical and socio-economic impacts are identified and assessed. Aurecon has undertaken this process on behalf of WfWetlands, and separate BA applications for each of the provinces listed in the table below, has been submitted to the DEA for consideration.

Province	Project	Nearest Town(s):
Eastern Cape	Amathole	Seymour
Gauteng	Gauteng North	Pretoria
KwaZulu-Natal	iSimangaliso	St Lucia
Limpopo	Soutini-Baleni	Giyani

The provincial level Basic Assessment Reports (BARs) provide the findings of the associated investigations and are available for public comment. The BARs describe the wetland systems that were identified as priorities for this planning cycle, together with the baseline information on the quaternary catchment.

2.2 Rehabilitation Plans

The project specific wetland rehabilitation plans include specialist reports prepared by the Wetland Specialist (which provide a site description, detailed baseline information, and the wetland context within the greater catchment). The rehabilitation plans also include the proposed interventions, objectives, their design details and specification, and proposed locations. Project specific rehabilitation plans were compiled for each project and 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 (including footprint) of each intervention.

3. THE NATIONAL WATER ACT, NO. 36 OF 1998 (NWA)

Activities associated with the rehabilitation of wetlands may constitute “water use” in terms of the NWA and may therefore require general authorisation or licenses from DWS. In general, a water use must be licensed unless:

- It is listed in Schedule one (1) of the NWA,
- It is existing lawful use,
- It is permissible under a General Authorisation (GA), and
- If a responsibility authority waives the need for a licence.

In terms of Section 39 of the NWA, a GA has been granted for certain activities that are listed and usually require a Water Use License. Such a GA (i.e. GN R1198 of 18 December 2009) exists for wetland rehabilitation as long as the activities are for conservation purposes.

4. OPPORTUNITY TO PARTICIPATE

Public Participation procedures are specified as a minimum requirement (Section 41 of GN R982) of the BA Process and must ensure that all Interested and Affected Parties (I&APs) (including State Departments) have an opportunity to participate. Accordingly, notice is hereby given of an additional 30-day public participation process (PPP) on the draft Basic Assessment Reports and Rehabilitation Plans. The BARs and Rehabilitation Plans will be made available for a 30-day comment period from 14 October 2019 until 12 November 2019.

The reports will be available from 14 October 2019 for download from the Aurecon Website: <http://aurecongroup.com/en/public-participation.aspx>. Please be aware that you will be required to register on the website and then again on the project to access the documents. Should you have any trouble accessing the documents,

please do not hesitate to contact Mr Simamkele Ntsengwane (details below).

I&APs have until 12 November 2019 to submit their comments on the BARs and rehabilitation plans to the EAPs below. I&APs should refer to the relevant province and specifically the wetland project (if applicable). Please include your name, contact details and an indication of any direct business, financial, personal or other interest that you may have in the applications in your submission.

Contact Person:	Mr Simamkele Ntsengwane	Miss Franci Gresse
Tel:	(021) 526 9560	(021) 526 6022
Email:	Simamkele.Ntsengwane@aurecongroup.com	Franci.Gresse@aurecongroup.com
Fax:	(021) 526 9500	
Mail:	PO Box 494, Cape Town, 8000	

5. WAY FORWARD

Following the 30-day public comment period, the BARs and rehabilitation plans will be updated by incorporating any I&AP comments received on the reports (where relevant), All comments received during the first application have been incorporated in the BARs and Public Participation Reports . All comments will be recorded and responded to in a Comments and Response Report which will be circulated to all who have provided comment. The updated BARs and/or rehabilitation plans will then be submitted to DEA for their decision. Once DEA has made their decision on the proposed projects, 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.

Yours sincerely
AURECON



Franci Gresse
Senior Environmental Practitioner
Aurecon, Environment and Planning Services

APPENDIX B4
PROOF OF MAILING

Appendix B5

COMMENTS AND RESPONSES

Any comments received and responses sent during the 30-day public comment period will be included with the Final Basic Assessment Report submitted to the Department of Environmental Affairs.

Simamkele Ntsengwane

From: Carl Myhill <carl@isimangaliso.com>
Sent: Tuesday, February 12, 2019 1:30 PM
To: Simamkele Ntsengwane; Franci Gresse; Claire Blanché
Subject: RE: WORKING FOR WETLANDS: PUBLIC PARTICIPATION PROCESS

thanks

From: Simamkele Ntsengwane [mailto:Simamkele.Ntsengwane@aurecongroup.com]
Sent: Monday, February 11, 2019 2:31 PM
To: Franci Gresse; Claire Blanché
Subject: WORKING FOR WETLANDS: PUBLIC PARTICIPATION PROCESS
Importance: High

Dear Sir/Madam

We would like to notify you of the opportunity to comment on the Basic Assessment Reports for proposed wetland rehabilitation activities in terms of Regulations pursuant to the National Environmental Management Act (Act 107 of 1998 (as amended) (NEMA).

Please find herewith attached a cover letter with more details, the letter includes information on a brief background to the proposed project, information on the environmental process, where to access the documents in full and opportunities to participate.

The Basic Assessment Reports for the projects listed in the table below are now available for a 30 day comment period. Electronic copies of these reports are available On Dropbox:

<https://www.dropbox.com/sh/53v4o0lvhyvc5ao/AABMT0VY2JaSSOzRIk9JTbKa?dl=0> and Aurecon's website (<http://www.aurecongroup.com/en/public-participation.aspx>).

Province	Project	Nearest Town (s):
Eastern Cape	Amathole	Seymour
Free State	Maluti	Harrismith and Phuthaditjhaba
Gauteng	Gauteng North	Pretoria
KwaZulu-Natal	Isimangaliso	St Lucia
Limpopo	Soutini Baleni	Giyani
North West	Madikwe National Park and Molopo	Zeerust and Mahikeng

Should you wish to register as an interested and affected party (I&AP), please submit your comments on the reports to the contact people below and include the applicable province and wetland system where relevant, before **14 March 2019**. Also include your **name, contact details** and an indication of any **direct business, financial, personal or other interest** that you may have in the applications in your submission.

Simamkele Ntsengwane: Tel: 021 526 9560; Email: Simamkele.Ntsengwane@aurecongroup.com; or
Franci Gresse: Tel: (021) 526 6022; Email: franci.gresse@aurecongroup.com; or
Fax: (021) 526 9500; or Mail: PO Box 494, Cape Town, 8000

Furthermore, should you have received this email but are no longer interested in the project, kindly let one of the above contacts know and you will be removed from the database.

Kind Regards

Simamkele Ntsengwane BSc (Hons) Env. Geography
Senior Consultant, Environment and Planning, Aurecon
T +27 21 526 9560 M +27 76 225 3548

www.linkedin.com/in/simamkele-ntsengwane-205689a3/
Simamkele.Ntsengwane@aurecongroup.com

Aurecon Centre, 1 Century City Drive, Waterford Precinct, Century City South Africa 7441
PO Box 494, Cape Town 8000 South Africa



DISCLAIMER

Simamkele Ntsengwane

From: Franci Gresse
Sent: Wednesday, March 6, 2019 10:18 AM
To: IvanR
Cc: Simamkele Ntsengwane
Subject: RE: Working for Wetlands Rehabilitation Project

Dear Mr Riggs

You can also access the documents on Dropbox by following this link:
<https://www.dropbox.com/sh/53v4o0lvhyvc5ao/AABMT0VY2JaSSOzRIk9JTBbKa?dl=0>

Please note that we have also provided CDs to your following colleagues:

- Ms Mpume Ntlokwana
- Ms Serah Muobeleni

If you continue to have difficulty accessing the documents, please let us know for further assistance.

Kind regards
Franci

Franci Gresse
Senior Consultant, Environment and Planning, Aurecon
T +27 21 5266022 F +27 86 7231750
Franci.Gresse@aurecongroup.com

DISCLAIMER

From: IvanR <IvanR@daff.gov.za>
Sent: Tuesday, March 5, 2019 10:00 AM
To: Franci Gresse <Franci.Gresse@aurecongroup.com>
Subject: Working for Wetlands Rehabilitation Project

Good day

I have registered on your website to view the documents online but cannot access them.

Can you kindly supply the project reference numbers for the those below.

Province	Project	Nearest Town(s):
Eastern Cape	Amathole, Kromme and Tsitsikamma	Seymour, Kareedouw
Free State	Maluti	Harrismith and Phutha
Gauteng	Gauteng North	Pretoria
KwaZulu-Natal	iSimangaliso	St Lucia
Limpopo	Soutini-Baleni	Giyani
North West	Madikwe National Park and Molopo	Zeerust and Mahikeng

Regards

Ivan Riggs
Regional Manager
Directorate Land Use and Soil Management
Department of Agriculture, Forestry and Fisheries

Tel: 012 319 7562
Cell: 082 574 7650
IvanR@daff.gov.za



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA · 0001· Environment House · 473 Steve Biko Road, Arcadia, - PRETORIA

DEA Reference: 14/12/16/3/3/1/1996

Enquiries: Ms Zamalanga Langa

Telephone: 012 399 9389 E-mail: zlanga@environment.gov.za

Ms Claire Blanché
Aurecon South Africa (Pty) Ltd
PO Box 494
CAPE TOWN
8000

Tel: (021) 526 6937

E-Mail: Claire.Blanche@aurecongroup.com

PER MAIL / E-MAIL

Dear Ms Blanché

COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED WORKING FOR WETLANDS PROGRAMME IN ISIMANGALISO WETLAND PARK IN KWAZULU NATAL PROVINCE.

The Application for Environmental Authorisation and Draft Basic Assessment Report (BAR) dated February 2019 and received by the Department on 11 February 2019, refer.

This letter serves to inform you that the following information must be included to the Final BAR:

(a) Contents of the BAR

- (i) A locality plan that indicates the sites or wetlands earmarked for rehabilitation must be provided. The locality plan and the project description must also be included in the EMPr. Kindly note that Google Earth maps will not be acceptable.
- (ii) The BAR must include a map at an appropriate scale which superimposes the proposed activity and its associated structures, buildings and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers, CBAs, heritage sites, all "no-go" areas.
- (iii) Kindly ensure that the co-ordinates of the wetlands identified for rehabilitation purposes that are included in the final BAR are provided in the format: degrees, minutes, and seconds, using the Hartebeesthoek94 WGS84 co-ordinate system. A list of the co-ordinates must also be provided under Appendix 3 of the application form.
- (iv) Please also ensure that the Final BAR includes the period for which the Environmental Authorisation is required and the date on which the activity will be concluded as per the Appendix 1(3)(1)(q) of the NEMA EIA Regulations, 2014, as amended

(b) Listed Activities

- (i) Please ensure that all relevant listed activities are applied for, are specific and that it can be linked to the development activity or infrastructure as described in the project description. If the area to be

rehabilitated are located in inaccessible areas with no definite access roads, the applicant must determine whether part of the rehabilitation activities will require the construction of access roads and whether this will trigger the applicable listed activities. If the activities applied for in the application form differ from those mentioned in the final BAR, an amended application form must be submitted. Please note that the Department's application form template has been amended and can be downloaded from the following link <https://www.environment.gov.za/documents/forms>.

- (ii) Please note that Table 4 on pages 9-10 titled "Listed activities triggered by the proposed Kwazulu-Natal Projects" project includes Activity 24 of Listing Notice 2 (GN R984, as amended). This activity triggers a full coping and EIA process, and not a Basic Assessment process. The EAP is required to determine the applicability of the activity, and if such activity is triggered, a new application for Environmental Authorisation must be lodged and followed for the proposed project.

(c) Specialist assessments

- (i) The applicant must ensure that should there be any recommendations from SHARA, that it must be included to form part of the EMPr and Rehabilitation Plan Documents.
- (ii) The final BAR must include an avifaunal impact statement from a qualified avifaunal specialist on the possible impacts on any important avifaunal species that may utilise the wetland system in iSimangaliso Wetland Park.
- (iii) The wetland system is located within an iSimangaliso Wetland Park, an important tourism area. The social impact assessment must also include an assessment of potential impacts on tourism in the area. The report must also include a tourism impact statement.
- (iv) The following Activities applied for may trigger Section 19; S21 (c) and (i) of the National Water Act No. 36 of 1998: GN R. 983 Activities 12 (i)(ii)(a); 48 (i)(ii)(a); GN R 985 Activities 14 (i)(ii)(a)(c)(e)(i)(ff)(hh), 23(i)(ii)(a)(c)(e)(i)(ee)(gg). The BAR must include a freshwater specialist study with the following terms of reference:
 - Desktop mapping of freshwater ecosystems within the Department of Water and Sanitation's (DWS) 500m Water Use Licence trigger area around the wetland system;
 - Field-based assessments of the potentially impacted systems to determine likely impacts and risks that the proposed rehabilitation measures may have on the wetland system.
 - Fish management method statement for any fish relocations if any.
 - Identify and recommend measures for mitigating impacts on the receiving environment.
- (v) The EAP must ensure that the terms of reference (TOR) for all the identified specialist studies must include the following:
 - A detailed description of the study's methodology; indication of the locations and descriptions of the development footprint, and all other associated infrastructures that they have assessed and are recommending for authorisations.
 - Provide a detailed description of all limitations to the studies. All specialist studies must be conducted in the right season and providing that as a limitation will not be allowed.
 - Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas.
 - Should the specialist definition of 'no-go' area differ from the Departments definition; this must be clearly indicated. The specialist must also indicate the 'no-go' area's buffer if applicable.
 - All specialist studies must be final, and provide detailed/practical mitigation measures and recommendations, and must not recommend further studies to be completed post EA.
 - Should specialists recommend specific mitigation measures, these must be clearly indicated.

(d) Undertaking of an Oath

An original signed undertaking under oath or affirmation by the EAP (administered by a Commissioner of Oaths), must be included in the final BAR, as per Appendix 1(3)(r) of the EIA Regulations, 2014 (as amended), which states that the BAR must include:

“an undertaking under oath or affirmation by the EAP in relation to:

- (i) the correctness of the information provided in the reports;*
- (ii) the inclusion of comments and inputs from stakeholders and I&APs;*
- (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and*
- (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties”.*

(e) Public Participation Process

The following information must be submitted with the final BAR:

- It is indicated that site notices will be included in the Public Participation Report in the final BAR. Please ensure that these site notices are provided, in order to comply with the requirements of regulation 41 (2) (a) of the EIA Regulations, 2014.
- You are further reminded to provide proof to show that the registered interested and affected parties and organ of states received written notification of the proposed activities, as per the requirements of regulation 41 (2) (b) of the EIA Regulations, 2014. This proof may include any of the following:
 - e-mail delivery reports;
 - registered mail receipts;
 - courier waybills;
 - signed acknowledgements of receipt; and/or any other proof as agreed upon by the competent authority.
- Please ensure that comments from all relevant stakeholders are submitted to the Department with the final BAR.
- Please also ensure that all issues raised and comments received during the circulation of the draft BAR from registered I&APs and organs of state which have jurisdiction (**including this Department's Biodiversity & Conservation Branch and iSimangaliso Wetland Park Authority**) in respect of the proposed activity are adequately addressed in the final BAR.
- Proof of correspondence with the various stakeholders must be included in the final BAR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The public participation process must be conducted in terms of Regulation 39, 40, 41, 42, 43 and 44 of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.
- The final BAR must comply with these comments and all other comments and conditions issued by the Department in relation to the proposed development.
- A comments and Response report (C&R) must be submitted with the final BAR. The C&R report must incorporate all comments for this development. Please note that a response such as “Noted” is not regarded as an adequate response to I&APs' comments.
- The final BAR must indicate clearly the name of the newspaper that the advertisement for the draft BAR has been advertised in.

General

The EAP is requested to contact the Department to make the necessary arrangements to conduct a site inspection prior to the submission of the final BAR.

The BAR, specialist studies and EMPr must ensure compliance to the relevant appendices as outlined in the EIA Regulations, 2014 as amended.

You are further reminded to comply with Regulation 19(1)(a) of the NEMA EIA Regulations, 2014, as amended, which states that:

*“Where basic assessment must be applied to an application, the applicant must, within 90 days of receipt of the application by the competent authority, submit to the competent authority -
(a) a basic assessment report, inclusive of specialist reports, an EMPr, and where applicable a closure plan, which have been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority.”*

Should there be significant changes or new information that has been added to the BAR or EMPr which changes or information was not contained in the reports or plans consulted on during the initial public participation process, you are therefore required to comply with Regulation 19(b) of the NEMA EIA Regulations, 2014, as amended, which states:

“the applicant must, within 90 days of receipt of the application by the competent authority, submit to the competent authority – (b) a notification in writing that the basic assessment report, inclusive of specialist reports an EMPr, and where applicable, a closure plan, will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to the basic assessment report or EMPr or, where applicable, a closure plan, which changes or information was not contained in the reports or plans consulted on during the initial public participation process contemplated in subregulation (1)(a) and that the revised reports or, EMPr or, where applicable, a closure plan will be subjected to another public participation process of at least 30 days”.

Should you fail to meet any of the timeframes stipulated in Regulation 19 of the NEMA EIA Regulations, 2014, as amended, your application will lapse.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.

Yours sincerely



Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs
Letter signed by: Mr Danie Smit
Designation: Deputy Director: Protected Areas
Date: 11/03/2019

CC:	Dr Faria Tererau	WfWetland programme	Email: Fterarai@environment.gov.za
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Simamkele Ntsengwane

From: Simamkele Ntsengwane
Sent: Monday, May 6, 2019 1:43 PM
To: Ashantia Nerissa Pillay
Cc: Franci Gresse
Subject: RE: Ezemvelo's Official Comment: Working for Wetlands Rehabilitation Project: iSimangaliso World Heritage Site

Good Afternoon Nerissa,

Thank you very much for the comments for the abovementioned application. Receipt is hereby acknowledged.

Kind Regards

Simamkele Ntsengwane BSc (Hons) Env. Geography

Senior Consultant, Aurecon

T +27 21 526 9560 M +27 76 225 3548

www.linkedin.com/in/simamkele-ntsengwane-205689a3/

Simamkele.Ntsengwane@aurecongroup.com

Aurecon Centre, 1 Century City Drive, Waterford Precinct, Century City South Africa 7441

PO Box 494, Cape Town 8000

aurecongroup.com



DISCLAIMER

From: Ashantia Nerissa Pillay <Nerissa.Pillay@kznwildlife.com>

Sent: Friday, May 3, 2019 10:53 AM

To: Simamkele Ntsengwane <Simamkele.Ntsengwane@aurecongroup.com>

Cc: Franci Gresse <Franci.Gresse@aurecongroup.com>

Subject: Ezemvelo's Official Comment: Working for Wetlands Rehabilitation Project: iSimangaliso World Heritage Site

Dear Mr Ntsengwane

Please find attached to this email Ezemvelo's Official Comment regarding the Draft Basic Assessment Report for the abovementioned application. Should you require any clarity on the points raised, please do not hesitate to contact this office.

Best Regards

*A. Nerissa Pillay
Scientific Technician
Conservation Planning: IEM*

Ezemvelo KZN Wildlife

1 Peter Brown Drive

P.O. BOX 13053

Cascades

3200

Telephone: (033) 845 1917

Fax: (033) 845 1499

email: nerissa.pillay@kznwildlife.com



E Z E M V E L O
K Z N W I L D L I F E

Conservation, Partnerships & Ecotourism



Planning Division: IEM Section

Enquiries: Nerissa Pillay

Your Ref: None Provided

Aurecon
P.O Box 494
Cape Town
8000

03 May 2019

ATTENTION: SIMAMKELE NTSENGWANE

Dear Mr Ntsengwane

**WORKING FOR WETLANDS REHABILITATION PROJECT: ISIMANGALISO WORLD HERITAGE SITE
District Municipality: Umkhanyakude**

The Draft Basic Assessment Report for the abovementioned application has been received by Ezemvelo's IEM Planning Division (Ezemvelo). Given that the proposed rehabilitation sites are located within the iSimangaliso World Heritage Site, Ezemvelo strongly recommends that this application be referred to the park's ecologist¹ for further assistance and guidance.

Should you require any clarity on the points raised, please do not hesitate to contact this office.

Yours sincerely

p.p
Coordinator IEM
For CEO: EZEMVELO KZN WILDLIFE
cc: Franci Gresse (AURECON)

C:\Nerissa_letters\18. Screen outs and Tech correspondence\2019\12179_Working for Wetlands\12179_WorkingforWetlands_Ezemvelo'sOfficialComment_030519

¹ Caroline Fox (Ezemvelo)- Caroline.Fox@kznwildlife.com
P O Box 13053, Cascades, 3202 • 1 Peter Brown Drive, Montrose, 3202 • Tel : +27 33 845 1346 Fax : +27 33 845 1499
www.kznwildlife.com

Ezemvelo KZN Wildlife Official Comment	Ref. No.: None Provided	Working for Wetlands Rehabilitation Project: Isimangaliso World Heritage Site	Page 1 of 1
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**KWAZULU-NATAL
AMAFA AND RESEARCH INSTITUTE**

**ISIKHUNGO SAMAFA NOCWANINGO
SAKWAZULU-NATALI**

**KWAZULU-NATAL
AMAFA- EN NAVORSINGSINSTITUUT**

PO Box 2685
Pietermaritzburg 3200

Tel: 033 394 6543
Fax: 033 394 6552

email: bernadetp@amafapmb.co.za
Website: www.heritagekzn.co.za

Project Title: Working For Wetlands- KwaZulu Natal
Our Ref: 11908

Enquiries: Bernadet Pawandiwa
Tel: 033 394 6543
Email: bernadetp@amafapmb.co.za
Case ID: 11908

Date: Tuesday June 25, 2019

Page No: 1

FINAL COMMENT

IN TERMS OF SECTION 38(8) OF THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999) AND THE KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE ACT (ACT 05 OF 2018)

Attention: Working for Wetlands Programme

RE: Working For Wetlands- KwaZulu Natal

Thank you for the opportunity to comment on this proposal as outlined above. The case has been considered and the development can proceed as planned as it involves rehabilitation of wetland areas.

The KwaZulu Natal Amafa and Research Institute, (Formerly Amafa aKwaZulu Natal, Heritage KwaZulu Natal, Erferenis KwaZulu Natal), has no objection to the proposed development within limits of the stipulated conditions and mitigation measures.

You are also required to adhere to the below-mentioned standard conditions:

Conditions:

1. The KwaZulu Natal Amafa and Research Institute should be contacted if any heritage objects are identified during earth-moving activities and all development should cease until further notice.
2. No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from the KwaZulu Natal and Amafa Research Institute.
3. Under no circumstances may any heritage material be destroyed or removed from site unless under direction of the KwaZulu Natal and Amafa Research Institute and a heritage specialist.
4. Should any remains be found on site that is potentially human remains, the South African Police Service (SAPS) should also be contacted. No SAPS official may disturb or exhume such remains, without the necessary permission from the KwaZulu Natal and Amafa Research Institute.
5. No activities are allowed within 50m of a site, which contains rock art.
6. Sources of all natural materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.) must be obtained in a sustainable manner and in compliance with the heritage legislation.

Failure to comply with the requirements of the National Heritage Resources Act and the KwaZulu Natal Amafa and Research Institute Act could lead to legal action being instituted against the applicant. Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully



Bernadet Pawandiwa
Senior Heritage Officer

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to the Institute immediately.
3. The Institute reserves the right to request additional information as required.

Franci Gresse

From: Ackerman Pieter <AckermanP@dws.gov.za>
Sent: Friday, June 7, 2019 8:49 AM
To: Simamkele Ntsengwane; Franci Gresse
Cc: Mulaudzi Nkhumbudzeni; Kuse Lumka; Roets Wietsche; Meulenbeld Paul; Khosa Tsunduka; Tonjeni Mzuvukile; Naidoo Bronwyn Roxanne
Subject: Working for Wetlands rehabilitation projects in all provinces: Comments to Aurecon

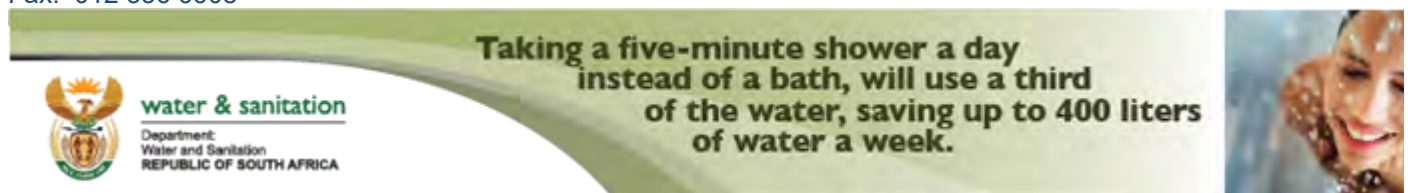
Hi Simamkele and Franci

My comments include:

1. Hydrological and ecological connectivity must be catered for in the designs.
2. It must be monitored if and how the ecological category changed after rehabilitation. PES of category D to PES of B.
3. Scientific buffers must be included taking into account hydrogeological flow drivers in the landscape
4. A guideline with concept designs must be compiled on how wetlands and pans can be re-created taking into account destruction of pans by mines.....OR a clear statement that the recreation is not possible in most cases.....In which cases can it work
5. A guideline with concept designs for constructed wetlands.
6. Lessons learned
7. Re introduction of plants and animals must be taken into account
8. Environmental awareness training for protection of the system in future.
9. Follow ups

Regards

Pieter Ackerman (PrLArch)
Chief Landscape Architect
Department of Water and Sanitation (DWS), South Africa
Sub Directorate Instream Water Use
Tel: 012 336 8217
Cell: 082 807 3512
Fax: 012 336 6608



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Franci Gresse

From: Roets Wietsche <RoetsW@dws.gov.za>
Sent: Friday, June 7, 2019 8:44 AM
To: Simamkele Ntsengwane; Franci Gresse; Claire Blanché
Subject: RE: WORKING FOR WETLANDS REHABILITATION PROJECT: PUBLIC PARTICIPATION PROCESS: EXTENSION OF TIMEFRAMES AND AVAILABILITY OF BASIC ASSESSMENT REPORTS AND REHABILITATION PLANS FOR COMMENT

Dear Simamkele

You are mentioning the GA1198 in your document, please ensure that you comply to the requirements set out in GA1198 and submit relevant registration documents to the relevant regional operations of DWS.

Kind regards

Wietsche Roets (PhD) Pr.Sci.Nat.
Specialist Scientist
Sub-Directorate: In-stream Water Use

185 Francis Baard Street, Sedibeng Bldg, Room 437A
P/Bag X313, PRETORIA, 0001
Tel +27(0)12 336 6510
Cell +27(0)82 604 7730
Email: RoetsW@dws.gov.za

From: Simamkele Ntsengwane [mailto:Simamkele.Ntsengwane@aurecongroup.com]
Sent: 06 June 2019 04:48 PM
To: Franci Gresse; Claire Blanché
Subject: WORKING FOR WETLANDS REHABILITATION PROJECT: PUBLIC PARTICIPATION PROCESS: EXTENSION OF TIMEFRAMES AND AVAILABILITY OF BASIC ASSESSMENT REPORTS AND REHABILITATION PLANS FOR COMMENT
Importance: High

Dear Interested and Affected Party,

WORKING FOR WETLANDS REHABILITATION PROJECT: PUBLIC PARTICIPATION PROCESS: EXTENSION OF TIMEFRAMES AND AVAILABILITY OF BASIC ASSESSMENT REPORTS AND REHABILITATION PLANS FOR COMMENT

Our previous communication of 11 February 2019 regarding the availability of the Draft Basic Assessment Report (BAR) for the above-mentioned project has reference.

We Wish to inform you that The Department of Environmental Affairs (DEA) has granted an extension of timeframes in accordance with Regulation 19(1) (b) of GN R 982 of December 2014, as amended. This provision allows for the competent authority to extend the relevant prescribed timeframes and agree with the applicant on the length of such extension.

You are thereby invited to submit comments on the Revised Draft Basic Assessment Report (BAR) and Draft Rehabilitation Plan which is subject to a further 30-day Public Participation Process from **07 June 2019** up until **08 July 2019**.

Please find attached a cover letter with more details, the letter includes information on a brief background to the proposed project, information on the environmental process, where to access the documents in full and opportunities to participate.

The Basic Assessment Reports and Rehabilitation Plans for the projects listed in the table below are now available for a 30-day comment period. Electronic copies of these reports are available on Dropbox:

<https://www.dropbox.com/sh/5hjupbn99xju93/AAACkvlondnqa48pGraop1YQa?dl=0> and Aurecon's website (<http://www.aurecongroup.com/en/public-participation.aspx>).



agriculture, forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Directorate: Land Use and Soil Management, P.O. Box 345, Pietermaritzburg, 3200

Tel: 033 345 3515, Fax: 033 394 6161, E-mail: ThobisaD@daff.gov.za

Enquiries: T.M Dlepu Ref: 19.1.2.2.3-230 Date: 20 June 2019

Attention: Mr Simamkele Ntsengwane

Tel: 021 526 9560

Fax: 021 526 9500

Email: Simamkele.Ntsengwane@arecongroup.com; Franci.Gresse@arecongroup.com

DRAFT BASIC ASSESSMENT REPORT (DBAR)

APPLICANT: WORKING FOR WETLANDS

PROJECT NAME: KWAZULU NATAL WORKING FOR WETLANDS PROGRAMME

**PROJECT DESCRIPTION: WORKING FOR WETLANDS REHABILITATION PROJECTS; KZN
ISIMANGALISO**

DISTRICT MUNICIPALITY: UMKHANYAKUDE DISTRICT MUNICIPALITY

Reference is made to the DBAR submitted by Aurecon Environmental Consulting; on behalf of the applicant; Working for Wetlands. Department of Agriculture, Forestry and Fisheries (DAFF): Land Use and Soil Management (LUSM) acknowledges receipt of the DBAR for the proposed working for wetlands rehabilitation programme.

Department of Agriculture, Forestry and Fisheries (Land Use and Soil Management) derive its mandate from Conservation of Agricultural Resources Act legislation, CARA (Act 43, 1983) it is administering; which aim to protect natural agricultural resources while maintaining the production potential of the land.

The comments are as follows:

- Since the Kwa-Zulu Natal Wetland Rehabilitation Programme aims to rehabilitate wetlands; to improve water quality and quantity while promoting conservation; therefore, DAFF is in support of this Wetland Rehabilitation Programme. However, rehabilitation must be in line with CARA legislation, by ensuring that the control measures are implemented in every wetland project to control the spread of problematic declared Weeds and Invader plants.
- It is brought to the attention of every landuser that, "Except on authority of a written permission by the executive officer, no landuser shall-
- drain or cultivate any vlei, marsh or water sponge or a portion thereof on his farm unit; or cultivate any land on his farm unit within the flood area of a water course or metres horizontally outside the flood area of a water course

- The Kwa-Zulu Natal Wetland Rehabilitation Programme will also restore biodiversity, while promoting ecological integrity for biological species; which include grazing livestock for adjacent communities.
- The applicant must obtain a written consensus from the landowner(s) prior to the commencement of the proposed activity.

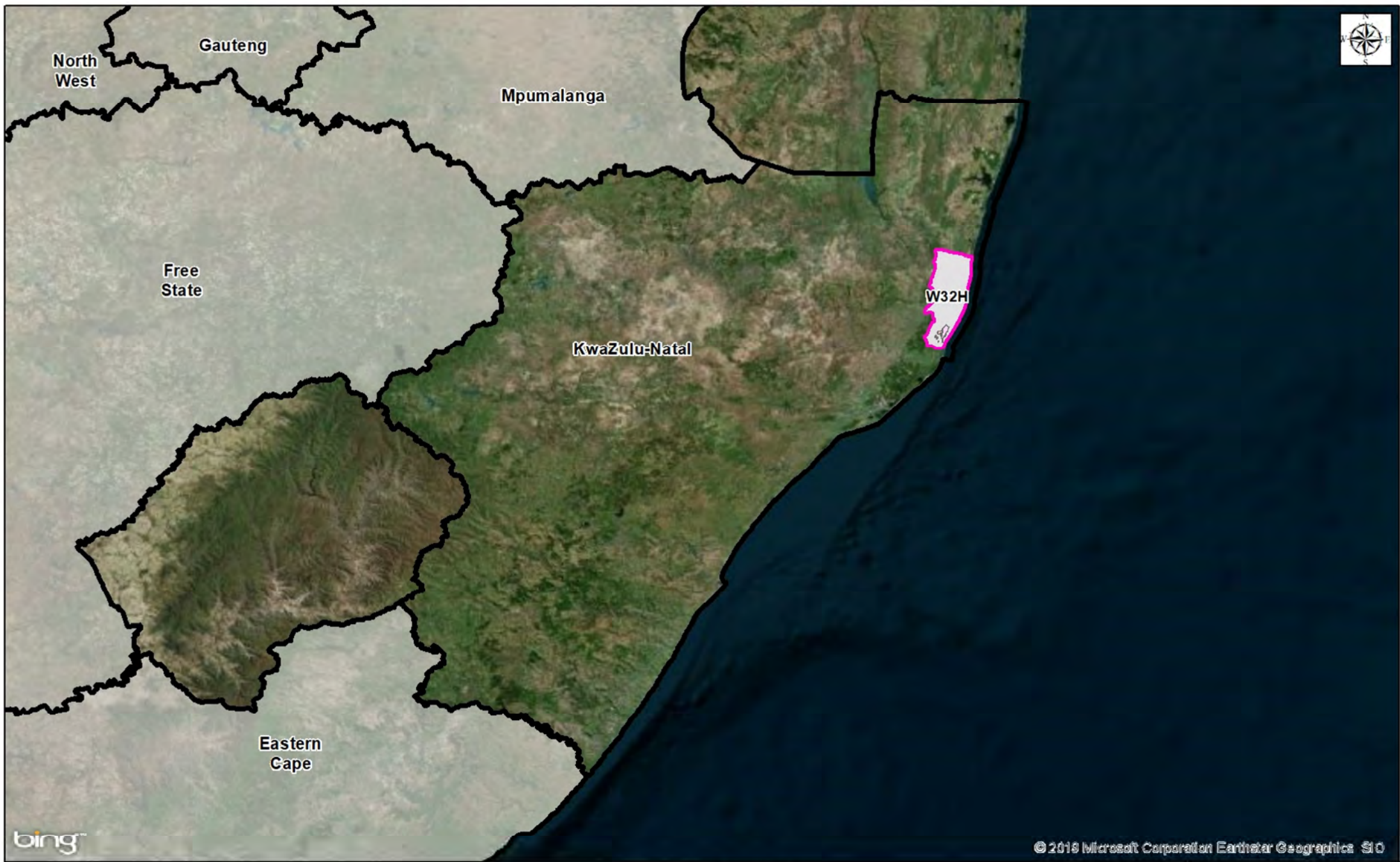
Yours sincerely

A handwritten signature in black ink, appearing to be 'D. Gupta', written over a horizontal line.

pp Executive Officer (Act 43 of 1983)

Appendix C

MAPS



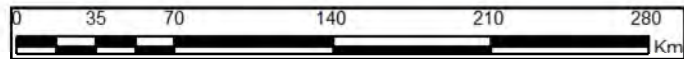
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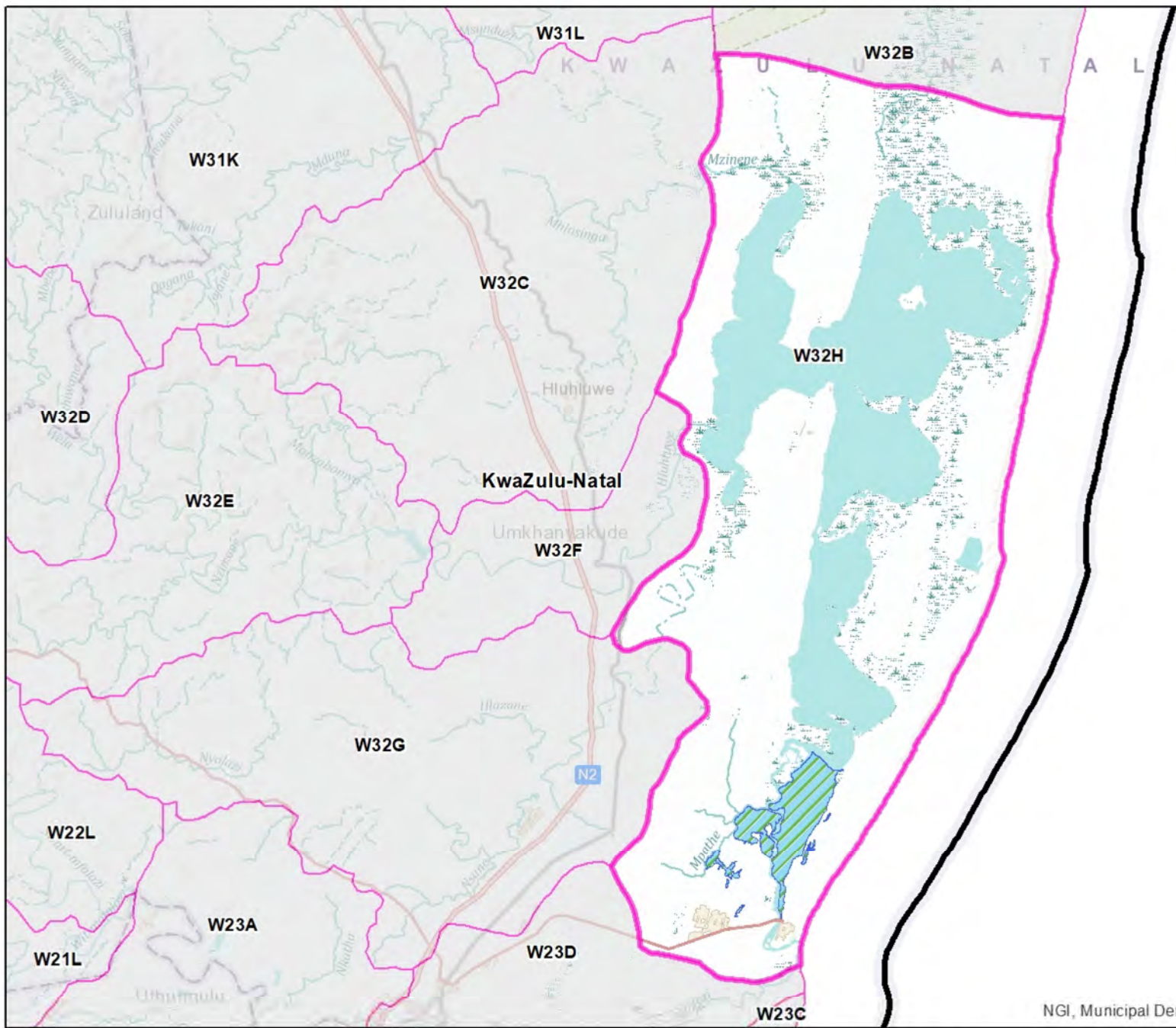
© 2019 Microsoft Corporation Earthstar Geographics SIO

Legend

- Provincial Boundaries
- Quaternary Boundaries



KwaZulu-Natal



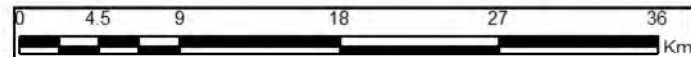


NGI, Municipal Demarcation Board, SANPARKS, Sources: Esri, Garmin, USGS, NPS

Legend

-  Wetland Boundaries
-  Relevant Quaternary

KwaZulu-Natal - W32H



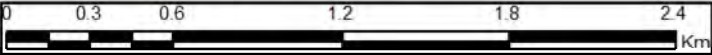


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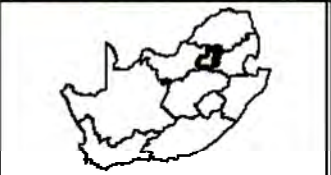
Legend

-  Wetland Boundary
-  Relevant Quaternary

KwaZulu-Natal W32H-03



0 0.3 0.6 1.2 1.8 2.4 Km







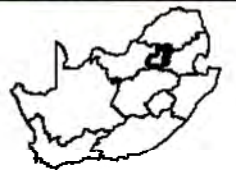
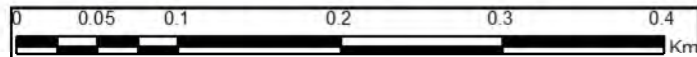
W32H-04

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Legend

-  Wetland Boundary
-  Relevant Quaternary



KwaZulu-Natal W32H-04



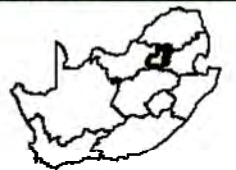
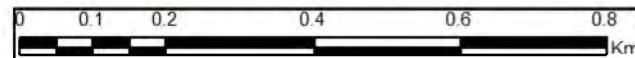


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Legend

-  Wetland Boundary
-  Relevant Quaternary



KwaZulu-Natal W32H-05



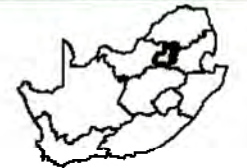
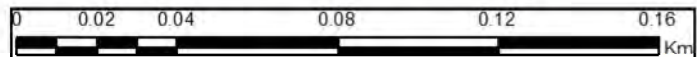


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Legend

-  Wetland Boundary
-  Relevant Quaternary

KwaZulu-Natal W32H-06



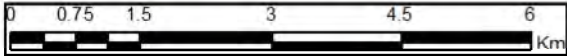


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Legend

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-  Relevant Quaternary

KwaZulu-Natal W32H-07





0 0.75 1.5 3 4.5 6 Km



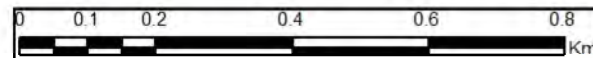


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-  Relevant Quaternary



KwaZulu-Natal W32H-08



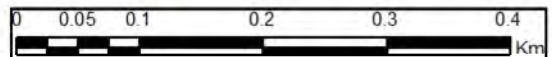


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Legend

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-  Relevant Quaternary

KwaZulu-Natal W32H-09







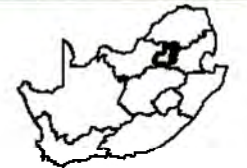
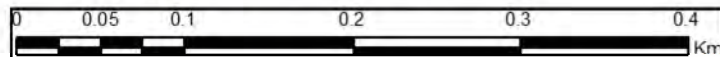
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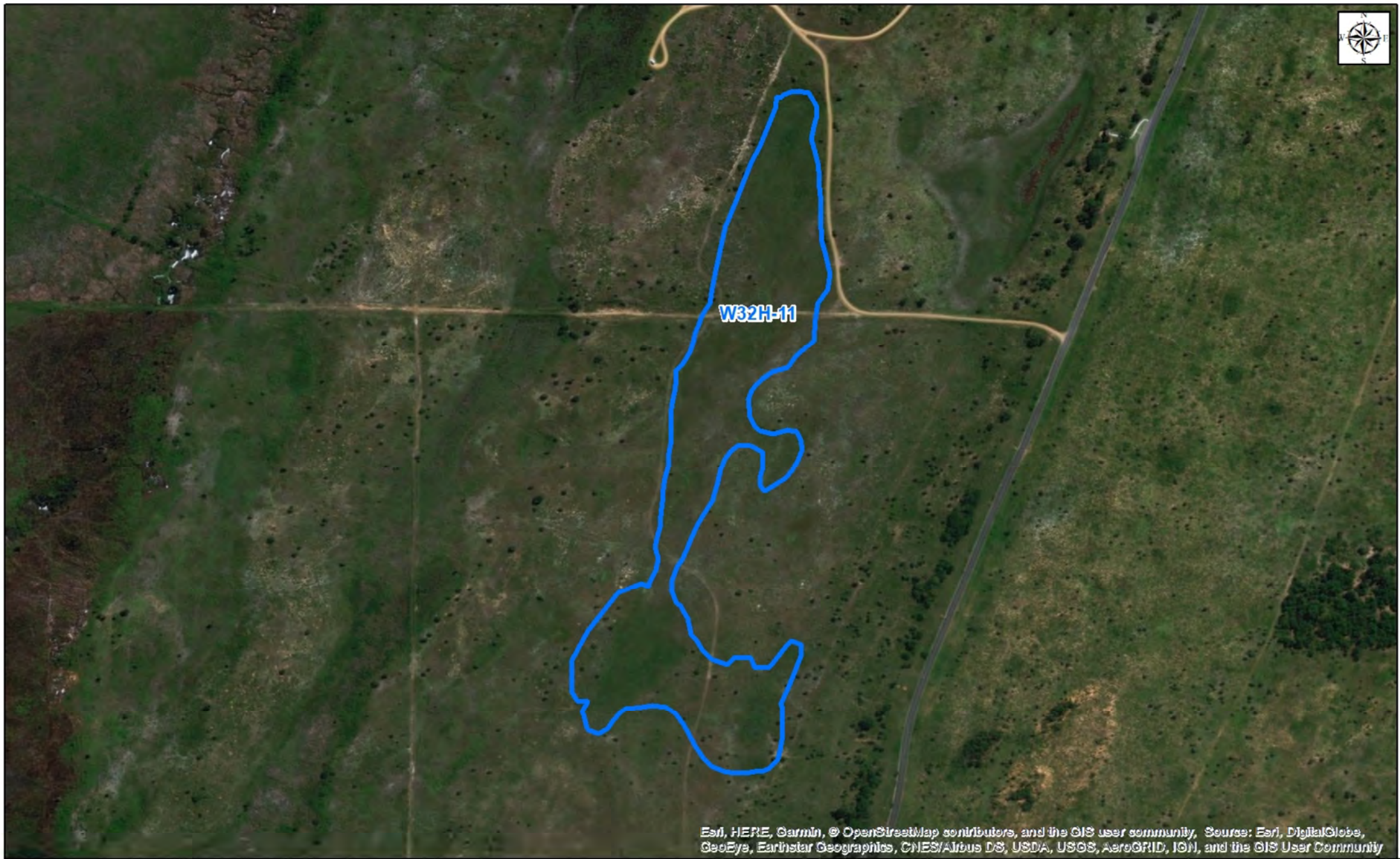
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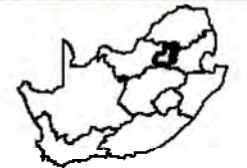
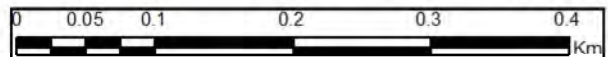


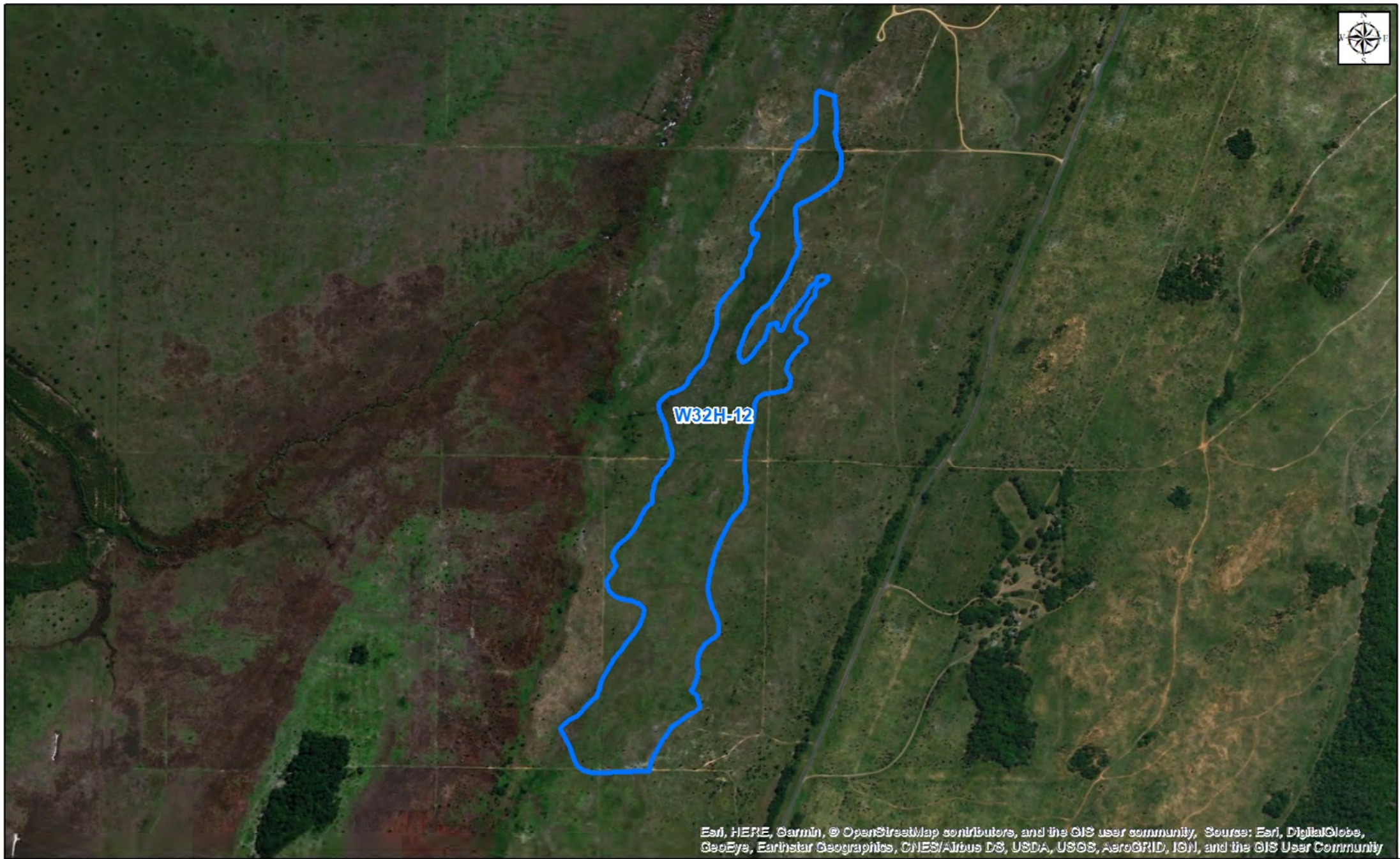
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-  Relevant Quaternary



KwaZulu-Natal W32H-11



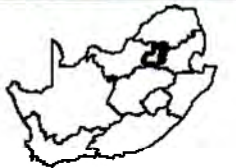
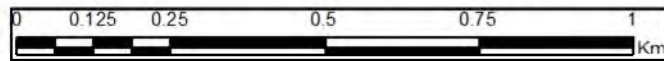


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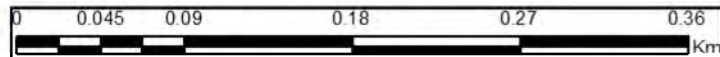
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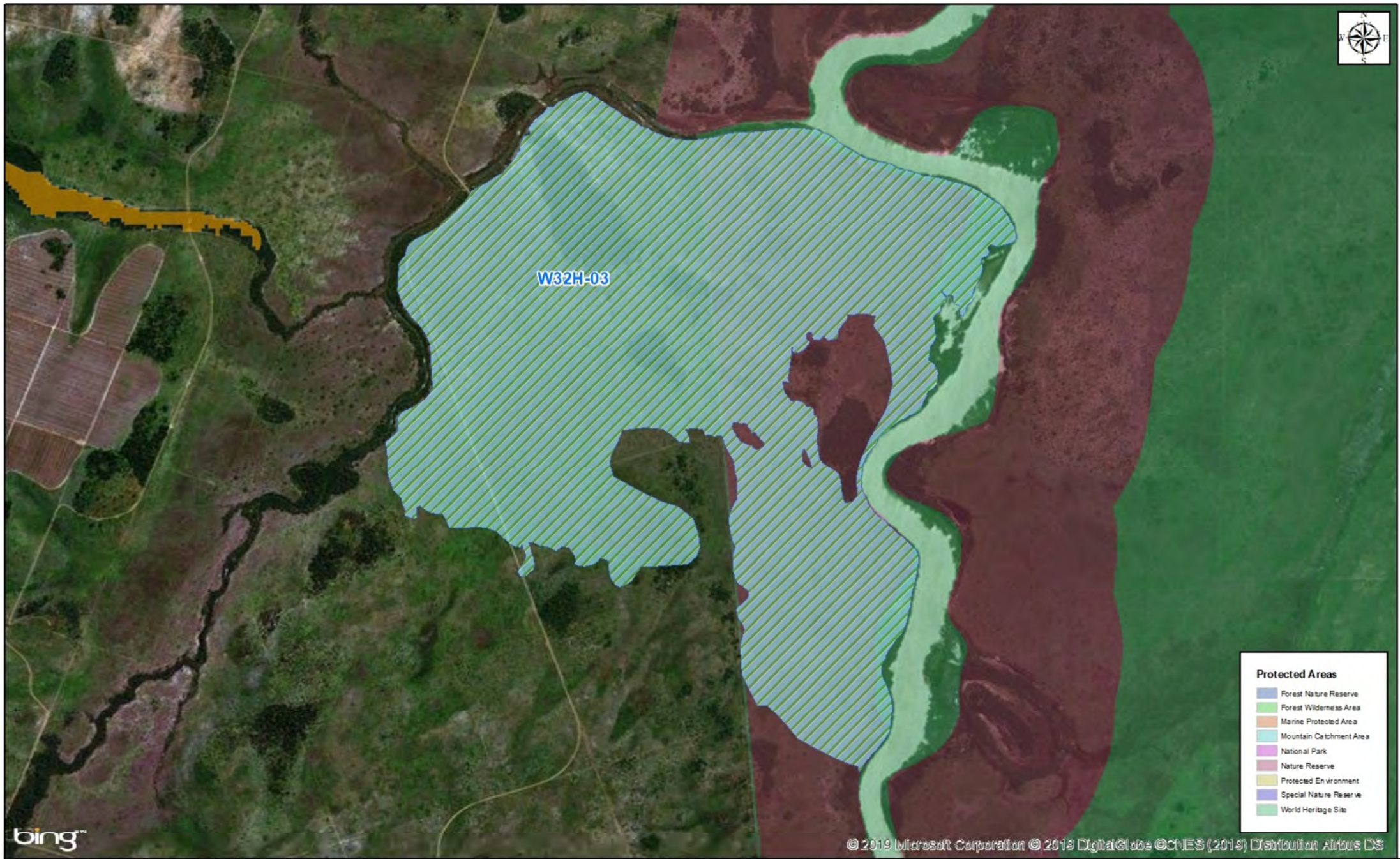
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-  Relevant Quaternary

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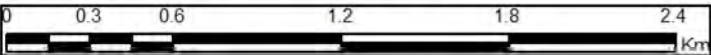
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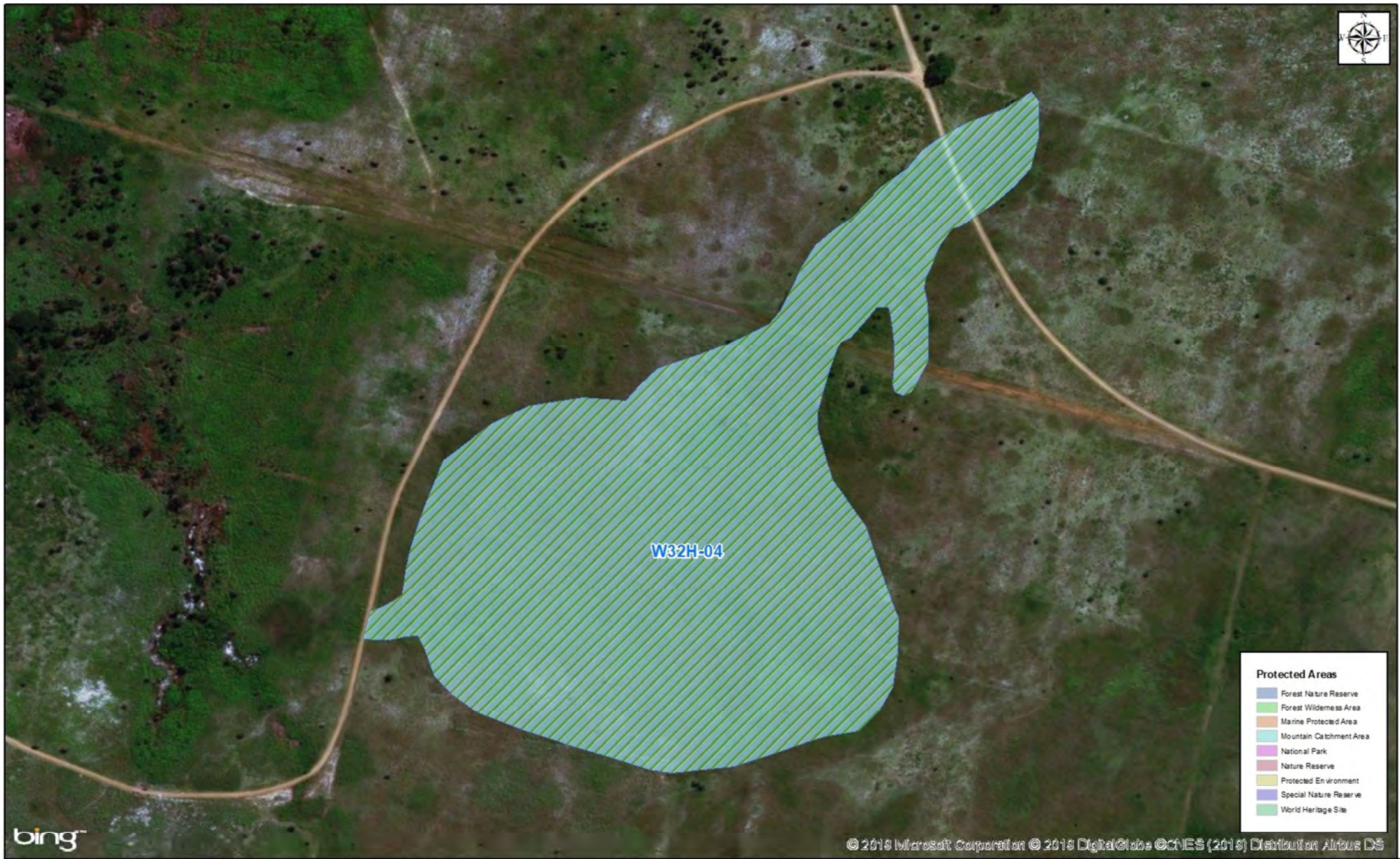
- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-03





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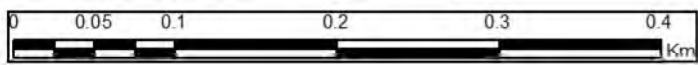
Protected Areas

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- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-04





Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

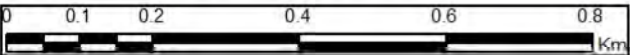
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Critical Biodiversity Areas

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CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-05





Protected Areas

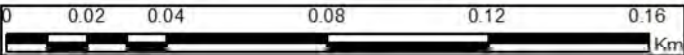
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- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

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Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
	Other	

KwaZulu-Natal W32H-06





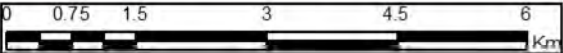
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Critical Biodiversity Areas

- CBA1 Degraded ESA2
- CBA2 ESA1 Protected
- Other

KwaZulu-Natal W32H-07



Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site





Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

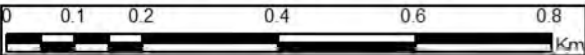
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Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-08





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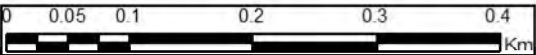
Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-09





Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

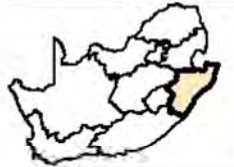
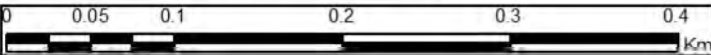
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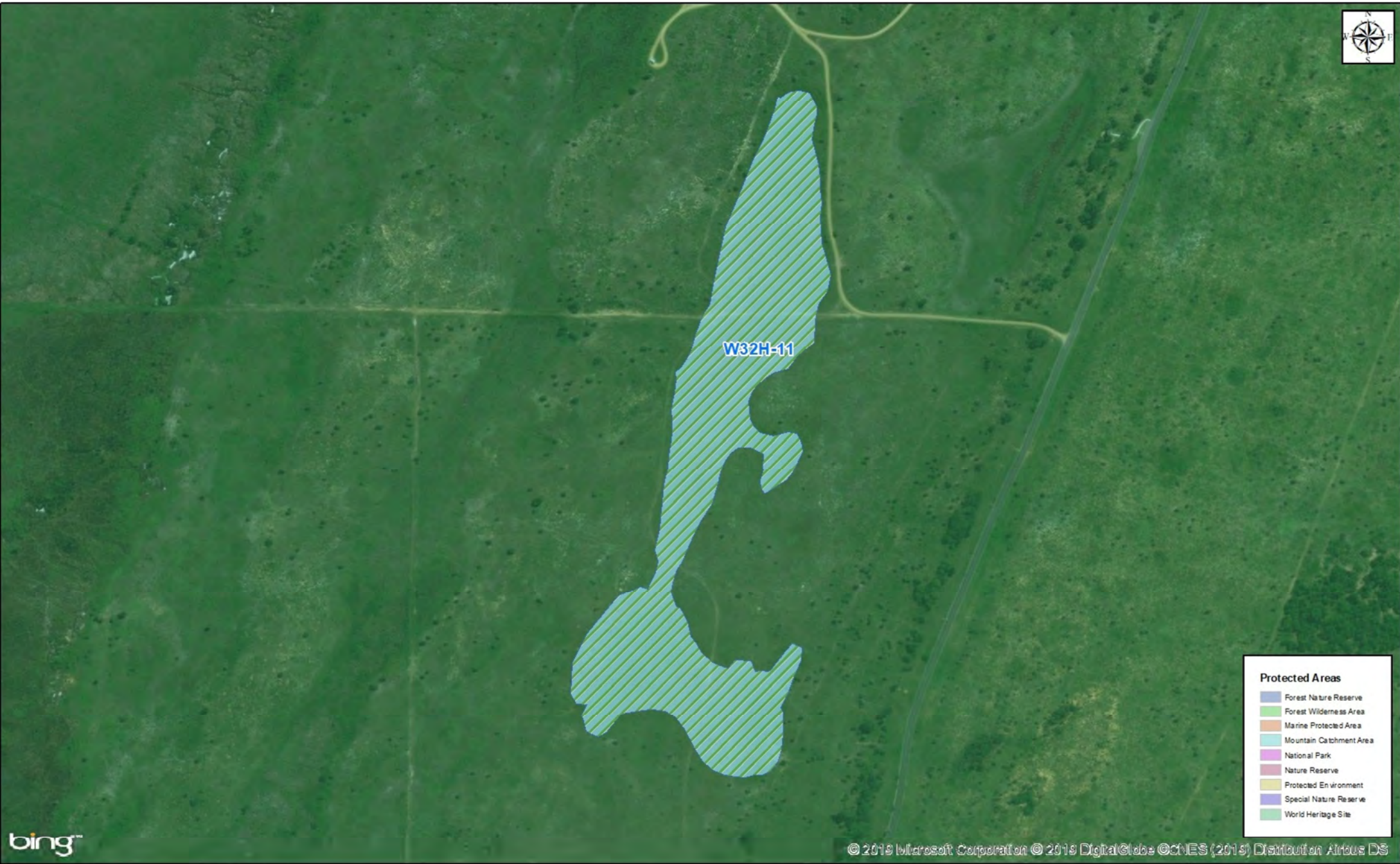
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Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-10





Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

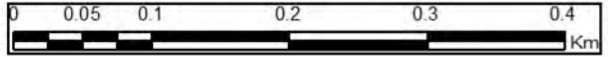
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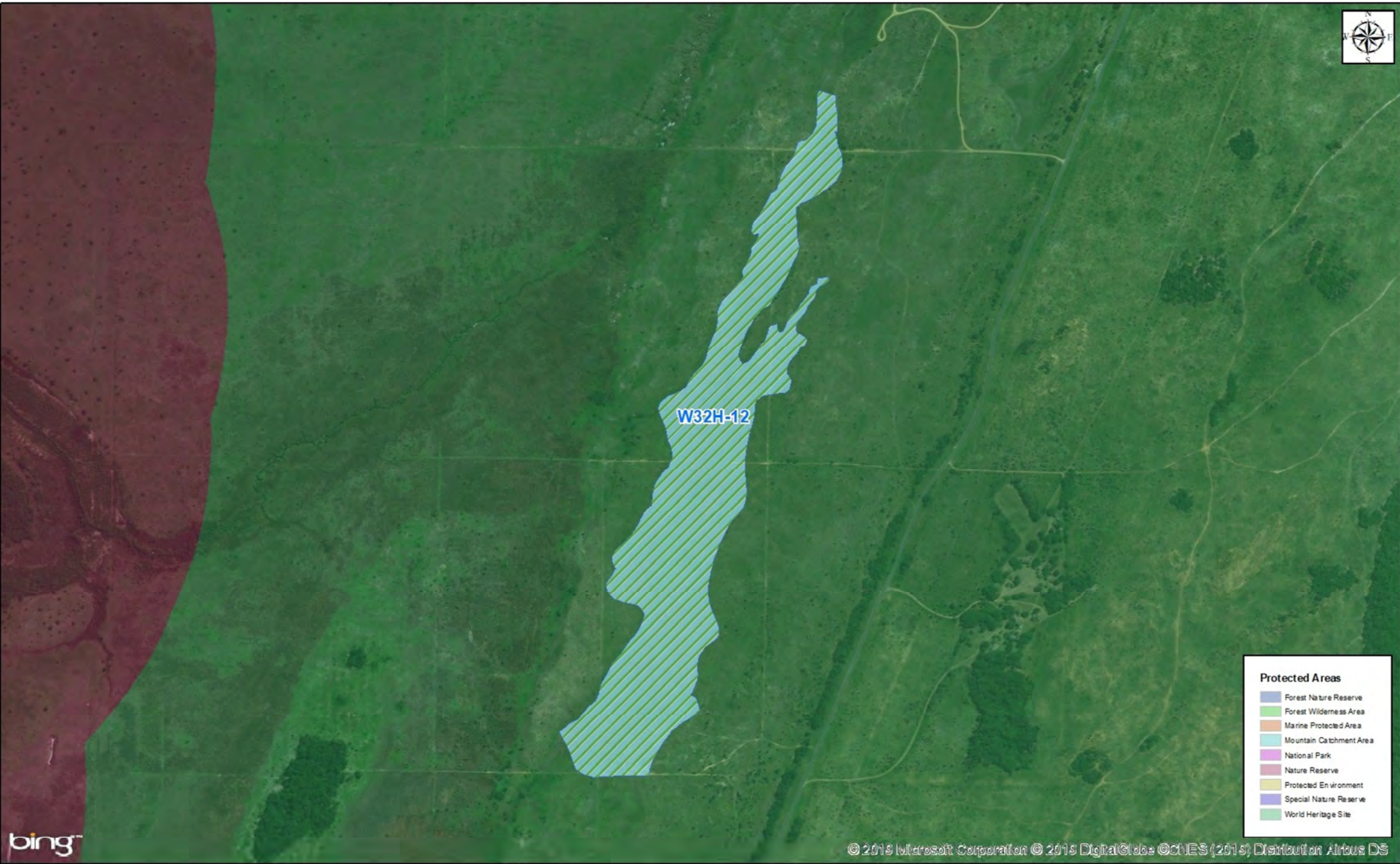
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Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-11





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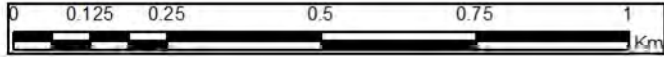
Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-12





Protected Areas

- Forest Nature Reserve
- Forest Wilderness Area
- Marine Protected Area
- Mountain Catchment Area
- National Park
- Nature Reserve
- Protected Environment
- Special Nature Reserve
- World Heritage Site

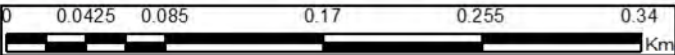
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Critical Biodiversity Areas

CBA1	Degraded	ESA2
CBA2	ESA1	Protected
		Other

KwaZulu-Natal W32H-13



Appendix D

ENVIRONMENTAL MANAGEMENT PROGRAMME

WORKING FOR WETLANDS PROGRAMME



CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME

Date: September 2017
Version: 5

Prepared by:
Aurecon South Africa (Pty) Ltd
PO Box 494
Cape Town
8000



Prepared for:
Working for Wetlands Programme
Department of Environmental Affairs:
Natural Resource Management
Private Bag X447
0001

REPORT CONTROL

Document control					
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Prepared by		Aurecon South Africa (Pty) Ltd PO Box 494 Cape Town 8000			
On behalf of		Working for Wetlands Programme (WfWetlands) Department of Environmental Affairs: Natural Resource Management Private Bag X447 0001			
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3	July 2015	Z. Palmer	F. Gresse	A. Beetge	F. Tererai
4	Nov. 2015	Z. Palmer	F. Gresse	A. Beetge	F. Tererai
5	Sept. 2017	M. Lowies & F. Gresse	F. Gresse	A. Beetge	F. Tererai
Approval					
Author signature				Approver signature	
Name				Name	
Title				Title	
Date				Date	



TABLE OF CONTENTS

1	INTRODUCTION	xii
1.1	Project Overview	1
1.2	Purpose of the EMPr	1
1.3	Auditing of compliance with the EA and EMPr.....	1
1.4	Frequency of compliance auditing	2
1.5	Content of an EMPr.....	2
1.6	Relevant legislation, guidelines and other documents.....	4
1.7	The EMPr in the context of the WfWetlands programme	4
2	IMPLEMENTATION OF THE EMPr	6
2.1	Role-players and their functions/responsibilities	6
2.1.1	DEA	6
2.1.2	The EA holder	6
2.1.3	The PC	7
2.1.4	The ECO	8
2.1.5	The Implementing Entity	9
2.2	Record keeping (site related activities)	11
2.2.1	Site Environmental File	11
2.2.2	Progress / Site Meetings	12
2.2.3	Failure to comply with the EA and EMPr	12
3	PRECONSTRUCTION/PLANNING PHASE	13
3.1	Compliance with environmental legislation	13
3.2	Submission of method statements	13
3.3	Environmental induction/training	14
4	CONSTRUCTION PHASE	16
4.1	Compliance with the EA and successful implementation of EMPr, environmental specifications and other permits/licences.....	16
4.2	Site establishment.....	18
4.3	Channels of communication for public complaints.....	21
4.4	Vegetation clearance	24
4.5	Topsoil management.....	27
4.6	Materials management (non-hazardous).....	31
4.7	Hazardous chemicals and potential hazardous substances.....	35
4.8	Contamination of soils and water	38
4.9	Concrete mixing and cement handling.....	41
4.10	Stormwater management, erosion and sedimentation	43
4.11	Dust nuisance.....	45
4.12	Noise nuisance.....	47
4.13	Ablution	50
4.14	Waste management	52
4.15	Removal of alien invasive species	55
4.16	Impact on fauna	57
4.17	Protection of natural features	59
4.18	Protection of heritage resources (including palaeontological objects).....	61
4.19	Visual impact.....	63
5	REHABILITATION PHASE	65



6	EMERGENCY REPORTING AND PROCEDURES	69
6.1	Emergency Awareness	69
6.2	Incident Recording	69
6.3	Fire	69

List of Annexures

Annexure A: Basic Code of Conduct / Implementation

Annexure B: Site Environmental File & Templates

Annexure C: Sensitive Areas

Annexure D: Minimum Standards for Construction and Maintenance

Annexure E: Curriculum Vitae of EAP

List of Figures

Figure 1:	Example of typical everyday noises and related dB values	47
------------------	-----------------------------------------------------------------------	-----------



List of Tables

Table 1: Requirements of an EMPr as per Appendix 4 of the 2014 EIA regulations, GN R982 (2014, as amended)	3
Table 2: Compliance with the EA and successful implementation of EMPr, environmental specifications and other permits/licences	16
Table 3: Specific avoidance, mitigation and cessation management measures related to impacts identified with site establishment.....	18
Table 4: Specific avoidance, mitigation and cessation management measures related to impacts identified with public complaints.....	21
Table 5: Specific avoidance, mitigation and cessation management measures related to impacts identified with vegetation clearance	24
Table 6: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding topsoil management.....	29
Table 7: Specific avoidance, mitigation and cessation management measures related to impacts identified with materials management (non-hazardous).....	32
Table 8: Specific avoidance, mitigation and cessation management measures related to impacts identified with hazardous materials management.....	35
Table 9: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding contamination of soil and water.....	38
Table 10: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of concrete batching and cement handling.....	41
Table 11: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of stormwater management, erosion and sedimentation	43
Table 12: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding dust nuisance	45
Table 13: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding noise nuisance	48
Table 14: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of ablution	50
Table 15: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of waste management	52
Table 16: Specific avoidance, mitigation and cessation management measures related to the removal of Alien Invasive/pioneer species.....	56
Table 18: Specific avoidance, mitigation and cessation management measures related to impacts on fauna	57
Table 17: Specific avoidance, mitigation and cessation management measures related to impacts on natural features	59
Table 19: Specific avoidance, mitigation and cessation management measures related to impacts on heritage resources (including palaeontological objects).....	61
Table 20: Specific avoidance, mitigation and cessation management measures related to visual impacts.....	63
Table 21: Specific avoidance, mitigation measures related to rehabilitation of the project footprint ...	66



ACRONYMS

BAR	Basic Assessment Report
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EMPr	Construction Environmental Management Programme
EPWP	Expanded Public Works Programme
GPS	Global Positioning System
IE	Implementing Entity
NEMA	National Environmental Management Act (Act 107 of 1998)
NRM	Natural Resource Management
PC	Provincial Coordinator ¹
PDP	Professional Driving Permit
PIP	Project Implementation Plan
PPE	Personal Protective Equipment
PPR	Project Progress Report
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
SEP	Site Environmental File
SETA	Sector Education and Training Authority

¹ Also referred to as Assistant Director: Wetlands Programme.



DEFINITIONS

Alien species²:

- (a) a species that is not an indigenous species; or
- (b) an indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.

Approved: Means approved in terms of the applicable legal requirements (e.g. NEMA approval/ Environmental Authorisation) and/or has been approved by the WfWetlands Programme's Deputy Director: Planning, Monitoring and Evaluation and/or an authorised representative of the WfWetlands Programme.

Archaeological³:

- (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- (c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which the South African Heritage Resource Agency (SAHRA) considers to be worthy of conservation; and

Auditing⁴: A systematic, documented, periodic and objective evaluation which provides verifiable findings, in a structured and systematic manner, on:

- (a) the level of performance against and compliance of an organisation or project with the provisions of the requisite environmental authorisation or Environmental Management Programme (EMPr) and, where applicable, the closure plan; and
- (b) the ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

Authority: National, regional or local authority, that has a decision-making role or interest in the project.

Basic Assessment Report (BAR): A report as described in Regulation 19 of GN R982 (2014, as amended) of the National Environmental Management Act (No. 107 of 1998, as amended) (NEMA).

Best Management Practice (BMP): Procedures and guidelines to ensure the effective and appropriate implementation of wetland rehabilitation by WfWetlands implementers.

² National Environmental Management: Biodiversity Act (No. 10 of 2004)

³ National Heritage Resources Act (No. 25 of 1999)

⁴ Regulation 34 of GN R982 (2014, as amended) of NEMA



Cement laden water: Means water (fresh or wash water) which has been in contact with partially cured concrete/mortar or raw cement product and which contains suspended and dissolved cement solids.

Commence: The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

Contaminated water: Means water contaminated by the Implementing Entity's activities such as with hazardous substances, hydrocarbons, paints, solvents and runoff from plant, workshop or personnel wash areas but excludes water containing cement/ concrete or silt.

Corrective (or remedial) action: Reactive response required to address an environmental problem that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

Dam⁵: Any barrier dam and any other form of impoundment used for the storage of water, excluding reservoirs.

Dangerous goods: Goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "*List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)*" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards.

Decommissioning⁶: To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned.

Dust⁷: Any material composed of particles small enough to pass through a 1 mm screen and large enough to settle by virtue of their weight into the sampling container from the ambient air.

Eco-log: A cylindrical sleeve made from, for example wire mesh, filled with organic material and/or soil used to prevent and/or repair minor erosion.

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

Endangered species: Means any indigenous species listed as an endangered species in terms of section 56 of the National Environmental Management Biodiversity Act ((No. 10 of 2004).

Endemic: An "endemic" is a species that grows in a particular area (i.e. it is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

⁵ GN R983 (2014, as amended) of NEMA

⁶ GN R983 (2014, as amended) of NEMA

⁷ National Dust Regulations GN R827 (2013)



Environment⁸: Means the surroundings within which humans exist and that are made up of:

- i. the land, water and atmosphere of the earth;
- ii. micro-organisms, plant and animal life;
- iii. any part or combination of i) and ii) and the interrelationships among and between them; and
- iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

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.

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 impact: An environmental change caused by some human act.

Environmental impact: Change in an environment resulting from the effect of an activity on the environment, whether positive or negative. Impacts may be the direct consequence of an individual's or organisation's activities or may be indirectly caused by them (DEAT, 1998).

Erosion: The loss of soil through the action of water, wind, ice or other agents, including the subsidence of soil.

Establishment of grass: Refers to all necessary procedures taken to produce an acceptable cover of specified live grass over an area.

Gabion: A structure made of wire mesh baskets filled with regularly sized stones, and used to prevent and/or repair erosion. They are flexible and permeable structures which allow water to filter through them. Vegetation and other biota can also establish in/around the habitat they create.

Hazard: Means a source of or exposure to danger.

Invasive alien species control:

- (a) to combat or eradicate an alien or invasive species; or
- (b) where such eradication is not possible, to prevent, as far as may be practicable, the recurrence, re-establishment, re-growth, multiplication, propagation, regeneration or spreading of an alien or invasive species.

Implementing Entity: The entity responsible for the construction of WfWetlands rehabilitation interventions by means of various contracted teams.

Indigenous vegetation⁹: Refers to 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.

⁸ NEMA

⁹ GN R983 (2014, as amended) of NEMA



Interested and Affected Parties (I&APs)¹⁰:

- (a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
- (b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

Intervention: An engineered structure such as a concrete or gabion weir, earthworks or revegetation that achieves identified objectives within a wetland e.g. raising of the water table within a drainage canal.

Invasive species¹¹: Means any species whose establishment and spread outside of its natural distribution range-

- (a) threaten ecosystems, habitats or other species or have demonstrable potential to threaten ecosystems, habitats or other species; and
- (b) may result in economic or environmental harm or harm to human health.

Listed invasive species: Any invasive species listed in terms of sections 66(1), 67(1), 70(1)(a), 71(3) and 71A of the National Environmental: Biodiversity Act (No. 10 of 2004).¹²

Maintenance period: The period after the Establishment Period (Practical Completion), up to and until the end of the Maintenance Period (i.e. a period of 12 months).

Maintenance¹³: Means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint.

Mine:

- (a) used as a noun-

any excavation in the earth, including any portion under the sea or under other water or in any residue deposit, as well as any borehole, whether being worked or not, made for the purpose of searching for or winning a mineral;

any other place where a mineral resource is being extracted, including the mining area and all buildings, structures, machinery, residue stockpiles, access roads or objects situated on such area and which are used or intended to be used in connection with such searching, winning or extraction or processing of such mineral resource; and

- (b) used as a verb-

in the mining of any mineral, in or under the earth, water or any residue deposit, whether by underground or open working or otherwise and includes any operation or activity incidental thereto, in, on or under the relevant mining area.

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

¹⁰ Regulation 42 GN R983 (2014, as amended) of NEMA

¹¹ National Environmental Management: Biodiversity Act (No. 10 of 2004)

¹² Also refer to GN 864 (2016): Alien and Invasive Species Lists

¹³ GN R983 (2014, as amended) of NEMA



Mitigation¹⁴: Means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible;

Monitoring¹⁵: The repetitive and continued observation, measurement and evaluation of environmental criteria to follow changes over a period of time and to assess the efficiency of control measures.

Nursery conditions: This refers to the necessary conditions that must be in place for maintaining strong healthy growth in all container plant materials on site. This includes for the protection of all container plants against wind, frost, direct sunlight, pests, disease and drought. It also includes for the provision of adequate and suitable water supply, fertilisers and all other measures necessary to maintain strong and healthy plant growth.

Offensive odour: Any smell which is considered to be malodorous or a nuisance to a reasonable person.

Pollution¹⁶: Means any change in the environment caused by substances;

(ii) radioactive or other waves; or

(iii) noise, odours, dust or heat,

emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

Post-construction: Refers to the period of 12 months after the completion of the construction works, the onset coinciding with the maintenance period.

Potentially hazardous substance: Any substance or mixture of substances, product or material declared to be a hazardous substance under section 2(1) of the Hazardous Substance Act (1973).

Pre-construction: Refers to the period leading up to the establishment on site by the Implementing Entity.

Project: A defined area for which an approved rehabilitation plan exists for the WfWetlands Programme.

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.

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”¹⁷

¹⁴ GN R983 (2014, as amended) of NEMA

¹⁵ DEAT, 1998

¹⁶ National Environmental Management Act (No. 107 of 1998, as amended)

¹⁷ DWS Groundwater Dictionary. Available online:

[http://www.dwaf.gov.za/Groundwater/Groundwater Dictionary/index.html?introduction_quaternary_catchment.htm](http://www.dwaf.gov.za/Groundwater/Groundwater%20Dictionary/index.html?introduction_quaternary_catchment.htm)



Reasonable: Means, unless the context indicates otherwise, reasonable in the opinion of the relevant environmental authority.

Rehabilitation: 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; and

Restoring processes and characteristics that are sympathetic to and not conflicting with the natural dynamic of an ecological or physical system¹⁸.

Scarifying: Loosening the soil in areas which have become hard and compacted and which need to be loosened in order to facilitate revegetation.

Shaping: Finishing all slopes which do not form part of the permanent works so that they do not exceed the maximum gradient stipulated in the approved rehabilitation plan.

Significant impact: Means an impact that may have a notable effect on one or more aspects of the environment or may result in k with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

Silt laden water: Means water (mostly overland surface runoff) containing a substantial concentration of suspended solids with increased turbidity. Usually occurs as a result of exposed/cleared ground surfaces, concentration of runoff and/or erosion of excavated or imported materials.

Site: This is the area described in the approved/authorised rehabilitation plan for the implementation of the rehabilitation measures. Where the area is not demarcated, it will include all adjacent areas, which are reasonably required for the activities for the Implementing Entity, and approved for such use by the Environmental Control Officer (ECO).

Slope: The inclination of a surface expressed as 1 unit of rise or fall for so many horizontal units.

Subsoil: The soil horizons between the topsoil horizon and the underlying parent rock.

Topsoil: The upper soil profile irrespective of the fertility appearance, structure, agriculture potential, fertility and composition of the soil, usually containing organic material and which is colour specific. Also referred to as the "O" and "A" horizons.

Waste: Any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 the National Environmental Management: Waste Act (No. 59 of 2008)¹⁹. Examples include construction debris, chemical waste, used oils and lubricants, batteries, metal and wood off-cuts, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Watercourse:

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermitted;
- (c) a wetland, pan, lake or dam into which, or from which, water flows

¹⁸ Wetland Management Series: WET-Origins, WRC Report TT 334/08, March 2008

¹⁹ National Environmental Management: Waste Act (No. 59 of 2008, as amended)



A reference to a watercourse includes, where relevant, its bed and banks

Weir: A dam-type structure placed across a watercourse to raise the water table of the surrounding ground and trap sediment on the upstream face without preventing water flow. Weirs are generally used to prevent erosion from progressing up exposed gullies.

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 soils²⁰ and,

Land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants living there²¹.

²⁰ National Water Act (No. 36 of 1998, as amended)

²¹ Wetland Management Series: WET-Origins, WRC Report TT 334/08, March 2008



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1 INTRODUCTION

1.1 Project Overview

Working for Wetlands 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 and 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.

1.2 Purpose of the EMPr

An Environmental Management Programme (EMPr) is compiled as part of the requisite submissions contained in a Basic Assessment Report (BAR) or Environmental Impact Report (EIR) in order to obtain an Environmental Authorisation (EA) to proceed with a listed activity(ies) as defined in GN R982 (2014, as amended) of the National Environmental Management Act (No. 107 of 1998), as amended. Upon approval of the BAR or EIR and resultant issuing of the EA, the EMPr becomes a legally binding document of which compliance has to be audited by an independent and appropriately qualified auditor as per Regulation 34 of GN R982 (2014, as amended).

The EMPr's main purpose is to document general and specific avoidance, mitigation and termination actions in order to address general and project specific impacts as identified by means of the EIA and/or Phase 2 planning process. Implementation of the actions specified in the EMPr can be contractually delegated to various parties involved in the project execution. However, legal compliance with the EA and EMPr remains with the EA holder and cannot be delegated or transferred. It is therefore of utmost importance that WfWetlands ensures that all parties involved are familiar with the contents and requirements of the EMPr as non-conformances can ultimately have legal and financial consequences to primarily the EA holder but also subsequently all other parties involved.

1.3 Auditing of compliance with the EA and EMPr

Compliance auditing has been transformed from a vague requirement under the 2006 and 2010 EIA regulations to a very specific set of actions and outcomes which are to be achieved under the 2014 EIA regulations. An audit report is now also subject to a specified structure and with specific content requirements (Appendix 7 of GN R982), as amended. According to GN R982 Appendix 7 (Section 2) the objectives of an audit report include *inter alia* the following:

- a) to report on—
 - i. the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and
 - ii. the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieve the objectives and outcomes of the EMPr, and closure plan;



- b) identify and assess any new impacts and risks as a result of undertaking the activity;
- c) evaluate the effectiveness of the EMPr, and where applicable, the closure plan;
- d) identify shortcomings in the EMPr, and where applicable, the closure plan; and
- e) identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.

As per Regulation 34, sub-regulation 4 of GN R982, where the findings of the environmental audit report contemplated in sub- regulation (1) of GN R982 indicate:

- (a) insufficient mitigation of environmental impacts associated with the undertaking of the activity; or
- (b) insufficient levels of compliance with the environmental authorisation or EMPr and, where applicable the closure plan;

the holder must, when submitting the environmental audit report to the competent authority in terms of sub-regulation (1), submit recommendations to amend the EMPr or closure plan in order to rectify the shortcomings identified in the environmental audit report.

When submitting recommendations in terms of sub-regulation (4), such recommendations must have been subjected to a public participation process, which process has been agreed to by the competent authority and was appropriate to bring the proposed amendment of the EMPr and, where applicable the closure plan, to the attention of potential and registered interested and affected parties, including organs of state which have jurisdiction in respect of any aspect of the relevant activity and the competent authority, for approval by the competent authority.

Given the strict and onerous above-mentioned requirements in terms of compliance with the EA and EMPr as well as auditing thereof, it is therefore of utmost importance that the EMPr specifies realistic and auditable avoidance, mitigation and cessation actions which can be applied across a wide range of project in various geographical settings. The approach to the structure and content of this EMPr is discussed in more detail under Section 1.7 below.

1.4 Frequency of compliance auditing

The ECO and Implementing Entity is responsible for ensuring compliance with the EMPr. The ECO shall inspect the site prior to commencement of any construction activity, at least once per month during construction and on completion of construction to establish the level of compliance with this CEMP. At sensitive sites, bi-weekly inspections shall take place as a minimum.

Monthly site audits shall be undertaken by the ECO and a bimonthly Project Inspection Report submitted to the Working for Wetlands Deputy Director: Planning, Monitoring and Evaluation for review prior to the annual Compliance Audit taking place.

The annual Compliance Audit Report shall be submitted to the DEA collating the year's completed checklists. It is the responsibility of the ECO to report any non-compliance, which is not correctly rectified to the DEA.

1.5 Content of an EMPr

Environmental management programmes are intended to be documents which indicate how the mitigation and management measures proposed for a project can be implemented in practice. As such they should be practical, reasonable and feasible. They must also meet the requirements of the legislation (Table 1), in particular regulation 19 (4) of the 2014 EIA regulations (GN R982).



Table 1: Requirements of an EMPr as per Appendix 4 of the 2014 EIA regulations, GN R982 (2014, as amended)

Section	Description	Heading/ section in this EMPr
(a)	details of- (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Report control sheet Annexure E
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Sections 1.1, 1.2 and 1.7
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Chapter 6 Annexure C
(d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Chapters 3-5
(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, including actions to - (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Chapters 4-5
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Chapters 4-5
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Chapters 4-5
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 2.1; Chapters 4-5
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 2.1



Section	Description	Heading/ section in this EMPr
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Chapters 4-5
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Sections 1.3 and 1.4
(m)	an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 3.3 and Chapter 6
(n)	any specific information that may be required by the competent authority.	NA

1.6 Relevant legislation, guidelines and other documents

This EMPr should be read in the context of the following documents:

- Constitution of the Republic of South Africa Act (No. 108 of 1996)
- National Environmental Management Act, (No. 107 of 1998, as amended)
- National Environmental Management: Waste Act (No. 59 of 2008)
- National Forest Act (No. 84 of 1998)
- National Water Act (No. 36 of 1998)
- National Heritage Resources Act (No. 25 of 1999)
- Municipal Systems Act (No. 32 of 2000)
- Occupational Health and Safety Act (No. 85 of 1993)

Note that the EMPr is not intended to replace any of the above, but rather augment them. Compliance with the EMPr does not exempt the EA holder, i.e. WfWetlands, from compliance with the legal or management requirements of any other licence or permit issued in terms of the project.

1.7 The EMPr in the context of the WfWetlands programme

As discussed under the previous sections, an EMPr and compliance with the EMPr (including compliance auditing) is specifically and strictly regulated under the 2014 EIA regulations, as amended. The implementation of a standard EMPr across a programme as diverse as WfWetlands does however pose various challenges as a result of the wide variety of interventions, site conditions, types of wetland systems, ecological integrity and complexity and so forth.

As a result the EMPr has been written with the abovementioned challenges in mind. It therefore focuses on the typical activities and impacts related to a WfWetlands project and generic avoidance, mitigation and termination actions. The EMPr is augmented by a site specific Rehabilitation Plan which includes more site specific mitigation measures and requirements where required. It is recommended that



compliance auditing takes into account the specific mitigation measures recommended in the accompanying Rehabilitation Plan for each individual project as well.

- Allowance will also be made throughout the document for minor deviations to allow for site specific scenarios but with the condition that each deviation be approved by the provincial Programme's Provincial Coordinator (PC) and in the case of major deviations by the DEA (also see Annexure B).



2 IMPLEMENTATION OF THE EMPr

The EMPr is ultimately intended to aid in the implementation of specific actions on site in order to ensure that the impacts of a project are avoided or mitigated during the various project implementation phases. A number of role-players are required to actively participate in the implementation of the EMPr with different roles and responsibilities typically assigned to each. The various roles and responsibilities are outlined below.

2.1 Role-players and their functions/responsibilities

2.1.1 DEA

Responsible Entity: DEA	
<ul style="list-style-type: none"> DEA (specifically the Legal Authorisations and Compliance Inspectorate) holds the ultimate authority and mandate in terms of ensuring environmental legislation is adhered to. 	
Responsibilities	Duration
<ul style="list-style-type: none"> Investigate reported non-compliances with EAs and EMPrs either as a result of findings by an ECO/auditor, reporting by the EA holder or public complaints. Enforce compliance and adherence to the EA, EMPr or any other environmental legislation through a number of administrative and legal procedures should it prove that a person or organisation is in contravention of an EA, EMPr or other environmental authorisation. 	Project lifespan

2.1.2 The EA holder

Responsible Entity: WfWetlands	
<ul style="list-style-type: none"> Holds sole legal liability in terms of ensuring compliance to the EA and EMPr. Some responsibilities resulting from the EA or EMPr can be delegated or transferred contractually. 	
Responsibilities	Duration
Contractual <ul style="list-style-type: none"> Ensure that the EA and EMPr is included in the contract documentation for a project in order to ensure that compliance with the EA and EMPr is contractually binding. Ensure that current standards and specifications forming part of the standard contract documentation allow for or are aligned to the requirements of the EA and EMPr. Ensure that all PCs and Implementing Entities are familiar with the requirements of the EA and EMPr. 	Appointment; Project lifespan



Responsibilities		Duration
Approvals and licences	<ul style="list-style-type: none"> Identify, obtain and comply with all other necessary approvals, permits, authorisations and requirements set by the relevant National and Provincial Departments and Local Authority for the construction of engineering interventions for the rehabilitation of wetlands before any site preparation activities are undertaken. 	Pre-construction
Record keeping	<ul style="list-style-type: none"> Ensure that a proper record keeping system is in place to keep track of proof that copies of the EA and EMPr were issued to the PCs and Implementing Entities. 	Pre-construction; Project lifespan

2.1.3 The PC

Responsible Entity: PC		
<ul style="list-style-type: none"> The PC shall be responsible for his/her specific province to ensure compliance with the EMPr. 		
Responsibilities		Duration
Approvals and licences	<ul style="list-style-type: none"> Be fully aware of and understand all the requirements of the EA(s) and EMPr(s) issued for projects in his/her province. Ensure compliance with the EA and implementation of the EMPr. Ensure that each Implementing Entity receives a copy of the EA and EMPr for distribution to each contractor, with proof of receipt (e.g. a transmittal note or similar). Ensure that each Implementing Entity fully understands the contents and requirements of the EA and EMPr and the legal and financial consequences of non-compliance. 	Pre-construction; Project lifespan
Communication	<ul style="list-style-type: none"> Communicate environmental issues associated with the site to the Implementing Entity, including having adequate environmental knowledge in the field of wetland rehabilitation to understand the detailed environmental issues associated with the project. 	Pre-construction; Project lifespan
Site management	<ul style="list-style-type: none"> Assist with developing a site environmental file and ensuring all documentation is filed correctly. Assist with site or project specific challenges or problems which might result in a non-conformance with the EA and EMPr. Provide guidance to Implementing Entities on practical solutions in achieving the outcomes and requirements of the EA and EMPr. 	Pre-construction; Project lifespan



Responsibilities		Duration
Environmental training	<ul style="list-style-type: none"> Confirm that Environmental Awareness training has been undertaken on all sites prior to construction commencing. 	Pre-construction

2.1.4 The ECO

Responsible Entity: ECO		
Responsibilities		Duration
<ul style="list-style-type: none"> The PC shall perform the duties of the ECO via monthly inspections in order to minimise adverse environmental impacts and effects. Any changes to any environmental management documentation must be reviewed and understood by the ECO. The ECO has access to the construction site at all times. Remain appointed until the site has been rehabilitated as specified in the EMPr. 		
Responsibilities		Duration
Approvals and licences	<ul style="list-style-type: none"> Ensure compliance with the EA, EMPr, permits issued and all the environmental legislation. Be fully knowledgeable with the contents and the conditions of the EA and all amendments. Be fully knowledgeable with the contents of the latest revision of the EMPr. Be fully knowledgeable with the contents of all relevant environmental legislation, and ensure compliance with them. 	Pre-construction
Communication	<ul style="list-style-type: none"> Ensure that the contents of the EMPr are communicated to the Implementing Entity. Escalate serious or repeat non-conformances to the relevant competent authority (i.e. DEA, DWS, SAHRA, etc.). 	Pre-construction; Project lifespan
Site management	<ul style="list-style-type: none"> Approve the site layout plan (showing environmental sensitive/no-go areas). Ensure that all relevant activities being undertaken on site are within the scope of the EA and within the boundaries of the approved layout plan. 	Project lifespan
Environmental training	<ul style="list-style-type: none"> Confirm that Environmental Awareness training has been undertaken on all sites prior to construction commencing. 	Pre-construction
Method statements	<ul style="list-style-type: none"> Ensure that all method statements required are submitted and approved prior to site establishment. 	Pre-construction



Responsibilities		Duration
Record keeping	<ul style="list-style-type: none"> • Keep and maintain a schedule of current site activities including the monitoring of such activities. • Keep copies of all reports submitted to DEA. • Obtain and keep record of all documentation including: environmental authorisation from DEA, EMPr, basic assessment, site layout plan, method statements, all communication detailing changes that may have environmental implications, site inspection checklist, Environmental awareness training attendance register, Environmental incident report, environmental performance certificates (once a project has been completed) photographic records (before, during and after development), records of non-compliance and corrective action taken to remediate, permits, licenses, and authorisations such as waste disposal certificates, hazardous waste landfill site licenses etc. which are required by this facility. 	Project lifespan
Audits	<ul style="list-style-type: none"> • Compile an audit checklist which complies with the requirements of GN R982 Appendix 7 and is able to measure compliance against the EA, EMPr, other relevant permits and contract environmental specifications (where applicable). • Escalate serious or repeat non-conformances to the relevant competent authority (i.e. DEA, DWS, SAHRA, etc.). • Work with the Implementing Entity and relevant stakeholders to resolve any areas of non-compliance with appropriate corrective action. • Assist the Implementing Entity in finding environmentally responsible solutions to problems. • Giving a report back on the environmental issues at the monthly site meetings and other meetings that may be called regarding environmental matters. • Submit final audit report to DEA upon project closure in accordance with the requirements of the EA and EMPr. 	Project lifespan; Project closure

2.1.5 The Implementing Entity

Responsible Entity: Implementing Entity

- The Implementing Entity will be acting as the Project Manager and is responsible for complying with the EMPr during the construction phase of the development on a day-to-day basis.
- The Implementing Entity will be responsible for any non-compliance with the EMPr and will pay for any remedial work that may result from non-compliance resulting directly from his/her negligence. Failure to comply with the EMPr is addressed in Section 2.2.3.



Responsibilities		Duration
Approvals and licences	<ul style="list-style-type: none"> Ensure that a copy of the EMPr, EA and any other applicable permit/licence are available on site. 	Pre-construction; Project lifespan
Communication	<ul style="list-style-type: none"> Submit all required documentation (e.g. proof of training, method statements, layout plans, and requests for deviations) to the ECO on a timely basis. Communicate any issues or concerns of the surrounding community regarding the development to the ECO or other responsible party and visa-versa. Ensure that all materials and equipment required for daily environmental compliance is ordered through the correct channels if such is not available. 	Pre-construction; Project lifespan
Site management	<ul style="list-style-type: none"> Ensure that appointed contractors, participants and sub-contractors are familiar with the EMPr and that they abide by it. Monitor and verify on a daily basis that the EMPr and specifications (if applicable) is adhered to at all times and taking the necessary action to ensure compliance is achieved where it is lacking. Ensure that site demarcation and no-go areas are maintained. Monitor and verify that environmental impacts as a result of construction activities are kept to a minimum. Ensure that all materials and equipment required for daily environmental compliance are available on site and ensure that the aforementioned is ordered through the correct channels if such is not available. Inspect the site and surrounding areas regularly with regard to compliance with the EMPr. Keep a photographic record of progress on site from an environmental perspective. 	Project lifespan
Environmental training	<ul style="list-style-type: none"> Provide environmental awareness training for all new personnel coming onto site and filing proof of such training in the Environmental File on site. 	Pre-construction
Method Statements	<ul style="list-style-type: none"> Ensure compliance with approved Method Statements. 	Pre-construction; Project lifespan



Responsibilities		Duration
Record keeping	<ul style="list-style-type: none"> • Submit all required documentation (e.g. proof of training, method statements, layout plans, and requests for deviations) to the ECO on a timely basis. • File proof of environmental awareness training in the Environmental File kept on site. • Keep and maintain a detailed incident (including spillage of fuels, chemicals, or any other material) and complaints register on site indicating how these issues were addressed, what rehabilitation measures were taken and what preventative measures were implemented to avoid re-occurrence of incidents/complaints. • Ensure that all relevant documentation illustrating or proving environmental compliance are filed on site in the Environmental File for inspection by the ECO or Competent Authority. • Keep a photographic record of progress on site from an environmental perspective. 	Project lifespan
Audits	<ul style="list-style-type: none"> • Complete start-up and site closure checklists on a weekly or monthly basis or as otherwise specified. 	Project lifespan

2.2 Record keeping (site related activities)

The development of an EMP for a project is an important and necessary task that is aimed at assigning responsibilities and mitigation options to a variety of activities. However, it can be an ineffective tool in the absence of auditing or monitoring activities. Auditing or monitoring activities involve the structured observation, measurement, and evaluation of environmental data over a period of time.

2.2.1 Site Environmental File

The Site Environmental File (SEF) is a critical part of compliance record keeping, specifically in terms of proof of activities undertaken on a regular basis on site to ensure compliance with the EA and EMP. The SEF is further a key component to demonstrate compliance to the ECO or relevant Competent Authority official during a compliance audit. The typical SEF contents should include *inter alia* the following:

1. Rehabilitation Plan and EMP

2. Approvals and licences

- 2.1. EA
- 2.2. Section 21(c) and (i) General Authorisation
- 2.3. Waste licence (if applicable)
- 2.4. Mining permit/licence (e.g. for proof of quarry legitimacy)

3. Communication

- 3.1. Important correspondence e.g. notice to Competent Authority of commencement of construction
- 3.2. Copy of public complaints register



4. Site management

- 4.1. Approved layout
- 4.2. Site instructions (or copies thereof)

5. Environmental Training

- 5.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)

6. Method statements

- 6.1. Approved method statements

7. Records

- 7.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)
- 7.2. Proof of legal/safe waste disposal
- 7.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)
- 7.4. Record of water usage (if applicable)
- 7.5. Log of topsoil samples (if applicable)

8. Audits

- 8.1. ECO audit reports
- 8.2. Internal audits/check conducted by the Implementing Entity
- 8.3. Incident and non-conformance reports

Typical examples of checklists and other types of record keeping are included in Annexure B.

2.2.2 Progress / Site Meetings

Environmental issues shall be put on the agenda as a discussion point during these meetings. The Implementer, or a designated person involved with environmental issues on the project, shall attend the progress and/or site meetings on a regular basis to provide feedback on any outstanding or contentious environmental matter.

2.2.3 Failure to comply with the EA and EMPr

The WfWetlands Programme, as the holder of the Environmental Authorisation, is responsible for ensuring compliance with the conditions by any person acting on their behalf including Implementing Entities. The EA holder must notify the DEA in writing within the period specific in the EA if any condition in the Environmental Authorisation is or cannot be complied with. Upon receiving such notification the DEA (Compliance Directorate) will assess the reported non-conformance and inform the EA holder of further actions and submissions required.

In addition to the above, the ECO may order the Implementing Entity to suspend part or all of the works if, based on the ECO's reasoned opinion, the Implementing Entity has, is in the process of or will cause significant environmental damage and/or cause a non-conformance to the EA and/or EMPr. The ECO shall report this instruction to the WfWetlands' *Deputy Director: Programme Implementation* **within 24 hours** of the instruction being issued. Should the aforementioned suspension of work be as a result of negligence or actions by the Implementing Entity, no extension of time will be granted for such delays and all costs will be borne by the Implementing Entity. Apart from direct non-compliance with the EA or EMPr, the following will be regarded as indirect non-compliance:

- Failure to comply with corrective or other instructions issued by the Implementing Entities, ECO or Competent Authority within a specified time.
- Failure to produce the supporting documentation proving compliance with the EA or EMPr.
- Failure to ensure that sub-contractors appointed by the Implementing Entity comply with the EA and EMPr.



3 PRECONSTRUCTION/PLANNING PHASE

3.1 Compliance with environmental legislation

Ensure relevant approvals from regulatory authorities are obtained, in particular in terms of:

- National Environmental Management Act (No. 107 of 1998) (NEMA), as amended;
- National Water Act (No. 36 of 1998);
- National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004);
- National Forests Act (No. 84 of 1998);
- National Heritage Resources Act (No. 25 of 1999); and
- Other provincial and local environmental legislation.

3.2 Submission of method statements

- Method Statements must be compiled by the Implementing Entity.
- All Method Statements must be submitted and approved prior to site establishment commencing.
- The content and required actions of the Method Statements must be communicated to site staff through a compulsory environmental induction.
- Approved Method Statements will be dated and signed by all relevant parties (Implementing Entity, ECO, DEA, Engineer).
- Should a Method Statement need to be revised, a formal revision will be issued, signed and dated. The updated Method Statement will be filed in the SEF.
- The submitted Method Statements (see Annexure B) will include but not be limited to:
 - Site division, demarcation and no-go areas (incl. site camp establishment, access, construction working widths).
 - Site clearance and topsoil management.
 - Stockpiling and laydown areas.
 - Solid waste management (general and hazardous, incl. disposal).
 - Hazardous substances storage and management.
 - Contaminated water management and disposal.
 - Cement storage and handling as well as concrete batching.
 - Fuel storage and management.
 - Ablution facilities and eating areas.
 - Dust and noise/nuisance control.
 - Protection of flora, fauna and natural features.
 - Stormwater management and erosion.



- Site de-establishment and rehabilitation.
- The submission of a site layout plan (see Annexure B) by the IE to the ECO for approval is compulsory. The layout plan must indicate all areas of relevance including *inter alia*:
 - The location of the site camp as well as the site camp layout indicating the location of materials storage (general and hazardous), fuel storage, the site office, ablution facilities, vehicle/machinery parking areas.
 - Access to the site camp and intervention sites.
 - Any required stormwater management measures such as diversion berms, cut-off drains, silt fences etc.
 - Stockpiling and laydown areas.
 - Concrete/mortar mixing/batching areas.
 - No-go or sensitive areas.
 - Limit(s) of the construction footprint.

The layout plan must take into consideration the buffer distances and restrictions as specified in the EMPr. Where applicable²² the IE must make use of multiple layout plans to indicate the location of the abovementioned areas.

3.3 Environmental induction/training

Training and induction forms an integral part of ensuring and maintaining compliance with the EA and EMPr. Every person on site needs to understand the importance of compliance with the EA and EMPr and their specific role(s) in achieving this. Environmental induction and/or training must be specific or relevant to the level of responsibility of the person receiving the training. Environmental training and/or induction shall comply with the following requirements:

- The Implementing Entity and any other staff with management responsibilities (e.g. HSE officer and the foreman) will undergo environmental compliance training prior to construction commencing. The induction/training shall include project specific requirements for compliance with the EA and EMPr and responsibilities assigned to each party.
- Once the Method Statement is approved, a copy of the Method Statement must be circulated and communicated to the responsible parties (see Section 3.2).
- General staff will receive a simplified environmental induction and/or training before the commencement of construction (i.e. site establishment). The induction/training shall address, but not be limited to, basic environmental awareness, basic health and safety awareness, prevention of water, soil, and air pollution, prevention of soil erosion and sedimentation, basic principles of materials handling and storage, fire risks, protection of fauna and flora, removal of invasive alien species (if relevant), emergencies and incident responses, spill response provisions, social responsibility, and administrative and reporting procedures.
- All project personnel shall further be trained in basic wetland awareness, including a basic understanding of the components of wetlands, how wetlands function, the benefits they provide,

²² Where the “site” covers an extensive area or where a large number of interventions are to be constructed.



why they need to be conserved and used sustainably, and the importance of rehabilitation in contributing to wetland conservation and sustainable use.

- Where work takes place in areas containing dangerous game, especially nature reserves and national parks, participants shall receive training in basic animal behaviour. A person trained in dangerous animal behaviour shall be present and suitably equipped to deal with such threats at all times. Before work commences each day, the site shall be checked for dangerous animals by the trained person. First aid training shall include current treatments for snakebites.
- Provision must be made for quarterly refresher environmental training to be undertaken during the course of the contract. The Implementing Entity shall ensure that all attendees sign an attendance register, and shall provide the Implementer with a copy of the attendance register the day after each course.
- Daily/weekly *Toolbox Talks* should include an environmental topic/issue in addition to a Health and Safety topic/issue.
- Proof (training material, attendance registers, photos) of training and attendance to be filed in SEF.
- Include environmental considerations as an item on the agenda of the monthly site meetings.



4 CONSTRUCTION PHASE

4.1 Compliance with the EA and successful implementation of EMPr, environmental specifications and other permits/licences

Identified impacts: The EA, EMPr and other relevant permits and licences are only of value if the conditions/requirements contained in them are adhered to. As these documents are legal documents, non-conformance in terms of adherence/implementation may constitute an offence and be subject to suspension of the authorisation/permit/licence and possible penalties or fines.

Objective of improved management:

- Continued and consistent compliance with the EA and EMPr as well as environmental specifications and other permits/licences

Specifications:

- The ECO shall be responsible for the implementation of this EMPr for the duration of the construction phase and until rehabilitation is completed.
- The ECO shall have full access to the site at all times.
- Audits²³ undertaken by the ECO shall comply with the requirements of GN R982 (2014, as amended).
- Although the EA/licence/permit holder can transpose contractual liabilities to the Implementing Entity in terms of compliance with the EA, EMPr, Environmental Specification and any other relevant permits/licenses, the EA/licence/permit holder will remain legally liable in terms of compliance.

Table 2: Compliance with the EA and successful implementation of EMPr, environmental specifications and other permits/licences

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> A copy of the EA, EMPr, Environmental Specifications and any other relevant permits/licenses will be kept in the SEF on site. The Implementing Entity will familiarise himself/herself with the contents and requirements of the EA, EMPr, Environmental Specifications and any other relevant permits/licenses. 	Implementing Entity, EA holder, ECO

²³ The ECO is responsible for providing an independent evaluation of compliance with the EMPr and not for enforcement of the conditions of the EMPr. The responsibility of enforcement of the conditions of the EMPr lies with the EA holder.



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> The Implementing Entity and/or EA holder will not knowingly proceed with any action which might compromise compliance with the EA, EMPr, Environmental Specifications or any other relevant permits/licenses. 	
Mitigation	<ul style="list-style-type: none"> Should a situation arise where compliance with the EA, EMPr, Environmental Specifications or any other relevant permits/licenses is likely to be compromised/deviated from due to exceptional circumstances or a change in scope of work, the Implementing Entity will notify the ECO immediately. The ECO will assess the type of deviation and its significance and will advise the Implementing Entity whether the deviation requires an amendment to the EA, EMPr, Environmental Specifications or any other relevant permits/licenses. 	Implementing Entity, EA holder, ECO
Stop work	<ul style="list-style-type: none"> Should a situation arise where there is accidental or intentional non-conformance with the EA, EMPr, Environmental Specification and any other relevant permits/licenses, the ECO may order all work to stop until such non-conformance has been assessed, reported to the relevant authority (if necessary) and appropriately mitigated A non-conformance will be recorded in writing by the ECO with a description (and photographic evidence where applicable) of the incident/non-conformance. A non-conformance report will contain detailed actions and action dates for each responsible party and will be signed off by the ECO and IE once completed/closed out. 	Implementing Entity, EA holder, ECO
Monitoring method and frequency	<ul style="list-style-type: none"> Daily/weekly monitoring by Implementing Entity. Formal monthly audits by ECO. 	Implementing Entity, EA holder, ECO
Management outcomes	<ul style="list-style-type: none"> Full and continued compliance with the EA, EMPr, Environmental Specifications and any other relevant permits/licenses. Identification of possible deviations in advance to avoid non-conformances. Independent and impartial monitoring of compliance by the ECO. 	Implementing Entity, EA holder, ECO



4.2 Site establishment

Identified impacts: Site establishment can often have a significant environmental impact in terms of vegetation clearance and/or the construction footprint and therefore needs to be carefully managed. It is also usually during site establishment that the site camp and laydown areas are identified and demarcated. If the aforementioned is not properly planned, it could have several secondary impacts such as water pollution, soil contamination, erosion and excessive dust.

Objective of improved management:

- To avoid excessive disturbance in terms of vegetation clearance and the construction footprint.
- Ensure that activities/facilities/site structures with pollution potential are located outside buffer zones and no-go areas, preferably in already disturbed or transformed areas. Examples include the site camp, material laydown areas, concrete batching plant, ablution facilities etc.
- Ensure that all activities remain within the approved construction footprint.

Specifications:

- Site establishment will not commence until such time that the EA appeal period has passed and will further be subject to the approval of the required method statements by the ECO.
- The wetland boundary shall be demarcated on the site plan and on site.
- Demarcation will be by means of brightly painted/white pegs/poles at least 1.5m in height and placed at regular (10m for linear or on every corner for non-linear) intervals on both sides of the approved construction footprint. **Demarcation shall be maintained for the duration of construction.**
- Danger tape and/or snow/barrier netting shall only be used for health and safety requirements along excavations or high risk areas.
- All areas outside approved and demarcated footprint are to be treated as no-go areas.

Table 3: Specific avoidance, mitigation and cessation management measures related to impacts identified with site establishment

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • The Implementing Entity must prioritise the use of disturbed areas for site camp establishment, laydown areas and stockpile areas. • The site camp shall be clearly demarcated and fenced subsequent to approval of the ECO. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> The site camp, laydown and stockpile areas may not be established within any environmentally sensitive area. Refer to Annexure C for sensitivity and wetland boundary map. Should an extension/amendment to the construction footprint be required, the Implementing Entity must submit such a request to the ECO for approval prior to extending the construction footprint. All work will be executed within the approved working area. Temporary laydown areas will not be used for a period exceeding four (4) weeks and must be approved by the ECO prior to being used. Temporary laydown areas must be demarcated should it fall outside the approved construction footprint. The Implementing Entity is to ensure that all staff (e.g. plant operators, general workers) are informed of no-go areas as part of the induction/environmental awareness training. 	
Mitigation	<ul style="list-style-type: none"> Should the Implementing Entity disturb an area outside the approved footprint, then the Implementing Entity will be held liable to reinstate the impacted area to its original condition. All temporary footprint areas must be reinstated/rehabilitated at the end of construction. 	Implementing Entity
Stop work	<ul style="list-style-type: none"> Should the Implementing Entity fail to remain within the approved construction footprint or intentionally/negligently cause damage to a natural feature in a no-go area, the ECO reserves the right to suspend or partially suspend construction via written instruction in order to allow for the assessment, reporting and rectification of the impact. The aforementioned will be determined by the type and significance of the non-conformance and the risk of it reoccurring should construction proceed. 	ECO, Engineer
Monitoring method and frequency	<ul style="list-style-type: none"> Daily and weekly monitoring/inspections by the Implementing Entity. Formal monthly audits by the ECO. 	ECO, Implementing Entity



Management Measure	Detailed Description	Responsibility
Management outcomes	<ul style="list-style-type: none"> • Method Statements are submitted at least 14 days prior to the commencement of site establishment. • Site establishment only commences after approval of the Method Statements. • Already disturbed areas are prioritised for site camp, laydown and stockpile areas. • Construction footprint and vegetation clearance is controlled and kept to a minimum. • Activities are restricted to within the approved construction footprint. • Demarcation remains visible and in place for the duration of construction. 	Implementing Entity, EA holder, ECO



4.3 Channels of communication for public complaints

Identified impacts: The construction activities could lead to nuisance impacts and impacts on the adjacent properties. This may result in complaints from the public and/or adjacent landowners

Objectives of improved management:

- To record and address (within a reasonable timeframe) any complaints by the public arising from the construction activities and the impacts thereof.

Specifications: None

Table 4: Specific avoidance, mitigation and cessation management measures related to impacts identified with public complaints

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • The IE must contact the landowner and/or occupier of the land where the construction is to take place at last 10 working days prior to moving onto site. • The IE must confirm the procedure to be followed for access including gates which must remain locked or open. • The Implementing Entity must ensure that the site remains neat and that no littering occurs. • Ensure that the public and adjacent landowners are informed well in advance of any construction activities to take place in the vicinity of their properties. • Where the site is located in a nature reserve/park, the Implementing Entity must familiarise him/herself with the rules and regulations of the reserve/park and where necessary include such information in the environmental induction and training. • Where the site is frequently visited by tourists, the Implementing Entity must ensure that his/her site does not cause a visual or noise disturbance. • Also refer to the Code of Conduct attached under Annexure A. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Provide a contact number of person responsible for the site on the site signage. • Maintain a complaints register on site to allow public complaints to be recorded. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Verbal complaints must be recorded within 24 hours of being received with a copy provided to the complainant. • Actions to address the complaints must be recorded in writing with sign-off by the ECO once the actions have been completed. • Address all complaints within a reasonable timeframe (24 hours for initial contact and 5 working days to resolve minor issues or complaints). • Ensure that actions are recorded in the SEF and the actions are implemented to avoid the future complaints regarding the same issue. 	
Stop work	<ul style="list-style-type: none"> • Should a complaint relate to an action by the Implementing Entity which can cause/has caused a serious health and safety or environmental impact, the ECO may suspend or partially suspend work via instruction from the Engineer in order to assess the impact/complaint and identify any remedial actions required. 	ECO
Monitoring method and frequency	<ul style="list-style-type: none"> • Reporting of serious complaints within 24 hrs to the ECO. • Address all complaints within a reasonable timeframe (24 hours for initial contact and 5 working days to resolve minor issues or complaints). • Ensure that all complaints are recorded in the complaints registered and that remedial actions are recorded, implemented and maintained. • Daily and weekly monitoring/inspections by the Implementing Entity. • Formal monthly audits by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> • The public is timeously informed of construction activities which might impact them. • Contact details of the Implementing Entity is visible on site signage at the site camp. • A register is available at the site camp to record any community/public complaints. 	Implementing Entity, ECO



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • All public complaints are recorded and closed out within a reasonable timeframe (24 hours for initial contact and 5 working days to resolve minor issues or complaints). • Repeat complaints regarding the same matter/issue are avoided. 	



4.4 Vegetation clearance

Identified impacts: Various activities that take place during the construction phase require the removal of vegetation, including clearing of the construction footprint for construction activities, site camp establishment, laydown and stockpile areas and access roads.

Objective of improved management:

- To retain natural vegetation in terrestrially sensitive areas.
- To minimise the extent of disturbance of vegetation/habitats on-site.
- Avoid the loss of species of conservation concern.

Specifications:

- Vegetation clearance must be restricted to the approved construction footprint.
- Removal of vegetation must occur at increments and must only be done up to two weeks ahead of actual construction commencing in an area.
- No burning of vegetation will be allowed.
- Where vegetation consists of grasses, bulbs and shrubs, it will be cleared (i.e. complete removal of the vegetation with its root system) as part of the removal of topsoil (i.e. to a maximum depth of 30cm) in order to maximise organic content and the available seedbank in the topsoil.
- Where vegetation consists predominately of reeds, the reeds will be slashed/cut to 30cm in height, measured from ground level, with the remainder of the plant and its root/rhizome system removed with the topsoil layer (i.e. at a maximum depth of 30cm).
- Vegetation/ plant material is not allowed to be disposed of as waste at a landfill site and should be stored for mulching purposes upon completion of the construction works.

Table 5: Specific avoidance, mitigation and cessation management measures related to impacts identified with vegetation clearance

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Limit vegetation clearance in “sensitive areas” as identified in the BAR and as indicated on the maps under Annexure C. • Prioritise the use of already disturbed and degraded areas for site camps, laydown and stockpiling areas. 	Implementing Entity, ECO



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> Do not remove/clear vegetation outside the approved construction footprint. Ensure that site demarcation is maintained throughout the construction phase. Clearly mark shrubs and trees which should not be disturbed/damaged during construction. Remove/relocate species of conservation concern where possible and practical. 	
Mitigation	<ul style="list-style-type: none"> Ensure that all temporary footprint areas are rehabilitated at the completion of construction in a specific area. Ensure that topsoil is removed and conserved in order to ensure successful revegetation/rehabilitation (also see Section 4.5). Any area disturbed outside the approved construction footprint must be reinstated at the Implementing Entity's cost to the satisfaction of the ECO. Ensure that sufficient funds are allocated in the BoQ for rehabilitation of temporary footprints. 	Implementing Entity, ECO, Engineer
Stop work	<ul style="list-style-type: none"> Should the Implementing Entity fail to remain within the approved construction footprint or intentionally/negligently cause damage to a natural feature/vegetation in a no-go area, the ECO reserves the right to suspend or partially suspend construction via instruction from the EA holder in order to allow for the assessment, reporting and rectification of the impact. The aforementioned will be determined by the type and significance of the non-conformance and the risk of it reoccurring should construction proceed. 	ECO, Engineer
Monitoring method and frequency	<ul style="list-style-type: none"> Daily and weekly monitoring/inspections by the Implementing Entity. Formal monthly audits by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> Work is contained to the approved construction footprint. Site demarcation is maintained for the duration of construction. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Vegetation clearance is limited in sensitive areas. • No site camps, laydown or stockpile areas in sensitive areas. • Plants of conservation concern are relocated where possible and feasible (with the necessary permits/licences/approvals in place). • Temporary footprint areas are rehabilitated once work in an area has been completed. • Topsoil is removed and managed properly (see Section 4.5 below) to aid in successful rehabilitation. 	



4.5 Topsoil management

Identified impacts: Topsoil is an essential component to achieve successful rehabilitation/revegetation of a disturbed area. Poor topsoil management practices such as double handling, compaction, contamination, erosion and failing to control weeds/alien invasive species on stockpiles all contribute to the degradation and loss of topsoil. This in turn compromises the success of rehabilitation or results in additional costs to improve or import topsoil.

Objective of improved management:

- To ensure that topsoil is properly removed and managed during construction in order to enable successful rehabilitation at the completion of construction.

Specifications:

- Topsoil must be removed to a maximum depth of 30cm.
- Where the topsoil layer is shallow or alternating in depth, it must be removed to the maximum depth possible.
- Topsoil removal must occur at increments and will only be done up to two weeks ahead of actual construction commencing in an area.
- Topsoil will be removed with the appropriate equipment i.e. pointed or flat tip shovel/spade and a wheelbarrow.
- Topsoil stockpiles must be stored on level areas to a maximum height of 1.5m. The stockpile areas will be properly planned and will be approved as part of the site demarcation process and will be indicated on the site layout plan.
- Stockpiles will not block access routes or endanger any person or animal.
- The stockpiles must be protected from erosion and contamination by subsoil or imported materials.
- Topsoil will not be driven over or compacted and stockpiles will not be reworked or moved unnecessarily.
- Topsoil stockpiles must be kept free of weeds for the duration of construction until reapplied during rehabilitation.
- Topsoil will only be reapplied after all civil work has been completed in order to avoid compaction.

Working in peat wetlands:

Some of the wetlands identified for priority rehabilitation may occur in soils with a high organic composition, known as peat. These soils hold huge importance globally due to their nature to hold high levels of carbon (known as carbon sequestration). The following considerations should be made for site clearance in peatlands:



- Work shall only be done in periods with low rainfall (Winter rainfall areas - November to March and Summer rainfall areas - May to September).
- No material will be removed from the peatland for construction purposes e.g. boulders, rocks, sand.
- All access to the intervention site in the peatland will be by foot, no vehicles will be allowed in the peatland.
- Where materials need to be transported into the peatland, it will be done by means of wheelbarrows on demarcated walkways lined by wooden planks, geotextile or similar material.
- The Implementing Entity will use only one access path/point per Intervention Point and will not create multiple access paths or points.
- No foreign vegetable matter (e.g. mulch) may be brought into the wetland area (especially from alien species).
- Topsoil shall be removed specifically in the form of sods (20 to 20cm (length) x 20cm (width) x 20cm (depth)):
 - The first sod shall include the roots/rhizome layer (i.e. the rootstalks and their associated nodes/tubers)
 - The sods shall be stored in a wet area, on site, in their original orientation and order.
 - Vegetation can be cut short if it will make it easier to handle the sods.
 - Soil shall be stockpiled according to the different soil layers (i.e. in separate stockpiles) as per the soil profile. Where possible, soils shall be stockpiled as high as possible to retain moisture, but not higher than 0.5m.
 - Stockpiles will be located in a saturated area with shallow surface water immediately adjacent to the Intervention Point. Sods will be placed on the existing vegetation. Where vegetation height exceeds 30cm, the vegetation can be cut and used as mulch/cover layer.
 - The stockpile area will be indicated by means of painted pegs at each corner.
 - Stockpiles shall only be handled twice i.e. during removal and during placement for rehabilitation.
 - Stockpiles shall be covered with 10cm mulch or cloth (geotextile with <0.5cm aperture) to ensure that the moisture content is maintained by restricted evaporation and evapotranspiration.



Table 6: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding topsoil management

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Ensure topsoil is stockpiled in areas on site where opportunity for compaction and contamination due to other construction activities are limited. • Avoid moving/handling the topsoil more than twice (i.e. restricted to initial stripping and final reapplication). • Ensure weeds and alien invasive species are removed from the stockpiles prior to reaching seed formation stage. • Do not move topsoil between different areas on site i.e. it should be reapplied in the same area that it was removed from. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Remove more than 15cm of topsoil where possible to compensate for areas of shallow/no topsoil as well as topsoil loss due to mismanagement. • Apply mulch to the topsoil if the topsoil quality has been impacted significantly and will compromise the success of revegetation (based on the reasoned opinion of the ECO or wetland specialist). • Enforce a stricter and more frequent weeding/alien invasive removal regime where there was failure to remove weeds/alien invasive species from topsoil stockpiles prior to seed formation stage. 	Implementing Entity, ECO, Engineer
Stop work	N/A	
Monitoring method and frequency	<ul style="list-style-type: none"> • Use of approved site layout to confirm correct location of topsoil stockpiles. • Continuous monitoring during initial topsoil removal/stripping. • Weekly to bi-weekly monitoring of stockpiles for signs of erosion and weeds. • Monthly audits for general topsoil management practices. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> • Topsoil is removed to a minimum depth of 15cm. • Topsoil is not contaminated by other materials. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • There is no compaction of topsoil. • Topsoil is not eroded or washed away. • Handling of topsoil is restricted to initial removal and final reapplication. • The topsoil applied during rehabilitation matches the quality and thickness of topsoil removed during site clearance. • Weeds and alien invasive species on topsoil stockpiles are removed on a regular basis prior to the plants reaching seed formation stage. 	



4.6 Materials management (non-hazardous)

Identified impacts:

- Material delivered to areas not approved by the ECO and Engineer e.g. outside the approved construction footprint, on steeply sloped areas, etc.
- Imported materials introduce new alien invasive species to site.
- Materials spilling from vehicles causing a safety or pollution risk.
- Materials are eroded and washed into wetland systems as a result of being stockpiled in areas with concentrated stormwater runoff or on sloped areas.
- Materials are mixed with the underlying natural ground surface causing contamination of soil, excessive quantities of material remaining on site after construction, localised plant die-off, increase in sedimentation etc.
- Wetland systems are impacted and/or polluted due to an insufficient buffer width between site camps, laydown and stockpile areas and water resource.
- Materials susceptible to wind erosion results in a dust nuisance and contamination of surrounding areas.
- Materials are stored on site for extended periods leading to the need for increased storage area due to materials not being used.

Objectives of improved management:

- Ensure material delivery and storage takes place in such a manner that it does not cause pollution or degradation of the surrounding environment.
- Plan material use and delivery in order to ensure that material storage on site does not take place for extended periods of time (i.e. > 4 weeks).
- Minimise the use of intact/undisturbed areas for material stockpiling/storage.
- Minimise exposure of materials to wind and water erosion.
- Ensure that materials are stored on site for the shortest possible period to limit the extent of areas required for storage and stockpiling.

Specifications: None



Table 7: Specific avoidance, mitigation and cessation management measures related to impacts identified with materials management (non-hazardous)

Management Measure	Detailed Description	Responsibility
<p>Avoidance</p>	<ul style="list-style-type: none"> • It will be the Implementing Entity's responsibility to ensure that delivery drivers/suppliers are aware of the relevant EMPr requirements. • The Implementing Entity shall ensure that materials are sourced from legal and approved sources. If unsure the Implementing Entity will obtain permission from the ECO prior to using a certain material resource. • Imported materials shall be free of weeds, litter and contaminants. • Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Implementing Entity shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials. • The Implementing Entity will identify appropriate storage and laydown areas prior to delivery to site. The areas will be approved by the ECO either as part of the required Method Statement or on an <i>ad hoc</i> basis. • Open, disturbed areas will be prioritised for stockpiling and laydown areas. • Bulk stockpile areas will be outside the wetland boundary and any other areas prone to seasonal flooding unless otherwise approved by the ECO. • The Implementing Entity will schedule the delivery of materials in such a manner that it does not require excessive periods (>4 weeks) of on-site storage unless otherwise approved by the ECO e.g. where delivery/source distances are excessive. • Minor stockpiles (not covering an area exceeding 4m² unless otherwise approved by the ECO) will be allowed next to an Intervention Point for specific use at the Intervention Point. • Minor stockpiles next to intervention sites will be utilised within 2 weeks of the material being stockpiled i.e. it will not be left adjacent to a planned or completed Intervention Point for an excessive period of time. 	<p>Implementing Entity</p>



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Laydown and storage areas where such occurs on vegetation, topsoil or in a wetland shall be on hessian, PVC sheeting or a similar material in order to separate the imported material from the vegetation/topsoil and to ensure easy and proper removal of excess material. • Stockpile heights will be limited to 1.5m where the material is fine (i.e. susceptible to wind erosion) or in areas known to regularly (weekly to fortnightly basis) experience wind speeds exceeding 20km/h. Alternatively, material which can be windblown will be covered with shade cloth, PVC sheeting, hessian or similar suitable material. • Stockpile areas will be flat and not subject to concentrated stormwater runoff or surface water flow. • Materials such as precast pipes and culverts, gabions baskets, MacMat-R, hessian etc. can be placed directly on vegetated areas to avoid the disturbance and clearance of vegetation and topsoil. This will be at the discretion of the ECO based on the merits of avoiding vegetation and topsoil removal. 	
Mitigation	<ul style="list-style-type: none"> • Should material be washed or blown into the surrounding environment, the Implementing Entity will be responsible for the removal/recovery of such material. Whether removal/recovery is required will be determined by the ECO based on the type of material, volume of material and whether the material can be recovered/removed without causing substantial additional degradation of the surrounding environment. • Materials not used at a specific Intervention Point will be removed once the activity requiring the material has been completed e.g. stones for gabions. • Where sand/fill material is legally sourced from a dam, existing borrow pit or similar with clear presence of invasive alien species, the Implementing Entity will allow for a weeding programme at the on-site stockpile area and Intervention Point. The weeding programme will span a winter and summer period consecutively to ensure that introduced invasive alien and weed species are removed prior to seed formation stage. • All remaining/waste material will be removed off-site before or by the end of construction. 	Implementing Entity
Stop work	N/A	



Management Measure	Detailed Description	Responsibility
Monitoring method and frequency	<ul style="list-style-type: none"> • Daily and weekly monitoring/inspections by the Implementing Entity. • Formal monthly audits by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> • Imported materials are stored/stockpiled on already disturbed areas within the approved construction footprint. • Material delivery and storage takes place as in such a manner that it does not cause pollution or degradation of the surrounding environment. • Materials are not eroded and/or deposited in the surrounding environment. • Materials are used within four weeks of delivery. • No new or additional alien invasive species are introduced via imported material. Where such are imported, the Implementing Entity implemented a weeding programme spanning at least one winter and one summer i.e. a year. • All imported material is removed from site at the completion of construction. 	



4.7 Hazardous chemicals and potential hazardous substances

Identified impacts:

- Includes, but are not limited to: drums of fuel, grease, oil, brake fluid, hydraulic fluid, paint, batteries and herbicides (for alien plant clearing), etc.
- Spills resulting in pollution of nearby aquatic systems and water resources.
- Spills resulting in soil contamination and degradation.
- Fauna and/or (indigenous) flora fatalities/die-off.
- Illegal/improper disposal of materials contaminated with hazardous product/spill.

Objectives of improved management:

- Ensure the controlled and documented management of hazardous chemicals and substances.
- Avoid and minimise spillages through proper storage and dispensing practices.
- Ensure that the appropriate mitigation measures are in place in the event of a spill.
- Ensure that hazardous materials are stored in designated/approved areas away from sensitive receptors/environments.

Specifications:

- The Implementing Entity must supply the ECO with a list of all hazardous materials that would be present on site during the construction period.

Table 8: Specific avoidance, mitigation and cessation management measures related to impacts identified with hazardous materials management

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • All hazardous materials and products must be stored in containers marked as per SANS 10234 requirements i.e. in its original container. • All containers will have lids and stored in a covered and bunded area or in a flammables/hazardous store with a metal drip tray able to contain 110% of the volume of the largest container. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • A register of hazardous materials and products will be kept at the site officer or flammables/hazardous store together with up to date Material Safety Data Sheet (MSDS). • Containers with a volume of more than 20ℓ will have proper dispensing equipment. • Dispensing of hazardous materials into smaller containers or equipment will only occur at the site camp on a lined or impermeable surface- • Hazardous materials and products will only be stored at the site camp. 	
Mitigation	<ul style="list-style-type: none"> • The Implementing Entity must ensure that there is an emergency procedure in place to deal with accidents and incidents (e.g. spills) arising from hazardous substances. • The Implementing Entity must ensure that all personnel on site are properly trained concerning the proper use, handling and disposal of hazardous substances. • The Implementing Entity must report major incidents to the ECO immediately. Any spill incidents must be cleaned up immediately and in according with the emergency procedure 	Implementing Entity
Stop work	<ul style="list-style-type: none"> • Should the Implementing Entity through negligent or wilful action/behaviour cause a significant/major spill or dispose of hazardous materials illegally, the ECO reserves the right to suspend or partially suspend construction via instruction from the EA Holder in order to allow for the assessment, reporting and rectification of the impact. • Depending on the severity of the non-conformance, the ECO will also inform the relevant competent authority to confirm the Implementing Entity's liability to be prosecuted and/or fined. 	ECO, EA Holder
Monitoring method and frequency	<ul style="list-style-type: none"> • Visual inspection. • Immediate response to spillage. • Completion of an incident form for major spillages (>5ℓ). • Reporting of major spills within 24 hrs to the ECO. 	Implementing Entity, ECO



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Daily and weekly monitoring/inspections by the Implementing Entity. • Formal monthly audits by the ECO. 	
Management outcomes	<ul style="list-style-type: none"> • Hazardous materials are properly managed including recording keeping, storage, dispensing and disposal. • Spillages are avoided and minimised through proper storage and dispensing practices. • All personnel on site are properly trained concerning the proper use, handling and disposal of hazardous substances. • The Implementing Entity has a designated and trained individual on-site to respond to spills on site. • Spillages are removed/cleaned/treated immediately after occurring. • Ensure that the appropriate mitigation measures are in place and implemented in the event of a spill. • Hazardous materials are stored in designated/approved areas away from sensitive receptors/environments. • Spills are reported to the ECO within 24hrs of occurring. • Spilled hazardous product and materials used for clean-up are stored and disposed of as hazardous waste or collected by a registered service provider. 	Implementing Entity, ECO



4.8 Contamination of soils and water

Identified impacts: Soil and water can be contaminated or polluted by construction activities via several pathways. In terms of soil contamination, pollution can result in the soil being unsuitable for certain land uses and it can also indirectly contribute to sustained pollution of both surface and groundwater resources. The pollution of water resources can lead to numerous direct and indirect impacts including the following:

- Water becoming unsuitable for certain uses such as human consumption and certain agricultural activities due to a decline in water quality.
- A loss of aquatic biodiversity through a change in species composition and diversity and/or species die-off in reaction to a decline in water quality.
- An increase in alien invasive fauna and flora species as a result of higher tolerance capacity in terms of water quality changes/deterioration.
- Increased costs of treating contaminated water for human consumption.

Objective of improved management:

- To conduct/manage construction activities in such a manner that the contamination of soil and water resources is avoided and/or minimised.

Specifications: None

Table 9: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding contamination of soil and water

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Ensure that all equipment, machinery and vehicles are in good working order. • No maintenance will take place on site and broken equipment, machinery and vehicles must be removed off-site within 24 hours of the breakdown. • Use drip trays for all stationary or parked equipment, machinery and vehicles showing signs of leakage. • Ensure that substances that pose a risk of water/soil contamination are appropriately stored and disposed of (also refer to Section 4.7). • Site camps are not allowed in a wetland. • Hazardous materials storage areas are not allowed within 100m of watercourses. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Concrete mixers may only operate on a stable, level site. • Concrete shall be mixed on trays or other suitable lining material to prevent contamination of the soil and/or waterbodies. • Ensure that minor mixing of concrete and mortar is done on impermeable surfaces or in wheel barrows. • Store chemicals in clearly marked, sealable containers in bunded areas as approved by the ECO. Inspect the containers at regular intervals for any leaks. • Use proper dispensing equipment on containers for hazardous products and store the dispensing equipment in weatherproof containers when not in use. • Ensure that equipment and plant is in proper working condition and do not leak fuel or oil, especially during work in or near watercourses. • Ensure designated staff are trained in the prevention and mitigation of spills. • The construction camp and any major stockpiling or storage areas should be outside any watercourse unless otherwise approved by the ECO. • Stormwater runoff must be diverted around the site camp and stockpile areas (material susceptible to erosion) by means of cut-off berms or trenches to avoid contamination of clean overland runoff. • Stockpiles (topsoil, subsoil and imported materials such as sand and fill material) must be on flat surfaces in areas which are not susceptible to concentrated stormwater runoff or flow. • Ablution facilities must be located outside the boundary of any watercourse unless otherwise approved by the ECO. Workers should not be allowed to urinate or defecate near or in bushes or rivers/streams. 	
Mitigation	<ul style="list-style-type: none"> • All spills to be contained and adequately cleaned-up or treated <i>in situ</i>. • Conduct activities with high pollution potential in the low rainfall months. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> Use designated washing areas for all equipment used for concrete work with the necessary mechanisms in place to retain contaminated runoff and allow for the necessary treatment/filtering of polluted water. 	
Stop work	<ul style="list-style-type: none"> Should a major spill occur (as per Section 4.7), the ECO reserves the right to suspend or partially suspend construction via instruction from the EA Holder in order to allow for the assessment, reporting and rectification of the impact. Depending on the severity of the non-conformance and degree of negligence on the Implementing Entity's part, the ECO will also inform the relevant competent authority to confirm the Implementing Entity's liability to be prosecuted and/or fined. 	ECO, EA Holder
Monitoring method and frequency	<ul style="list-style-type: none"> Daily visual inspection of equipment, vehicles and machinery for signs of leaks. Immediate response to spillage of product or material with pollution potential. Completion of an incident form for major spillages (>5l). Reporting of major spills within 24 hrs to the ECO. Daily and weekly monitoring/inspections by the Implementing Entity. Formal monthly audits by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> All activities and materials with a notable pollution potential or located away from any watercourse unless otherwise approved by the ECO. All the necessary pollution prevention measures are in place. Plant is in good and working condition with leaks repaired immediately or the plant removed from site where more extensive repairs are required. All hazardous products/materials are handled/managed correctly as per Section 4.7. All hazardous liquid product spills are cleaned/treated/removed immediately as per procedure under Section 4.7. 	Implementing Entity



4.9 Concrete mixing and cement handling

Identified impacts: Concrete batching/mixing operations can have several impacts, most notably soil and water pollution (increase in pH, TSS, TDS and minor levels of Aluminium, Iron and Magnesium oxides) as a result of cement laden runoff not being properly contained or purposeful discharge of cement laden runoff. Poor cement handling, storage and disposal practices can also contribute to the aforementioned impacts. Hardened concrete is however stable and inert as a waste.

Objective of improved management:

- Ensure proper cement handling, storage and disposal, avoiding discharge or disposal into the environment.
- Ensure that cement laden water/runoff from concrete/mortar mixing and application activities is collected and retained on site to allow for reuse in construction activities, avoiding discharge into the environment.

Specifications:

- A concrete batching plant/portable mixer will not be allowed to operate until a temporary washwater and runoff containment system has been constructed/established.

Table 10: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of concrete batching and cement handling

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Where concrete is mixed in bulk (i.e. portable concrete mixer), the following will apply: <ul style="list-style-type: none"> ○ The mixer will be placed on a level, surfaced/lined area. ○ Bulk mixing will not occur in the wetland unless the distance from the wetland boundary to the Intervention Point necessitates <i>in situ</i> mixing. This must be approved in all instance by the PC/ECO prior to the commencement of bulk mixing concrete. • Cement storage will be in a closed container. • Waste or contaminated cement powder will be stored in a marked container with a lid until disposal or reuse. • Cement bags must be emptied properly and stored in a weatherproof container until disposal. 	Implementing Entity, ECO



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> Minor concrete and mortar mixing will be done on an impermeable surface such as a wooden board, wheelbarrow, metal tray etc. 	
Mitigation	<ul style="list-style-type: none"> Equipment and containers used for minor concrete/mortar work and mixing will be washed in a designated container and the contents disposed of in the settling system at the concrete batching plant. Washwater can alternatively be reused in concrete/mortar mixing or application, but may not be disposed of onto the ground surface or into a water resource. Concrete (not cement) spills will be allowed to harden and removed within 2 days for reuse or disposal as a Type 4 waste to a Class D landfill. 	Implementing Entity
Stop work	<ul style="list-style-type: none"> Mismanagement of waste concrete and/or cement laden runoff can result in the suspension of bulk concrete mixing activities via instruction from the ECO until non-conformances have been rectified to the ECO's satisfaction. 	Implementing Entity, ECO, Engineer
Monitoring method and frequency	<ul style="list-style-type: none"> Daily visual inspection of areas where concrete/mortar work is taking place (Foreman). Weekly inspection of settling system at batching plant (Foreman). Reporting of major spills within 24 hrs to the ECO. Formal monthly audits by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> Cement laden runoff is contained to site in an appropriately sized settling system. Cement product is properly handled and stored and does not result in pollution of soil or water resources. No equipment or plant used for concrete/mortar mixing or application is washed in a watercourse. The settling system at the batching plant/portable mixer is maintained and does not overflow. Waste concrete is removed within 2 days and reused or disposed of as inert waste. 	Implementing Entity



4.10 Stormwater management, erosion and sedimentation

Identified impacts: The clearance of vegetation and earthworks associated with construction usually results in an increase in stormwater runoff volume and velocity. This in turn results in an increase in erosion and sedimentation, impacting both terrestrial and aquatic systems. Temporary structures, stockpiles and access roads can also further contribute to a concentration of runoff and resultant increase in erosion and sedimentation on site.

Objective of improved management:

- To avoid and mitigate the increase in stormwater volumes and velocity, thereby reducing erosion and sedimentation on site.

Specifications: None

Table 11: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of stormwater management, erosion and sedimentation

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Vegetation and topsoil clearance will occur at increments and will only be done up to two weeks ahead of actual construction (i.e. excavation) commencing in an area. • Material (excavated and imported) stockpiles will not be located in areas of concentrated runoff/flow. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Stormwater generated on the cleared construction footprint will be allowed to discharge into the surrounding vegetation at regular intervals and will not be allowed to collect and concentrate in large volumes or discharge at high velocities. • Disturbed areas must be rehabilitated as soon as possible after construction has been completed in order to stabilise exposed surfaces which are susceptible to erosion. • Implement temporary stormwater management and erosion prevention measures in areas with high erosion potential (in consultation with the ECO). 	Implementing Entity
Stop work	N/A	



Management Measure	Detailed Description	Responsibility
Monitoring method and frequency	<ul style="list-style-type: none"> • <i>Ad hoc</i> visual inspections of site by the Implementing Entity after rainfall exceeding 15mm per day. • Formal monthly audits by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> • Exposed ground surfaces are limited and rehabilitated immediately after completion of construction activities in an area. • Stormwater runoff is dissipated and allowed to discharge at regular intervals. • Erodible stockpiles are located outside areas of stormwater concentration. • The construction site does not contribute notably to erosion on-site and in the immediate vicinity of the site. • Erosion is detected/identified and addressed/mitigated within 14 days of occurring. • Temporary stormwater management and erosion prevention measures are implemented in areas with high erosion potential of signs of extensive erosion occurring. 	Implementing Entity, ECO



4.11 Dust nuisance

Identified impacts: Construction activities will typically lead to dust generation and general exhaust emissions from vehicles and construction plant. Given the limited extent of vegetation clearance and low number of vehicles and construction plant used on a typical WfWetlands site, dust generation is expected to generally be minimal and restricted to mostly a nuisance impact.

Objective of improved management:

- To limit the generation of dust and where needed mitigate dust nuisance.

Specifications:

- Watering for dust suppression purposes is only recommended in instances where dust will create a significant health and/or safety hazard.

Table 12: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding dust nuisance

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • As far as possible stockpile materials which are prone to become airborne away from areas where dust will be a nuisance or a hazard. • Limit the height of stockpiles which could cause a dust nuisance to 1m. • Where the abovementioned cannot be achieved, cover stockpiles consisting mostly of fine material with shade cloth, hessian or a similar acceptable cover. • Limit earthworks in during windy conditions (i.e. winds above 40 km/h). • Limit vehicle travelling speeds on unsurfaced roads to 40 km/h. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Where dust poses a notable health and/or safety hazard, implement a watering schedule to address the particular area of concern. • Ensure that a watering schedule is maintained over weekends and holidays where a dust nuisance could pose a health and/or safety hazard to the public using the road. • Record and address any public/community complaints regarding dust generation in the Complaints Register. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
Stop work	<ul style="list-style-type: none"> • Work causing excessive dust will be halted at wind speeds exceeding 40km/h. • Where dust generation leads to/results in a complaint by the public or landowner, the ECO reserves the right to suspend or partially suspend work on site until the source of dust is identified and mitigation measures implemented. 	Implementing Entity, ECO
Monitoring method and frequency	<ul style="list-style-type: none"> • Daily visual monitoring. • Recording of public complaints regarding dust generation in Complaints Register. 	Implementing Entity
Management outcomes	<ul style="list-style-type: none"> • The dustfall rate as specified under regulation 3 of GN R827 (National Environmental Management: Air Quality Act (No. 39 of 2004) - National Dust Control Regulations, 2013) is not exceeded. • Stockpiles which could cause a dust nuisance are limited to 1m in height or covered with a suitable material. • No public complaints are received regarding dust nuisance and/or health and safety hazard. • Where required, a watering schedule is implemented where required i.e. where dust causes a health and/or safety hazard. • Alternative dust binding products are used where long-term watering (> 4 weeks) over an extensive area (>1ha) is required. • Vehicle travelling speed is limited to 40km/h on unsurfaced roads. 	Implementing Entity, ECO



4.12 Noise nuisance

Identified impacts: Typical construction activities can lead to excessive noise which could cause a disturbance or nuisance to neighbouring land uses/receptors. Typical construction related noise which would usually be regarded as permissible in urban areas might also be regarded as a disturbance in areas such as nature reserves or on farms.

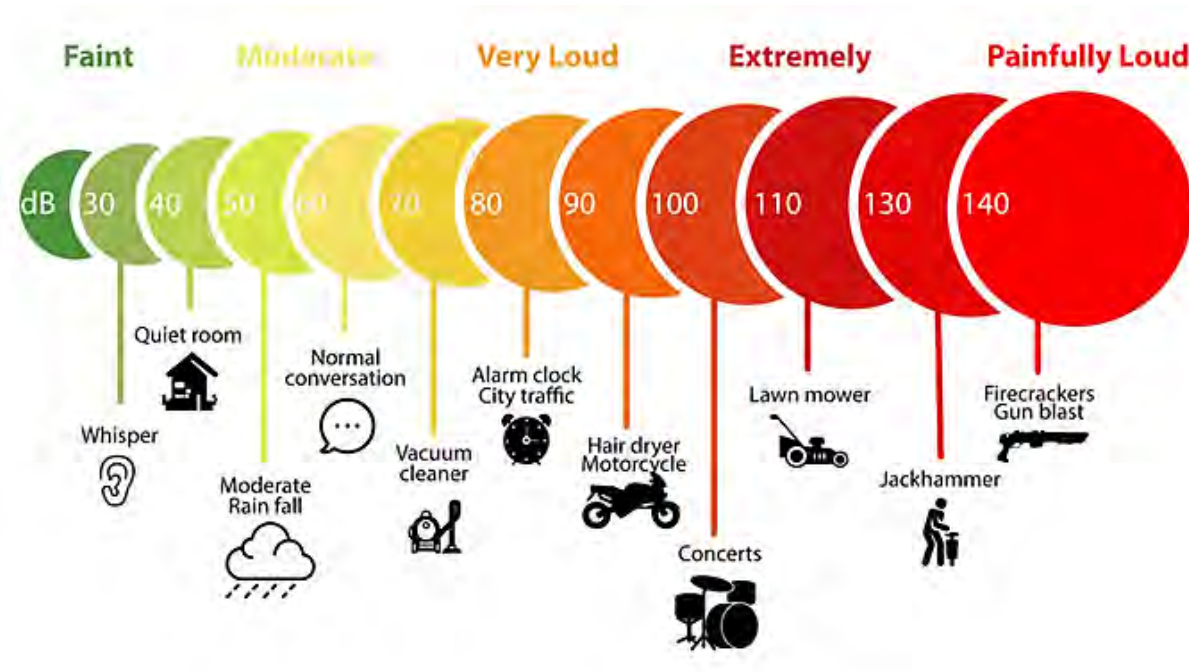


Figure 1: Example of typical everyday noises and related dB values²⁴

Objective of improved management:

- Manage the level and duration of excessive noise generated as a result of construction activities and avoid resultant public complaints. Also ensure that sensitive receptors are notified in advance where excessive noise cannot be avoided for a certain period of time or activity.

Specifications: None

²⁴ <http://ototronixdiagnostics.com/images/decibelthermometer-horizontal.jpg>

Table 13: Specific avoidance, mitigation and cessation management measures related to impacts identified regarding noise nuisance

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Fit silencers to equipment as required. • Ensure equipment and vehicles are properly maintained and in working order. • The Implementing Entity shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Sub-clause 4.1 regarding “built-up areas” shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. • Appropriate directional and intensity settings are to be maintained on all hooters and sirens. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Limit working hours with noisy equipment to weekdays between 07H00 and 18H00. • Inform sensitive receptors in advance of construction activities. • Construction activities generating output levels of 50dB (A) or more, in peri-urban areas, shall be confined to the hour’s 08h00 to 17h00 Mondays to Saturdays. • Record and address any public/community complaints regarding noise generation in the Complaints Register. • Request formal approval of extension of working hours by the ECO prior to implementing extended hours or working over weekends. 	Implementing Entity, ECO
Stop work	N/A	
Monitoring method and frequency	<ul style="list-style-type: none"> • Daily monitoring (by means of a dB meter application on a cell phone) should any loud activities take place. • Recording of public complaints regarding noise generation in Complaints Register. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
Management outcomes	<ul style="list-style-type: none"> • Compliance with the Environment Conservation Act (No. 73 of 1989): Regulations in terms of Section 25 - Noise Control (GN R154, 1992)²⁵. • No public complaints are received regarding noise generation and/or health and safety hazard. 	Implementing Entity, ECO

²⁵ Please note: These regulations have been repealed in Gauteng by Gen N 5479 / PG 75 / 19990820; in the Free State by Gen N 24 / PG 35 / 19980424 and in the Western Cape by RN 627 / PG 5309 / 19981120. Proposed Noise Control Regulations have been published for Eastern Cape under Gen N 181 / PG 824 / 20011210. Please also note that various municipalities have their own By-Laws regarding noise control.



4.13 Ablution

Identified impacts: A lack of proper and well placed ablution facilities can result in poor working conditions, health risks as well as environmental pollution.

Objective of improved management:

- To provide sanitary working conditions and avoid health risks and environmental pollution as a result of a lack of ablution facilities.

Specifications: None

Table 14: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of ablution

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> Prior to construction commencing the Implementing Entity must provide sanitation for Contractors at a ratio of one (1) toilet for every 15 workers. Toilets should preferably be located outside the wetland boundary and must be approved by the ECO. Toilets shall be placed on level surfaces and secured to the ground outside areas susceptible to potential flooding. The Implementing Entity shall supply toilet paper at all toilets at all times. The Implementing Entity shall ensure that the workers make use of the toilets provided. The Implementing Entity shall be responsible for the cleaning, maintenance and servicing of the toilets. The Implementing Entity shall ensure that the toilets are protected from vandals. No litter or general waste shall be placed in the toilets. Upon completion of the contract, the pit latrines shall be filled in and all structures shall be removed from site. Washing areas with soap and sufficient clean water shall be provided for hand washing after use of ablutions. 	Implementing Entity
Mitigation	N/A	
Stop work	N/A	



Management Measure	Detailed Description	Responsibility
Monitoring method and frequency	<ul style="list-style-type: none"> • Daily inspection (by the Implementing Entity) to allow for timely removal/servicing of the ablation facilities. • Monthly compliance audits (including checking of disposal slips where relevant) by the ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> • A sufficient number of ablation facilities is provided at locations approved by the ECO. • Toilets are placed on level areas and secured to the ground. • Toilets are provided at a ratio of one (1) toilet for every 15 workers. 	Implementing Entity



4.14 Waste management

Identified impacts: The construction phase will produce typical construction waste such as general waste, waste containers, cement bags, off-cuts etc. The volumes of waste to be generated on a typical WfWetlands site are expected to be low.

Objective of improved management:

- To prevent general littering and to ensure that waste is correctly stored on-site and disposed of off-site. Licenced waste disposal facilities (landfill, transfer, recycling) can be found using the search function at the following link <http://sawic.environment.gov.za/?menu=88>.

Specifications: None

Table 15: Specific avoidance, mitigation and cessation management measures related to impacts identified in terms of waste management

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Waste will not be buried or burned on site. • The quantity of materials and product brought to site will not be in notable excess of what is required for construction. • Waste from other construction sites where the Implementing Entity is working will not be brought onto site or stored on site. • Waste storage facilities will outside the wetland boundary or other sensitive areas. • Waste storage facilities and containers will be weather and scavenger proof with sufficient capacity to avoid waste accumulating outside of the facility or containers. • The Implementing Entity shall ensure that general and inert waste does not become contaminated by hazardous waste thereby generating larger volumes of hazardous waste requiring disposal at a Class A landfill. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • The Implementing Entity shall, in conjunction with the ECO, designate restricted areas for eating. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Waste generated on site will be collected and transported to the waste storage area at the site camp on a daily basis. • Each foreman will do a daily inspection/walkthrough of his area and ensure that it is litter free. • Waste storage areas will be restricted to the site camp. • Hazardous and general waste will be separated and designated and marked bins/containers provided for each. • In the case of skippy bins being used, the bins will be covered with secured shade cloth or other cover approved by the ECO. Skippy bins are only allowed for storage of inert waste such as wood off-cuts, hardened concrete etc. • Waste transport will be by means of an appropriate vehicle with containers and/or bags secured and covered to prevent waste being blown from the vehicle during transport. • Used oil will be collected and taken to or collected by a registered oil recycling company. • Other hazardous waste as per Schedule 3 of NEM:WA and Annexure 1 of GN R634 (2013) will be disposed of at a Class A landfill or collected by an approved service provider. Proof of safe transfer/disposal will be filed in the SEF. • Waste disposal restrictions as per GN R636 (2013) shall apply. Of specific relevance is: <ul style="list-style-type: none"> ○ Lead acid batteries, corrosive or oxidizing products. ○ Waste which is flammable with a flash point lower than 61°C. ○ Waste compressed gases. ○ Re-usable, recoverable or recyclable used lubricating mineral oils, as well as oil filters, but excluding other oil containing wastes. ○ Re-usable, recoverable or recyclable used or spent solvents. 	



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> ○ Lamps. ○ Tyres (whole or quartered). ○ Liquid waste or waste with a moisture content of >40%. 	
Stop work	N/A	
Monitoring method and frequency	<ul style="list-style-type: none"> • Daily inspection of working area for any litter/waste. • Weekly checking of waste storage area to ensure timeous removal of waste off-site prior to storage areas becoming overfull. • Proof of safe disposal filed in Environmental File and audited monthly by ECO. 	Implementing Entity, ECO
Management outcomes	<ul style="list-style-type: none"> • No waste disposed of or burned on site. • No visible littering. • Waste transport does not result in waste being blown from the vehicle along the route. • Appropriate and separate storage of different types of waste in approved locations. • Proper record keeping of hazardous waste generated and safe and legal disposal thereof. 	Implementing Entity



4.15 Removal of alien invasive species

Identified impacts: The WfWetlands programme often involves the removal of alien invasive species as part of an intervention(s) to improve wetland functioning. The method for removal is usually specified in the aforementioned situation. A construction site, due to its inherent disruptive nature, does however also lead to conditions ideal for the establishment of weeds/pioneer species and alien invasive species (hereafter collectively referred to as “weeds”) which could compromise the habitat integrity and ecological functioning of the wetland system as well as downstream systems. It is therefore important to implement strict control measures to ensure that alien invasive species are not introduced into a system or/and are not allowed to dominate an area post-construction.

Objective of improved management:

- No new alien invasive/pioneer species are introduced into the wetland system and catchment.
- Emerging weeds are removed prior to seed formation stage.

Specifications:

- Where project activities include the eradication of invasive alien plants, Working for Water guidelines and policies shall be adhered to.
- Weeds will be removed prior to reaching seed formation stage.
- Prior to construction, the Implementing Entity shall ensure that invasive alien vegetation is cleared from the entire site in accordance to the applicable Working for Water guidelines and policies. Follow up clearing may be necessary if the species re-establish following the initial clearing.
- Species that are declared invasive species (according to NEMBA’s Alien and Invasive Species Regulations, 2014 (GN R598)) must be recorded and polygons of the affected area must be submitted to the Working for Water national alien invasive plant database.
- The Alien and Invasive Species Lists 2016 (GN 864) will apply when identifying species which require removal/eradication.
- No trees within the environmentally sensitive areas may be removed, whether alien species or not, unless permitted by the ECO.
- Other alien species (non-listed) occurring on site may not be used in the landscaping and should be removed from site where possible.
- Where an individual or group of an invasive alien specimens/plants has potential cultural or heritage value e.g. a blue gum tree at a grave site, the landowner and/or community will be consulted prior to the removal of the specimen(s). The aforementioned might also be protected under the NHRA, in which case removal might not be allowed.



Table 16: Specific avoidance, mitigation and cessation management measures related to the removal of Alien Invasive/pioneer species

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> Imported material shall be free of weeds. Stockpiles (topsoil and subsoil) will be checked for emerging weeds on a fortnightly basis. Topsoil sourced from areas with notable weeds infestation will not be used in other areas for rehabilitation or fill purposes. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> Where sand/fill material is legally sourced from a dam, existing borrow pit or similar with clear presence of invasive alien species, the Implementing Entity will allow for a weeding programme at the on-site stockpile area and Intervention Point. 	Implementing Entity
Stop work	N/A	
Monitoring method and frequency	<ul style="list-style-type: none"> Fortnightly inspections of disturbed/cleared areas and stockpiles for signs of emerging weeds. Monthly audit/visual inspection by ECO. 	ECO
Management outcomes	<ul style="list-style-type: none"> Construction activities are restricted to the approved construction footprint. The Implementing Entity's activities does not lead to the negligent or wilful damage to a natural feature. 	Implementing Entity



4.16 Impact on fauna

Identified impacts: Typical construction activities could lead to fatalities of small fauna e.g. birds, reptiles, rodents through direct impact and the destruction of habitat. The proposed project will however be limited to the road reserve which is already completely transformed and subject to daily traffic. The upgrade/replacement of culverts and bridges might result in the destruction of a number bird nests attached to the structures.

Objective of improved management:

- Protect fauna in the study area, preserve the ecological functioning along the development footprint as much as is possible.

Specifications: None

Table 17: Specific avoidance, mitigation and cessation management measures related to impacts on fauna

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Do a site walkthrough prior to construction commencing to remove any slow moving animals and to identify nesting sites, burrows etc. • Demarcate nesting sites which should be avoided as no-go areas by means of painted pegs. • Avoid disturbance of burrows, nests etc. where possible. • Create awareness of conservation of fauna during environmental induction and toolbox talks. • Fauna may not be captured, poisoned, trapped or killed. • Do not feed wildlife. • Where working in a nature reserve with potentially dangerous animals present, ensure that the team is accompanied by a suitably qualified game ranger at all times. • A speed limit of 20 km/h in nature reserves will apply unless otherwise indicated by the reserve road signage. • Inspect excavations for trapped animals prior to work commencing each day. • Do not use pesticides on site. 	Implementing Entity



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> Do not burn vegetation. Store waste in weather and scavenger proof bins to avoid ingestion of waste by wildlife. 	
Mitigation	<ul style="list-style-type: none"> Limit the construction footprint. Reinstate temporary footprints after construction has been completed. Report any animal fatalities of significance to the ECO and relevant reserve management (where applicable) and identify measures to avoid reoccurrence. 	Implementing Entity, ECO
Stop work	N/A	
Monitoring method and frequency	<ul style="list-style-type: none"> Daily inspections of trenches and excavations prior to construction commencing. Weekly inspections of demarcated no-go areas. Recording of incidents and near misses (e.g. vehicle-antelope collision) in the site diary and at site meetings. Disciplinary action against any construction staff guilty of purposefully capturing, poisoning, trapping or killing wildlife. 	Implementing Entity
Management outcomes	<ul style="list-style-type: none"> No unnecessary fauna fatalities. Limited habitat disturbance and reinstatement of temporary construction footprints. 	Implementing Entity



4.17 Protection of natural features

Identified impacts: Construction activities could result in damage to natural features such as rock outcrops and exposed rock faces/cliffs. The project is not located in an area associated with rock paintings, caves, waterfalls, trees of historical or cultural significance etc. and the risk of damage to natural features is generally considered low.

Objective of improved management:

- No damage to natural features due to negligent or purposeful action during construction.

Specifications:

- Demarcation will be by means of brightly painted/white pegs/poles at least 1.5m in height and placed at regular (10m for linear or on every corner for non-linear) intervals on both sides of the approved construction footprint.
- Danger tape and/or snow/barrier netting shall only be used for health and safety requirements along excavations or high risk areas.
- All temporary barriers and signage must be removed and the site restored on completion of the project.

Table 18: Specific avoidance, mitigation and cessation management measures related to impacts on natural features

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Construction activities shall be restricted to the approved construction footprint. • Sensitive or no-go areas in close proximity (<100m) to the construction site will be demarcated with painted pegs and marked as no-go areas. • The Implementing Entity shall not deface, paint, damage or mark any natural features (e.g. trees or rock formations) situated in or around the site for survey or other purposes unless agreed beforehand with the ECO and Engineer. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Any features affected by the Implementing Entity as a result of negligence or wilful conduct shall be restored/rehabilitated to the satisfaction of the ECO and/or relevant competent authority. 	Implementing Entity
Stop work	N/A	



Management Measure	Detailed Description	Responsibility
Monitoring method and frequency	<ul style="list-style-type: none"> Monthly audit/visual inspection by ECO. 	ECO
Management outcomes	<ul style="list-style-type: none"> Construction activities are restricted to the approved construction footprint. The Implementing Entity's activities does not lead to the negligent or wilful damage to a natural feature. 	Implementing Entity



4.18 Protection of heritage resources (including palaeontological objects)

Identified impacts: The nature and location of typical WFWetlands interventions seldom have the potential to cause the destruction or lead to the discovery of palaeontological objects such as fossils. An exception is peat wetlands which can contain fossils at usually substantial depth. Heritage resources are identified during the EIA phase and indicated as no-go areas. There is however still the opportunity for the discovery or damage to new objects during the construction phase.

Objective of improved management:

- To avoid damage to known heritage objects and to ensure a protocol is in place in the case of discovery of an unknown heritage or palaeontological object.

Specifications: None

Table 19: Specific avoidance, mitigation and cessation management measures related to impacts on heritage resources (including palaeontological objects)

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • The Implementing Entity shall avoid all “no-go” areas as identified during the EIA. • General staff awareness training in terms of the protection and conservation of heritage resources during the environmental induction and toolbox talks. 	Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Should any cultural, archaeological or palaeontological artefacts/objects or evidence be discovered at any stage during construction, the Implementing Entity will cease work in the vicinity of the artefact/object and inform the ECO who will in turn inform the relevant specialists and authorities. • Site staff is not allowed to collect or keep on artefact or object of cultural, archaeological or palaeontological significance. 	Implementing Entity, ECO, Specialist
Stop work	<ul style="list-style-type: none"> • Should any cultural, archaeological or palaeontological artefacts/objects or evidence be discovered, partial suspension of construction activities in the immediate vicinity of the object might need to be required until the object can be evaluated and/or removed. 	Implementing Entity, ECO, Specialist



Management Measure	Detailed Description	Responsibility
Monitoring method and frequency	<ul style="list-style-type: none"> • Continuous during construction. • Monthly audit by ECO in terms of no-go areas being maintained. 	Implementing Entity
Management outcomes	<ul style="list-style-type: none"> • No-go areas (i.e. all areas outside the approved construction footprint) are treated as no-go areas with no disturbance of heritage/cultural objects on private land adjacent to the construction site. • Proper procedure followed should any object or artefact be discovered during construction. 	Implementing Entity



4.19 Visual impact

Identified impacts: The nature of a typical WfWetlands project is seldom such that it causes significant visual disturbance, with the visual impact of the operational outcome usually being positive. Construction activities can however lead to temporary and permanent landscape scarring and impacts, which can be excessive if not controlled and mitigated properly.

Objective of improved management: Ensure that visual impacts caused by landscape scarring are minimised through proper planning and mitigated through successful rehabilitation.

Specifications: None

Table 20: Specific avoidance, mitigation and cessation management measures related to visual impacts

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Avoid excessive vegetation clearance. • Ensure construction remains within the approved construction footprint. • Do not paint or deface any natural feature. 	EAP, ECO, Implementing Entity
Mitigation	<ul style="list-style-type: none"> • Ensure that materials used for construction limits visual impacts e.g. use natural colours where possible. • Ensure that the site remains neat and tidy with no littering etc. • Use shade cloth or construction cordon in areas specifically sensitive to visual disturbances e.g. areas frequented by tourists or the public. • Record and address community complaints as per procedure specified under Section 4.3. • Ensure rehabilitation is successful as specified under Section 5. 	Implementing Entity
Stop work	N/A	
Monitoring method and frequency	As specified for rehabilitation under Section 5.	ECO



Management Measure	Detailed Description	Responsibility
Management outcomes	<ul style="list-style-type: none"> • Visual impacts are minimised and managed. • The extent of disturbance is minimised and limited to the approved construction footprint. • The extent of intervention infrastructure remaining bare i.e. no vegetated is limited as best as possible. • Rehabilitation meets the requirements and targets as per Section 5. 	Implementing Entity, ECO



5 REHABILITATION PHASE

Identified impacts: Poor rehabilitation can often lead to secondary impacts such as erosion, an increase in alien invasive species, decreased biodiversity, decreased habitat connectivity, poor ecological integrity and functioning and so forth. Given the core focus of the WfWetlands programme, successful rehabilitation is also a key factor, but should entail more than the functioning of an intervention with focus on ensuring that the permanent footprint of the construction site and actual structure is minimal.

Objective of improved management:

- To ensure that construction footprints are rehabilitated and that site rehabilitation is undertaken in such a manner that the permanent footprint of the construction site of the Intervention Point is minimal.

Specifications:

- All working areas shall be rehabilitated once work has been completed and before the team leaves the site. This includes closure and rehabilitation of temporary access routes.
- All foreign material not utilised in the rehabilitation activities shall be removed from the site.
- Re-vegetation of all exposed soils, and measures to address any potential erosion risk shall be done before the team leaves the site.
- Where project activities include the eradication of invasive alien plants, Working for Water guidelines and policies shall be adhered to.
- All rehabilitated areas shall be considered “no-go” areas upon completion and the Implementing Entity shall ensure that none of his staff or equipment enters these areas.
- Specific Site Rehabilitation measures have been included in the project specific Rehabilitation Plans and shall be referred to for site closure. Due notice of the conditions of Environmental Authorisation and requirements of the General Authorisation for water uses (Annexure B) must be complied with.
- Specifically, on the completion of the construction activities:
 - All disturbed areas must be re-vegetated with local indigenous vegetation suitable to the area.
 - An active campaign for controlling new exotic and alien vegetation must be implemented within the disturbed areas.
 - Structures must be inspected after a major rain event (i.e. more than 50mm rainfall) or annually for the accumulation of debris, blockages, instabilities and erosion with concomitant remedial and maintenance actions.



Table 21: Specific avoidance, mitigation measures related to rehabilitation of the project footprint

Management Measure	Detailed Description	Responsibility
Avoidance	<ul style="list-style-type: none"> • Manage site demarcation and vegetation clearance as per Sections 4.2, 4.4 and 4.5 respectively. • Ensure that sufficient topsoil is available through proper removal, stockpiling and maintenance procedures as specified under Section 4.5. 	Implementing Entity
Mitigation	<p>General:</p> <ul style="list-style-type: none"> • All waste will be collected and removed (also look beyond immediate working area for any waste which might have been blown into the surrounding area). • All spoil and excess material must be removed material. • All spills and waste concrete must be removed. • All temporary markings and site demarcation must be removed. • All temporary construction signage must be removed. • Where temporary access roads cut across contours, diversion berms will be constructed at 30m intervals to avoid erosion and concentration of runoff prior to vegetation establishing. Mulching shall be applied to the decommissioned temporary access road. <p>Shaping and revegetation:</p> <ul style="list-style-type: none"> • Material will be backfilled in the order on which it was removed. • Compacted soil shall be scarified prior to topsoil and seed application. • Topsoil shall be applied at a minimum depth of 75mm. • Where the Implementing Entity failed to manage topsoil properly, the Implementing Entity shall be held responsible to source topsoil of similar quality from a commercial source OR to remediate compromised topsoil by means of compost, fertiliser and seeding as agreed by the ECO. 	Implementing Entity, ECO, Engineer



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Topsoil shall match the type and quality of topsoil removed from that area. • Special care shall be taken where rehabilitation occurs across several wetland zones and or crossing between wetland and dryland habitats to match the soil removed to the area where it is reapplied. • Seeding/re-seeding should, where possible, be timed to take advantage of the rainy season. • All reinstated slopes will be at a gradient of 1:3 to 1:4. • Slopes of 1:2 and 1:1 shall be stabilised by means of suitable geotextiles, hard structures or any other means as approved by the ECO. • Slopes of 1:2 and 1:1 will be revegetated by means of sods and/or plugs of an approved indigenous grass specie. No Kikuyu shall be used for revegetation purposes. • Local indigenous plants shall be used in the landscaping of the site. Plants that are proclaimed as problem plants or noxious weeds (see Section 4.15) are to be excluded from the landscaping plan and must be removed immediately, should they occur on site. • Plants introduced into the project sites must be guided by ecological rather than horticultural principles. For example ecological communities of indigenous plants provide more biodiversity and habitat opportunities and would blend with natural vegetation. • Where sods are sources from the surrounding environment, the sods must be 30x30cm, sourced in a checkered pattern in a flat area (i.e. not on slopes). The sods must be sourced 1m in radius apart and will be planted within 24 hours of removal unless otherwise approved by the ECO. • Should the reshaping of watercourse banks be required it will match the natural preconstruction geomorphology and slope structure. Extensive reshaping of watercourse banks (and beds if applicable) will be done under close supervision of the ECO or relevant specialist. 	



Management Measure	Detailed Description	Responsibility
	<ul style="list-style-type: none"> • Areas where sods, plugs or seeds have been used as part of slope stabilisation measures will be watered at least every third day for a minimum period of 6 weeks unless the area is in a permanently wet zone of a wetland i.e. no watering required. <p>Rehabilitation of peatlands:</p> <ul style="list-style-type: none"> • Upon rehabilitation, the removed sods and soil stockpiles shall be placed back into the system in the original order/layers (i.e. deeper layers shall be placed first with the rhizosphere layer at ground level), and orientation (according to the natural slope). Should the moisture content of the sods be less than 90% moisture, the Implementing Entity shall be required to peg them with wooden stakes. • The site shall be mulched (alternatively cloth/geotextile may be used) and livestock shall be fenced out for at least two seasons. Alternatively brush packs can be used to keep livestock and/or game away from the site. • If compaction took place, the Implementing Entity shall loosen the soil with a fork on flat surfaces, and create small contour berms on paths with slopes. 	
Stop work	N/A	
Monitoring method and frequency	<ul style="list-style-type: none"> • The Implementing Entity shall notify the ECO once rehabilitation in an area has been completed. The ECO shall be responsible for the technical, not contractual, sign-off of the rehabilitated sections. Only once the rehabilitation has been approved by the ECO, may the contractual sign-off be effected. • The ECO shall conduct monthly inspections of rehabilitated areas for the first three months and then continue with inspections on a quarterly basis until the end of the contract period. • The ECO should audit the site at the end of the Implementing Entity's retention period to establish whether rehabilitation has been successfully carried out. If not, the retention money could be used to implement additional rehabilitation measures. 	Implementing Entity, ECO, Engineer
Management outcomes	<ul style="list-style-type: none"> • Vegetation clearance is limited to the approved construction footprint. • All sloped areas are stable with no sign of slope failure or erosion. 	Implementing Entity, ECO, Engineer



6 EMERGENCY REPORTING AND PROCEDURES

The Implementing Entity must ensure that all emergency procedures are in place prior to commencing work. The nearest emergency service provider shall be identified and the up-to-date contact details of this emergency centre, as well as the police and ambulance services shall be displayed on a notice board and shall be made available to staff on-site. Emergency equipment including fire-fighting equipment shall be positioned at accessible locations near to areas where such emergencies may arise.

6.1 Emergency Awareness

The Implementing Entity shall ensure that site staff are aware of the procedure to be followed for dealing with emergencies, which shall include notifying the Implementer and relevant authorities of the event. All site staff shall be briefed regarding the requirements for dealing with potential emergencies including fires, accidental leaks and spillage of pollutants (also see Section 4.7 and 4.8), as well as Health and Safety incidents. Education of site staff shall focus on both preventative and remedial actions in the case of an emergency.

6.2 Incident Recording

The Implementing Entity shall complete an Incident Report (refer to template under Annexure B) in the case of any environmental emergencies, accidents or incidents (including near misses). The ECO shall monitor that the necessary procedures and responses are followed to close out any entries in the Environmental Incident Report. The aforementioned report will be filed in the SEF.

6.3 Fire

The Implementing Entity must take all reasonable measures to ensure that fires are not started as a result of construction activities on site, and shall also ensure that their operations comply with the Occupational Health and Safety Act (Act No. 85 of 1993). Where possible, all work done in the dry season shall be organised in liaison with the landowners so that it fits into their firebreak/ fire protection programme. No large open fires are permitted on site. Smoking on site shall only be permitted in designated areas and in the presence of a fire extinguisher.

Basic functional fire-fighting equipment (one back pack and at least five beaters) shall be made available at each work site at all times. In forestry areas there must also be two rake hoes per team. The Implementing Entity shall appoint a member of his staff to be responsible for the installation and inspection of this equipment. Where work will take place in a peatland or wetland with a high organic soil content, a Method Statement shall be prepared for the ECO's approval, detailing all the actions that will take place should a fire occur, as well as the relevant emergency contacts.

Where fuels and machines are used on site, the prescribed fire extinguishers in working condition must be made available by the Implementing Entity.

Sparks generated during welding, cutting of metal or gas cutting can result in fires. Every possible precaution shall therefore be taken when working with this equipment near potential sources of combustion. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities.

The Implementing Entity is to ensure that he/ she has the contact details of the nearest fire station in case of an emergency.



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Annexure A: Basic Code of Conduct / Implementation

- Private property access is only permitted on previous agreement with the affected landowner, or will be considered trespassing. Trespassing on adjacent properties shall be subject to disciplinary and legal action.
- Ensure that closed gates are kept closed. When in doubt, the landowner should be consulted.
- Teams working outside of the active site, or requiring access to private properties are to carry identification on their persons that includes their name, position, company of employ, and reference to the Working for Wetlands Project. Similarly, such information shall be displayed on vehicle dashboards/exterior.
- All work shall be based on an approved rehabilitation plan.
- Any deviations from the planned specification need to be approved by the PC and the relevant Engineer.
- A construction supervisor shall be appointed. The appointment letter shall be made available on site.
- Work sites shall be properly planned and marked out, preferably in collaboration with the Implementing Entity. Areas shall be demarcated for vehicle access and parking, off-loading, mixing etc. (refer to Section 4.2).
- No unauthorised person may enter the work site.
- The location and position of all rehabilitation interventions shall be precisely demarcated by the Engineer and the Implementer, according to the rehabilitation plan.
- Dimensions of rehabilitation interventions shall also be marked out where appropriate (e.g. depth of an excavation).
- Implementation of all interventions will be done with a focus on cost-effectiveness and efficiency, while maintaining quality and appropriateness.



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Annexure B: Site Environmental File & Templates

Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
4. Communication	
4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
4.2. Copy of public complaints register	Yes
5. Site Management	
5.1. Approved layout	
5.2. Site instructions (or copies thereof)	
6. Environmental Training	
6.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)	
7. Method Statements	
7.1. Combined method statements	Yes
7.2. Additional method statements	Yes
8. Records	
8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
8.2. Proof of legal/safe waste disposal	
8.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)	
8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



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Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
4. Communication	
4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
4.2. Copy of public complaints register	Yes
5. Site Management	
5.1. Approved layout	
5.2. Site instructions (or copies thereof)	
6. Environmental Training	
6.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)	
7. Method Statements	
7.1. Combined method statements	Yes
7.2. Additional method statements	Yes
8. Records	
8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
8.2. Proof of legal/safe waste disposal	
8.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)	
8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



2 Implementing Entity Agreements

2.1 Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements

PROJECT NAME:

IMPLEMENTING ENTITY:

DATE:

I, _____ (name), ID number _____ hereby confirm the following:

1. I have received a copy of the Environmental Authorisation (EA), Environmental Management Programme (EMPr) and Rehabilitation Plan for this project.
2. I have familiarised myself with the contents of aforementioned documents and understand what is required from me as the Implementing Entity.
3. I understand that I will be audited against the EA, EMPr, Rehabilitation Plan and approved Method Statements.
4. I understand that the EA is legally binding and that a contravention of an EA condition can lead to the suspension of the EA and thus construction.
5. I understand that I am responsible for the actions of my employees and will ensure that all staff on site are aware of the requirements and restrictions as per the EA, EMPr, Rehabilitation Plan and Method Statements.

Signed

Designation

Dated



Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
4. Communication	
4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
4.2. Copy of public complaints register	Yes
5. Site Management	
5.1. Approved layout	
5.2. Site instructions (or copies thereof)	
6. Environmental Training	
6.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)	
7. Method Statements	
7.1. Combined method statements	Yes
7.2. Additional method statements	Yes
8. Records	
8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
8.2. Proof of legal/safe waste disposal	
8.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)	
8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



4 Communication

4.2 Copy of public complaints register

COMPLAINTS REGISTER

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....
REVISION:	.....



Id.	Date	Time	Complainant Name	Address	Contact Details	Path for complaint (Phone, Discussion, email)	Description of complaint	Detail of investigation	Result of investigation	Corrective action	Response to complaint
1											
2											
3											
4											
5											
6											
7											
8											



Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
4. Communication	
4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
4.2. Copy of public complaints register	Yes
5. Site Management	
5.1. Approved layout	
5.2. Site instructions (or copies thereof)	
6. Environmental Training	
6.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)	
7. Method Statements	
7.1. Combined method statements	Yes
7.2. Additional method statements	Yes
8. Records	
8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
8.2. Proof of legal/safe waste disposal	
8.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)	
8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



7 Method Statements

The Implementing Entity is to complete this section, taking cognisance of the relevant EA, EMP, environmental specifications and SANS.

7.1 Combined method statements

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....
REVISION:	.....

ACRONYMS

ECO	Environmental Control Officer
EMPr	Environmental Management Programme
NEMA	National Environmental Management Act (Act 107 of 1998)
SHE	Safety Health Environment

DEFINITIONS

Alien species¹:

- (a) a species that is not an indigenous species; or
- (b) an indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.

Approved: Means approved in terms of the applicable legal requirements (e.g. NEMA approval/ Environmental Authorisation) and/or has been approved by the WfWetlands Programme's Deputy Director: Planning, Monitoring and Evaluation and/or an authorised representative of the WfWetlands Programme.

Archaeological²:

- (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- (c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the

¹ National Environmental Management: Biodiversity Act (No. 10 of 2004)

² National Heritage Resources Act (No. 25 of 1999)



Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which the South African Heritage Resource Agency (SAHRA) considers to be worthy of conservation; and

Auditing³: A systematic, documented, periodic and objective evaluation which provides verifiable findings, in a structured and systematic manner, on:

(a) the level of performance against and compliance of an organisation or project with the provisions of the requisite environmental authorisation or Environmental Management Programme (EMPr) and, where applicable, the closure plan; and

(b) the ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

Authority: National, regional or local authority, that has a decision-making role or interest in the project.

Best Management Practice (BMP): Procedures and guidelines to ensure the effective and appropriate implementation of wetland rehabilitation by WfWetlands implementers.

Cement laden water: Means water (fresh or wash water) which has been in contact with partially cured concrete/mortar or raw cement product and which contains suspended and dissolved cement solids.

Commence: The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

Contaminated water: Means water contaminated by the Implementing Entity's activities such as with hazardous substances, hydrocarbons, paints, solvents and runoff from plant, workshop or personnel wash areas but excludes water containing cement/ concrete or silt.

Corrective (or remedial) action: Reactive response required to address an environmental problem that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

Dam⁴: Any barrier dam and any other form of impoundment used for the storage of water, excluding reservoirs.

Dangerous goods: Goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "*List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)*" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards.

Decommissioning⁵: To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned.

³ Regulation 34 of GN R982 (2014, as amended) of NEMA

⁴ GN R983 (2014, as amended) of NEMA

⁵ GN R983 (2014, as amended) of NEMA



Dust⁶: Any material composed of particles small enough to pass through a 1 mm screen and large enough to settle by virtue of their weight into the sampling container from the ambient air.

Eco-log: A cylindrical sleeve made from, for example wire mesh, filled with organic material and/or soil used to prevent and/or repair minor erosion.

Endangered species: Means any indigenous species listed as an endangered species in terms of section 56 of the National Environmental Management Biodiversity Act ((No. 10 of 2004).

Endemic: An "endemic" is a species that grows in a particular area (i.e. it is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment⁷: Means the surroundings within which humans exist and that are made up of:

- i. the land, water and atmosphere of the earth;
- ii. micro-organisms, plant and animal life;
- iii. any part or combination of i) and ii) and the interrelationships among and between them; and
- iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

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

Environmental impact: Change in an environment resulting from the effect of an activity on the environment, whether positive or negative. Impacts may be the direct consequence of an individual's or organisation's activities or may be indirectly caused by them (DEAT, 1998).

Erosion: The loss of soil through the action of water, wind, ice or other agents, including the subsidence of soil.

Gabion: A structure made of wire mesh baskets filled with regularly sized stones, and used to prevent and/or repair erosion. They are flexible and permeable structures which allow water to filter through them. Vegetation and other biota can also establish in/around the habitat they create.

Hazard: Means a source of or exposure to danger.

Invasive alien species control:

- (a) to combat or eradicate an alien or invasive species; or
- (b) where such eradication is not possible, to prevent, as far as may be practicable, the recurrence, re-establishment, re-growth, multiplication, propagation, regeneration or spreading of an alien or invasive species.

Implementing Entity: The entity responsible for the construction of WfWetlands rehabilitation interventions by means of various contracted teams.

Indigenous vegetation⁸: Refers to 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.

⁶ National Dust Regulations GN R827 (2013)

⁷ NEMA

⁸ GN R983 (2014, as amended) of NEMA



Interested and Affected Parties (I&APs)⁹:

(a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;

(b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

Intervention: An engineered structure such as a concrete or gabion weir, earthworks or revegetation that achieves identified objectives within a wetland e.g. raising of the water table within a drainage canal.

Invasive species¹⁰: Means any species whose establishment and spread outside of its natural distribution range-

(a) threaten ecosystems, habitats or other species or have demonstrable potential to threaten ecosystems, habitats or other species; and

(b) may result in economic or environmental harm or harm to human health.

Listed invasive species: Any invasive species listed in terms of sections 66(1), 67(1), 70(1)(a), 71(3) and 71A of the National Environmental: Biodiversity Act (No. 10 of 2004).¹¹

Maintenance period: The period after the Establishment Period (Practical Completion), up to and until the end of the Maintenance Period (i.e. a period of 12 months).

Maintenance¹²: Means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint.

Mine:

(a) used as a noun-

any excavation in the earth, including any portion under the sea or under other water or in any residue deposit, as well as any borehole, whether being worked or not, made for the purpose of searching for or winning a mineral;

any other place where a mineral resource is being extracted, including the mining area and all buildings, structures, machinery, residue stockpiles, access roads or objects situated on such area and which are used or intended to be used in connection with such searching, winning or extraction or processing of such mineral resource; and

(b) used as a verb-

in the mining of any mineral, in or under the earth, water or any residue deposit, whether by underground or open working or otherwise and includes any operation or activity incidental thereto, in, on or under the relevant mining area.

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

Mitigation¹³: Means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible;

⁹ Regulation 42 GN R983 (2014, as amended) of NEMA

¹⁰ National Environmental Management: Biodiversity Act (No. 10 of 2004)

¹¹ Also refer to GN 864 (2016): Alien and Invasive Species Lists

¹² GN R983 (2014, as amended) of NEMA

¹³ GN R983 (2014, as amended) of NEMA



Monitoring¹⁴: The repetitive and continued observation, measurement and evaluation of environmental criteria to follow changes over a period of time and to assess the efficiency of control measures.

Nursery conditions: This refers to the necessary conditions that must be in place for maintaining strong healthy growth in all container plant materials on site. This includes for the protection of all container plants against wind, frost, direct sunlight, pests, disease and drought. It also includes for the provision of adequate and suitable water supply, fertilisers and all other measures necessary to maintain strong and healthy plant growth.

Offensive odour: Any smell which is considered to be malodorous or a nuisance to a reasonable person.

Pollution¹⁵: Means any change in the environment caused by substances;

- (ii) radioactive or other waves; or
- (iii) noise, odours, dust or heat,

emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

Post-construction: Refers to the period of 12 months after the completion of the construction works, the onset coinciding with the maintenance period..

Potentially hazardous substance: Any substance or mixture of substances, product or material declared to be a hazardous substance under section 2(1) of the Hazardous Substance Act (1973).

Pre-construction: Refers to the period leading up to the establishment on site by the Implementing Entity.

Project: A defined area for which an approved rehabilitation plan exists for the WfWetlands Programme.

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"¹⁶

Reasonable: Means, unless the context indicates otherwise, reasonable in the opinion of the relevant environmental authority.

Rehabilitation: 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; and

Restoring processes and characteristics that are sympathetic to and not conflicting with the natural dynamic of an ecological or physical system¹⁷.

Significant impact: Means an impact that may have a notable effect on one or more aspects of the environment or may result in k with accepted environmental quality standards, thresholds or targets

¹⁴ DEAT, 1998

¹⁵ National Environmental Management Act (No. 107 of 1998, as amended)

¹⁶ DWS Groundwater Dictionary. Available online:

http://www.dwaf.gov.za/Groundwater/Groundwater_Dictionary/index.html?introduction_quaternary_catchment.htm

¹⁷ Wetland Management Series: WET-Origins, WRC Report TT 334/08, March 2008



and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

Silt laden water: Means water (mostly overland surface runoff) containing a substantial concentration of suspended solids with increased turbidity. Usually occurs as a result of exposed/cleared ground surfaces, concentration of runoff and/or erosion of excavated or imported materials.

Site: This is the area described in the approved/authorised rehabilitation plan for the implementation of the rehabilitation measures. Where the area is not demarcated, it will include all adjacent areas, which are reasonably required for the activities for the Implementing Entity, and approved for such use by the Environmental Control Officer (ECO).

Slope: The inclination of a surface expressed as 1 unit of rise or fall for so many horizontal units.

Subsoil: The soil horizons between the topsoil horizon and the underlying parent rock.

Topsoil: The upper soil profile irrespective of the fertility appearance, structure, agriculture potential, fertility and composition of the soil, usually containing organic material and which is colour specific. Also referred to as the "O" and "A" horizons.

Waste: Any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 the National Environmental Management: Waste Act (No. 59 of 2008)¹⁸. Examples include construction debris, chemical waste, used oils and lubricants, batteries, metal and wood off-cuts, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Watercourse:

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermitted;
- (c) a wetland, pan, lake or dam into which, or from which, water flows

A reference to a watercourse includes, where relevant, its bed and banks

Weir: A dam-type structure placed across a watercourse to raise the water table of the surrounding ground and trap sediment on the upstream face without preventing water flow. Weirs are generally used to prevent erosion from progressing up exposed gullies.

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 soils¹⁹ and,

Land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants living there²⁰.

¹⁸ National Environmental Management: Waste Act (No. 59 of 2008, as amended)

¹⁹ National Water Act (No. 36 of 1998, as amended)

²⁰ Wetland Management Series: WET-Origins, WRC Report TT 334/08, March 2008



SECTION 1: SITE ESTABLISHMENT

Briefly describe where the site camp will be located. Also provide a layout on the next page.
Coordinates:
How will you demarcate the site camp (note no danger tape allowed)
What will the size of the site camp be?
Are there any sensitive areas, trees, shrubs or landscape features (e.g. a heritage site) that must be avoided to prevent disturbances and/or damage? How will disturbances or damage be prevented?

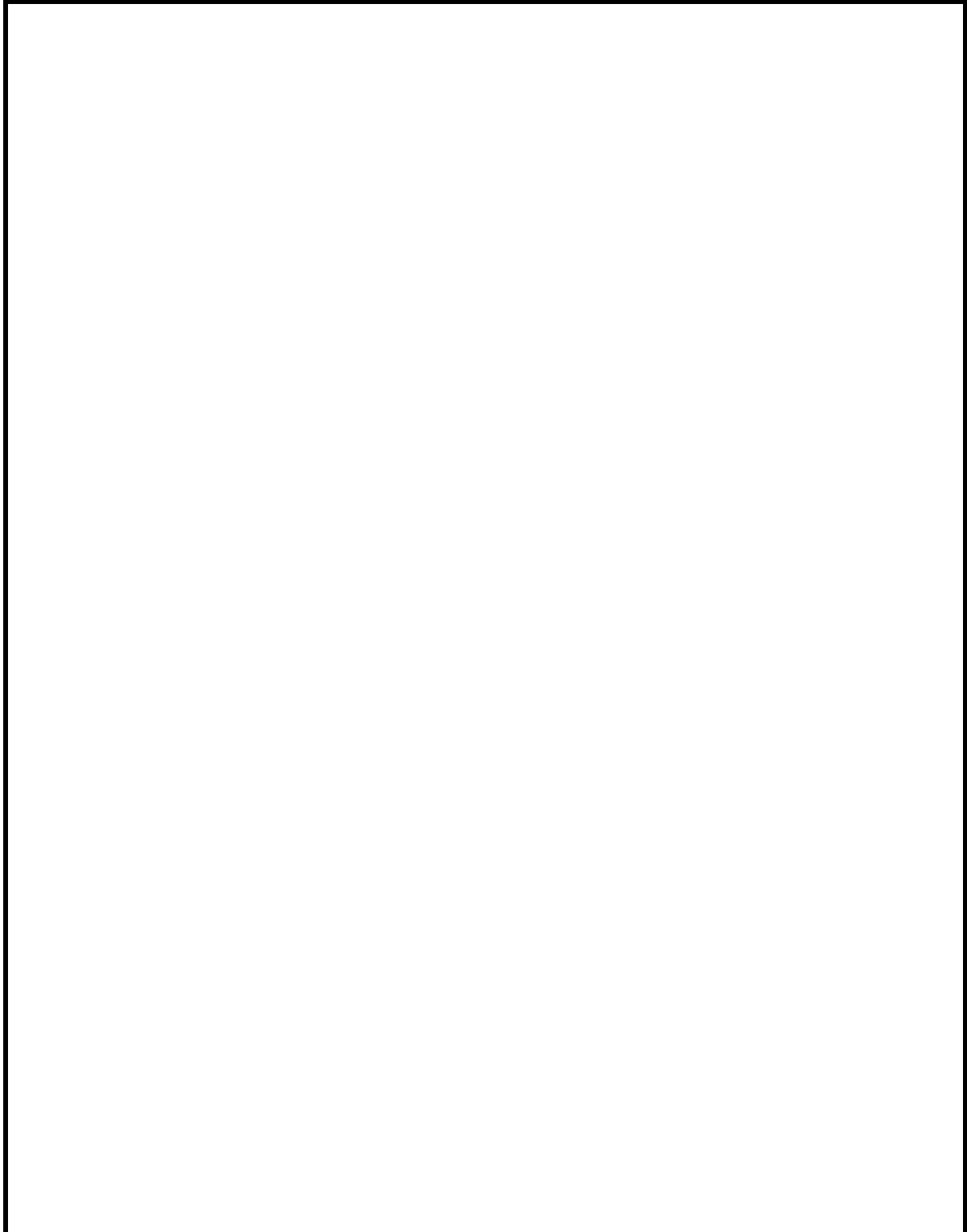
Is the site camp on a flat area (i.e. slope not exceeding 1:3)?	Y	N
Is the site camp located away from areas of stormwater concentration and areas prone to flooding?	Y	N
Are there any recently disturbed areas close to the site which can be used as a site camp?	Y	N
Is there sufficient space available at the identified site to accommodate all site camp components i.e. ablution facilities, eating areas, laydown areas, stockpile areas, vehicle parking area, concrete wash water settling area?	Y	N
Can the site camp remain at one location? I.e. it does not need to be moved on a regular basis (i.e. every two to four weeks) due to intervention sites being far apart?	Y	N

If, “No”, attach the approved for request for deviation form to the back of this document.



Indicate the following (ignore if not relevant): Ablution facilities, waste storage area (general and hazardous), eating area, laydown area, stockpile area, concrete/mortar mixing/batching area, concrete wash water settling system, site office, access, vehicle parking area, any stormwater diversion measures required, the wetland boundary and sensitive features that must be avoided.

Site camp layout (please use multiple layout plans if required).



SECTION 2: SITE DEMARCATION

Indicate the working area required for each intervention site.

Intervention No	Type of intervention	Area required (incl. temporary laydown and stockpile areas, topsoil stockpiling, equipment etc.)

How will you demarcate the working area required for each intervention?

--

SECTION 3: ACCESS ROUTES/HAUL ROADS

Length of new access road required for each intervention site.

Intervention No	Existing access (Y/N)?	Length of access road required

Describe how access roads will be made and demarcated (i.e. avoiding unnecessary access roads and the creation of multiple access roads).

--

**Include a simple layout indicating the proposed access routes as an addendum to this document.*

SECTION 4: MATERIALS HANDLING, USE AND STORAGE

Briefly list the materials (including volumes) to be used during construction (e.g. bidim, gabion baskets, stones, gravel, shuttering oil, cement, sand, MacMat-R, geotextile):		
Where will the materials be off-loaded?		
Where are you sourcing the material from?		
If it is not a commercial source, have you written obtained permission from the ECO and any other relevant party e.g. the landowner, provincial roads, Department of Mineral Resources? Please attached a copy of the written permission/consent to the end of this METHOD STATEMENT .	Y	N



Are the areas you've identified for stockpiling of bulk material outside of the wetland? If "No", consult with the ECO.	Y	N
Are the areas you've identified for stockpiling level (i.e. not steeper than 1:30)? If no, explain the measures which will be implemented to prevent materials washing away during rainfall.	Y	N
Have you planned how to get the materials from the stockpile/laydown area to the intervention working area? Please provide details on the proposed methodology below. Differentiate between the various materials where required.	Y	N
Do you have sufficient covered storage space for products such as cement, and shuttering oil? Please provide details of the storage areas to be used and the type of cover e.g. roofed, shade cloth, storage container.	Y	N
Do you need to stockpile bulk materials e.g. rock, sand next to an intervention? If "Yes", please provide details on the duration of stockpiling, the volume and the measures to be taken to avoid erosion of material and contamination of topsoil.	Y	N
Have you worked out a delivery schedule to avoid materials being stored on site for longer than 4 weeks?	Y	N
Is there any material which will be prone to become windblown e.g. sand? If yes, describe how you will contain the material.	Y	N

SECTION 5: SOLID WASTE MANAGEMENT AND DISPOSAL

What types of waste is expected to be generated during the construction period?		
List any wastes that are potentially hazardous ²¹ (e.g. empty sealant containers, materials from spill kit used to clean spillages, batteries, contents from portable toilets, herbicide containers):		
How will waste be stored on site (i.e. where and in what)?		
General:		
Hazardous:		
How often, how and where will waste be disposed of?		
General:		
Hazardous:		
Is a substantial quantity of vegetation clearance required?	Y	N

²¹ Refer to National Environmental Management: Waste Amendment Act 26 of 2014 and SANSH 234



If "yes" indicate how vegetation material not removed as part of topsoil stripping will be dealt with e.g. chipping, brush packing, donate to local community.

* Please remember to clearly indicate waste storage areas on the layout plan.

SECTION 6: HAZARDOUS CHEMICALS AND POTENTIAL HAZARDOUS SUBSTANCES

List potentially hazardous substances to be used on the project. (*Hazardous being defined in terms of Hazardous Substances Act (No.187 of 1993) and associated regulations as well as SANS 10234. Examples include, but are not limited to: drums of fuel, grease, oil, brake fluid, hydraulic fluid, paint, batteries and herbicides (for alien plant clearing).*)

How and where will these substances be stored?

How will these substances be applied or dispensed?

How will spills be prevented?

In the event of a spill, how will it be mitigated?

Procedure:

Materials:

Person responsible and contact details:

*Attach the relevant Material Safety Data Sheet (MSDS) of hazardous materials to be stored on site as an addendum to this document.

SECTION 7: FUEL

What is the volume of fuel planned to be stored on site?

How and where will fuel be stored?

How will fuel be dispensed?

What precautions will be taken to prevent accidental spills or fires?



In the event of a spill, how will it be mitigated (i.e. cleaned up)?

Procedures:

Materials:

Person responsible and contact details:

How will hydrocarbon contaminated materials be managed and disposed of? Note hydrocarbon contaminated soil is only allowed to go to a Class A landfill (previously H:H landfill site).

SECTION 8: WATER USE

What source will be used to obtain water for construction purposes?

What source will be used to obtain water for drinking and sanitation purposes?

SECTION 9: CONCRETE BATCHING AND CEMENT HANDLING

List activities where concrete or mortar will be used:

If ready mix is not used, where and how will concrete be mixed and how will it be transported to the intervention location?

How will cement laden runoff be managed? Specify for the concrete mixing area as well as washing of equipment.

Where and how will cement be stored?

How and where will cement bags be stored until taken off site?

How will excess concrete and concrete remains be disposed of?

SECTION 10: ABLUTION FACILITIES

How many people will be on site?



How many toilets will be required at a ratio of 1 toilet for every 15 people?

What type of toilet will be used (e.g. chemical or pit latrine) and where will it be located?

If chemical toilets are used, specify how and when they'll be serviced.

SECTION 11: EATING AREAS

Where will the eating area be located?

How will you prevent littering around the eating area?

** Also clearly indicate the designated eating area(s) on the layout plan.*

SECTION 12: VEHICLES AND EQUIPMENT

Describe the number and type of vehicles to be used on site.

Where will vehicles be parked or equipment stored overnight, during weekends and during holidays?

Describe the procedure to be implemented for dealing with vehicles or equipment leaking oil or fuel:

Describe emergency equipment maintenance procedures:

Procedure:
Materials:
Person responsible:

SECTION 13: NOISE

Are there any houses nearby? Do you need inform the landowners of any noisy activities that will take place? How will this be done?

Describe the measures to be implemented to prevent excessive noise disturbance during construction:



SECTION 14: DUST

What is the distance to the closest occupied building and what type of building is it (e.g. house, school, clinic, etc.)

List activities and material that might lead to the generation of dust:

If closer than 100m from a sensitive receptor e.g. occupied building, road, orchard, describe the activities to be implemented to limit and mitigate the generation of dust:

SECTION 15: IMPLEMENTING ENTITY'S SAFETY HEALTH ENVIROMENT (SHE) OFFICER

Who will be responsible to ensure that Health and Safety and Environmental Requirements are implemented on site? Describe responsibilities of the relevant person:

Name:
Responsibilities:
Reporting to:

SECTION 16: ENVIRONMENTAL AWARENESS TRAINING

Describe how environmental awareness and training for senior staff will be addressed:

Describe how environmental awareness and training for general labour will be addressed:

** Please include a copy of the training material and attendance register in the environmental folder.*

SECTION 17: FIRE CONTROL

List activities on site with a fire risk e.g. smoking areas, generators.

How will fires be prevented?

Describe the procedure to be followed in case of a fire on site:

Process:
Materials:



Responsible person:

SECTION 18: COMMUNITY RELATIONS

Who is/are the landowner(s) of the property/properties where work will be conducted?

Has the landowner been contacted and notified of construction commencing and are there any specific concerns or requests which need to be taken into account?

Describe how good community relationships will be ensured (e.g. complaints register, contact details of Implementing Entity on site):

SECTION 19: PROTECTION OF FAUNA AND FLORA

Are you working in a conservancy, nature reserve or biosphere? If, yes, what are the precautions to be taken to avoid the accidental or intentional killing and/or trapping of animals?

Are you aware of any nesting or breeding sites close to any of the interventions?

Describe the procedure to be followed pre-construction to check for slow moving animals in the vicinity of the construction area.

Describe the procedure to be followed to check excavations of 0.5m and deeper for trapped animals.

If you are working in an area with potentially dangerous animals, describe the measures to be taken to ensure the safety of staff.

Are there any trees or shrubs that may not be disturbed or damaged? Have these been clearly marked to prevent disturbances and potential damage?

SECTION 20: STORMWATER MANAGEMENT

Is the site located in floodplain or valley? If "Yes", have you verified the typical rainfall patterns in the area and when increased flow/flooding can be expected?



Are you aware of any major dams or impoundments upstream of the site? If yes, do you have the contact details of the entity/responsible person in control of releases from the dam or impoundment and have you notified them of work being undertaken downstream?

Are you doing work in the “seasonal” or “permanent zone” of the wetland i.e. an area that is seasonally or permanently wet? If “Yes”, describe the dewatering procedures to be followed (i.e. will pumping be required, where will the pumped water be discharged, how will you reduce sediment loads in pumped water, how will you prevent scouring at the pipe outlet?)

Do you need to divert flow to enable construction/work being undertaken? If “Yes”, provide details on the type and duration of the diversion.

SECTION 21: EROSION AND SEDIMENTATION CONTROL

How will you prevent the erosion of access roads?

Will there be significant exposed areas (areas exceeding 10m²) during the rainfall season? If “Yes”, how will you protect bare soil surfaces exposed for a month or longer (e.g. stormwater diversion, temporary revegetation, geotextile)?

Do you need to work on steep (1:4) slopes? If “Yes”, describe the measures to be implemented to avoid the erosion of exposed ground surfaces, excavated material and construction material.

Are there any known stormwater structures discharging towards the site e.g. culverts, stormwater outlets. If “Yes”, is the diversion of the stormwater required to protect the site from erosion and how will it be done?

SECTION 22: PROTECTION OF ARCHAEOLOGICAL AND PALAEOLOGICAL SITES

Are you aware of any known heritage artefacts (e.g. old buildings, Stone Age sites, shell middens, caves, historic grave sites, monuments) close to the site? If “Yes”, describe how you will protect the site.

Describe the procedure to be followed in the event that an object of heritage, archaeological or paleontological is discovered:



Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
4. Communication	
4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
4.2. Copy of public complaints register	Yes
5. Site Management	
5.1. Approved layout	
5.2. Site instructions (or copies thereof)	
6. Environmental Training	
6.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)	
7. Method Statements	
7.1. Combined method statements	Yes
7.2. Additional method statements	Yes
8. Records	
8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
8.2. Proof of legal/safe waste disposal	
8.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)	
8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



7 Method Statements

7.2 Additional method statements

INFORMATION ON METHOD STATEMENTS

Method Statements are to be completed by the person undertaking the work (i.e. the Implementing Entity). The Method Statement will enable the potential negative environmental impacts associated with the proposed activity to be assessed.

The Method Statement can only be implemented once approved by the PC in consultation with the ECO.

The Implementing Entity (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

The PC and/or ECO will use the Method Statement to audit compliance by the Implementing Entity with the requirements of the approved Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the PC, denoting that the changed methodology or works are necessary for the successful completion of the works, and where applicable the PC will consult with the ECO regarding to environmental concerns. The Implementing Entity will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

This Method Statement MUST contain sufficient information and detail to enable the PC (and ECO where applicable) to apply his/her mind to the potential impacts of the works on the environment. The Implementing Entity will also need to thoroughly understand what is required of him/her in order to undertake the works.

THE TIME TAKEN TO PROVIDE A THOROUGH, DETAILED METHOD STATEMENT IS TIME WELL SPENT. INSUFFICIENT DETAIL WILL RESULT IN DELAYS TO THE WORKS WHILE THE METHOD STATEMENT IS REWRITTEN TO THE ASD'S SATISFACTION



METHOD STATEMENT

PROJECT NAME:

IMPLEMENTING ENTITY:

DATE:

PROPOSED ACTIVITY *(give title of method statement):*

E.g. construction of diversion structure, temporary damming of stream, deviation from standard rehabilitation procedures

Scope	
Potential Impacts	E.g. litter, spills, damage to flora, contamination of water
Start Date:	
End Date:	
Description (i.e. how will the Method Statement be implemented?):	
Location:	
Person(s) responsible for implementing (Name and designation):	



DECLARATIONS

1) Environmental Consultant/Environmental Control Officer

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

Signed Print name Dated

2) Implementing Entity

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the PC/ECO will audit my compliance with the contents of this Method Statement

Signed Print name Dated

3) Engineer/Engineer's Representative

The works described in this Method Statement are approved.

Signed Print name Dated

4) Approving authority: PC

Signed Print name Designation

Dated: _____



Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
4. Communication	
4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
4.2. Copy of public complaints register	Yes
5. Site Management	
5.1. Approved layout	
5.2. Site instructions (or copies thereof)	
6. Environmental Training	
6.1. Proof of toolbox talks, environmental awareness and induction (incl. attendance register and training material)	
7. Method Statements	
7.1. Combined method statements	Yes
7.2. Additional method statements	Yes
8. Records	
8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
8.2. Proof of legal/safe waste disposal	
8.3. Record of chemicals on site and Material Safety Data Sheets (MSDS)	
8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



8 Records

8.5 Request for deviations from standard EMPr or Rehabilitation Plan requirement

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....

DEVIATION 1 (*Implementing Entity to complete*)

Description of deviation	<i>E.g. mixing of concrete in wetland</i>
Reason for deviation	<i>E.g. major wetland system resulting in excessive transport distances</i>
Start Date:	
End Date:	
Relevant section in EMPr	
Potential impacts associated with deviation	<i>E.g. concrete spills in wetland, additional vegetation clearance, water pollution</i>
Mitigation measures identified	<i>E.g. mixing boards, dedicated wash bins, no cement storage in wetland next to mixing area, regular clean-up</i>

DEVIATION 2 (*Implementing Entity to complete*)

Description of deviation	
Reason for deviation	
Start Date:	
End Date:	
Relevant section in EMPr	
Potential impacts associated with deviation	
Mitigation measures identified	



PC CHECKLIST

Does the deviation carry a high risk e.g. pollution, structure failure	Yes	No	Unsure	If “yes” or “unsure” consult with Engineer
Does the proposed deviation trigger a new listed activity	Yes	No	Unsure	If “yes” or “unsure” consult with EAP
Does the deviation involve a change in design of the IP	Yes	No	Unsure	If “yes” or “unsure” consult with Engineer and Wetlander
Is the deviation outside the approved wetland system?	Yes	No	Unsure	If “yes” or “unsure” consult with EAP



Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
3. Approvals and Licenses	
3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
3.3. Waste license (if applicable)	
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4.1. Important correspondence e.g. notice to Competent Authority of commencement of construction	
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8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



9 Audits

9.1 Baseline audit/ inspection prior to commencement of construction

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....

SECTION 1: WETLAND ZONE IN WHICH WORK WILL BE UNDERTAKEN:

Permanent	Seasonal	Temporary	Outside wetland boundary
-----------	----------	-----------	--------------------------

SECTION 2: CONDITION OF VEGETATION

Coverage:	Poor	Moderate	Good
Species diversity:	Poor	Moderate	Good
Grazing in wetland:	Yes	No	
Harvesting of vegetation in wetland:	Yes	No	
Level of alien invasive species infestation:	Low	Moderate	High

Insert photos:

SECTION 3: SOIL

Topsoil depth:	≥10cm	≥30cm	≥ 50cm
Peat known to be present?	Yes	No	
Evidence of erosion	Yes	No	
Type of erosion	Dryland	Gullies/donga	In-stream (undercutting, lateral, scouring)
	Stormwater outlets	Dispersed overland flow	Tunnelling (dispersive soils)



SECTION 4: IS THERE ANY EXISTING WASTE OR SPOIL ON SITE?

Yes	No
-----	----

If yes, specify the type and estimated quantity

--

Insert photos:

SECTION 5: ARE THERE EXISTING ALIEN INVASIVE SPECIES ON THE SITE?

Yes	No
-----	----

If yes, list the species

--

Are any of the species Category 1a or b species? (Alien and Invasive Species Regulations, 2014 - GN R598/2014)

Yes	No
-----	----

If yes, list the species and number/density of plants.

--

Insert photos:

SECTION 6: ARE THERE EXISTING ACCESS ROADS TO THE SITE?

Yes	No
-----	----

If yes, what is the condition of the road(s)?

Good	Moderate	Poor
------	----------	------

SECTION 7: ARE THERE OTHER IMPACTED OR DISTURBED AREAS

Cleared area	Mining area	Kraal	Previous site camps	Ploughed agricultural land
Roads	Settlements	Other:		

SECTION 8: EXISTING WATER QUALITY ISSUES

High sediment loads (murky/cloudy water)	Eutrophication (excess algal growth)	High TDS (salt deposits)	Low pH (orange coloured water)	<i>E. coli</i> (leaking sewer lines, concentration of animals)
------------------------------------------	--------------------------------------	--------------------------	--------------------------------	----------------------------------------------------------------



SECTION 9: IS THERE EXISTING FENCING ON THE PROPERTY WHERE THE WORK WILL BE CONDUCTED?

Yes	No
-----	----

If yes, what type of fencing and what is the condition of the fencing?

--

Insert photos:

SECTION 10: ARE THERE ANY KNOW PROTECTED PLANT SPECIES ON SITE?

Yes	No
-----	----

If yes, list the species

--

Insert photos:

SECTION 11: ARE THERE ANY SIGNIFICANT TREES OR CLUMPS OF TREES WHICH NEED TO BE CONSERVED?

Yes	No
-----	----

If yes, specify the species and location.

--

Insert photos:

SECTION 12: ARE THERE ANY KNOWN OR VISIBLE HERITAGE OBJECTS (E.G. OLD KRAAL, OLD FURROW, CORNER POSTS, OLD BUILDINGS)?

Yes	No
-----	----

If yes, specify the type of object and location.

--

Insert photos:



SECTION 13: ARE THERE ANY EXISTING ANIMAL (DOMESTIC OR WILD) CROSSINGS ON OR CLOSE TO THE SITE?

Yes	No
-----	----

If, yes, will the planned work impact on the crossings and movement of the animals?

Yes	No
-----	----

SECTION 14: ARE THERE ANY EXISTING SERVICES ON OR NEAR THE SITE (E.G. POWER LINES, SUB-STATIONS, PIPELINES, TELEPHONE LINES)?

Yes	No
-----	----

If yes, specify the type of infrastructure and whether it will be impacted by the activities on site

--

Insert photos:



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3. Approvals and Licenses	
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7.2. Additional method statements	Yes
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8.1. Record of waste generation – quantity, type, fate (incl. general/hazardous, liquid/solid)	
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8.4. Record of water usage (if applicable)	
8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



9 Audits

9.3 Internal audits/check conducted by the Implementing Entity

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....
WEEK:	<i>E.g. Week 1 / Week 2</i>

SECTION 1: SITE CONDITIONS

--

SECTION 2: LAYDOWN AREAS & SITE OFFICES

ITEM	DESCRIPTION	EVALUATION		NOTES
		Not to Standard	To Standard	
2.1	Litter control			
2.2	Dust suppression			
2.3	Erosion control			
2.4	Storm water / Runoff control			
2.5	Toilets			
2.6	Fuel & oil storage & dispensing			
2.7	Material handling or Storage			
2.8	Waste management			
2.8.1	<i>Domestic Waste</i>			
2.8.2	<i>Hazardous Waste</i>			
2.9	Noise control			

SECTION 3: CONSTRUCTION SITES

ITEM	DESCRIPTION	EVALUATION		NOTES
		Not to Standard	To Standard	
3.1	Litter control/Recycle			



3.2	Dust suppression			
3.3	Erosion control			
3.4	Toilets			
3.5	Eating areas			
3.6	Material handling and Storage			
3.7	No go areas, natural features and trees have not been damaged			
3.8	Drip trays			
3.9	Waste management			
3.9.1	<i>Domestic Waste</i>			
3.9.2	<i>Hazardous Waste</i>			
3.10	Noise control			
3.11	Environmental Awareness Training			

SECTION 4: COMPLIANCE WITH THE EA CONDITIONS AND EMP AND/OR ENVIRONMENTAL INCIDENTS

--

SECTION 5: GENERAL NOTES

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Section	Template available
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8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



9 Audits

9.4 Incident and non-conformance reports

9.4.1 Environmental Incident Report

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....
REVISION:	.....

SECTION 1: DESCRIPTION OF INCIDENT

SECTION 2: REMEDIAL ACTION REQUIRED

Remedial Action Due Date:	

SECTION 3: RELEVANT DOCUMENTATION

SECTION 4: SIGNATURES

ECO:		Implementing Entity:	
Name:		Name:	
Date:		Date:	



SECTION 5: REMEDIAL ACTION COMPLETED

Implementer to sign when remedial action has been completed and return original to ECO:	
Name:	
Date:	

SECTION 6: REMEDIAL ACTION VERIFIED

ECO:		Implementing Entity:	
Name:		Name:	
Date:		Date:	

SECTION 7: DRAWING/SKETCH

--



9.4.2 Environmental Non-Conformance Notice

PROJECT NAME:
IMPLEMENTING ENTITY:
DATE:
REVISION:

SECTION 1: INCIDENT SEVERITY

High	Medium	Low
Number of previous similar non-conformances on same contract:		

SECTION 2: DESCRIPTION OF INCIDENT

--

SECTION 3: DRAWING/SKETCH

--

SECTION 4: REMEDIAL ACTION REQUIRED

Remedial Action Due Date:	



SECTION 5: DRAWING/SKETCH

--

SECTION 6: RELEVANT DOCUMENTATION

--

SECTION 7: SIGNATURES

ECO:		Implementing Entity:	
Name:		Name:	
Date:		Date:	

SECTION 8: REMEDIAL ACTION COMPLETED

Implementer to sign when remedial action has been completed and return original to ECO:	
Name:	
Date:	

SECTION 9: REMEDIAL ACTION VERIFIED

ECO:		Implementing Entity:	
Name:		Name:	
Date:		Date:	



Section	Template available
1. Rehabilitation Plan and EMP	
2. Implementing Entity Agreements	
2.1. Undertaking in terms of Environmental Authorisation, Environmental Management Programme, Rehabilitation Plan and submitted Method Statements	Yes
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3.1. Environmental Authorisation	
3.2. Section 21(c) and (i) General Authorisation	
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8.5. Request for deviations	Yes
9. Audits	
9.1. Baseline Audit	Yes
9.2. ECO audit reports	
9.3. Internal audits/check conducted by the Implementing Entity	Yes
9.4. Incident and non-conformance reports	Yes
9.5. Site closure	Yes



9 Audits

9.5 Site closure

PROJECT NAME:	.....
IMPLEMENTING ENTITY:	.....
DATE:	.....

SECTION 1: SITE CLOSURE INSPECTION SHEET

Slope:	
Alien invasives:	
Topsoil:	
Anti-erosion:	
Waste:	
Other:	
Timeframe for completion:	

PC signature

Implementing Entity
signature

Date

Date



SECTION 2: POST SITE CLOSURE INSPECTION COMMENTS

Slope:	
Alien invasives:	
Topsoil:	
Anti-erosion:	
Waste:	
Other:	

Outstanding items:

1. _____
2. _____
3. _____

Completion date: _____

PC signature

Implementing Entity
signature

Date

Date



Annexure C: Sensitive Areas

Sensitive areas (incl. delineated wetland boundary)



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Annexure D: Minimum Standards for Construction and Maintenance

Note that maintenance information of structures (position, numbering and BoQ) will be determined as part of the planning process (by the PC and/or the Engineer) and will be included in the Rehabilitation Plan together with new wetlands. This information will be available on WetIS for inclusion in the PIPs. It is the Implementing Entity's responsibility to make provision for maintenance activities in the PIP as discussed and agreed with the PC.

Concrete Batching

- Concrete shall be mixed according to the correct MPa and mix information as specified in the construction notes of the respective design drawings.
- All material used in the mixing of concrete are to be of good quality, clean and clear of any organic material.
- Manufacturer's directions for mixing, consistency and treatment after pouring shall be complied with.
- Cement shall be stored in dry conditions for no longer than six weeks after delivery.
- When cement is stored temporarily infield it shall be kept on a dry waterproof base with a waterproof cover.
- The batching of concrete shall be done on a smooth impermeable surface (e.g. shutter plywood sheets). The batching area shall be prepared by cutting (not removing) the existing vegetation and covering the natural ground level (NGL) with Geotextile lining (minimum A4 grade). A sand retaining berm is to be constructed on top of the geotextile on the downstream end to contain any run-off. A 250µm plastic lining is to cover the geotextile and sand berm while secured to the NGL. The prepared area should be of sufficient size to prevent overspill of any material of substance. All wastewater resulting from batching of concrete shall be disposed of via a contaminated water management system and shall not be discharged into the environment.
- Contaminated water storage areas shall not be allowed to overflow and appropriate protection from rain and flooding shall be implemented.
- A demarcated site at least 20m away from water/ wetland edge shall be used for cement mixing. No batching activities shall occur directly on unprotected ground.
- Empty cement bags shall be stored in weather proof containers to prevent windblown cement dust and water contamination. Empty cement bags shall be disposed of on a regular basis via the solid waste management system, and shall not be used for any other purpose. Unused cement bags shall be stored so as not to be affected by rain or runoff events. In this regard, closed steel containers shall be used for the storage of cement powder and any additives.
- The Implementing Entity shall ensure that sand, aggregate, cement or additives used during the mixing process are contained and covered to prevent contamination of the surrounding environment.
- The Implementing Entity shall take all reasonable measures to prevent the spillage of cement/ concrete during batching and construction operations. During pouring, the soil surface shall be protected using plastic and all visible remains of concrete shall be physically removed on completion of the cement/ concrete pour and appropriately disposed of. All spoiled and excess



aggregate/ cement/ concrete shall be removed and disposed of via the solid waste management system.

- Construction using shuttering shall take into consideration the structure design dimensions and safe working heights to prevent over extension of shuttering. Steel shuttering panel sizes shall be used to match the dimensions of the final concrete section as close as possible.
- Concrete will be mixed and used on the same day. Time from mixing to final compaction should not exceed 45 minutes.
- The maximum haul distance of mixed concrete by means of wheel barrows should be limited to ensure the maximum time from mixing to final compaction does not exceed 45 minutes.
- Where sand, stone and cement are transported by wheelbarrow to their point of mixing the distance travelled should be limited to 150m.
- Where applicable, the location of the batching site (including the location of cement stores, sand and aggregate stockpiles) shall be as approved by the PC. The concrete batching plant shall be kept neat and clean at all times.
- Water used for mixing purposes will be of suitable non-potable quality and may not be obtained from natural water resources.

Concrete Structures:

- Concrete mix to follow the design specification.
- Participants shall be trained in concrete mixing and placing by an accredited organisation prior to performing construction of concrete structures.
- Concrete to be placed in 300mm layers and vibrated using a concrete vibrator.
- Minimum 50mm cover required on all concrete reinforcing and mesh unless otherwise specified.
- 250µm plastic sheets to be placed under structure.
- All concrete walls to be fully supported until they are backfilled to the designed level.
- All mesh reinforcing to have 500mm overlaps between sheets.
- Buttresses and walls to be cast monolithically with footing.
- Construction joints to be used wherever new concrete is cast against previously cast concrete.
- If rebar or mesh crosses a construction joint, it should be continuous through the joint and extend 600mm into each side.
- Foundation improvement to be constructed from 70kg sandbags made of BIDIM A4 and filled with sand or well graded gravel, where indicated.

Gabion Structures:

- Gabion work shall be done according to design specifications.
- Participants shall be trained in gabion construction by an accredited organisation prior to performing placing or construction of gabion structures.
- Gabion baskets and Reno mattresses to be constructed of minimum double twisted, hexagonal galvanized wire mesh of nominal diameter and 80mm mesh. Frame wire to be 3.4mm outside diameter (o/d) and mesh wire to be 2.7mm o/d with partitions at 1m centres.



- Support and binding wire shall be a minimum 2.2mm. Lacing shall be done according to specification.
- Support wires (bracing) shall be in place according to manufacturer's specifications.
- All adjoining baskets shall be laced together according to manufacturer's specifications.
- Geotextile shall line all faces of the gabion baskets that are exposed to earth and certain water exposed sides with a minimum of 200mm overlap in all directions and stitched with either polyester or galvanised wire at 300mm c/c.
- Water corrosivity shall be determined at each site; if necessary PVC coated gabion wire shall be used as specified.
- Soil dispersivity shall be determined at each site. If dispersive soils are detected, the ECO / Engineer shall be contacted.
- Density of fill material shall satisfy the gabion design. Clay bricks, weathered rock and sandstone and shale shall not be used as fill material. Any unconventional fill material shall be approved by the ECO / Engineer.
- Fill material shall not be smaller than mesh size.
- Where fill material is hauled to its point of placement by means of wheelbarrows, the haul distance shall not be greater than 150m.

Stone Masonry Structures:

- Stone to be packed and mortared in place using concrete with specified strength.
- Concrete mix to follow the design specification
- 100mm - 200mm stone to be used in all stone masonry, gabions and Reno mattresses. Stone fill must be non-friable & insoluble e.g. Granite, basalt, limestone or sandstone.

Geo Cells:

- Geo cells shall not be used in conditions that exceed their design specifications.
- Geo cell material shall be UV resistant.
- Geo cells shall be anchored in by the "trench" method and in such a way that prevents undermining of the cells.
- Fill material shall conform to the design specifications. The following general rules shall be applied: If soil is used to fill the cells, it shall be re-vegetated immediately with optimum prepared soil conditions.
- If concrete is used to fill the cells, some degree of permeability of the structure shall be permitted. If concrete is used as fill, concrete baffles should be inserted or as per specified design. Rock is not suitable for this purpose.

Earth Works

- Excavations may not exceed 1.5m depth without stepping, shoring and/or reinforcement.
- All excavated material temporarily stored shall be placed on Geotextile sheets covering the NGL. If stockpiled for extended periods, it will be done so at predetermined positions approved by the ECO.
- Excavation and compaction must comply with design specifications.



- The ECO / Engineer must be consulted for work undertaken in dispersive, unstable and organic soils.
- Backfilling in trenches must be done in layers of thickness not exceeding 100mm before compaction. Each layer shall be compacted using hand compactors or mechanical rammers at optimum moisture content.
- Where excavation material is hauled by means of wheelbarrows, the haul distance shall not be greater than 150m.

All earthworks shall be undertaken in such a manner so as to minimise the extent of any impacts caused by such activities, particularly with regards to erosion and dust generation. No equipment associated with earthworks shall be allowed outside of the Site and defined access routes unless expressly permitted by the ECO / Engineer.

Rock Packing:

- Stone must be non-friable and insoluble, e.g. granite, basalt, limestone or sandstone
- Rock packs placed across a stream to be tied min 1m into each bank.
- The ECO must approve the source of rocks if not supplied by suitable rock supplier.
- The haul distance may not be greater than 150m where rocks are transported to their point of placement by means of wheel barrows
- The size of rocks must comply with the specifications shown on the drawings and must be handled in a safe manner particularly during offloading/placing. Heavy duty gloves to be worn when handling rocks.

Ecologs:

- Wooden pegs used to anchor EcoLogs are to be no less than 40mm diameter and 1000mm in length.
- Pegs should protrude no less than 600mm from the soil @ 1000 c/c.

MacMat / MacMat-R

- MacMat / MacMat-R to be installed to manufacturers specifications.

Working with Wire (Ecologs, fencing, silt traps)

- Wire used must comply with the engineer's specifications.
- The appropriate tools are to be used for safe handling of wire.
- Heavy duty gloves must be worn when handling wire.
- No loose wire/sharp edges are to remain on completed interventions.
- All excess wire must be removed from the site.
- Stakes used for pegging should not present a tripping/piercing risk (as far as practically possible).



Annexure E: Curriculum Vitae of EAP





Franci Gresse

Franci is a senior environmental practitioner in Aurecon's Cape Town office. She has been involved in various environmental investigations, including environmental impact assessments (EIA's), environmental management plans (EMP's), environmental management programmes (EMP's), rehabilitation plans maintenance management plans (MMP's) and fatal flaw analysis.

Franci has been involved with the Working for Wetlands rehabilitation programme for the past five years, of which she has been acting as the Team Leader for the environmental assessment practitioners (EAP's) for the last three years. The Working for Wetlands project won the 2012 Aurecon Chairman's Award for its positive contribution to the natural and social environment. In addition, Franci has also been involved with a number of projects in the renewable energy sector.

Franci served on the committee of the South African affiliate of the International Association for Impact Assessment (IAIA) for the Western Cape Branch from 2009 to 2011, and remains a member. She completed a Bachelor of Science and an Honours Degree in Conservation Ecology at the University of Stellenbosch (South Africa).

Qualifications

BSc (Hons) Conservation Ecology

Member, International Association of Impact Assessment (IAIA)

Specialisation

Environmental Impact Assessment Practitioner

Years in industry

8.08

Experience

Working for Wetlands plan 2016 - 2018, Regional South Africa, Department of Environmental Affairs: Natural Resource Management Directorate, 06/2016 - Date, Project Leader

The Natural Resource Management Directorate of the Department of Environmental Affairs appointed Aurecon to provide environmental and engineering services for the Working for Wetlands Programme which is a national wetland rehabilitation programme. Responsibilities include the management and coordination of the overall project, management of the environmental authorisation component of the project, as well as the compilation of basic assessment reports (BAR) for the country. Other responsibilities include the compilation of wetland rehabilitation plans for the Western Cape, Northern Cape and Limpopo Provinces, liaison with authorities and the public (public participation process) and management of wetland specialists.

Integrated Environmental Impact Assessment (EIA) for the proposed extension of the Ash Dam facility at Kriel power station, Mpumalanga Province, South Africa, Eskom Holdings, 06/2016 - date, Project Leader

Appointed by Eskom to conduct an integrated environmental impact assessment (EIA) for the proposed construction of a fourth ash dam facility at the Kriel power station. Responsible for the general project management and finances, authority liaison and the compilation and review of the EIA documentation.

Amended Environmental and Socio-Economic Impact Assessment for a concentrated solar plant facility near Arandis in the Erongo Region, 02/2016 – 10/2016, Project Leader

Aurecon was appointed by the NamPower to amend the Environmental Clearance Certificate (ECC) issued for the Erongo Coal-fired Power Station at Arandis, to a Concentrated Solar Plant. Responsibilities included project management (programme, finances and client expectations), liaison with authorities and relevant stakeholders, review of specialist reports and the compilation and review of the Amendment Report.



Franci Gresse Senior Environmental Impact Assessment Practitioner

Table Mountain Group (TMG) Aquifer feasibility study and pilot project, Western Cape Province, South Africa, City of Cape Town, 2015 - date, Environmental Consultant

The TMG Aquifer Feasibility Study and Pilot Project was initiated in 2002 and is a long term planning initiative to investigate the groundwater potential of the TMG Aquifer as a water source to augment Cape Town's water supply. Given the recommendations in the Exploratory Phase report, and the fact that the TMG Aquifer has since been utilised as a water resource in areas such as Hermanus and Oudtshoorn, the City of Cape Town decided to omit the Pilot Phase and rather proceed with an extended Exploratory Phase, which would include limited pump testing. Aurecon was appointed to undertake the extended Exploratory Phase work. Responsibilities include the compilation of Environmental Management Plans for the additional test sites, liaison with the relevant authorities and landowners and management of the Environmental Control Officers on the project.

Implementation of the Hoekplaas environmental authorisation (EA), Northern Cape Province, South Africa, Mulilo Renewable Energy, 11/2013 - 05/2015, Project Leader

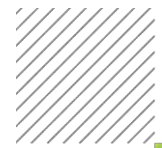
Aurecon assisted the holder of the environmental authorisation (EA) for the 100 MW photovoltaic (PV) facility in De Aar with the implementation of the environmental conditions to ensure compliance to all relevant environmental legislation. Responsible for the management of tasks and review of all documentation. Also assisting client with questions on the environmental impact assessment (EIA) process.

Environmental impact assessment and compilation of an environmental management plan (EMP) for the Swakopmund-Mile 7 Water Supply, Phase 2, Swakopmund, Namibia, NamWater, 11/2013 - 10/2015, Project Leader

NamWater appointed Aurecon to assist with the environmental impact assessment process for the proposed construction of a new bulk water pipeline between Swakopmund and Mile 7. Responsible for the management and review of the environmental impact assessment (EIA) reports and processes, as well as the project's finances.

Working for Wetlands plan 2014 - 2016, Regional South Africa, South African National Biodiversity Institute (SANBI), 06/2013 – 05/2016, Task Leader

The South African National Biodiversity Institute (SANBI) appointed Aurecon to provide environmental and engineering services for the Working for Wetlands Programme which is a national wetland rehabilitation programme. Responsible for the management of the environmental authorisation component of the project, as well as the compilation of basic assessment reports (BAR) for the country. Other responsibilities include the compilation of wetland rehabilitation plans for the Western Cape, Northern Cape, North West and Limpopo Provinces, liaison with authorities and the public (public participation process) and management of wetland specialists.



Franci Gresse Senior Environmental Impact Assessment Practitioner

Maintenance management plans (MMP's) for flood damaged road infrastructure, Western Cape Province, South Africa, Western Cape Provincial Government Department of Transport and Public Works, 06/2013 - Date, Project Staff

The project entails the compilation of maintenance management plans (MMP's) for two local municipal areas (Laingsburg and Worcester), as well as obtaining the necessary permits/ water use authorisations. Personally involved during the project commencement with regards to strategy development, meetings with the relevant authorities and assistance with the development of the MMP's.

Environmental impact assessment (EIA) for the expansion of approved solar energy facilities located near Prieska and De Aar, Northern Cape Province, South Africa, Mulilo Renewable Energy, 03/2013 - 09/2015, Phase Leader

Mulilo Renewable Energy decided to expand the approved solar energy facilities on the farms Hoekplaas and Klipgats in Prieska, as well as on the farms Badenhorst Dam and Du Plessis Dam in De Aar. The expansion of Hoekplaas farm in Prieska includes ten additional 75 MW photovoltaic (PV) facilities and six additional PV units at Klipgats Pan farm. The expansion at Badenhorst Dam farm includes four additional 75 MW PV facilities and three additional PV units at Du Plessis Dam farm. Responsible for the management and review of the environmental impact assessment (EIA) reports and processes, as well as the project's finances.

Fatal flaw study for two potential Wind Energy Facility (WEF) sites, Northern and Western Cape Provinces, South Africa, Juwi Renewable Energies (Pty) Ltd, 03/2013 - 04/2013, Environmental Practitioner

The study entailed a fatal flaw analysis of two potential wind energy facility (WEF) sites in the Northern and Western Cape Provinces. Responsible for the assessment of the sites and compilation of the fatal flaw report.

Richtersveld wind energy facility (WEF), Northern Cape Province, South Africa, TRE Tozzi Renewable Energy S.p.A and Guma Group, 07/2012 - 09/2013, Environmental Practitioner

The project entailed a due diligence of the proposed wind energy facility (WEF) to review compliance with the requirements of the Department of Energy's independent power producer (IPP) process. Responsible for the review of the environmental reports and compilation of the due diligence report.

Three photovoltaic (PV) energy facilities near Copperton, Northern Cape Province, South Africa, Mulilo Renewable Energy (MRE), 09/2011 - 05/2015, Environmental Practitioner

The project entailed three environmental impact assessments (EIA's) for three photovoltaic (PV) energy facilities comprising 75 MW to 150 MW, located near Copperton. Responsible for the management the EIA process and project specialists, compilation of scoping and EIA reports and liaison with authorities.

Fatal flaw study for four potential wind energy facility (WEF) sites, Northern and Western Cape Provinces, South Africa, Mainstream Renewable Power South Africa, 11/2011 - 05/2012, Environmental Practitioner

The study entailed a fatal flaw analysis of four potential wind energy facility (WEF) sites across the Northern and Western Cape Provinces. Responsible for the management of specialists, review of reports, assessment of the sites and compilation of the fatal flaw report.



Franci Gresse Senior Environmental Impact Assessment Practitioner

Implementation of the Klipgats Pan environmental authorisation (EA), Northern Cape Province, South Africa, Mulilo Renewable Energy, 09/2011 - 05/2015, Project Leader

Aurecon was appointed to undertake three environmental impact assessments (EIA's) for three proposed photovoltaic (PV) solar energy plants near Copperton. The first PV solar energy plant will generate around 100 MW (preferred alternative) or 150 MW (alternative) on the Hoekplaas Farm (Farm 146/RE). The proposed PV plant will cover approximately 300 ha (preferred alternative) or 450 ha (alternative). The second includes a PV solar energy plant to generate roughly 100 MW on the farm Klipgats Pan (Farm 117/4) near Copperton in the Northern Cape. The proposed PV plant will cover an estimated 300 ha. An alternative site for a 100 MW PV plant with a 300 ha footprint is also being considered. The third comprises a PV solar energy plant to generate about 100 MW (preferred alternative) or 300 MW (alternative) on the farm Struisbult (Farm 104, portion 1) which will cover 300 ha to 900 ha. Responsible for managing tasks and reviewing all documentation for updating the environmental management plan (EMP) and implementing the environmental authorisation (EA). Also assisted client with questions on the EIA process.

Proposed rehabilitation of Wetlands as part of the Working for Wetlands, Regional, South Africa, South African National Biodiversity Institute (SANBI), 08/2011 - 09/2013, Environmental Practitioner

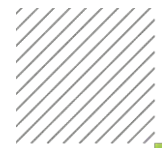
Appointed by the South African National Biodiversity Institute (SANBI) to conduct environmental impact assessments (EIA's) for the rehabilitation of specific wetlands in all provinces of South Africa over a five year period. Responsible for the compilation of basic assessment reports (BAR) and Wetland Rehabilitation Plans for the Western Cape, Northern Cape, Gauteng and Limpopo Provinces. Other responsibilities included liaison with authorities, public participation process, management of specialists and general project management of the environmental component of the project.

Repair of flood damage to road structures in the Eden District Municipality, Western Cape Province, South Africa, Western Cape Provincial Department of Transport and Public Works, 01/2011 - Date, Environmental Practitioner

The project entails the compilation of maintenance management plans (MMP) for seven areas within the Eden District Management Area to repair. Responsible for compilation of MMP's, review of reports and liaison with stakeholders and authorities.

Environmental impact assessment (EIA) for the proposed extension of the Ash Dam facility at Kriel power station, Mpumalanga Province, South Africa, Eskom Holdings, 11/2009 - 12/2015, Environmental Practitioner

Appointed by Eskom to conduct an environmental impact assessment (EIA) for the proposed construction of a fourth ash dam facility at the Kriel power station. Responsible for the general project management and finances, screening process, compilation of the scoping and EIA reports, public participation and the compilation of a waste management licence application.



Franci Gresse Senior Environmental Impact Assessment Practitioner

Environmental impact assessment (EIA) for proposed relocation of solar energy facility, Onder Rietvlei Farm, Aurora, Western Cape Province, South Africa, Solaire Direct Southern Africa, 2010 - 2011, Project Leader

Appointed by Solaire Direct to undertake a basic environmental impact assessment (EIA) process for the proposed relocation of an approved, but not yet constructed 10 MW solar energy facility. Responsible for the management and review of the EIA process and finances.

Environmental impact assessment (EIA) for proposed solar energy facility, Onder Rietvlei Farm, Western Cape Province, South Africa, Solaire Direct Southern Africa, 07/2010 - 02/2012, Environmental Practitioner

Appointed by Solaire Direct to undertake a basic environmental impact assessment process for the proposed construction of a 10 MW solar energy facility. Responsible for the compilation of the draft and final reports, public participation process, management of specialists and general project management.

Proposed Paarl Mountain and Ysterbrug pumping main upgrades, Western Cape Province, South Africa, Drakenstein Municipality, 06/2010 – 12/2015, Environmental Advisor

The Drakenstein Municipality appointed Aurecon's engineers to investigate and plan the proposed upgrade of the Paarl Mountain and Ysterbrug Pumping Scheme. The upgrading of the pipelines feeding the Meulwater Water Treatment Works from the Bethel and Nantes dams, also part of this scheme, was also investigated. Responsible for providing advice on environmental processes required. Other responsibilities included the management of the independent environmental assessment practitioner and the review of all environmental impact assessment (EIA) documentation.

Environmental sensitivity study (ESS) for a proposed solar energy facility on a farm Near Aurora, Western Cape Province, South Africa, Solaire Direct Southern Africa, 2010, Environmental Practitioner

Appointed to provide an environmental sensitivity study (ESS) which inter alia highlights the potential constraints ('red flags') and opportunities presented by the site from an environmental perspective. Responsible for the compilation of the ESS.

Proposed remediation, rehabilitation and restoration of the Spruit, Krom, Leeu and Palmiet Rivers, Western Cape Province, South Africa, Drakenstein Municipality, 2009 - 2010, Environmental Practitioner

Appointed by the Drakenstein Municipality to undertake the requisite environmental impact assessment (EIA) process for the rehabilitation, remediation and stabilisation of four rivers in Paarl and Wellington. Responsible for the EIA and public participation processes.

Proposed construction of a new pipeline from Bovlei Winer to Withoogte Dam, Wellington, Western Cape Province, South Africa, Drakenstein Municipality, 2009 - 2010, Environmental Practitioner

The Drakenstein Municipality proposed to replace a section of the existing pipeline extending from the Withoogte Dam to the Welvanpas Reservoir near Wellington as part of the municipality's water master plan in order to improve the overall water supply. Responsible for the compilation of the environmental impact assessment (EIA) report, management of specialists and the public participation process.



Franci Gresse Senior Environmental Impact Assessment Practitioner

Proposed erection of Eskom communication sirens and public announcement (PA) systems, Blaauwberg, Western Cape Province, South Africa, Eskom, 2009 - 2010, Environmental Practitioner

The project entailed three environmental impact assessment (EIA) processes for the (a) erection of 10 new sirens in the Parklands area, (b) the relocation of one siren in Bloubergstrand, and (c) the upgrade of five sirens on farms near Melkbosstrand. Responsible for compiling environmental impact assessment (EIA) reports, and the public participation process.

Overberg District Municipality integrated transport plan (ITP) strategic environmental informants, Western Cape Province, South Africa, Overberg District Municipality, 2009, Environmental Practitioner

Aurecon's Transportation Unit was appointed to revise the integrated transport plan (ITP). The Environmental Unit was subcontracted to provide environmental input. Responsible for identifying and describing the relevant informants.

Annandale Commercial: development of petrol filling station on portion of Erf 5561, Kuils River, Western Cape Province, South Africa, Communicate, 2009, Environmental Practitioner

Appointed to compile a construction environmental management plan (CEMP) for the construction of a filling station on the corner of Gladioli Street and Amandel Drive, Kuils River. Responsible for the compilation of the project specification document as part of the CEMP.

Environmental impact assessment (EIA) for the proposed Langezandt Quays development in Struisbaai Harbour, Western Cape Province, South Africa, Golden Falls (Pty) Ltd, 2008 - Date, Environmental Practitioner

Aurecon was appointed to undertake an environmental impact assessment (EIA) process for the proposed development of a four storey development on Erf 848 within the Struisbaai harbour precinct. Responsible for drafting responses to the Department of Environmental Affairs' independent review report on the proposed development.

Pre-feasibility and feasibility studies for augmenting the Western Cape water supply system, South Africa, Department of Water Affairs (DWA), 2008 - 2013, Project Staff

The Department of Water Affairs commissioned pre-feasibility and feasibility studies for the augmentation of the Western Cape water supply system through the further development of the surface water resources. Surface water schemes to be investigated were identified by the Western Cape water supply system reconciliation strategy study. Responsible for the public participation process, managing environmental specialists, and compiling a socio-economic overview of the study area.

Proposed redevelopment of the Blaauwberg Conservation Area: Eerstestein Node, Western Cape Province, South Africa, City of Cape Town, 2008 - 2010, Environmental Practitioner

The project entailed an environmental impact assessment (EIA) process for redeveloping the Eerstestein Conservation Area on the West Coast. Responsible for compiling the EIA report, as well as managing specialists and the public participation process.



Franci Gresse Senior Environmental Impact Assessment Practitioner

Table Mountain Group aquifer feasibility study and pilot project, Western Cape Province, South Africa, City of Cape Town, 2008 - 2010, Environmental Control Officer

The City of Cape Town initiated a study into the Table Mountain Group Aquifer as a potential water source to augment the city's supply. The feasibility and pilot project phase record of decision (RoD) required completion for site-specific environmental management plans (EMP's) for drilling sites that were assessed to be environmentally sensitive. Site-specific EMP's were designed for sensitive sites to ensure minimal environmental impact during the drilling phase. Responsible for monitoring compliance with the RoD and EMP during the drilling phase.

Water reconciliation strategy for the Algoa water supply area, Eastern Cape Province, South Africa, 2008 - 2009, Environmental Practitioner

This project provided an assessment of the environmental opportunities and constraints for a suite of water schemes in the Algoa water supply area. This was undertaken as part of a broader study in the area.

Application for rectification in terms of Section 24G of the National Environmental Management Act (NEMA) for the unlawful commencement of a fruit processing factory on Op de Tradouw Farm, Number 69, Barrydale, Western Cape Province, South Africa, Schoonies Family Trust, 2008 - 2009, Environmental Practitioner

The project consisted of an application for rectification in terms of Section 24G of NEMA. Responsible for compiling an environmental impact report and an environmental management plan (EMP) for the application, as well as managing the public participation process.

Proposed development of apple and pear orchards on Soetmelksvlei Farm, Western Cape Province, South Africa, BETCO, 2008 - 2009, Project Staff

This Agri-development project involved the development of 50 ha of apple and pear orchards in the Riviersonderend region. Responsible for compiling the basic assessment report, environmental management plan (EMP), and managing the specialists and public participation process.

C.A.P.E. Olifants-Doring Catchment Management Agency project: Development of a catchment management strategy water resource protection sub-strategy for the Olifants-Doring Catchment, South Africa, CapeNature, 2008 - 2009, Environmental Practitioner

Appointed by CapeNature to compile a catchment management strategy water resource protection sub-strategy for the Olifants-Doorn catchment. Responsible for compiling a database that lists all institutions and their respective mandates in terms of water resource protection and biodiversity conservation decision making for the Olifants-Doring Catchment, workshop arrangements, and general project related work.

Environmental sensitivity study for the proposed Dasdrif poultry farm in Moorreesburg, Western Cape Province, South Africa, Eikenhoff Poultry Farms (Pty) Ltd, 2008, Project Staff

The project consisted of an environmental sensitivity study (ESS) which, inter alia, highlighted the potential constraints ('red flags') and opportunities presented by the site from an environmental perspective. Responsible for compiling the ESS.



Margaret Lowies

Senior Environmental Scientist

Margaret is a senior environmental scientist currently based in Aurecon's Port Elizabeth office. She has over seven years of experience in environmental impact assessment (EIA) processes, water use licence applications, waste licence applications, environmental compliance auditing, mining permit applications, wetland assessments, due diligence assessments and water quality assessments. Most of these projects have been focussed at a municipal level within the various municipalities of the Eastern Cape, and her roles include both the technical work and overall project management. Her role as an environmental control officer (ECO) has also given her a very practical understanding of how projects of various scales are implemented.

She obtained a BSc degree in Geography and Environmental Management, a BSc in Geography (Hons) as well as an MSc degree in Geography from the University of Johannesburg, South Africa in 2008, 2010 and 2014 respectively. She is registered as an environmental assessment practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPSA) and is a registered candidate natural scientist with the South African Council for Natural Scientific Professions (SACNASP). She is also member of the Institute of Waste Management of South Africa (IWMSA) and the South African affiliate of the International Association of Impact Assessment (IAIAsa).

Qualifications

MSc Geography
BSc (Geography and Environmental Management)
BSc Geography (Hons)
Environmental Assessment Practitioner, Interim Certification Board of Environmental Assessment Practitioners of South Africa
Candidate Natural Scientist, South African Council for Natural Scientific Professions (SACNASP)
Member, International Association for Impact Assessment (IAIAsa), South Africa
Member, Institute of Waste Management of Southern Africa (IWMSA)

Specialisation

Environmental Specialist

Years in industry

7

Languages

Afrikaans

English

Experience

Training & Capacity Building

Working for Wetlands ECO training, South Africa,

Having worked on the planning cycles of the Working for Wetlands Programme for many years, Margaret provided training on the importance of implementing the appropriate mitigation measures during wetland rehabilitation. This was guided by her experience as an Environmental Control Officer.

Environmental Control Officer

Construction of Zone 7 municipal infrastructure to service the TNPA Tank Farm, Eastern Cape Province, South Africa, Coega Development Corporation (CDC), 10/2007 - 12/2025, Environmental Control Officer

The project involved the construction of roads, a stormwater detention pond and the installation of various services. Responsible for ensuring compliance with environmental assessment and CDC standard environmental specifications.

Dordrecht water and sanitation services upgrade, Eastern Cape Province, South Africa, Chris Hani District Municipality, 10/2015 - 12/2017, Environmental Control Officer

This project is divided into four future projects, which includes the construction of new sewage treatment facilities; the construction of new reticulation in Dordrecht; immediate water supply upgrades and long-term bulk water supply upgrades. Responsible for report review.



Margaret Lowies Senior Environmental Scientist

Northern outfall sewers, Mthatha, Eastern Cape Province, South Africa, Amatola Water - Amanzi, 06/2013 - 12/2017, Environmental Control Officer

The project entailed consulting engineering, social facilitation and environmental services for the construction of the outfall sewers along the banks of the Mthatha River. This involved the installation of 1 200 mm diameter sewer pipes, crossing the river above ground and below the river bed level. The sewage will discharge into a 17 m-deep pump station, from where it will be pumped into the head of the existing wastewater treatment works (WWTW). The project also entailed the application for a water use licence application (WULA). Responsible for management of environmental site officer, report writing and WULA report/application review.

Construction of Graaff-Reinet solid waste site, Eastern Cape Province, South Africa, Camdeboo Local Municipality, 12/2010 - 12/2016, Environmental Control Officer

The project comprised the construction of a new solid waste site outside Graaff-Reinet. Responsible for monitoring compliance with the environmental management plan (EMP) and record of decision (ROD).

Construction environmental management plan (EMP) for Ugie particle board plant, Eastern Cape Province, South Africa, PG Bison, 08/2006 - 08/2016, Environmental Control Officer

The project entailed a construction environmental management plan (EMP), operation environmental management plan (OEMP), atmospheric emissions license (AEL) reviews and ongoing monitoring for the Ugie particle board plant. Responsible for operational compliance auditing.

Sidwadweni Bulk Regional Water Supply Scheme, Eastern Cape Province, South Africa, Amatola Water - Amanzi, 09/2012 - 07/2016, Environmental Control Officer

The project included the construction of river abstraction, raw water reservoir, water treatment works (WTW), clear water pump station and bulk supply mains for the Sidwadweni Bulk Regional Water Supply Scheme. Responsible for report review.

Idutywa East Water Supply Scheme (WSS), Eastern Cape Province, South Africa, Amathole District Municipality (ADM), 05/2006 - 12/2015, Environmental Control Officer

Aurecon undertook the design and construction of the Idutywa East Water Supply Scheme (WSS) in the Eastern Cape Province. Responsible for ensuring environmental compliance and report review.

Khayamnandi housing development project, Eastern Cape Province, South Africa, Nelson Mandela Bay Metropolitan Municipality (NMBMM), 02/2011 - 01/2015, Environmental Control Officer

The project entailed environmental services for the development of Khayamnandi extension on erven 114, 609, 590 and 24337, Bethelsdorp, including the construction of 7 960 residential stands, business stands and community facilities and supporting infrastructure. Responsible for overall environmental monitoring and inputs as well as compilation/review of monthly audit reports.



Margaret Lowies Senior Environmental Scientist

Cookhouse Wind Farm project, Eastern Cape Province, African Clean Energy Developments (ACED), 12/2012 - 12/2014, Environmental Control Officer

Aurecon was appointed as owner's engineer for the construction of a 140 MW wind farm in the Eastern Cape Province of South Africa. The scope of services included design review, site supervision, environmental monitoring, health and safety monitoring and witnessing of commissioning and testing. The Cookhouse Wind Farm Stage 1 comprise 66 x Suzlon S88 2.1 MW wind turbines, associated roads and foundations, electrical reticulation, substation, supervisory control and data acquisition (SCADA) system as well as a 132 kV overhead line (OHL) to the Poseidon substation. The scope of owner's engineer services has been structured to align with the role and obligations of the owner's engineer defined in the draft engineering, procurement and construction (EPC) agreement for the project. Responsible for overseeing environmental compliance of the project including updating of the environmental management plan (EMP), approval of method statements, environmental authorisation and layout amendments, bi-weekly audits with a monthly environmental assessment (EA) and EMP compliance report.

Advisory

Reconciliation strategy for Algoa Water Supply System (WSS), Eastern Cape Province, South Africa, Department of Water and Sanitation, 04/2016 - 03/2019, Environmental Specialist - Advisory

The project objectives are to put arrangements and resources in place for the ongoing implementation of the recommendations and maintenance of the Algoa Reconciliation Strategy; to evaluate the efficiency of the Orange-Fish-River Project and to remove potential operating system constraints for the sustainable delivery of the Orange River bulk water supply to the Lower Sundays River Government Water Scheme (LSRGWS) and to Nelson Mandela Bay Municipality (NMBM) for water requirements up to 2040. In order to evaluate the efficiency of the Orange River Project Aurecon will estimate water use efficiency; determine catchment yields of the Fish and Sundays catchments; give recommendations for the phasing-out of current gratis allocations; identify potential water savings and provide options for re-allocation as well as confirm an official allocation from the Teebus Tunnel to the Orange-Fish System (OFS) in the Eastern Cape. While the focus is on providing additional balancing storage in addition to the Scheepersvlakte Balancing Dam, the provision of storage at other potential locations in the bulk transfer infrastructure must also be considered. Responsible for ad hoc advisory relating to environmental legislation compliance and general environmental matters.

Public Servant Association Social and Labour Plan (SLP), Eastern Cape Province, South Africa, Public Servant Association, 12/2010 - 02/2011, Environmental Assessment Practitioner

The Social and Labour Plan (SLP) was done in order to obtain a mining right conversion for the Department of Mineral Resources (DMR) for the Gonubie Sand Mine. Responsible for compilation of SLP and communication with DMR.



Margaret Lowies **Senior Environmental Scientist**

Integrated Environmental Permitting (EIAs, EMPs and MMPs)

Working for Wetlands Programme, Department of Environmental Affairs, 06/2011 - 04/2018, Environmental Assessment Practitioner - Coordinator of the Mpumalanga and Eastern Cape Provincial teams

Aurecon was appointed in 2011, 2013 and then again in 2016 for a three-year cycle for the design, planning, environmental, project and risk management of the Working for Wetlands programme. The programme's objective is to rehabilitate damaged wetlands throughout South Africa, with an emphasis on complying with the principles of the Expanded Public Works Programme (EPWP) through employing only local small, medium and micro enterprises (SMMEs). Involvement included site work, a rehabilitation plan and basic assessment report to enable the rehabilitation of various wetlands within the Mpumalanga and Eastern Cape provinces. Responsible for coordination of provincial team (wetland specialist, engineer and DEA Assistant Director) and report writing.

Motherwell North Bulk Sewer, Eastern Cape Province, South Africa, Nelson Mandela Bay Metropolitan Municipality (NMBMM), 12/2015 - 10/2017, Project Leader/Environmental Assessment Practitioner

Aurecon was appointed to undertake environmental authorisations for the Motherwell North Bulk Sewer project. This included environmental impact assessment (EIA), heritage, water use licenses (WUL) and specialist studies for the 1.5 m diameter collector sewer of 10 km. Responsible for project management and review of report.

Misgund augmentation bulk water supply, Eastern Cape Province, South Africa, Amatola Water - Amanzi, 01/2014 - 06/2017, Environmental Assessment Practitioner/Specialist

The project entailed a study to determine the technical feasibility of bulk water supply in Misgund as per the Department of Water Affairs (DWA) guidelines for Regional Bulk Infrastructure Grant (RBIG) projects. Responsible for environmental impact assessment (EIA) process, water use licence application (WULA) and wetland assessment.

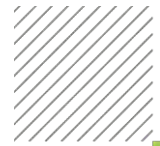
Upgrading and permitting of the Klipplaat landfill site, Eastern Cape Province, South Africa, Ikwezi Local Municipality, 10/2011 - 06/2016, Environmental Assessment Practitioner

The project involved the upgrading and permitting of the existing Klipplaat landfill site. This includes a scoping-environmental impact assessment (EIA) process as well as waste licence application process. Responsible for managing the EIA process, including public participation and report writing and review.

Bende water supply scheme, Eastern Cape Province, South Africa, Amathole District Municipality, 05/2014 - 02/2015, Environmental Assessment Practitioner

Aurecon was appointed for the environmental management for the proposed implementation of two rural water supply schemes at Bende and Shixini in the Eastern Cape Province. Responsible for report review, appointment of specialists and management of environmental impact assessment (EIA) process.

Upgrading of National Route 61 Section 6 (R61/6) from All Saints (Km 68.5) to Section 7 - Baziya (Km 12), between Baziya and Queenstown, Eastern Cape Province, South Africa, South African National Roads Agency Limited



Margaret Lowies Senior Environmental Scientist

(SANRAL), 04/2012 - 12/2014, Environmental Assessment Practitioner/Environmental Specialist

Aurecon was appointed by Jeffares & Green (J&G), on behalf of the South African National Roads Agency Limited (SANRAL), to undertake an all environmental authorisation and public participation process (PPP) for the proposed road upgrade of National Route R61. The project involved the upgrading of a 36 km stretch of road as well as replacing five bridges. Responsible for project management, report writing and water quality specialist report.

Social impact assessment (SIA) for augmentation of the Driftsands collector sewer, Eastern Cape Province, South Africa, Nelson Mandela Bay Metropolitan Municipality (NMBMM), 08/2011 - 10/2011, Environmental Assessment Practitioner

The project involved a survey of households in the Walmer Township that are impacted by the augmentation of the Driftsands sewer collector. Responsible for coordination of survey, capturing of data and report writing.

Other Environmental Permitting/ Management Projects

- Churchill water treatment works (WTW), Eastern Cape Province, 03/2007 – 12/2020, Environmental Assessment Practitioner
- Upgrade of Brickfields pre-treatment works in Nelson Mandela Bay Metropolitan Municipality, 12/2010 – 07/2020, Environmental Assessment Practitioner
- Sewer maintenance backlog study for the Nelson Mandela Bay Metropolitan Municipality, Eastern Cape Province, South Africa, Nelson Mandela Bay Metropolitan Municipality (NMBMM), 10/2004 - 07/2020, Environmental Assessment Practitioner
- Environmental impact assessment for pipe upgrade of Eastbury Drive Sewer, KwaZulu-Natal Province, South Africa, eThekweni Municipality, 06/2016 - 05/2019, Environmental Assessment Practitioner
- Environmental services for upgrading of R75, Eastern Cape Province, South Africa, South African National Roads Agency Limited (SANRAL), 02/2015 - 02/2018, Project Leader/Environmental Assessment Practitioner
- Woodchem water use licence, Mpumalanga Province, South Africa, KAP Diversified Industrial (Pty) Ltd, 04/2016 - 07/2017, Environmental Specialist
- Environmental impact assessment (EIA) for Coega wastewater treatment works (WWTW), Eastern Cape Province, South Africa, Nelson Mandela Bay Metropolitan Municipality (NMBMM), 12/2014 - 05/2017, Project Leader/Environmental Assessment Practitioner
- Water use licence application (WULA) and wetland assessment for Grassridge to Melkhout 132 kV line, Eastern Cape Province, South Africa, Eskom SOC Ltd, 11/2014 - 12/2015, Environmental Specialist/Project Leader
- Proposed construction of the Ingquza Hill Museum - basic assessment, Eastern Cape Province, South Africa, National Department of Arts and Culture, 08/2013 - 10/2013, Environmental Assessment Practitioner

Appendix E

ADDITIONAL INFORMATION

Appendix E1

EAP DECLARATION AND EXPERTISE

Claire Blanché

Senior Environmental Specialist

Claire is currently employed as a senior environmental scientist in Aurecon's Cape Town office where she has worked on South African projects within the environmental impact assessment (EIA) process. She has a good understanding of the South African laws and regulations associated with these procedures.

In her capacity as a lead environmental scientist, Claire has led teams of consultants, specialists and scientists, focusing specifically on large-scale linear-type developments. She has gained skills in the execution of plant rescue and rehabilitation in linear projects and has contributed towards research and State of Environment Reporting, specifically in the fields of air quality and climate change.

She studied at the University of KwaZulu-Natal, South Africa and obtained a Master's degree in 2001 in the field of Environment and Development, including integrated environmental management (IEM) procedures, project management and planning, environmental auditing, environmental law, and rural land and community development), with specialisations in water resources and catchment management.

Between 2009 and 2011 Claire was an elected member of the national executive committee as well as a vice-chair KwaZulu-Natal committee member for the International Association for Impact Assessments South Africa (IAIASa). She is currently also a lifetime inaugural member of the Golden Key International Honour Society (GKIHS) as well as an interim inaugural member of the Environmental Assessment Practitioners Association of South Africa (EAPASA).



Qualification

MSc Environment and Development

BSc (Hons) Applied Environmental Science: Physical and Human Geography

BSc

Specialisation

Senior Environmental Scientist

Working for Wetlands Programme, Regional, South Africa, South African National Biodiversity Institute (SANBI), 08/2011 - 09/2013, Co-Team Leader (Environmental Component)

Working for Wetlands (WfWetlands) is a government programme managed by the South African National Biodiversity Institute (SANBI), and is a joint initiative of the Departments of Environmental Affairs, Water Affairs and Agriculture, Forestry and Fisheries. The programme is mandated to rehabilitate damaged wetlands and to protect pristine wetlands throughout South Africa, with an emphasis on complying with the principles of the Expanded Public Works Programme which 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. This project involved the basic assessment process to apply for environmental authorisation to work in many wetland projects throughout South Africa. It also involved the coordination of wetland ecologists, engineers and environmental scientists to deliver detailed rehabilitation plans for each wetland project, as well as the public participation processes associated with the rehabilitation proposals.

Piketberg stormwater infrastructure upgrade project, Western Cape Province, South Africa, UDS Africa, 05/2012 - 04/2013, Project Leader

This project involved the basic assessment process and environmental management plan

Professional membership

Lifetime Inaugural Member, Golden Key International Honour Society (GKIHS)

Elected Member of the National Executive Committee, International Association for Impact Assessments South Africa (IAIASA)

Interim Inaugural Member, Environmental Assessment Practitioners Association of South Africa (EAPASA)

KwaZulu-Natal Committee Member: Vice-Chair, International Association for Impact Assessments South Africa (IAIASA)

Member, International Association of Impact Assessment (IAIA)

17

(EMP) for the proposed upgrade of the stormwater infrastructure in the town of Piketberg. Responsible as project leader.

Borrow pits for the Department of Transport and Public Works, Western Cape Province, South Africa, Western Cape Government Department of Transport and Public Works, 11/2012 - Date, Team Leader (NEMA Component)

This project involves basic assessment processes and environmental management plans (EMP's) for approximately 50 borrow pits which will be used as material sources for road re-gravelling and maintenance programmes within the Overberg, Eden and Central Karoo Districts of the Western Cape. The broader project includes the identification of suitable material sources, and the legalisation of preferred borrow pits in terms of the National Environmental Management Act, No. 107 of 1998, the Minerals and Petroleum Resources Development Act, No. 28 of 2002, the National Heritage Resources Act, No. 25 of 1999, the National Water Act, No. 36 of 1998 and the Land Use Planning Ordinance, No. 15 of 1985. The project therefore required the coordination of these processes and detailed liaison with the relevant Organs of State.

Horizontal dust flux monitoring for the Port of Saldanha terminal, Western Cape Province, South Africa, Transnet Ports Terminal (TPT), 10/2011 - 04/2012, Project Leader

This project involved the servicing of 24 horizontal dust flux monitoring stations for Transnet at their port terminal in Saldanha, and the monthly reporting on dust derived from the iron ore handling facilities. The project also included two annual audits.

Jack Muller Park Core Conservation Zone (CCZ), Belville, Western Cape Province, South Africa, 04/2011 - 08/2011, Project Leader

This project involved the compilation of a specific Environmental Management Strategy and Plan (EMS and EMP) for the operation of the Core Conservation Zone (CCZ) within the greater Jack Muller Park. The CCZ comprises the threatened Cape Flat Sand Fynbos ecosystem, and required detailed aims and objectives for fire management, recreational activity management, invasive plant control, educational opportunities, and general park maintenance activities.

Extension to Parys Cemetery, Paarl, Western Cape Province, South Africa, 02/2011 - 07/2011, Project Leader

This project involved the Basic Assessment (BA) process and Environmental Management Plan (EMP) for the proposed extension of the Parys cemetery in Paarl. The property proposed for development was considered of biodiversity significance, and careful layout design to avoid sensitive portions was required. The extension would also impact on the unmarked graves that historically formed part of the cemetery activities.

Hillside 2 stormwater detention ponds and pipelines, Beaufort West, Western Cape Province, South Africa, 02/2011 - 07/2011, Project Leader

This project involved the Basic Assessment (BA) process and Environmental Management Plan (EMP) for two stormwater detention facilities (dams) and associated pipelines and culverts. The development alleviates flood risk to residential properties, as well as improves stormwater infrastructure for the town of Beaufort West.

Air Quality Management (AQM) training and air emissions licensing training, Western Cape Province, South Africa, Cape Winelands District Municipality, 03/2011 - 06/2011, Project Leader

The aim of the project was to empower the Cape Winelands District Municipality in Air Quality Management (AQM) and emissions licensing in terms of the National Environmental Management: Air Quality Act (NEMAQA), enabling them to fulfil their responsibilities as air quality authorities across five local municipalities in the Cape Winelands District.

Rehabilitation of the Western Aqueduct, Phase 1, KwaZulu-Natal Province, South Africa, eThekweni Water and Sanitation, 01/2009 - 12/2010, Project Leader

The Western Aqueduct project is a bulk water supply project. Responsible for managing the design and compilation of the Environmental Management Plan (EMP), rehabilitation strategy, rehabilitation specification and Bill of Quantities (BoQ) for the rescuing of indigenous plant materials from the proposed footprint of the 73 km bulk water pipeline, and the rehabilitation of the 30m-wide corridor following construction. This project was awarded the International Association for Impact Assessment South Africa's (IAIASA) 2011 Special Recognition Certificate for excellence in project execution.

Demolition of Athlone Cooling Towers, Western Cape Province, South Africa, City of Cape Town, 03/2010 - 08/2010, Project Leader

This project involved the expedient demolition of two benign cooling towers due to structural instability. Responsible for undertaking the development

of an appropriate Environmental Management Plan (EMP) for the planning, demolition and clean-up of the towers. The project required the coordination of specialist teams for noise, dust and vibration mitigation, as well as the relocation of Peregrine Falcon nesting boxes, and the general Public Participation Process (PPP). This project won the Consulting Engineers South Africa's (CESA) Aon 2011 Commendation Award for projects under R50 million.

Environmental impact assessment (EIA) for the Western Aqueduct, KwaZulu-Natal Province, South Africa, eThekweni Water and Sanitation, 01/2006 - 12/2008, Project Leader

Responsible for undertaking the Public Participation Process (PPP), and the scoping and Environmental Impact Assessment (EIA) processes associated with the 73 km bulk water pipeline, with a diameter of 1.6m. Duties included the design of an appropriate methodology to deal with the variety of biophysical and socio-economic environments along the route; the coordination of four renowned specialist teams; the public consultation with all Interested and Affected Parties (I&AP), including government departments, stakeholders and interest groups; the liaison between the engineering design team, the client and the specialist teams; and the compilation of the relevant reports, documents and correspondence.

Umgeni Water pipeline specialist studies, Pietermaritzburg, KwaZulu-Natal Province, South Africa, Umgeni Water, 2007 - 2008, Project Leader

The project involved the potential development of an eco-estate, nature reserve and a conservation area characterised by the presence of endangered mistbelt species, including the near-extinct *Gerbera aurantiaca* (Hilton Daisy).

The social aspects of the project required a holistic approach to client, authority and general public communications. Responsible for managing the biodiversity specialist study and the Public Participation Process (PPP), which formed part of the Basic Assessment (BA) process, for a water pipeline project.

Bulk water pipeline, reticulation network and abstraction/treatment plant, Macambini, KwaZulu-Natal Province, South Africa, 2007 - 2008, Project Leader

The project provides potable water to agricultural and rural communities in Northern KwaZulu-Natal, and required the construction of an abstraction and treatment facility. Responsible for managing the Public Participation Process (PPP) for 170 km of bulk water pipelines and reticulation networks aimed at providing treated water to previously neglected areas (in terms of infrastructure provision).

School access road upgrade project, Umzumbe, KwaZulu-Natal Province, South Africa, 2007, Project Leader

Responsible for supervising the Basic Assessment (BA) process and associated Public Participation Process (PPP) for an access road linking rural schools with local communities.

Upgrading of Main Road P100, Ndwedwe, KwaZulu-Natal Province, South Africa, 2006, Project Leader

This project was an African Renaissance Road Upgrading Programme (ARRUP) initiative promoting development within a rural community. Responsible for managing and undertaking the environmental scoping investigations and Public Participation Process (PPP), and developing the Environmental Management Plan (EMP) for the construction and upgrade of the P100 Main Road in Ndwedwe, KwaZulu-Natal. Also responsible

for managing the associated specialist investigations and compiled the environmental reports.

Upgrading of Florida Road, Somtseu Road, and Florence Nightingale Drive in Durban, KwaZulu-Natal Province, South Africa, 2006, Project Leader

Responsible for managing and undertaking the environmental scoping investigations and Public Participation Processes (PPPs) for three road upgrade projects in the Durban area, aimed at improving safety and relieving congestion/parking inadequacies.

Five projects on intersection and pedestrian safety improvements in the Greater Durban Area, KwaZulu-Natal Province, South Africa, 2006, Project Leader

Responsible for supervising the environmental investigations associated with the exemption applications for five separate road projects aimed at improving intersection and pedestrian safety.

Tyburn Boulevard water pipeline, Westville, KwaZulu-Natal Province, South Africa, 2006, Project Leader

Responsible for managing and undertaking the environmental scoping investigations and Public Participation Process (PPP) for a new section of water pipeline linking the Dawncliff Reservoir water supply to the West End Office Park in Westville, KwaZulu-Natal. Also responsible for managing the associated specialist investigations for the environmental work.

Valley of a Thousand Hills reservoir, Botha's Hill, KwaZulu-Natal Province, South Africa, 2006, Project Leader

Responsible for managing and undertaking the environmental scoping investigations and Public

Participation Process (PPP) for the construction of a water reservoir to supplement existing bulk water infrastructure.

Westriding Aqueduct, KwaZulu-Natal Province, South Africa, 2005, Project Leader

Responsible for undertaking the environmental scoping investigations, social study and Public Participation Process (PPP) for the construction and upgrading of a water supply system (pipeline and reservoirs) in the Hillcrest area.

Arlington Sawmill, Nottingham Road, Pietermaritzburg, KwaZulu-Natal Province, South Africa, 2005, Environmental Scientist

Responsible for managing and undertaking the environmental scoping investigation and Public Participation Process (PPP) for the relocation and upgrading of the Arlington Sawmill, including a scheduled process in terms of the Atmospheric Pollution Prevention Act (APPA). Also responsible for undertaking the specialist studies regarding air quality and noise level monitoring.

Cathedral Peak Hotel, Drakensberg, KwaZulu-Natal Province, South Africa, 2005, Environmental Scientist

Responsible for assisting with the compilation of the Environmental Management Plan (EMP) for the hotel and infrastructure, including recreational and mountain activities, the golf course, the sewerage works, a trout farm, a piggery and chicken farm, and surrounding wilderness management; all stakeholder engagement, client/authority liaisons, and report design and compilation.

Daimler-Chrysler Franchise and Industrial Park, KwaZulu-Natal Province, South Africa, 2005, Project Leader

Responsible for managing and undertaking the environmental scoping investigations and Public Participation Processes (PPPs) for projects requiring a change in landuse from agriculture to light industrial type.

Victoria Country Club Estate, Pietermaritzburg, KwaZulu-Natal Province, South Africa, 2004, Environmental Scientist

The project entailed the merger of the Queen Elizabeth Park, headquarters of Ezemvelo KZN Wildlife, and the Victoria Country Club; and the addition of a five-village residential and office park estate to create an exclusive wildlife, recreational, commercial and residential development. Responsible for undertaking the design and compilation for the Environmental Management Plan (EMP) for the construction and operation of the golf and wilderness estate.

Skozani aluminium recycling facility, Pietermaritzburg, KwaZulu-Natal Province, South Africa, 2004, Environmental Scientist

Responsible for managing and undertaking the environmental scoping investigation and Public Participation Process (PPP) for the proposed aluminium recycling facility, including a scheduled process in terms of the Atmospheric Pollution Prevention Act (APPA). Also responsible for undertaking the specialist studies regarding air quality and noise level monitoring.

Mabhobhane access road, Maphumulo, Tugela Valley, KwaZulu-Natal Province, South Africa, 2004, Project Leader

Responsible for managing and undertaking the environmental

scoping investigation and Public Participation Process (PPP), and developing the Environmental Management Plan (EMP) for the construction and upgrading of 13km of gravel road to provide a community access route to areas previously only reachable by four-wheel drive vehicles.

Magabeni Community Project, Mnini, KwaZulu-Natal Province, South Africa, 2003, Environmental Scientist

The project's aim was to provide community skills development, food security, and income sustainability for 30 households. Responsible for managing and undertaking the environmental scoping investigation and Public Participation Process (PPP), and developed the Environmental Management Plan (EMP) for the proposed change in landuse from grazing land to irrigated agriculture, utilising treated effluent from the Magabeni Wastewater Treatment Works (WWTW).

Responsible for assisting with the environmental scoping investigation and Public Participation Process (PPP) for the 700 000 cubic metre farm dam; all stakeholder consultation, research, and report design and compilation.



Franci Gresse

Programme Manager

Qualifications

BSc (Hons) Conservation Ecology

Member, International Association of Impact Assessment South Africa (IAIAsa)

Specialisation

Environmental Impact Assessment Practitioner

Years in industry

10,08

Franci is a senior environmental practitioner in Aurecon's Cape Town office. She has been involved in various environmental investigations, including environmental impact assessments (EIA's), environmental management plans (EMP's), environmental management programmes (EMP's), rehabilitation plans maintenance management plans (MMP's) and fatal flaw analysis.

Franci has been involved with the Working for Wetlands rehabilitation programme for the past five years, of which she has been acting as the Team Leader for the environmental assessment practitioners (EAP's) for the last three years. The Working for Wetlands project won the 2012 Aurecon Chairman's Award for its positive contribution to the natural and social environment. In addition, Franci has also been involved with a number of projects in the renewable energy sector.

Franci served on the committee of the South African affiliate of the International Association for Impact Assessment (IAIA) for the Western Cape Branch from 2009 to 2011, and remains a member. She completed a Bachelor of Science and an Honours Degree in Conservation Ecology at the University of Stellenbosch (South Africa).

Experience

Implementation of the Hoekplaas environmental authorisation (EA), Northern Cape Province, South Africa, Mulilo Renewable Energy, 11/2013 - 05/2015, Project Leader

Aurecon assisted the holder of the environmental authorisation (EA) for the 100 MW photovoltaic (PV) facility in De Aar with the implementation of the environmental conditions to ensure compliance to all relevant environmental legislation. Responsible for the management of tasks and review of all documentation. Also assisting client with questions on the environmental impact assessment (EIA) process.

Environmental impact assessment and compilation of an environmental management plan (EMP) for the Swakopmund-Mile 7 Water Supply, Phase 2, Swakopmund, Namibia, NamWater, 11/2013 - 10/2015, Project Leader

NamWater appointed Aurecon to assist with the environmental impact assessment process for the proposed construction of a new bulk water pipeline between Swakopmund and Mile 7. Responsible for the management and review of the environmental impact assessment (EIA) reports and processes, as well as the project's finances.

Working for Wetlands plan 2014 - 2017, Regional South Africa, South African National Biodiversity Institute (SANBI), 06/2013 - Date, Task Leader

The South African National Biodiversity Institute (SANBI) appointed Aurecon to provide environmental and engineering services for the Working for Wetlands Programme which is a national wetland rehabilitation programme. Responsible for the management of the environmental authorisation component of the project,



as well as the compilation of basic assessment reports (BAR) for the country. Other responsibilities include the compilation of wetland rehabilitation plans for the Western Cape, Northern Cape, North West and Limpopo Provinces, liaison with authorities and the public (public participation process) and management of wetland specialists.

Maintenance management plans (MMP's) for flood damaged road infrastructure, Western Cape Province, South Africa, Western Cape Provincial Government Department of Transport and Public Works, 06/2013 - Date, Project Staff

The project entails the compilation of maintenance management plans (MMP's) for two local municipal areas (Laingsburg and Worcester), as well as obtaining the necessary permits/ water use authorisations. Personally involved during the project commencement with regards to strategy development, meetings with the relevant authorities and assistance with the development of the MMP's.

Environmental impact assessment (EIA) for the expansion of approved solar energy facilities located near Prieska and De Aar, Northern Cape Province, South Africa, Mulilo Renewable Energy, 03/2013 - 09/2015, Phase Leader

Mulilo Renewable Energy decided to expand the approved solar energy facilities on the farms Hoekplaas and Klipgats in Prieska, as well as on the farms Badenhorst Dam and Du Plessis Dam in De Aar. The expansion of Hoekplaas farm in Prieska includes ten additional 75 MW photovoltaic (PV) facilities and six additional PV units at Klipgats Pan farm. The expansion at Badenhorst Dam farm includes four additional 75 MW PV facilities and three additional PV units at Du Plessis Dam farm. Responsible for the management and review of the environmental impact assessment (EIA) reports and processes, as well as the project's finances.

Fatal flaw study for two potential Wind Energy Facility (WEF) sites, Northern and Western Cape Provinces, South Africa, Juwi Renewable Energies (Pty) Ltd, 03/2013 - 04/2013, Environmental Practitioner

The study entailed a fatal flaw analysis of two potential wind energy facility (WEF) sites in the Northern and Western Cape Provinces. Responsible for the assessment of the sites and compilation of the fatal flaw report.

Richtersveld wind energy facility (WEF), Northern Cape Province, South Africa, TRE Tozzi Renewable Energy S.p.A and Guma Group, 07/2012 - 09/2013, Environmental Practitioner

The project entailed a due diligence of the proposed wind energy facility (WEF) to review compliance with the requirements of the Department of Energy's independent power producer (IPP) process. Responsible for the review of the environmental reports and compilation of the due diligence report.

Three photovoltaic (PV) energy facilities near Copperton, Northern Cape Province, South Africa, Mulilo Renewable Energy (MRE), 09/2011 - 05/2015, Environmental Practitioner

The project entailed three environmental impact assessments (EIA's) for three photovoltaic (PV) energy facilities comprising 75 MW to 150 MW, located near Copperton. Responsible for the management the EIA process and project specialists, compilation of scoping and EIA reports and liaison with authorities.

Fatal flaw study for four potential wind energy facility (WEF) sites, Northern and Western Cape Provinces, South Africa, Mainstream Renewable Power South Africa, 11/2011 - 05/2012, Environmental Practitioner

The study entailed a fatal flaw analysis of four potential wind energy facility (WEF) sites across the Northern and Western Cape Provinces. Responsible for the management of specialists, review of reports, assessment of the sites and compilation of the fatal flaw report.

Implementation of the Klipgats Pan environmental authorisation (EA), Northern Cape Province, South Africa, Mulilo Renewable Energy, 09/2011 - 05/2015, Project Leader

Aurecon was appointed to undertake three environmental impact assessments (EIA's) for three proposed photovoltaic (PV) solar energy plants near Copperton. The first PV solar energy plant will generate around 100 MW (preferred alternative) or 150 MW (alternative) on the Hoekplaas Farm (Farm 146/RE). The proposed PV plant will cover approximately 300 ha (preferred alternative) or 450 ha (alternative). The second includes a PV solar energy plant to generate roughly 100 MW on the farm Klipgats Pan (Farm 117/4) near Copperton in the Northern Cape. The proposed PV plant will cover an estimated 300 ha. An alternative site for a 100 MW PV plant with a 300 ha footprint is also being considered. The third comprises a PV solar energy plant to generate about 100 MW (preferred alternative) or 300 MW (alternative) on the farm Struisbult (Farm 104, portion 1) which will cover 300 ha to 900 ha. Responsible for managing tasks and reviewing all documentation for updating the environmental management plan (EMP) and implementing the environmental authorisation (EA). Also assisted client with questions on the EIA process.

Proposed rehabilitation of Wetlands as part of the Working for Wetlands, Regional, South Africa, South African National Biodiversity Institute (SANBI), 08/2011 - 09/2013, Environmental Practitioner

Appointed by the South African National Biodiversity Institute (SANBI) to conduct environmental impact assessments (EIA's) for the rehabilitation of specific wetlands in all provinces of South Africa over a five year period. Responsible for the compilation of basic assessment reports (BAR) and Wetland Rehabilitation Plans for the Western Cape, Northern Cape, Gauteng and Limpopo Provinces. Other responsibilities included liaison with authorities, public participation process, management of specialists and general project management of the environmental component of the project.

Repair of flood damage to road structures in the Eden District Municipality, Western Cape Province, South Africa, Western Cape Provincial Department of Transport and Public Works, 01/2011 - Date, Environmental Practitioner

The project entails the compilation of maintenance management plans (MMP) for seven areas within the Eden District Management Area to repair. Responsible for compilation of MMP's, review of reports and liaison with stakeholders and authorities.

Environmental impact assessment (EIA) for the proposed extension of the Ash Dam facility at Kriel power station, Mpumalanga Province, South Africa, Eskom Holdings, 11/2009 - 12/2015, Environmental Practitioner

Appointed by Eskom to conduct an environmental impact assessment (EIA) for the proposed construction of a fourth ash dam facility at the Kriel power station. Responsible for the general project management and finances, screening process, compilation of the scoping and EIA reports, public participation and the compilation of a waste management licence application.

Environmental impact assessment (EIA) for proposed relocation of solar energy facility, Onder Rietvlei Farm, Aurora, Western Cape Province, South Africa, Solaire Direct Southern Africa, 2010 - 2011, Project Leader

Appointed by Solaire Direct to undertake a basic environmental impact assessment (EIA) process for the proposed relocation of an approved, but not yet constructed 10 MW solar energy facility. Responsible for the management and review of the EIA process and finances.



Environmental impact assessment (EIA) for proposed solar energy facility, Onder Rietvlei Farm, Western Cape Province, South Africa, Solaire Direct Southern Africa, 07/2010 - 02/2012, Environmental Practitioner

Appointed by Solaire Direct to undertake a basic environmental impact assessment process for the proposed construction of a 10 MW solar energy facility. Responsible for the compilation of the draft and final reports, public participation process, management of specialists and general project management.

Proposed Paarl Mountain and Ysterbrug pumping main upgrades, Western Cape Province, South Africa, Drakenstein Municipality, 06/2010 - Date, Environmental Advisor

The Drakenstein Municipality appointed Aurecon's engineers to investigate and plan the proposed upgrade of the Paarl Mountain and Ysterbrug Pumping Scheme. The upgrading of the pipelines feeding the Meulwater Water Treatment Works from the Bethel and Nantes dams, also part of this scheme, was also investigated. Responsible for providing advice on environmental processes required. Other responsibilities included the management of the independent environmental assessment practitioner and the review of all environmental impact assessment (EIA) documentation.

Environmental sensitivity study (ESS) for a proposed solar energy facility on a farm Near Aurora, Western Cape Province, South Africa, Solaire Direct Southern Africa, 2010, Environmental Practitioner

Appointed to provide an environmental sensitivity study (ESS) which inter alia highlights the potential constraints ('red flags') and opportunities presented by the site from an environmental perspective. Responsible for the compilation of the ESS.

Proposed erection of Eskom communication sirens and public announcement (PA) systems, Blaauwberg, Western Cape Province, South Africa, Eskom, 2009 - 2010, Environmental Practitioner

The project entailed three environmental impact assessment (EIA) processes for the (a) erection of 10 new sirens in the Parklands area, (b) the relocation of one siren in Bloubergstrand, and (c) the upgrade of five sirens on farms near Melkbosstrand. Responsible for compiling environmental impact assessment (EIA) reports, and the public participation process.

Proposed remediation, rehabilitation and restoration of the Spruit, Krom, Leeu and Palmiet Rivers, Western Cape Province, South Africa, Drakenstein Municipality, 2009 - 2010, Environmental Practitioner

Appointed by the Drakenstein Municipality to undertake the requisite environmental impact assessment (EIA) process for the rehabilitation, remediation and stabilisation of four rivers in Paarl and Wellington. Responsible for the EIA and public participation processes.

Proposed construction of a new pipeline from Bovlei Winer to Withoogte Dam, Wellington, Western Cape Province, South Africa, Drakenstein Municipality, 2009 - 2010, Environmental Practitioner

The Drakenstein Municipality proposed to replace a section of the existing pipeline extending from the Withoogte Dam to the Welvanpas Reservoir near Wellington as part of the municipality's water master plan in order to improve the overall water supply. Responsible for the compilation of the environmental impact assessment (EIA) report, management of specialists and the public participation process.

Overberg District Municipality integrated transport plan (ITP) strategic environmental informants, Western Cape Province, South Africa, Overberg District Municipality, 2009, Environmental Practitioner

Aurecon's Transportation Unit was appointed to revise the integrated transport plan (ITP). The Environmental Unit was subcontracted to provide environmental input. Responsible for identifying and describing the relevant informants.



Annandale Commercial: development of petrol filling station on portion of Erf 5561, Kuils River, Western Cape Province, South Africa, Communicate, 2009, Environmental Practitioner

Appointed to compile a construction environmental management plan (CEMP) for the construction of a filling station on the corner of Gladioli Street and Amandel Drive, Kuils River. Responsible for the compilation of the project specification document as part of the CEMP.

Overberg District Municipality integrated transport plan (ITP): strategic environmental informants, Western Cape Province, South Africa, Overberg District Municipality, 2009, Environmental Practitioner

Aurecon's Transportation Unit was appointed to revise the integrated transport plan (ITP). The Environmental Unit was subcontracted to provide environmental input. Responsible for identifying and describing the relevant informants.

Environmental impact assessment (EIA) for the proposed Langezandt Quays development in Struisbaai Harbour, Western Cape Province, South Africa, Golden Falls (Pty) Ltd, 2008 - Date, Environmental Practitioner

Aurecon was appointed to undertake an environmental impact assessment (EIA) process for the proposed development of a four storey development on Erf 848 within the Struisbaai harbour precinct. Responsible for drafting responses to the Department of Environmental Affairs' independent review report on the proposed development.

Pre-feasibility and feasibility studies for augmenting the Western Cape water supply system, South Africa, Department of Water Affairs (DWA), 2008 - 2013, Project Staff

The Department of Water Affairs commissioned pre-feasibility and feasibility studies for the augmentation of the Western Cape water supply system through the further development of the surface water resources. Surface water schemes to be investigated were identified by the Western Cape water supply system reconciliation strategy study. Responsible for the public participation process, managing environmental specialists, and compiling a socio-economic overview of the study area.

Proposed redevelopment of the Blaauwberg Conservation Area: Eersteste Node, Western Cape Province, South Africa, City of Cape Town, 2008 - 2010, Environmental Practitioner

The project entailed an environmental impact assessment (EIA) process for redeveloping the Eersteste Conservation Area on the West Coast. Responsible for compiling the EIA report, as well as managing specialists and the public participation process.

Table Mountain Group aquifer feasibility study and pilot project, Western Cape Province, South Africa, City of Cape Town, 2008 - 2010, Environmental Control Officer

The City of Cape Town initiated a study into the Table Mountain Group Aquifer as a potential water source to augment the city's supply. The feasibility and pilot project phase record of decision (RoD) required completion for site-specific environmental management plans (EMP's) for drilling sites that were assessed to be environmentally sensitive. Site-specific EMP's were designed for sensitive sites to ensure minimal environmental impact during the drilling phase. Responsible for monitoring compliance with the RoD and EMP during the drilling phase.

Application for rectification in terms of Section 24G of the National Environmental Management Act (NEMA) for the unlawful commencement of a fruit processing factory on Op de Tradouw Farm, Number 69, Barrydale, Western Cape Province, South Africa, Schoonies Family Trust, 2008 - 2009, Environmental Practitioner

The project consisted of an application for rectification in terms of Section 24G of NEMA. Responsible for compiling an environmental impact report and an environmental management plan (EMP) for the application, as well as managing the public participation process.



Proposed development of apple and pear orchards on Soetmelksvlei Farm, Western Cape Province, South Africa, BETCO, 2008 - 2009, Project Staff

This Agri-development project involved the development of 50 ha of apple and pear orchards in the Rivieronderend region. Responsible for compiling the basic assessment report, environmental management plan (EMP), and managing the specialists and public participation process.

Proposed extension of Lock Road, Kalk Bay, Western Cape Province, South Africa, Mr Rick Bartlett, 2008 - 2009, Project Staff

The project comprised an environmental impact assessment (EIA) process for extending Lock Road to an existing erf. Involved during the final stages of the application.

Water reconciliation strategy for the Algoa water supply area, Eastern Cape Province, South Africa, 2008 - 2009, Environmental Practitioner

This project provided an assessment of the environmental opportunities and constraints for a suite of water schemes in the Algoa water supply area. This was undertaken as part of a broader study in the area.

C.A.P.E. Olifants-Doring Catchment Management Agency project: Development of a catchment management strategy water resource protection sub-strategy for the Olifants-Doring Catchment, South Africa, CapeNature, 2008 - 2009, Environmental Practitioner

Appointed by CapeNature to compile a catchment management strategy water resource protection sub-strategy for the Olifants-Doorn catchment. Responsible for compiling a database that lists all institutions and their respective mandates in terms of water resource protection and biodiversity conservation decision making for the Olifants-Doring Catchment, workshop arrangements, and general project related work.

Environmental sensitivity study for the proposed Dasdrif poultry farm in Moorreesburg, Western Cape Province, South Africa, Eikenhoff Poultry Farms (Pty) Ltd, 2008, Project Staff

The project consisted of an environmental sensitivity study (ESS) which, inter alia, highlighted the potential constraints ('red flags') and opportunities presented by the site from an environmental perspective. Responsible for compiling the ESS.

Joint Maputo River Basin water resources study, Mozambique, Swaziland and South Africa, 2008, Project Staff

The project provided an environmental opportunities and constraints assessment of a suite of potential dams in South Africa and Swaziland, within the Maputo River Catchment. This was undertaken as part of a broader study into the catchment.

Department of Economic Affairs, Environment and Tourism (DEAET) decision-making support, South Africa, Department of Economic Affairs, Environment and Tourism (DEAET), 2008, Project Staff

Responsible for assisting the DEAET with the review and processing of environmental impact assessment (EIA) applications in terms of the Environment Conservation Act.

Appendix E2

SPECIALIST DECLARATION AND EXPERTISE



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	(For official use only) 12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

- (1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and
- (2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Working for Wetlands Rehabilitation Programme: KwaZulu – Natal

Specialist:	Craig Cowden		
Contact person:	Craig Cowden		
Postal address:	9 Quarry Road, Hilton		
Postal code:	3245	Cell:	082 748 8522
Telephone:	033 343 2229	Fax:	086 599 2300
E-mail:	craig@grandtruth.co.za		
Professional affiliation(s) (if any)	South African Council for Natural Scientific Professions Registration No. 400197/05		
Project Consultant:	Aurecon South Africa Pty (Ltd)		
Contact person:	Claire Blanché		
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Telephone:	021 526 6937	Fax:	021 526 9500
E-mail:	Claire.Blanche@aurecongroup.com		

4.2 The specialist appointed in terms of the Regulations_

I, Craig Coulter, declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Ground Truth

Name of company (if applicable):

23/01/2019

Date:

Curriculum Vitae – Craig Cowden

Personal Details:

Name: Craig Cowden
Profession: Wetland Ecologist
Date of Birth: 14 March 1978
Nationality: South African



Key Qualifications:

Seventeen years' experience in ecosystem functioning and management, specializing in wetland ecosystems. Involvement in a variety of studies to determine practical and applied ecological solutions. Specialist input into various studies, focusing on:

- Mapping and infield delineation of wetland habitat within various regions of Southern Africa, including South African provinces of KwaZulu-Natal, Mpumalanga, Free State, Eastern Cape and Gauteng, and Lesotho for inventory and management purposes.
- Assessment of various wetland ecosystems to highlight potential impacts, within current and proposed landscape settings, and recommend appropriate mitigation and offsets based on assessing wetland ecosystem service delivery (functioning) and ecological health/integrity.
- Assessment of various wetland ecosystems to plan appropriate wetland rehabilitation activities and performance evaluation and monitoring of wetland rehabilitation projects.
- Literature reviews and research relating to impacts, best management practices, promoting biodiversity, monitoring and evaluating rehabilitation within wetland ecosystems.

Education and Training:

- 2017 MSc (Environmental Science) Rhodes University, Grahamstown. MSc has been accepted pending corrections.
- 2017 Wetland Delineation Course - Wetland Training Institute, Convington (Louisiana), USA.
- 2017 Natural Processes for the Restoration of Drastically Disturbed Sites. VII World Conference on Ecological Restoration, Foz do Iguassu, Brazil, August 26, 2017.
- 2015 A Methodology for Determining Buffer Zones for Rivers, Wetlands and Estuaries. National Training and Development Workshop, Pretoria, Gauteng, November 24-25, 2017.
- 2005 Wetland Assessments to Inform Wetland Rehabilitation Planning - University of KwaZulu-Natal.
- 2001 Forest Certification Course - SGS Qualifor.
- 2001 Wetland Rehabilitation Planning and Implementation - Mondi Wetlands Project.
- 1999 B.Sc. (Agriculture) University of Natal, Pietermaritzburg – Four-year Degree (Honours equivalent), majoring in Wildlife Science & Zoology.

Professional Memberships:

- Professional Natural Scientist (Pr.Sci.Nat) in Ecological Science - The South African Council for Natural Scientific Professions (Reg. No. 400197/05)
- Founding Member - South African Wetland Society
- Member -Society of Wetland Scientists (International)
- Member -Society of Ecological Restoration (International)

Professional Awards:

- National Wetland Award under the "Stewardship" category awarded in 2013 in recognition of the wetland rehabilitation associated with the Greater Edendale Mall development.
- Mondi Wetlands Programme acknowledgment of "Contributions towards wetland conservation" awarded in 2012.

Experience Record:

2009 to Present: GroundTruth (GT) - Management of the wetland division within GT.

2001 to 2009: Land Resources International (LRI) - Management of the environmental division within LRI.

Examples of Projects:

- Implementation of wetland rehabilitation planning in various provinces, including KwaZulu-Natal, Mpumalanga, Limpopo, Gauteng, Free State and Western Cape for the Working for Wetlands Programme from 2005-2012, 2016-2018.
- Wetland specialist input and support to Burundi Nature Action and Association pour la Conservation de la Nature au Rwanda on behalf of the International Union for the Conservation of Nature – Netherlands Committee.
- Assessments of impacted wetland systems and rehabilitation planning to inform the offset requirements for proposed development at the Cascades Mall in Pietermaritzburg.
- Assessments of impacted wetland systems and rehabilitation planning to inform the offset requirements for Exxaro coal mining operations.
- Assessment of wetland systems potentially affected by the proposed expansion of Lumwana Mine near Solwezi, Zambia on behalf of SRK Consultants.
- Water Research Commission research project on developing a monitoring and evaluation framework to assess wetland rehabilitation in South Africa.

Publications

- **Cowden C**, Kotze DC, Ellery WN & Sieben EJJ. 2014. *Assessment of the long-term response to rehabilitation of two wetlands in KwaZulu-Natal, South Africa*. African Journal of Aquatic Science, Vol. 39, No. 3.
- Rivers-Moore NA, **Cowden C**. 2012. *Regional prediction of wetland degradation in South Africa*. *Wetlands Ecology and Management*, DOI 10.1007/s11273-012-9271-5.
- Macfarlane DM, Walters D & **Cowden C**, 2011. A wetland health assessment of KZN's priority wetlands. Draft Unpublished Report prepared for Ezemvelo KZN Wildlife, Pietermaritzburg.
- **Cowden C** & Kotze DC, 2009. WET-RehabEvaluate: Guidelines for the monitoring and evaluation of wetland rehabilitation projects. WRC Report No. TT 342/08, Water Research Commission, Pretoria.
- Kotze DC, **Cowden C**. 2009. KZN Biodiversity Stewardship Programme: Guidelines for the *in situ* Management of Ecosystems in KwaZulu-Natal, according to Biodiversity Conservation Principles – Wetlands. Unpublished Report prepared for Ezemvelo KZN Wildlife by Land Resources International, Pietermaritzburg.
- **Cowden C**, Ellery W, Kotze D, Grenfell M, McCulloch D, Woods D, Grenfell S, Bambus O. 2009. *Performance evaluation of the wetland rehabilitation undertaken at Killarney Wetland in Ntsikeni Nature Reserve, KwaZulu-Natal Province* **In** Kotze DC, Ellery WN. 2009. *WET-OutcomeEvaluate: An Evaluation of the rehabilitation outcomes at six wetland sites in South Africa*. WRC Report No. TT 343/09. Water Research Commission, Pretoria.

Conference Presentations:

- **Cowden C**, Kotze D, Walters D, Browne B. Monitoring and evaluation framework for wetland restoration in South Africa, using an urban wetland case study. *Presented during VII World Conference on Ecological Restoration*. Foz do Iguassu, Brazil, August 28 - September 1, 2017.
- **Cowden C**. Wetland specialist input into the Working for Wetlands rehabilitation planning cycle. 21st National Wetlands Indaba, Hoedspruit, Mpumalanga, October 25-28, 2016.
- **Madikizela B**, Cowden C, Kotze D, Ellery W. *Documenting lessons and refining the wetland restoration field of practice in South Africa: The response of two wetlands to Working for Wetlands Restoration*, *Presented during V World Conference on Ecological Restoration*. Wisconsin, USA, September 6-11, 2013.
- **Cowden C**, Kotze D, Ellery W. *Assessment of the long-term response of specific wetlands to rehabilitation interventions by Working for Wetlands*, 17th National Wetlands Indaba. Klein Kariba, Limpopo, October 23-26, 2012.
- **Cowden C**. *Urban Wetland Rehabilitation: A KwaZulu-Natal Case Study*, 16th National Wetlands Indaba. Didima, KwaZulu-Natal, October 18-21, 2011.

Appendix E3

WETLAND FORUM MEETING MINUTES



KZN WETLAND FORUM MEETING: MINUTES

Date: 28 January 2019

Venue: Shop 6, Greater Edendale Mall, PMB

Time: 09:00 – 12h00

1 Welcome

Chair

The chair welcomed all to the meeting.

2 Present and apologies

Chair

Present:

- Skhumbuzo Kubheka (SK)
- Mlu Ntuli (MN)
- Lesley Bay (LB)
- Steven Ellery (SE)
- Tarryn Frankland (TF)
- Siphu Ngqasa (SN)
- Nozipho Mahlanze (NM)
- Sifiso Maphumulo (SM)
- Pearl Gola (PG)
- Mbali Goge (MG)
- Cherise Acker-Cooper (CA)
- Lulu van Rooyen (LvR)
- Nomalungelo Radebe (NR)
- Susan Janse van Resnburg (SvR)
- Hlelo Mbense (HM)

Apologies received from:

- Craig Mulqueeny
- Jacolette Adam
- Siyabonga Buthelezi
- Jeanne Tarrant
- Jiba Magwaza
- Penny Gumede
- Craig Cowden
- Njabulo Tshabalala
- Tembelihle Ndlela
- Ian Bredin
- Kurt Barchievy

3 Approval of previous minutes

Chair

- (MN) proposed minutes, (SK) seconded (no corrections noted)

4 Confirmation of agenda/ additional agenda items

Chair

- IAIASA student partnership

5 Matters Arising

5.1 Actions from previous meetings

5.1.1. Need for Wetlands Database

As per previous minutes funding is needed to appoint an intern to assist in putting this database together of which the main purpose would be to support EKZNW in monitoring developments. Ian Bredin suggested that seed funding be secured through the forum to support this process, and Matthew Dickey volunteered to source students. Another option is to fund an intern through the International Association for Impact Assessment (IAIASA), where the intern will then sit with an IAIASA registered company, but work on the database as part of his/her responsibilities. Also see section 8.

Action 1: SK to follow up with Ian Bredin and Christine Cuenod to ascertain funding available for this (as per previous minutes).

5.1.2. Balamhlanga Case

SK asked to be released from his responsibility to follow up on the Balamhlanga case, since he is affiliated with EKZNW. The latest understanding is that there were departmental issues with directives to rehabilitate, and dissatisfaction from DWS about how the directive was responded to. There has also been a turnover of governmental officials, and therefore uncertainty about who is responsible for what.

It is suggested that the KZNWF form a 'task team' as a KZNWF portfolio to establish the status quo, produce a summary of current existing documents and actions, and create a platform for stakeholders to coordinate. The aim is to be a neutral, solution-focused task team which can objectively understand the issues and play a bigger role in resolving this case, and report back to various stakeholders (not only the KZNWF). The suggestions for this task team/portfolio are Susan Janse van Rensburg, Mbali Goge, Skhumbuzo Kubheka, Lulu v Rooyen and potentially Kurt Barchiev. Any other KZNWF member interested in partaking in this portfolio is welcome to contact the Chairperson Skhumbuzo Kubheka. Also see Section 6.1.

Action 2: SvR, MG, SK, LvR, KB to convene a meeting to plan actions for this task team

Action 3: IB to follow up with Carte Blanche (previous minutes)

5.1.3. Wetland classification

The new wetland classification was meant to be delivered by the end of 2018 from national. SK will follow up with Namhla Mbona from SANBI about this. As per previous minutes the provincial classification should still be obtained from Boyd Escott and distributed.

Action 4: SK to follow up with Namhla about Version 5 of the next wetland classification

Action 5: SK to obtain provincial classification from Boyd Escott

5.1.4. National wetland indaba finances

The status of KZNWF finances is still unclear at this stage, due to the transfer to the new committee. SK will work with Ian Bredin to have access to funding and status of books. There exist also now the opportunity for the South African Wetland Society (SAWS) to host Forum funds. Two provincial forums are already in the process of moving funds to SAWS.

Action 6: SK to discuss KZNWF funds and bookkeeping with IB

5.2 Information/data management and feedback

5.2.1. PRESENTATION: ICLEI project – EGS Quality Scoring Toolkit

CA presented on the 'Ecological goods and services quality assessment toolkit' developed by EWT. The aim of this toolkit is to equip people (researchers, students, environmental monitors, community members, etc.) to collect baseline- and monitoring data. It can also be used to develop environmental citizenship in communities. As part of the presentation CA also demonstrated the use of the geospatial data collection app.

6 General Matters

6.1 Portfolios for 2018

It was suggested that portfolios are created with assigned KZNWF members to drive these. The suggested portfolios are:

1) 'Training, skills development and student support' portfolio:

This portfolio will identify training and skills development opportunities hosted by the KZNWF for 2019, as well as focus on student participation in the forum. The latter is to happen by collaborating with institutions such as IAIASA (International Association for Impact Assessments South Africa), EWT, SAEON and UKZN. The members responsible for this portfolio are Cherise Acker-Cooper, Sue Janse van Rensburg, and Tarryn Frankland. Erwin Sieben can be approached for his assistance herewith.

Within this portfolio there is a need for the KZNWF to support and facilitate more students to attend KZNWF meetings and NWI. The SAWS is developing a similar portfolio to help Forums to work with students, so this portfolio should collaborate with SAWS.

2) 'Response' portfolio

This is the 'watchdog portfolio', and currently the Balamhanga wetland case is to be focused on, although not limited to. As per Section 5.1.2 the following members have volunteered to drive this portfolio: Susan Janse van Rensburg, Mbali Goge, Skhumbuzo Kubheka, Lulu v Rooyen and potentially Kurt Barchievy. A response policy will have to be developed for this portfolio.

It is the responsibility of the various portfolio task teams to set up meetings within themselves and come up with a set of objectives and action plan for next meeting.

Action 7: Set up task team meetings - Training portfolio: Cherise Acker-Cooper, Sue Janse van Rensburg, and Tarryn Frankland; Response portfolio: Susan Janse van Rensburg, Mbali Goge, Skhumbuzo Kubheka, Lulu v Rooyen

Planning for activities (i.e. presentations, training, etc.)

The following activities have been put forward:

1) Mini Wetland Indaba for students, aligning with Mlu Ntuli's similar initiative.

Action 8: LvR, MN, and CA to collaborate with the Training Portfolio members to organize this

2) Jacolette Adam will be asked to present her Master's degree work at the next KZNWF meeting. Doug McFarlane is to be asked if he can give training as part of Quarter 4's KZNWF meeting.

Action 9: LvR to ask Jacolette Adam.

Action 10: SK to approach DM.

3) There will be a workshop on Wetland Ecoservices and Wet Health training in May hosted by Groundtruth.

Action 11: Steven Ellery to forward leaflet/invitation to LvR.

- 4) Cedara College is hosting their annual soil classification and land capability course 7-9 May. LvR will distribute invitation

Action 12: LvR to distribute invitation.

5) Other potential opportunities:

- ICLEI presentations on wetland management guidelines for municipalities, and action ICLEI on training component
- Delineation training with new soil classification book
- Training for wetland buffer tool
- Doug to complete list of all known tools and resources that can be shared and discussed

Action 13: MN to report on event

Action 14: CA to report on EWT event

7 General matters

7.1 NWI attendance

MN reported back that various KZN students presented and was motivated to present this year as well. LibertyNPO won the skills development wetland award.

7.2 Wetlands day events 2019

- 1) Greater Edendale event to be celebrated again on the 1st February 2019, supported by various institutions. They will showcase documentaries and have sessions on wetland theory and marketing material inside, and practical events outside. MN requested support from KZN Wetland Forum members. There is a plan to shift WWD to March next year to give more time for planning and other projects.
- 2) EWT will host a Wetlands Day Celebration in Adams Mission on 8 February 2019. There will be exhibition tables and an outdoor cinema hosted by NEWF Nature Environment, Wildlife Filmmakers Congress. CA will disseminate details.
- 3) SvR is hosting a closed WWD event on the 5th and 6th of March in Maputaland on the Mabaso tribal Council's request
- 4) The rehabilitation of Mphophomeni is finally taking place – a positive story of collaboration. The teams will also have a WWD celebration at the end of February. MG also suggested that the third quarter forum meeting is in Mphophomeni and have a site visit attached to it.

7.3 Planned meetings for the year:

The following meeting dates are to be diarised:

April 26	Durban (Venue to be confirmed)	Jacquette Adam to present (TBC)
July 26	Mphophomeni	Mphophomeni Rehabilitation site visit
11Oct	Durban (Venue to be confirmed)	Doug McFarlane to give training (TBC)

Action 15: SB to ask Siyabonga Buthelezi for a Durban venue; or TF to ask for a Durban IAIASA venue

8 Additional Items

8.1 Student Mentorship Programme

IAIASA can act as link between various employees registered with IAIASA and their organisations, and students to disseminate job opportunities and host networking events, career days, etc. One of their responsibilities is to assimilate information and distribute it. They're looking for opportunities to collaborate with the KZNWF, especially on the student facilitation aspect. As per Section 5.1.1 IAIASA can raise funds to sponsor an intern in an IAIASA registered company to can work on wetland issues such as the wetland database.

Action 16: LvR to approach IAIASA registered consultant about the opportunity and work with Tarryn to solicit funding from IAIASA.

Meeting closed 12h00

APPENDIX F1

SCREENING TOOL REPORTS

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR
FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION
AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number:

Project name: iSimangaliso Wetland Rehabilitation

Project title: iSimangaliso Wetland Park

Date screening report generated: 09/10/2019 12:41:42

Applicant: Working for Wetlands

Compiler: Aurecon SA (Pty) Ltd

Compiler signature:

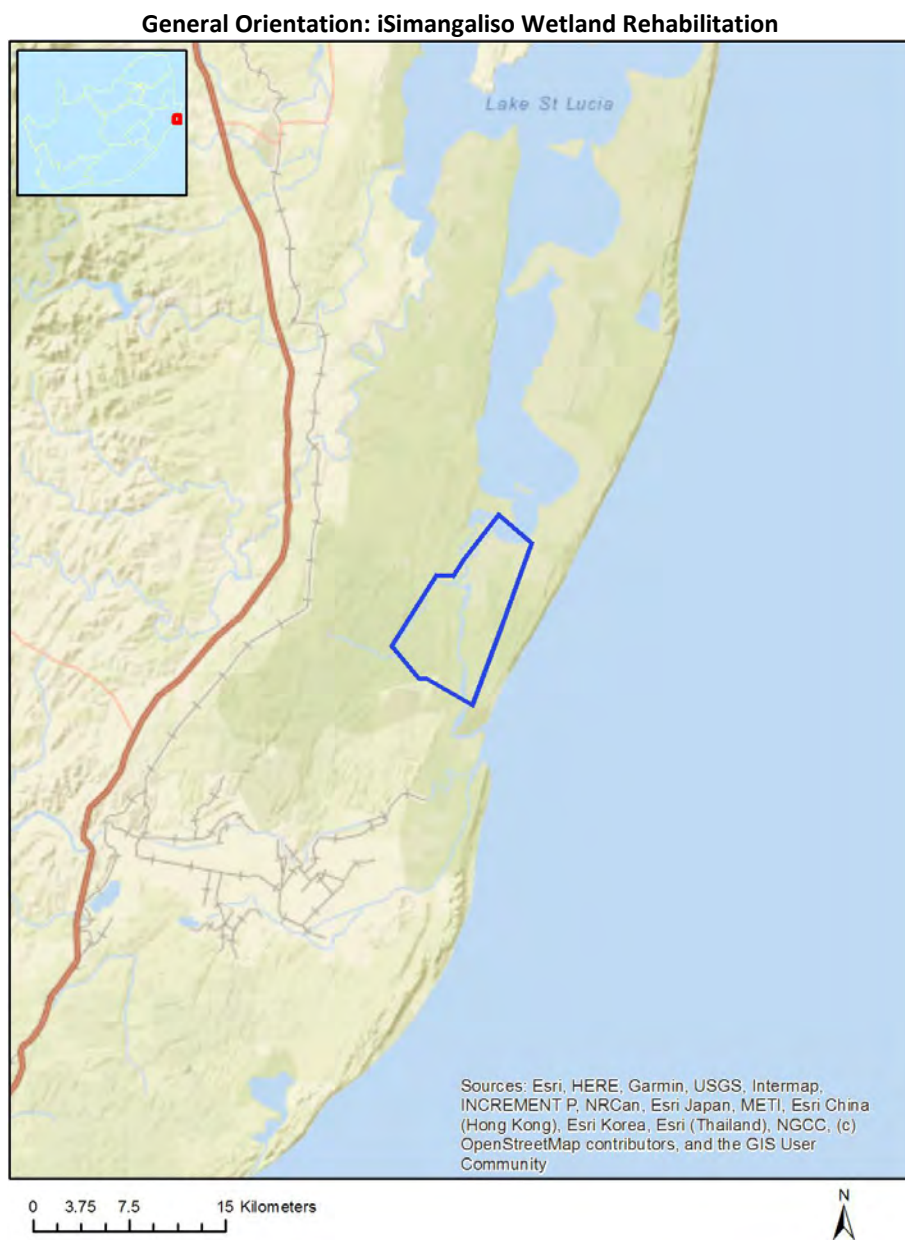
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Table of Contents

- Proposed Project Location 3
 - Orientation map 1: General location 3
- Map of proposed site and relevant area(s) 4
 - Cadastral details of the proposed site 4
 - Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area 5
 - Environmental Management Frameworks relevant to the application 5
- Environmental screening results and assessment outcomes 5
 - Relevant development incentives, restrictions, exclusions or prohibitions 5
- Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones 6
 - Proposed Development Area Environmental Sensitivity 6
 - Specialist assessments identified 7
- Results of the environmental sensitivity of the proposed area 9
 - MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY 9
 - MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY 10
 - MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY 11
 - MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY 12
 - MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY 13
 - MAP OF RELATIVE DEFENCE THEME SENSITIVITY 14
 - MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY 15

Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	ST LUCIA	321	0	28°22'3.55S	32°24'56.82E	Erven
2	KHULA VILLAGE	1	0	28°21'22.74S	32°23'3.95E	Erven
3	KHULA VILLAGE	1	13	28°22'15.65S	32°21'43.25E	Erven
4	KHULA VILLAGE	1	16	28°21'41.52S	32°22'20.14E	Erven
5	KHULA VILLAGE	1	18	28°21'50.72S	32°22'20.61E	Erven
6	KHULA VILLAGE	2456	0	28°21'30.44S	32°22'15.54E	Erven
7	KHULA VILLAGE	1	12	28°21'43.21S	32°22'8.03E	Erven
8	DUKUDUKU WETLANDS	17458	0	28°23'29.55S	32°17'29.28E	Farm
9	ST LUCIA LANDS	13702	0	28°22'39.54S	32°24'22.57E	Farm
10	DUKUDUKU FOREST	17393	0	28°20'43.39S	32°19'38.01E	Farm
11	ST. LUCIA WETLANDS	17459	0	28°4'18.64S	32°28'8.85E	Farm
12	ST LUCIA LANDS	13702	0	28°22'40.01S	32°24'22.54E	Farm Portion
13	DUKUDUKU FOREST	17393	1	28°19'48.98S	32°22'29.74E	Farm Portion
14	DUKUDUKU WETLANDS	17458	0	28°23'30.16S	32°17'29.25E	Farm Portion
15	DUKUDUKU WETLANDS	17458	0	28°23'25.78S	32°17'57.69E	Farm Portion
16	ST. LUCIA WETLANDS	17459	0	28°4'19.08S	32°28'8.86E	Farm Portion
17	ST. LUCIA WETLANDS	17459	0	28°4'18.64S	32°28'8.85E	Farm Portion

Development footprint¹ vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:
Any activities within or close to a watercourse | Any activities within or close to a watercourse.

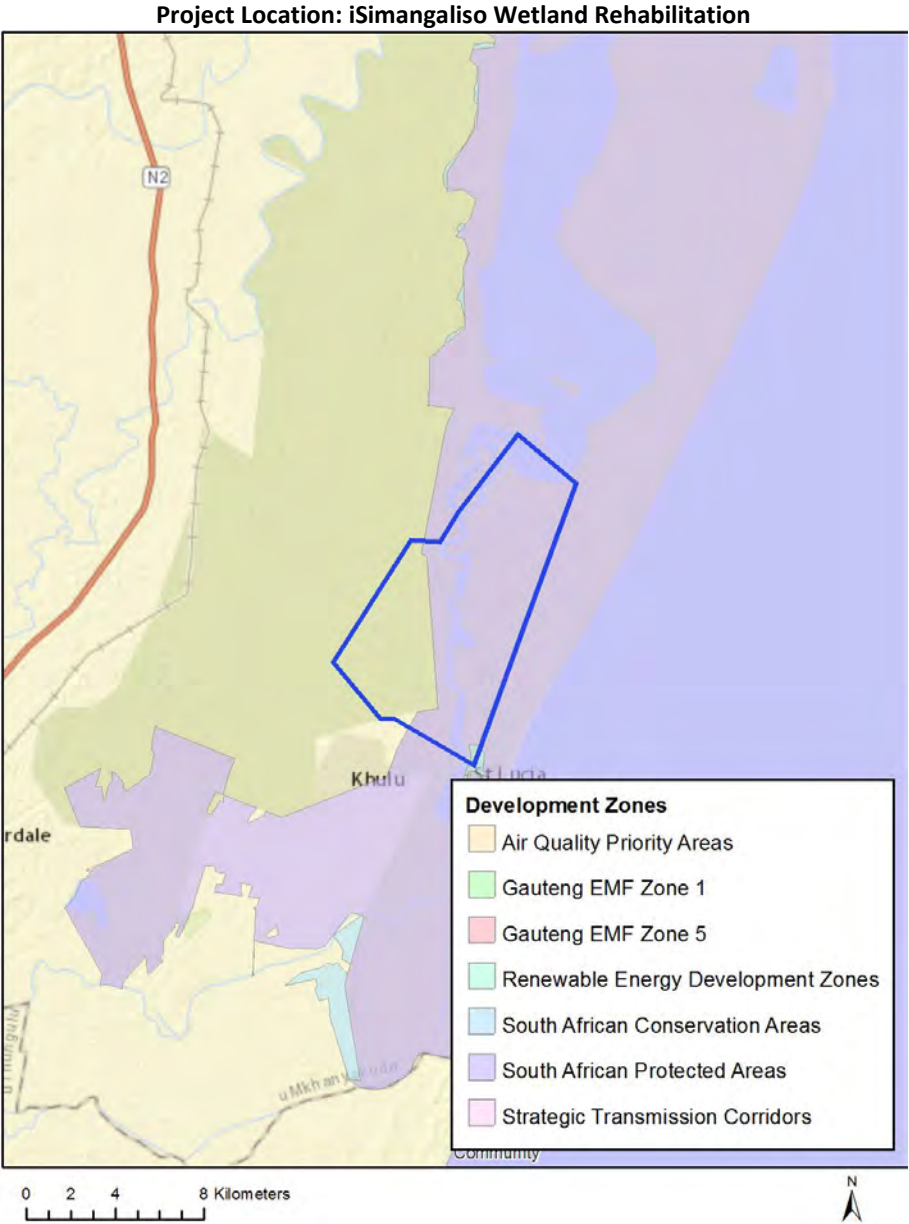
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2019_Q1_Metadata.pdf
South African Protected Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPAD_OR_2019_Q2_Metadata.pdf

¹ “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Aquatic Biodiversity Theme	X			

Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme		X		
Plant Species Theme		X		
Defence Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

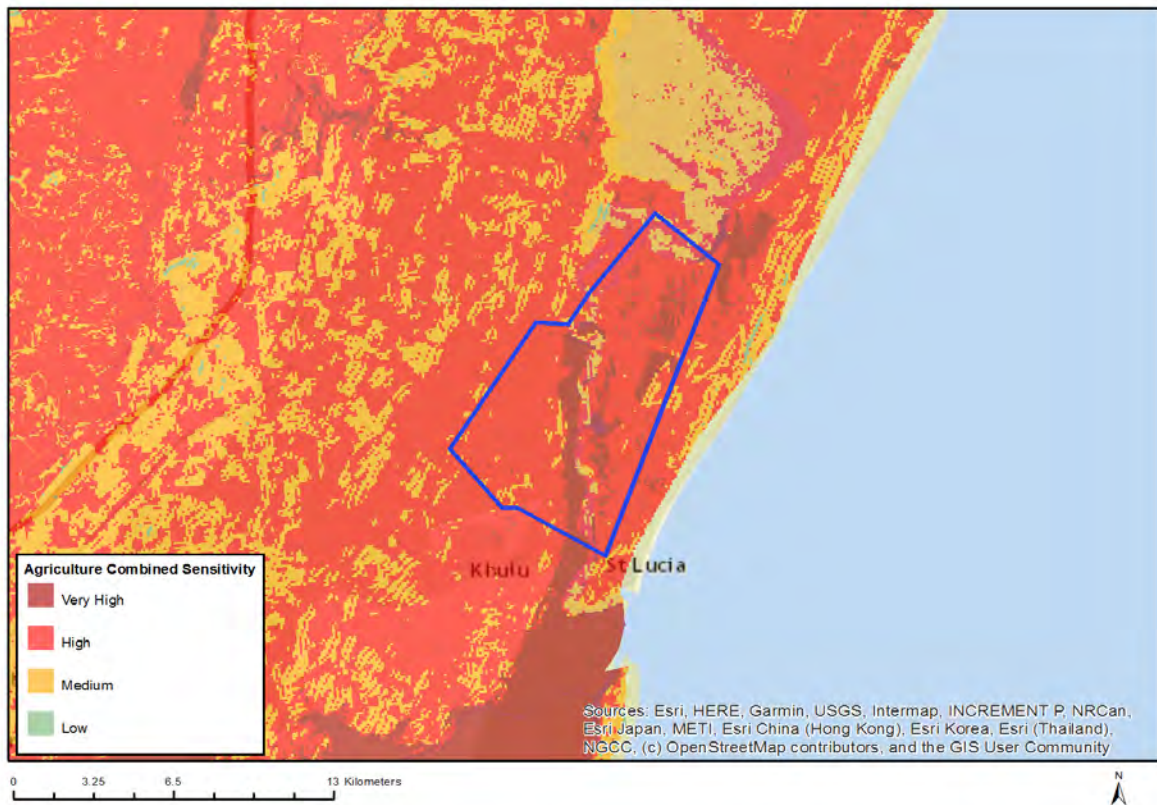
N o	Specialist assessment	Assessment Protocol
1	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Aquatic_Biodiversity_Assessment.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
7	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf

	ent	
8	Plant Species Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
9	Animal Species Assessm ent	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

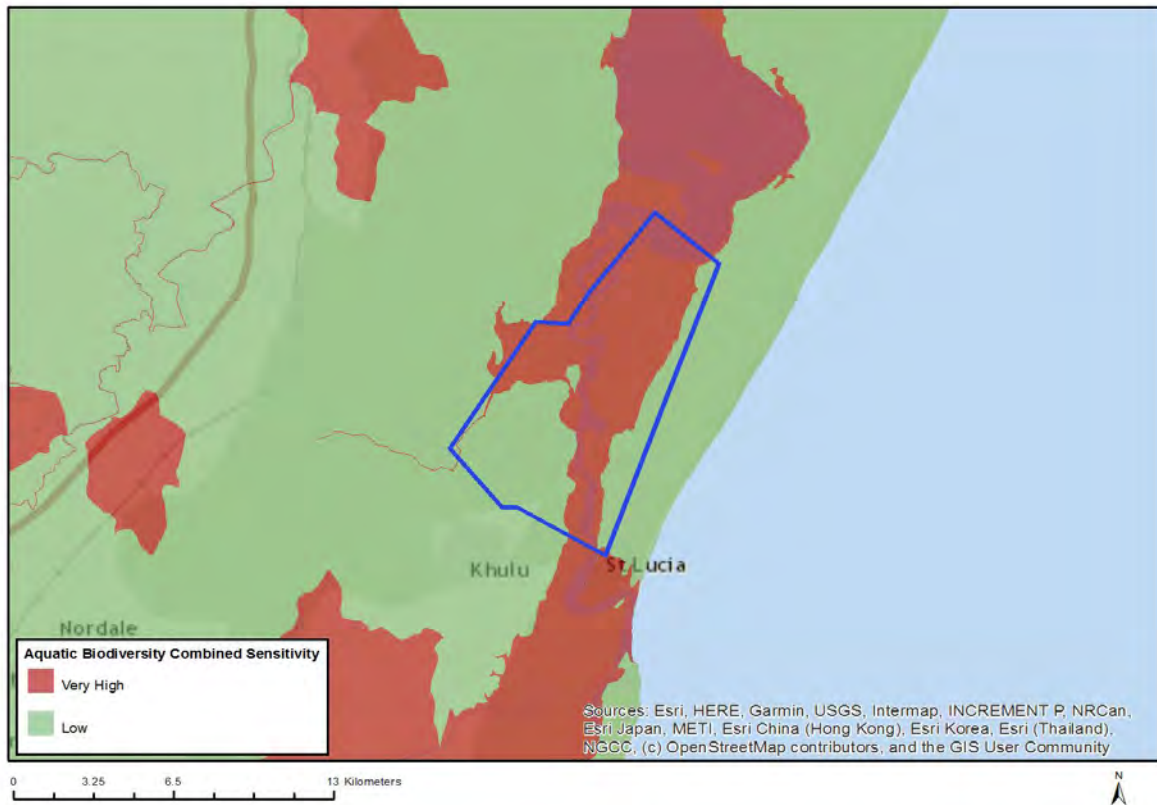


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Land capability;11. High/12. High-Very high/13. High-Very high/14. Very high/15. Very high

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

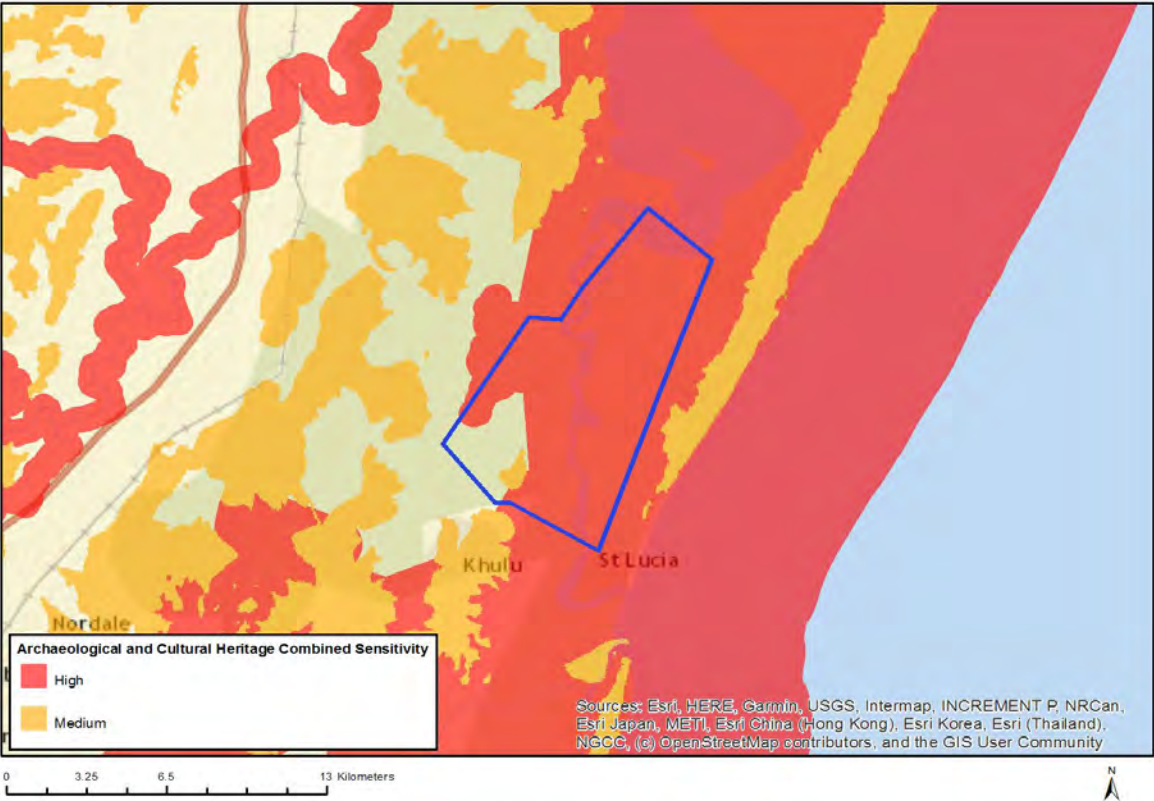


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity Areas
Very High	Estuary,St Lucia/Mfolozi,
Very High	River,Mpate,Estuary,St Lucia/Mfolozi,
Very High	River,St Lucia,Estuary,St Lucia/Mfolozi,
Very High	CBAEstuary,St Lucia/Mfolozi,
Very High	CBA,RiverStrategic water source area
Very High	CBA,River,Mpate

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

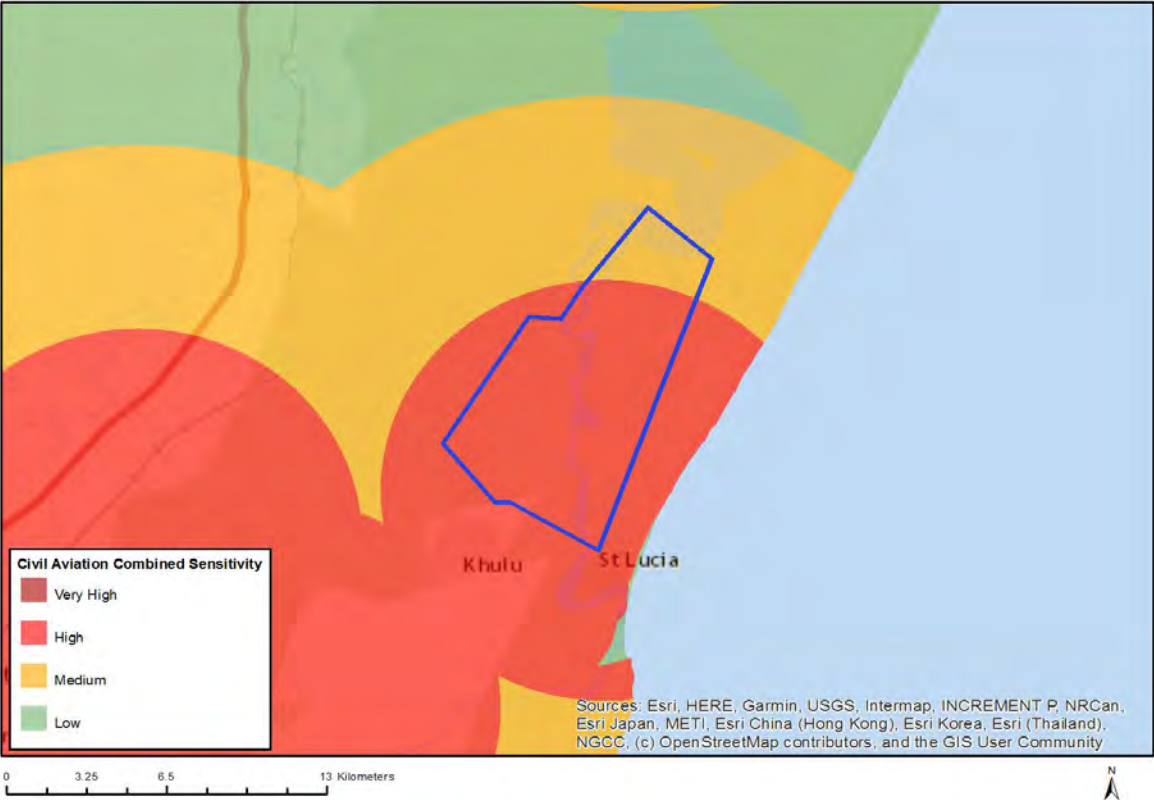


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of an important river
High	Within an important wetland
High	Within 500 m of an important wetland
High	Within protected area
High	Within 1 km of a protected area
Medium	Mountain or ridge

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

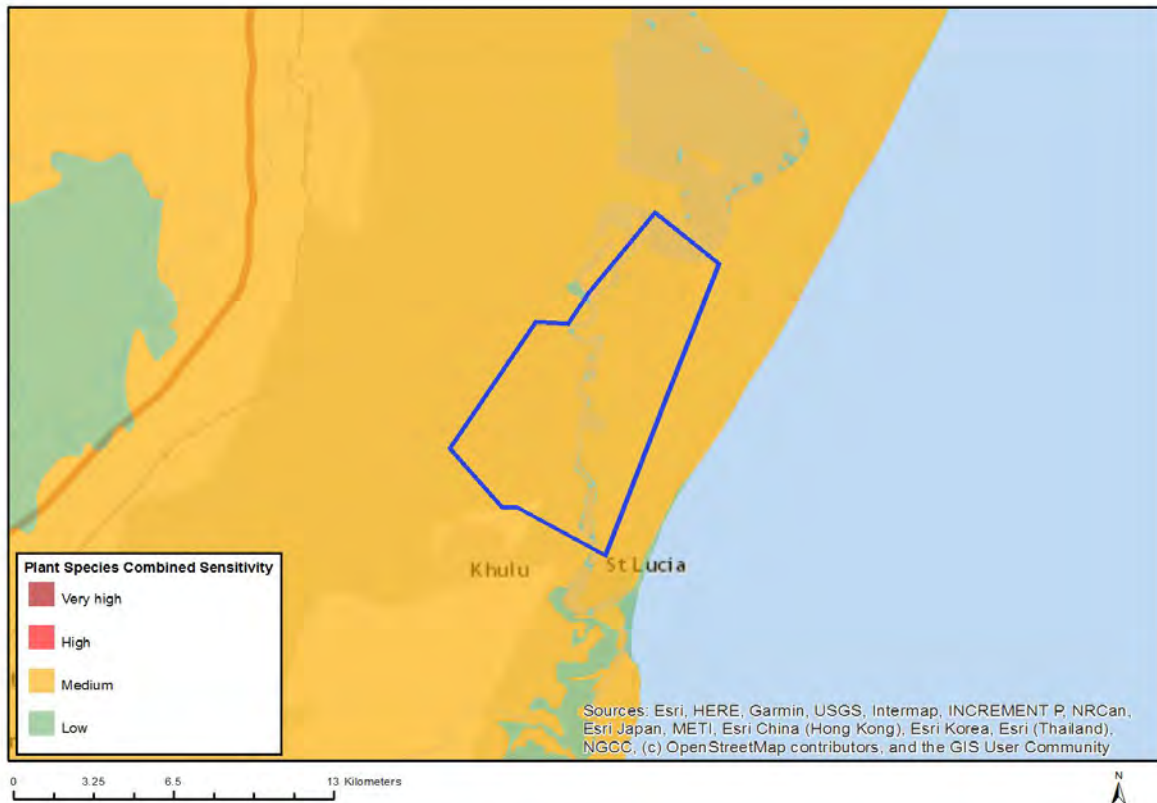


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	<i>Restio zuluensis</i>
Low	Low sensitivity
Medium	<i>Cassipourea gummiflua</i> var. <i>verticillata</i>
Medium	<i>Pristimera delagoensis</i> var. <i>delagoensis</i>
Medium	<i>Freesia laxa</i> subsp. <i>azurea</i>
Medium	Sensitive species 275
Medium	<i>Oxygonum dregeanum</i> subsp. <i>streyi</i>
Medium	<i>Fimbristylis aphylla</i>
Medium	<i>Restio zuluensis</i>
Medium	<i>Asclepias gordon-grayae</i>
Medium	<i>Pachycarpus concolor</i> subsp. <i>arenicola</i>
Medium	Sensitive species 471
Medium	<i>Senecio ngoyanus</i>
Medium	<i>Aspalathus gerrardii</i>
Medium	<i>Thesium polygaloides</i>

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

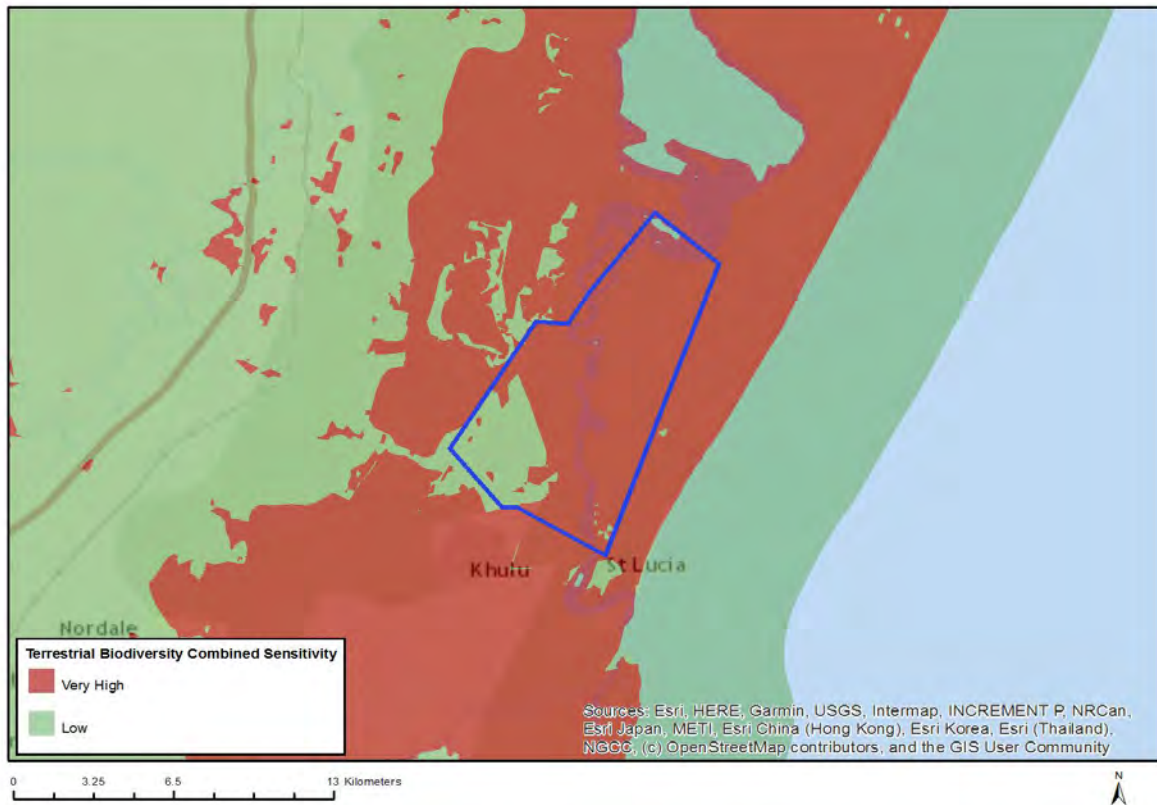


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	None
Very High	Endangered ecosystem
Very High	Vulnerable ecosystem
Very High	Ecological Support Area 1
Very High	Critical Biodiversity Area 1
Very High	Focus Areas for land-based protected areas expansion
Very High	Forest