



# **GREEN DOOR** **environmental**

## **DRAFT BASIC ASSESSMENT** **The Proposed Wetland Rehabilitation Intervention** **for the Working for Wetlands Programme in the** **Zaalklapspruit Wetland, eMalahleni Local** **Municipality, Mpumalanga**

REF: NEAS Ref: DEA/EIA/0001745/2013  
DEA Ref: 14/12/16/3/3/1/859

**PREPARED FOR THE SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE (SANBI)**  
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**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

**Kindly note that:**

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

**SECTION A: ACTIVITY INFORMATION**

Has a specialist been consulted to assist with the completion of this section?  YES    
 If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

**1. PROJECT DESCRIPTION**

**a) Describe the project associated with the listed activities applied for**

**Background To Project**  
The Zaalklapspruit Wetland Rehabilitation Project forms part of the SANBI 'Working for Wetlands' (WfWetlands) Freshwater Programme. This programme focuses on the rehabilitation, protection and sustainable use of South Africa's wetlands, while contributing to the creation of employment as part of the Expanded Public Works Programme, through employing only local Small, Medium and Micro Enterprises (SMMEs). The South African National Biodiversity Institute manages the programme on behalf of a joint initiative between the National Department of Environmental Affairs (DEA), the Department of Water Affairs (DWA), and the Department of Agriculture, Forestry and Fisheries (DAFF), all of which have wetland-related mandates. The WfWetlands Programme honours South Africa's commitments under several international agreements. Most notably of these is the Ramsar Convention on Wetlands.

WfWetlands has invested millions of Rand in the successful rehabilitation of hundreds of wetlands throughout the country. The health of thousands of hectares of wetland areas have been secured whilst thousands of employment opportunities have been provided to previously disadvantaged people, including woman and people with disabilities. The social benefits include training, enterprise development and the dignity of decent work. Wetland rehabilitation protects agricultural resources, enhances biodiversity, reduces the impacts of flooding, provides cleaner water and increases water security.

WfWetlands operates within the context of the Constitution Act, No. 108 of 1996. National legislation that protects the environment (National Environmental Management Act, No. 107 of 1998 (NEMA), National Water Act, No. 36 of 1998 (NWA), Conservation of Agricultural Resources Act, No. 43 of 1983 (CARA)) guides the WfWetlands Programme whilst regulating the wetland rehabilitation activities in compliance with all legislation.

In terms of Section 39 of the NWA, a General authorisation (GA) has been granted for certain wetland rehabilitation activities that are listed under the NWA that usually require a Water Use License. These activities include 'impeding or diverting the flow of water in a watercourse' and 'altering the bed, banks, course or characteristics of a watercourse'.

A Memorandum of Agreement has been entered into between the DAFF, DEA, DWA and SANBI for the WfWetlands Programme to streamline the authorisation processes for authorisation of wetland rehabilitation activities under CARA, NEMA and NWA.

Wetlands rank among the most threatened ecosystems in South Africa. According to SANBI, recent studies show that 65% of South African wetland types are under threat. The Zaalklapspruit wetland has been identified as a 'National Freshwater Ecosystem Area' and falls within a 'critically endangered wetland type'.

The Zaalklapspruit Wetland falls within an area that is being used for mining near the town of Witbank in the Emalahleni Municipality. Coal mining is known to have significant impacts on water resources but wetland rehabilitation provides a potential opportunity to address some of these impacts. A partnership between WfWetlands (rehabilitation activities), the Coaltech Research Association (Funding) and the Council for Scientific and Industry Research (CSIR) (water testing) has been formed to rehabilitate the Zaalklapspruit Wetland system.

Green Door Environmental has been appointed to undertake the Zaalklapspruit Wetland Basic Assessment. The Phase 1 Planning and a Rehabilitation Plan has been undertaken by Eco-Pulse Environmental Consulting Services, in accordance with the WfWetlands planning programme.

**Project Description**

The Zaalklapspruit wetland is a naturally un-channeled valley bottom wetland system which is 139 hectares in size. It is located in the Mpumalanga Upper Olifants catchment (Quaternary Catchment B20G) and forms part of a larger wetland system which lies along a tributary of the Zaalklapspruit River, the Grootspuit. The Grootspuit River then flows into the Wilge River, which is approximately 35km northwest of the Town of Witbank. The wetland has been identified as a 'National Freshwater Ecosystem Area' and falls within a 'critically endangered wetland type'.

The catchment area of 9603 hectares consists of cultivated lands, plantations and coal mines. There are significant water quality impacts associated with the current catchment land-uses. However, the wetland is not functioning optimally at present due primarily to permanent channel incision which has resulted in concentrated, canalized water flow and consequently reduced plant life, all of which inhibit its ability to enhance water quality. The causes are identified as historic agricultural practices, namely ridge and furrow cultivation and artificial drainage in the central reaches of the wetland.

It is thus proposed to rehabilitate the Zaalklapspruit Wetland located in the eMalahleni Local Municipality in Mpumalanga. The project will form part of the Wetland Rehabilitation Intervention for the Working for Wetlands Programme in partnership with Coaltech who is providing the funding. The Council for Scientific and Industrial Research (CSIR) will contribute through the provision of water testing.

The project objective is primarily to address the water quality enhancement functions of the wetland. Water quality improvements are achieved through ensuring diffuse flow and adequate wetland plant life. Chanel incision, which concentrates the water flow and thus reduces plant life, is the main obstruction to this goal at present. The causes are ridge and furrow cultivation and artificial drainage in the central reaches of the wetland. The rehabilitation therefore focuses on the re-activation of areas affected by ridge and furrow cultivation, the de-activation of the central incised channel (encouraging water to flow diffusely across the wetland) and the prevention of further channel incision by de-activation of the head-cut located upstream of the main channel. The duration of the project is estimated to be three years.

**b) Provide a detailed description of the listed activities associated with the project as applied for**

Listed activity as described in GN R.544, 545 and 546	Description of project activity
<b>Example:</b> <i>GN R.544 Item 11(3): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a</i>	<i>A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river</i>

<i>watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i>	
<i>GNR 544, Part 11: The construction of:... ii) channels; ...v) weirs;... xi) infrastructure or structures covering 50 square metres or more... where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse...</i>	<i>The rehabilitation of the Zaalklapspruit Wetland will include the construction channels, weirs or infrastructure within a watercourse.</i>
<i>GNR 544, Part 18: The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand ... from i) a watercourse...</i>	<i>The rehabilitation of the Zaalklapspruit Wetland will require more than 5 cubic metres of material to be moved within a watercourse.</i>

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

“**alternatives**”, in relation to a proposed activity, means 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.

Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

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**a) Site alternatives**

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>Wetland rehabilitation provides an opportunity to address the impacts from coal mining activities which are being undertaken directly above the Wetland. The Wetland is currently not providing the service of water quality enhancement to an optimal level, due to the incised channel that has formed from historical agricultural practices. The wetland falls within a critically endangered wetland type and has been identified as a National Freshwater Ecosystem Area. Coupled with its environmentally sensitivity, the Wetland receives degraded water from the mines. It is therefore a priority that the ability of the Wetland to filter and clean the water flowing through it is improved.</p> <p>This wetland is one of many wetlands which have been identified for rehabilitation as part of the 2013/2014 SANBI Freshwater Programme. This particular project is however being undertaken through a partnership between WfWetlands (rehabilitation activities), the Coaltech Research Association (Funding) and the Council for Scientific and Industry Research (CSIR) (water testing). While a number of alternative sites were considered, the Zalklapspruit Wetland was regarded as most in line with the projects objectives. No other sites have therefore been investigated as part of this Application.</p>	<b>25° 54' 33.04" S</b>	<b>29° 03' 54.87" E</b>
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

In the case of linear activities:

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

<b>25° 54' 04.69" S</b>	<b>29° 01' 51.05" E</b>
<b>25° 54' 28.60" S</b>	<b>29° 03' 22.90" E</b>
<b>25° 55' 04.37" S</b>	<b>29° 04' 37.02" E</b>

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

N/A	

Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

N/A	

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For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A.

### b) Lay-out alternatives

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Given that the prime objective of the rehabilitation project is to improve the ability of the Wetland to enhance water quality, three focus areas have been prioritised. These areas, shown in Figure 1 (Appendix A), feature both ridge and furrow cultivation and artificial drainage, which cause the channel incision and concentration flow that is currently observed within the Wetland. These three areas have been identified as key areas of wetland which require rehabilitation by the consulting wetland specialists. Based on the rehabilitation opportunities available within each of these areas, a decision was made to focus initial rehabilitation planning on the area indicated in the green oval on the map. Further planning will be required prior to rehabilitation being undertaken in the remainder of the wetland.	<b>25° 54' 33.04" S</b>	<b>29° 03' 54.87" E</b>
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
	N/A	
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
	N/A	

### c) Technology alternatives

<b>Alternative 1 (preferred alternative)</b>
<p><u>Soft structures</u></p> <p>The construction of soft structures are labour-intensive. The 'Working for Wetlands' programme is aligned to the Public Works Expansion Programme and therefore labour intensive construction is favoured. Training and skills development is also a high priority. Soft structures are non-permanent and not as aesthetically intrusive and tend to blend better into the natural dynamic environment than hard structures.</p> <p>The construction of earthen berms and leveling by hand is preferred and has proved to be a successful rehabilitation intervention for projects that feature similar agricultural drainage issues.</p> <p>Fill material is available in the areas to used for the construction of earth berms. The berms have been designed to suit the local conditions of each location.</p> <p><u>Hard structures</u></p> <p>Hard structures, like concrete walls, are more expensive than soft structured earth berms which are labour-intensive structures to build. However, in areas where support is required (e.g. the large central drain and head-cut upstream), and earthen berms would be 'too soft', hard structured cement</p>



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walls are proposed (e.g. concrete weirs). This is because the structures will be exposed to high flow velocities and must therefore be durable. Working for Wetlands has been successful in training unskilled labour in the construction of concrete weirs. Concrete weirs that have been applied in other rehabilitation projects have performed well. The overflow level can be adjusted in the operational phase to optimize the distribution of water across the wetland. The high acidity of the water would reduce the durability of alternative gabion structures as opposed to concrete weirs.

A combination of hard (concrete weirs) and soft structures (earthen berms) is therefore the recommended option to be applied.

### Alternative 2

#### Mechanised option

Large machinery could be used to re-shape the entire area to be rehabilitated. This area could then be re-vegetated. However, apart from not adhering to the job creation objectives of the programme, there would be a significant level of environmental disturbance and the consequent potential for sediment loss. The risk is considered too high to be acceptable.

This option is therefore not recommended.

### Alternative 3

N/A

#### d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

#### Alternative 1 (preferred alternative)

N/A

#### Alternative 2

N/A

#### Alternative 3

N/A

#### e) No-go alternative

Deteriorating water quality, head-cut advancement and the spread of Poplars Trees into areas of intact wetland vegetation is ongoing. If the rehabilitation of the Zaalklapspruit Wetland does not occur, then the following benefits would not accrue:

- Addressing the acid-mine drainage generated by the mines (through the enhanced ability of the Wetland to remove excess iron and other harmful substances in the water).
- General toxicant removal through improved ability to purify waters.
- Improve wetland water quality enhancement function and filtration services.
- Increase in wetland vegetation, which contributes to water quality enhancement functioning.
- Improved and increased flora and fauna habitat through improved water quality and wetland vegetation (especially for wetland-dependant vulnerable and threatened species of the Mpumalanga region).
- Increased biodiversity through restoration of wetland habitat increases species richness in Mpumalanga, reversing the ecological damage associated to agriculture, forestry and mining.
- Decreased sediment downstream reduces the sedimentation of downstream water storage facilities, such as dams and reduces water storage and treatment costs.
- Stream flow regulation for downstream users with a more reliable and cleaner source of water.
- Reduced soil erosion through reduced exposure of ground surface and consequent surface

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<p>runoff velocity.</p> <ul style="list-style-type: none"> <li>• Flood attenuation will improve as rehabilitation activities will help to increase residence times of floodwaters.</li> <li>• Restoration of the wider wetland corridor will result once areas previously drained become wet, linking up areas that were previously wet, allowing for greater ecosystem connectivity.</li> </ul>
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Paragraphs 3 – 13 below should be completed for each alternative.

### 3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the activity:**

1 390 000 m <sup>2</sup>
N/A m <sup>2</sup>
N/A m <sup>2</sup>

The Zaalklapspruit Wetland is a moderate sized naturally un-channelled valley bottom wetland system of 139 ha (Figure 2, Appendix A). Thirteen (13) interventions have been proposed as part of this initial planning phase. The location of these planned rehabilitation interventions within the priority focal area is included in Figure 3, Appendix A while a list of planned interventions detailing associated rehabilitation objectives is provided below. Further details of planned interventions are included in the wetland rehabilitation plan submitted together with this report.

INTERVENTION NUMBER	STRUCTURE TYPE	PRIORITY	REHABILITATION OBJECTIVE
B20G-01-201-00	CONCRETE WEIR	1	<ul style="list-style-type: none"> <li>• DEACTIVATE HEAD-CUT UPSTREAM OF MAIN DRAIN.</li> </ul>
B20G-01-202-00	CONCRETE WEIR	2	<ul style="list-style-type: none"> <li>• RAISE THE WATER LEVEL IN THE MAIN CHANNEL AND PROMOTE DISTRIBUTION INTO ADJACENT WETLAND AREAS.</li> </ul>
B20G-01-203-00	LOW CONCRETE WALL AND REMOVAL OF BERMS	4	<ul style="list-style-type: none"> <li>• PROMOTE DIFFUSE FLOWS AND ENCOURAGE ESTABLISHMENT OF WETLAND VEGETATION.</li> </ul>
B20G-01-204-00	EARTHWORKS - LEVELLING	5	<ul style="list-style-type: none"> <li>• PROMOTE DIFFUSE FLOWS AND ENCOURAGE ESTABLISHMENT OF WETLAND VEGETATION.</li> </ul>
B20G-01-205-00	LOW CONCRETE WALL	6	<ul style="list-style-type: none"> <li>• PROMOTE DIFFUSE FLOWS AND ENCOURAGE ESTABLISHMENT OF WETLAND VEGETATION.</li> </ul>
B20G-01-206-00	CONCRETE WEIR	12	<ul style="list-style-type: none"> <li>• DE-ACTIVATE MAIN CHANNEL AND DEFLECT WATER INTO ADJACENT WETLAND AREAS.</li> </ul>
B20G-01-207-00	CONCRETE WEIR	13	<ul style="list-style-type: none"> <li>• DE-ACTIVATE MAIN CHANNEL AND DEFLECT WATER INTO ADJACENT WETLAND AREAS.</li> </ul>
B20G-01-208-00	EARTHWORKS -	10	<ul style="list-style-type: none"> <li>• DE-ACTIVATE AREAS OF RIDGE AND FURROW</li> </ul>

<sup>1</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

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INTERVENTION NUMBER	STRUCTURE TYPE	PRIORITY	REHABILITATION OBJECTIVE
	DISTRIBUTION BERM		CULTIVATION AND PROMOTE DIFFUSE FLOWS ACCROSS THE WETLAND.
B20G-01-209-00	EARTHWORKS - BERM	9	<ul style="list-style-type: none"> <li>DE-ACTIVATE SECONDARY DRAIN AND PROMOTE DISTRIBUTION OF FLOWS INTO ADJACENT WETLAND. FLOWS TO DOWNSTREAM AREA TO BE MAINTAINED THROUGH USE OF PIPES THROUGH THE BERM.</li> </ul>
B20G-01-210-00	EARTHWORKS - BERM	8	<ul style="list-style-type: none"> <li>PROMOTE DIFFUSE FLOWS AND ENCOURAGE ESTABLISHMENT OF WETLAND VEGETATION.</li> </ul>
B20G-01-211-00	EARTHWORKS - BERM	7	<ul style="list-style-type: none"> <li>PROMOTE DIFFUSE FLOWS AND ENCOURAGE ESTABLISHMENT OF WETLAND VEGETATION.</li> </ul>
B20G-01-212-00	EARTHWORKS - DISTRIBUTION BERM	11	<ul style="list-style-type: none"> <li>DE-ACTIVATE AREAS OF RIDGE AND FURROW CULTIVATION AND PROMOTE DIFFUSE FLOWS ACCROSS THE WETLAND.</li> </ul>
B20G-01-213-00	CONCRETE WEIR	3	<ul style="list-style-type: none"> <li>DE-ACTIVATE SECONDARY CHANNEL IN ORDER TO DEFLECT FLOWS INTO DOWNSTREAM WETLAND AREA.</li> </ul>

or, for linear activities:

**Alternative:**

Alternative A1 (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)

**Length of the activity:**

Approx. 6 000 m
N/A m
N/A m

**b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):**

**Alternative:**

Alternative A1 (preferred activity alternative)  
 Alternative A2 (if any)  
 Alternative A3 (if any)

**Size of the site/servitude:**

N/A m <sup>2</sup>
N/A m <sup>2</sup>
N/A m <sup>2</sup>

### 4. SITE ACCESS

Does ready access to the site exist?

YES	
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Access to the site for the purpose of rehabilitation will be via a gravelled road that extends between the N12 and R104 and crosses the wetland. However, the following access challenges do exist:

- The Wetland at the furthest point west of the District Road is wide and accessibility will be difficult at these lower reaches of the wetland. Negotiation to access this site through farms located west of the wetland will therefore need to be considered for any future planning.
- Access routes are not gravelled and are slippery when wet. Use of 4x4 vehicles or tractors may therefore be required to gain access to the site during wet periods.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

### 5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

### 6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

### 7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;

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- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

### 8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

### 9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

### 10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	YES	[REDACTED]	Please explain
The land is unzoned but used for agriculture, and will therefore fit in with the surrounding land uses.			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES	[REDACTED]	Please explain
According to the Mpumalanga Provincial Government Five Year Review, seven LandCare projects were undertaken and are considered to be significant initiatives. The main focus of this project is on soil care, water care and land management. Furthermore, information sessions were also held on water, wetlands, biodiversity conservation, etc. to facilitate environmental awareness and sustainable practices. Therefore the proposed rehabilitation project is considered to be in line with the Mpumalanga Provincial Government's objectives.			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	NO	Please explain
N/A			
<b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</b>	[REDACTED]	NO	Please explain
The Zaalklaspuit wetland is located within the Nkangala District and the Emalahleni Local Municipality. The Nkangala District Municipality, Integrated Development Plan 2012 identified environmental challenges which are relevant to the Zaalklaspuit Wetland Rehabilitation Project, namely:			

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<ul style="list-style-type: none"> <li>• Acid Mine Drainage is a feature of the region given the mining activities past and present. Heavy metals, such as aluminium, vanadium, copper, lead and zinc have been observed in water samples. The main objective of the Zaalklapspruit Wetland Rehabilitation Project is to improve the ability of the wetland to enhance water quality. The rehabilitation activities will encourage diffuse flow and vigorous wetland vegetation growth, in order to improve the filtration and toxicant removal functions of the Wetland.</li> <li>• Economic Development and Job Creation for the communities has also been identified as a priority. The need to facilitate the implementation of poverty alleviation programmes has been identified as a way to support this. The WfWetlands project is part of the Expanded Public Works Programme. WfWetlands employs significant numbers of previously disadvantaged people into the productive sector of the economy. These individuals are trained and acquire skills while they work, thus increasing their capacity to earn an income.</li> </ul> <p>No services will be required to undertake the rehabilitation work and there are no infrastructural requirements.</p>			
<b>(d) Approved Structure Plan of the Municipality</b>	YES	NO	Please explain
See above.			
<b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b>		NO	Please explain
See above.			
<b>(f) Any other Plans (e.g. Guide Plan)</b>	YES	NO	Please explain
N/A			
<b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b>	YES		Please explain
See above.			
<b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b>	YES		Please explain
See above			
<b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	YES	NO	Please explain
Not applicable.			

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<p><b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>		NO	Please explain
Not applicable			
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	YES		Please explain
<p>The Zaalklapspruit Wetland system falls within a critically endangered wetland type and has been identified as a National Freshwater Ecosystem Priority Area.</p>			
<p><b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b></p>	YES		Please explain
<p>The ecological integrity of Zaalklapspruit wetland has been impacted by historical cultivation and artificial drainage resulting in a channel incision which has caused concentrated flows through the Wetland. Concentrated flows reduce the ability of a Wetland to filter and clean the water flowing through it. Coal mining activities have transformed large areas of the catchment, increasing stormwater runoff and lowering water quality. The Due to the location of the site and potential for rehabilitation, this Wetland has been selected as a target site for evaluating the potential of wetlands to address water quality impacts associated with mining activities.</p>			
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	YES		Please explain
See above responses.			
<p><b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b></p>	YES		Please explain
See above responses.			
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>	YES		Please explain
See above responses.			
<p><b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b></p>		NO	Please explain
See above responses.			
<p><b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b></p>		NO	Please explain
N/A – The properties fall outside the urban edge.			
<p><b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b></p>		NO	Please explain
Wetland rehabilitation work is not included in any of the 17 SIPS.			
<p><b>15. What will the benefits be to society in general and to the local communities?</b></p>	Please explain		
The Wetland itself does not have any communities living in close proximity to it. The catchment area			

## BASIC ASSESSMENT REPORT

is characterized by commercial agriculture and livestock grazing. The rehabilitation activities will have no impact on the socio-economic environment that surrounds it. Furthermore, the Wetland is close to mines and there is a lack of accessibility to the general public. The site is therefore not suitable for tourism or recreational activities. The Wetland is dominated by reeds and bulrushes which are not favoured by livestock. There is thus little grazing value that can be attributed to the Wetland. The potential for cultivating food on the Wetland is also low because of its high clay content and regular inundation with water.

The employment opportunities for this rehabilitation project apply only to the construction phase. WfWetlands already has established trained teams, however where requirements for further unskilled labour exist, local labour will be prioritised.

<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain
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The Zaalklaspuit Wetland system falls within a critically endangered wetland type and has been identified as a National Freshwater Ecosystem Priority Area. The rehabilitation of the wetland will do much for the preservation of the wetlands and their associated biodiversity habitats for future generations.

<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain
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Yes. This programme links wetland conservation to the sustainable economic development approach. The WfWetlands programme forms part of the EPWP, which seeks to attract significant numbers of unemployed people into the productive sector of the economy. These individuals gain skills while they are working, and this results in increasing their capacity to earn a greater income.

<b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b>
---

The vision of the programme is to facilitate the protection, conservation, rehabilitation and sustainable use of wetlands in South Africa, in accordance with national policies and commitment to international conventions and regional relationships, including Section 23 of NEMA. The proposed rehabilitation activities are thus in line with the principles of NEMA.

<b>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b>
---

The aim to facilitate the protection, conservation, rehabilitation and sustainable use of wetlands in South Africa in accordance with national policies and commitment to international conventions and regional relationships. More specifically the programme is in line with Principle 4(r) of Section 2 which notes the requirement of specific management and planning procedures to deal with sensitive and vulnerable ecosystems such as wetlands.

### 11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Conservation of Agricultural Resources Act Act (43)		Department of Agriculture, Forestry & Fisheries	1983
National Heritage Resources Act (25)		National Heritage Resources Agency	1999
World Heritage Conventions Act		Department of	1999



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(49)		Environmental Affairs	
The National Environmental Management: Biodiversity Act (10)		Department of Environmental Affairs	2004
National Environmental Management: Protected Areas Act (57)		Department of Environmental Affairs	2003
The Mountain Catchments Areas Act (63)		Department of Water Affairs	1970
MTPA Biodiversity Conservation Plan		Department of Economic Development & Environmental Affairs / Mpumalanga Tourism and Parks Agency	
<b>IEM Guideline 5:</b> Companion Guideline on the Implementation of the Environmental Impact Assessments Regulations		Department of Environmental Affairs	2010
<b>IEM Guideline 6:</b> Environmental Management Framework Guideline		Department of Environmental Affairs	
<b>IEM Guideline 7:</b> Public Participation Guideline		Department of Environmental Affairs	
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)			

## 12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

### a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES

If YES, what estimated quantity will be produced per month?

Impossible to predict

How will the construction solid waste be disposed of (describe)?

The proposed activities are the construction of earth berms, concrete weirs and hand levelling of the land. These activities will not generate large volumes of solid waste. There may be limited quantities of recyclable wastes (such as empty cement bags and domestic waste from the labour force). This type of waste will be collected on site and disposed of at the nearest recycling depot. If it emerges that any part of this waste cannot be recycled, it must be disposed of at the nearest permitted landfill site.

Where will the construction solid waste be disposed of (describe)?

Waste will be collected on site and disposed of at the nearest recycling depot. If it emerges that any part of this waste cannot be recycled, it must be disposed of at the nearest permitted landfill site.

Will the activity produce solid waste during its operational phase?

NO

If YES, what estimated quantity will be produced per month?

N/A m<sup>3</sup>

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How will the solid waste be disposed of (describe)?

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

N/A

*If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.*

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA? [REDACTED] NO

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility? [REDACTED] NO

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

### b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES

If YES, what estimated quantity will be produced per month?

N/A m<sup>3</sup>

Will the activity produce any effluent that will be treated and/or disposed of on site?

NO

*If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.*

Will the activity produce effluent that will be treated and/or disposed of at another facility?

**The activity will not produce effluent, other than normal sewage by staff, during the construction phase that will be disposed of in chemical toilet ablution facilities. These chemical toilets must be located more than 100 m from the wetland, and must be properly maintained. The chemical toilet supplier must empty these toilets, as and when needed.**

NO

If YES, provide the particulars of the facility:

<b>Facility name:</b>	N/A	
<b>Contact person:</b>		
<b>Postal address:</b>		
<b>Postal code:</b>		
<b>Telephone:</b>	<b>Cell:</b>	
<b>E-mail:</b>	<b>Fax:</b>	

## BASIC ASSESSMENT REPORT

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

### c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?  NO

If YES, is it controlled by any legislation of any sphere of government?  NO

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

The activity will not release emissions into the atmosphere other than limited exhaust emissions and dust associated with construction phase activities.

### d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?  NO

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

### e) Generation of noise

Will the activity generate noise?  NO

If YES, is it controlled by any legislation of any sphere of government?  NO

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the noise in terms of type and level:

Noise will only be generated during the construction phase. Noise generation will be limited to the workers interactions and activities, concrete mixers or pumps, if utilised.

## 13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

River, stream, dam or lake

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:  litres

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?  NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

In terms of Section 39 of the NWA, a GA has been granted for certain activities that are listed under the NWA that usually require a Water Use License. Such a GA exists for wetland rehabilitation as long as the activities are for conservation purposes. As some of the rehabilitation activities may entail 'impeding or diverting the flow of water in a watercourse' and / or 'altering the bed, banks, course or characteristics of a watercourse', a number of GA's have been registered with the DWA for structures that would ordinarily require a Water Use License. For each planning cycle the proposed rehabilitation work will be submitted to DWA, the requisite approval sought, and project monitoring reported as required.

#### 14. ENERGY EFFICIENCY

Describe the design measures, if any that have been taken to ensure that the activity is energy efficient:

N/A

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

There are no energy requirements for the proposed construction activities, as the majority of the work entails manual labour. Materials and labour will be brought to site daily in vehicles. Therefore fuel for these vehicles and for any limited machinery work, will be the only source of energy used.

**SECTION B: SITE/AREA/PROPERTY DESCRIPTION**

**Important notes:**

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section?  YES  NO  
 If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

**Property description/physical address:**

<b>Province</b>	See attachment
<b>District Municipality</b>	
<b>Local Municipality</b>	
<b>Ward Number(s)</b>	
<b>Farm name and number</b>	
<b>Portion number</b>	
<b>SG Code</b>	

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

**Current land-use zoning as per local municipality IDP/records:**

Unzoned. Used for agriculture.

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?  NO  YES

# BASIC ASSESSMENT REPORT

## 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

### Alternative S1:

Flat	1:50 – 1:20					
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### Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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### Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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## 2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline <input type="checkbox"/>	2.4 Closed valley <input type="checkbox"/>	2.7 Undulating plain / low hills <input type="checkbox"/>
2.2 Plateau <input type="checkbox"/>	2.5 Open valley <input type="checkbox"/>	2.8 Dune <input checked="" type="checkbox"/>
2.3 Side slope of hill/mountain <input type="checkbox"/>	2.6 Plain <input type="checkbox"/>	2.9 Seafront <input type="checkbox"/>

## 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:	Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	YES	YES	YES
Dolomite, sinkhole or doline areas	NO	NO	NO
Seasonally wet soils (often close to water bodies)	YES	YES	YES
Unstable rocky slopes or steep slopes with loose soil	NO	YES	YES
Dispersive soils (soils that dissolve in water)	NO	YES	YES
Soils with high clay content (clay fraction more than 40%)	YES	YES	YES
Any other unstable soil or geological feature	NO	YES	YES
An area sensitive to erosion	YES	YES	YES

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

**4. GROUND COVER**

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

	Natural veld with scattered aliens <sup>E</sup>	
	Cultivated land	

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

**Alluvial deposits occur upstream, because of the base level of the Zaalklapspruit stream into which this Wetland system flows, preventing down-cutting of the Valley upstream. There are significant areas of seepage (seasonal and temporal) indicating that lateral sub-surface seepage is an input to the Wetland in addition to the upstream catchment. Geomorphic integrity has few modifications and is largely natural, although there are a few localized areas of sediment loss associated to the artificial drains and head-cut advancement. Addressing the impacts of the drainage and channel incision will assist in the improvement of the geomorphic integrity of the system.**

**5. SURFACE WATER**

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	
Non-Perennial River	YES	
Permanent Wetland	YES	
Seasonal Wetland	YES	
Artificial Wetland		NO
Estuarine / Lagoonal wetland		NO

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The wetland system is located along the Grootspruit River (Perennial River).
Non-perennial rivers were identified within and around the wetland system (refer to Wetland Assessment).
The Wetland Assessment identified permanent and seasonal wetlands within the system.

**The region has a low mean annual precipitation of 668.4 mm and a high mean annual potential evapotranspiration of 2104.6 mm. There is a perennial stream which flows through this Wetland. Water is drawn from the stream for livestock. There is a negligible demand for water supply from the surrounding communities.**

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The hydrological functioning of the Wetland is moderately impacted upon by the catchment area which features cultivated lands, 51 dams and coal mines, and to a lesser extent alien vegetation and hardened surfaces, such as roads. A minor reduction in water inputs and flood peaks to the Wetland can be attributed to activities in and features of the catchment area. This includes seasonal irrigation for cultivated land; coal mines which act as a collector of groundwater; alien vegetation and the presence of 51 dams. Hardened surfaces, like roads, infrastructure and bare soil offset this and therefore on balance, catchment impacts, although identifiable, are limited. The more significant event for the hydrological function of the Wetland has been the formation of an incised channel from historic cultivation practices, which has canalised flows, preventing diffuse flow, drying out areas of the Wetland and reducing the water quality enhancement functions of the Wetland. The effect is considered by the Wetland Specialist to have largely modified the hydrological functioning of the Wetland.

**6. LAND USE CHARACTER OF SURROUNDING AREA**

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station <sup>H</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup>	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge
Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity?

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A



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Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)		NO
Core area of a protected area?		NO
Buffer area of a protected area?		NO
Planned expansion area of an existing protected area?		NO
Existing offset area associated with a previous Environmental Authorisation?		NO
Buffer area of the SKA?		NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

### 7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:

NO

No features of cultural or historical value were identified during field inspections. The communal areas are located away from the Wetland, and there are no buildings or structures older than 60 years in close proximity to the site. There is no known area of cultural significance, and it is therefore not necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

N/A

Will any building or structure older than 60 years be affected in any way?

NO

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

### 8. SOCIO-ECONOMIC CHARACTER

#### a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

44% of the economically viable youth are not employed. High levels of unemployment coupled to low income levels result in poverty, with 24% of the population living below the poverty line.

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### Economic profile of local municipality:

The Economy of the municipality is driven by the Mining sector which contributed more than 50% in 2009 followed by Electricity at 12.1% and Finance at 10.8%. Over the three year period, mining has had a steadily increased contribution to the economy of Emalahleni. Electricity has also had significant contribution as well, although marginal decline was experienced. However, Agriculture's contribution to the economy of Emalahleni is relatively low compared to the other sectors of the economy. It is critical to investigate and establish the current state of the primary agricultural activities and the value chain activities associated with the sector. The other sectors with potential include Finance, Trade and the green economy (given the dominance of mining and electricity and their environmental degradation potential).

### Level of education:

The majority of the population has not completed matric. There are fewer graduates. This has many implications on the economic and social status of the community, as it means the municipality may be experience unemployable population should the type of industry that employs the majority of the population i.e. mining. This means the municipality should look at establishing more FET/ Tertiary institutions. This also means the majority of the population is employable in the semi-skilled and skilled labour sector and not in the professional sector.

### b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R1.5 million
What is the expected yearly income that will be generated by or as a result of the activity?	None
Will the activity contribute to service infrastructure?	NO
Is the activity a public amenity?	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Project team of 3-6 people
What is the expected value of the employment opportunities during the development and construction phase?	40-50% of capital value
What percentage of this will accrue to previously disadvantaged individuals?	> 50%
How many permanent new employment opportunities will be created during the operational phase of the activity?	None
What is the expected current value of the employment opportunities during the first 10 years?	None
What percentage of this will accrue to previously disadvantaged individuals?	N/A

## 9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or [BGIShelp@sanbi.org](mailto:BGIShelp@sanbi.org). Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

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- a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category		If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)		The wetland is not highlighted as a priority in the Mpumalanga Biodiversity Conservation Plan. The wetland has however been highlighted as a priority wetland in a recent assessment of the conservation significance of aquatic resources (CSIR, 2011).

- b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	20 %	Although historic cultivation has led to problems in the Wetland associated with the incised channel, which is causing concentrated flow and a reduction in Wetland vegetation, most of the Wetland is unaffected and there is a good cover of natural wetland vegetation. The Wetland vegetation is considered by the Wetland Specialist to be moderately changed, with the loss of natural vegetation identifiable, but predominantly intact. The lower, more permanently saturated areas of the Wetland have extensive beds of naturally occurring <i>Phragmites australis</i> (common reed) and <i>Typha capensis</i> (bulrush), whilst the upper seasonal and temporary wetland zones have a diverse mix of hygrophilous grasses ( <i>Imperata cylindrica</i> , <i>Agrostis lachnantha</i> , <i>Harpochloa Falx</i> and <i>Pennisetum Sphacelatum</i> ), sedges ( <i>Bulboschoenus glaucus</i> , <i>Bulbostylis hispidula</i> , <i>Choenoplectus corymbosus</i> , <i>Cyperus congestus</i> , <i>Cyperus fastigiatus</i> ) and forbs.
Near Natural (includes areas with low to moderate level of alien invasive plants)	40 %	The groundcover is predominantly natural veld with scattered aliens and cultivated land. The most disturbed area is associated with an area of heavy Poplar infestation in the upper reaches of the Wetland, which has resulted in an almost total loss of indigenous species in those areas.
Degraded (includes areas heavily invaded by alien plants)	%	
Transformed (includes cultivation, dams, urban,	40 %	The groundcover is predominantly natural veld with scattered aliens and cultivated land. Historic agricultural practice has had a long-term, negative impact on wetland

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plantation, roads, etc)		vegetation. This is particularly significant for the areas that have been drained for cultivation. This has ultimately resulted in the drying out of wetland areas, and subsequent loss of wetland vegetation species, and an increase in alien infestation (terrestrial grasses and ruderal weeds)
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**c) Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems			
<b>Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</b>	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)		Estuary	Coastline
	Endangered				
	Vulnerable				
		YES		NO	

- d) **Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

Wetlands rank among the most threatened ecosystems in South Africa. According to SANBI, recent studies show that 65% of South African wetland types are under threat. The Zaalklapspruit wetland has been identified as a 'National Freshwater Ecosystem Area' and falls within a 'critically endangered wetland type'.

The Zaalklapspruit Wetland falls within an area that is being used for mining near the town of Witbank in the Emalahleni Municipality. Coal mining is known to have significant impacts on water resources but wetland rehabilitation provides a potential opportunity to address some of these impacts.

The following assessments apply to the Zaalklapspruit Wetland:

- The wetland has been identified as a priority wetland in a recent assessment of the conservation significance of aquatic resources (CSIR, 2011), Critical Biodiversity Area (CBA);
- The Wetland is located within the Rand Highveld Grassland vegetation type (Vulnerable);
- The Wetland falls within the Mesic Highveld Grassland Group 4 wetland vegetation group which is regarded as having a 'critically endangered' threat status; and
- The Wetland has been identified as a National Freshwater Ecosystem Priority Area (NFEPA).

The Wetland vegetation is largely intact but deteriorating water quality will impact negatively on wetland-dependant biota. The Grass owl (*Tyto capensis*) has been observed in this wetland and is considered a vulnerable species and there are other species which are listed as vulnerable (NEMBA status) which the Wetland will potentially provide habitat for. Water quality is deteriorating due primarily to mining activities upstream of the wetland area. The ability of the wetland to provide a water quality enhancement service is limited due to the channel incision, which has formed from historic agricultural practices in the wetland area. The main objective of the rehabilitation programme proposed for the Wetland is to correct the resulting concentrated flow, which is reducing the Wetlands ability to improve the water quality and ultimately posing a risk to the wetland dependant biota.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

<b>Publication name</b>	Witbank News	
<b>Date published</b>	Friday 23 November 2012	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	25°52'48.8" S	30°00'27.7" E
<b>Date placed</b>	5 December 2012	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

### 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

<b>Title, Name and Surname</b>	<b>Affiliation/ key stakeholder status</b>	<b>Contact details (tel number or e-mail address)</b>
Charmaine Uys	Birdlife South Africa	grasslands@birdlife.org.za
Arno De Klerk	CSIR	ADKlerk@csir.co.za
Sonnyboy Mhlongo	ICMA	mhlongos@inkomaticma.co.za
Lemson Betha	WESSA	lbetha@wessanorth.co.za
Jannie Coetzee	MTPA	jannie@loskop.co.za
Albert Hertzog	Zaalklap Boerdery Trust	zaalklap@gmail.com
Aaron Masilela	EWR Projects	aaron@wetlandrehab.co.za
Umesh Bahadur	SANBI	u.bahadur@sanbi.org.za
Eric Munzhedzi	SANBI	E.Munzhedzi@sanbi.org.za
Andre Beetge	SANBI	A.Beetge@sanbi.org.za
Peter Arderne – FOSAF	FOSAF	mwardern@mweb.co.za
Patricia Dlamini	Imbali Primary School	071 063 6186

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

### 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

<b>Summary of main issues raised by I&amp;APs</b>	<b>Summary of response from EAP</b>
Section 7 (Monitoring and evaluation) is crucial in the process and baseline monitoring on water	This component is being addressed separately by the CSIR who are undertaking both baseline and

## BASIC ASSESSMENT REPORT

quality (notably pH, EC, DO, SS, Sulphate and Turbidity) is essential as it might pose problems to the engineering designs due to the presence of acid mine drainage.	longer-term water quality monitoring.
It is useful if the report formally identifies upstream problem areas that can be taken up with the relevant DWA structures for action.	The impact of mining activities has been discussed with Mr Paul Meulenbeld. He should contact the Provincial Coordinator for further information.
The subsequent reporting documents must be in line with the requirements and outline of GN1198, with special emphasis on land access, rehabilitation planning process and the rehabilitation plan and the completion of water use. Phase 2 reports to be structured in this way so that compliance to GN1198 can be easily observed.	Noted. The Phase 2 reports have been structured with these comments in mind.
As the current PES of the wetland is a C, the rehabilitation objective must be stated (final PES status).	Addressed in wetland report.
Listing of the EIS is also a requirement, before and after rehabilitation.	Addressed in wetland report.

#### 4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

#### 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
SAHRA	Jenna Larvin	021 462 4502	021 462 4509	info@sahra.org.za	PO Box 4637, Cape Town, 8000
Department of Water Affairs	Mbali Dlamini	073 222 5871		dlaminim@dwa.gov.za	
DEA, WfW	Daleen Strydom	082 335 8122	086 613 6355	Dstrydom@environment.gov.za	
DAFF	Love Shabane	013-754 0734	013-754 0735	LoveS@nda.agric.za	
National Department of Agriculture	Lufuno Sethomota	012 319 7634		lufunos@daff.gov.za	Private Bag x120, Pretoria, 0001
Provincial Department of	Hennie Laas	082 401 0868	017-819 1295	mp.landbou@mweb.co.za	

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<b>Agriculture</b>					
<b>Nkangala Municipality</b>	<b>Allen Zimbwa</b>	<b>013 249 2004/0</b>	<b>013 249 2087</b>	<b>zimbwaag@nkangaladm.org.za</b>	<b>P.O. Box 437, Middleburg, 1050</b>
<b>eMalahleni Local Municipality</b>	<b>George Mthimunye</b>	<b>013 690 6208</b>	<b>013 690 6479</b>	<b>mthimunyeg@emalahleni.gov.za</b>	<b>P.O. Box 3. eMalahleni, 1035</b>
<b>Mpumalanga Department of Education</b>	<b>Charlotte Nkosi</b>	<b>082 432 4704</b>	<b>017-819 5303</b>	<b>cd.nkosi@education.mpu.gov.za</b>	
<b>DEDET</b>	<b>Gavin Cowden</b>	<b>071 541 7783</b>		<b>GCowden@mpg.gov.za</b>	
<b>DWA (National)</b>	<b>Paul Meulenbeld</b>			<b>MeulenbeldP@dwa.gov.za</b>	

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

### **6. CONSULTATION WITH OTHER STAKEHOLDERS**

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.



## SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

### 1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

#### A) Construction Phase

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
	<b><i>Direct impacts:</i></b>		
	<u>Job creation:</u> <ul style="list-style-type: none"> <li>The Wetland rehabilitation will result in job provision and skills transfer. This in turn will promote the opportunity for re-employment. Although there are established teams working for WfWetlands, there will also be employment opportunities for members of the local community.</li> </ul>	High	<ul style="list-style-type: none"> <li>Project workers should be sourced from local communities where possible.</li> <li>Local business should be supported, with respect to the purchase of materials, where possible.</li> </ul>
	<u>Fire risk:</u> <ul style="list-style-type: none"> <li>Construction workers could cause a fire on site (construction usually takes place in the dry winter months when the danger of veld fires is highest).</li> </ul>	Low	<ul style="list-style-type: none"> <li>Workers should be made aware of the potential for fires to become out of control and the damage that could be caused.</li> <li>Fire response procedure should be in place (the rehabilitation programme should be planned in consultation with the landowner to take the land fire protection/firebreak regime into consideration).</li> </ul>
	<u>Construction nuisance impacts include the potential for the following:</u> <ul style="list-style-type: none"> <li>Noise from construction activities, personnel and vehicles.</li> <li>Dust.</li> <li>Security concerns.</li> </ul>	Low	<ul style="list-style-type: none"> <li>Site workers must undergo environmental induction training before undertaking work so that they are aware of the various environmental requirements. The induction training must address keeping noise to a minimum and labourers conduct.</li> </ul>

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> <li>• However, the area is within an agricultural area, therefore, the above impacts are likely to be of low significance.</li> </ul>		<ul style="list-style-type: none"> <li>• Utilise local labour wherever possible to reduce potential friction within the community caused by bringing outside personnel in.</li> <li>• Ensure that the WfWetlands staff uniforms are worn so that their workers are clearly identifiable.</li> </ul>
	<u>Soil Erosion</u> <ul style="list-style-type: none"> <li>• Management of construction vehicles.</li> <li>• Vegetation clearing.</li> <li>• Erosion management.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• All construction vehicles and machinery and equipment must be properly maintained to prevent leaks.</li> <li>• Vegetation clearing on the site should take place only immediately prior to construction in order to minimise the time the soil is bare, thus minimising soil erosion, dust and visual impacts.</li> <li>• Once earthworks are complete, disturbed areas are to be stabilised to prevent erosion.</li> </ul>
	<u>Waste management</u> <ul style="list-style-type: none"> <li>• An increase in the amount of litter being generated</li> <li>• Non-use of sanitation facilities.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• The environmental induction training must address the management of sanitation facilities and general site management.</li> <li>• The site must be managed appropriately and all rubbish and rubble must be collected in appropriate waste receptacles and disposed of at the nearest landfill site.</li> </ul>
	<u>Heritage Impacts</u> <ul style="list-style-type: none"> <li>• Although no heritage resources have been observed within the Wetlands, it is always possible that a heritage resource could be encountered.</li> </ul>	Neutral	<ul style="list-style-type: none"> <li>• Should any artefact / suspected artefact / site of cultural significance be encountered during construction, then the Contractor must cease work in that vicinity and alert the relevant authorities.</li> </ul>
	<u>Safety of workers</u> <ul style="list-style-type: none"> <li>• Construction of weirs may pose a risk to workers, especially when working in deep trenches</li> <li>• Future clearing of alien vegetation (large Poplar trees) could present a safety risk to workers who are felling timber and using chain saw.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) and the National Building Regulations.</li> <li>• Potentially hazardous areas are to be cordoned off and clearly marked at all times.</li> <li>• All vehicles and equipment used on site must be operated by appropriately trained and / or licensed personnel.</li> <li>• All personnel must operate in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA).</li> <li>• The Contractor must make available safe drinking water fit for human consumption.</li> <li>• Washing and toilet facilities must be provided on site.</li> <li>• Adequate numbers of chemical toilets must be maintained to</li> </ul>

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Activity	Impact summary	Significance	Proposed mitigation
			service the staff using this area. At least 1 toilet must be available per 20 workers. Toilet paper must be provided. <ul style="list-style-type: none"> <li>• Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.).</li> </ul>
	<u>Flora and Fauna disturbance</u> <ul style="list-style-type: none"> <li>• Although the habitat disturbance during construction will be temporary, it can affect floral growth and faunal breeding patterns.</li> <li>• Disturbance to the environment encourages further alien infestation if not managed correctly.</li> <li>• Poaching of animals for food by the construction workers is a potential risk.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• Ensure that disturbed areas are re-vegetated as soon as possible after clearing.</li> <li>• Site workers must undergo environmental induction training before undertaking work so that they are aware of the various environmental requirements.</li> </ul>
	<u>Aquatic eco-system impacts</u> <ul style="list-style-type: none"> <li>• In order to work in the wetter areas, water diversion, using sand bags for example, is required during construction. This leads to a temporary alteration in the stream flow pattern, a temporary change in drainage characteristics and a temporary drying out of the affected area. This can affect aquatic organisms.</li> <li>• Additional sediment could enter the watercourse during construction when working with sediment (earthworks and sand bags). This could result in the build-up of silt downstream, and thus the increase in water turbidity, both affecting the aquatic eco-system (a low impact is anticipated, especially since the Wetland has the ability to trap sediment).</li> <li>• Pollution from construction-related activities could enter the Wetland system (fuel leaks, shutter oil and lubricating fluid spills, litter, cement and contaminated wash-down water.),</li> </ul>	Low	<ul style="list-style-type: none"> <li>• Sandbags must be in a good condition, so that they do not burst.</li> <li>• Earth that is used to fill sand bags should come from and be returned to the designated existing excavation points.</li> <li>• Soil used in interventions must be stabilised as per the engineer's recommendations to counteract the dispersive tendencies.</li> <li>• If water is required beyond the limits of the general authorisation by DWA, then additional authorisation prior to such abstraction must be sought.</li> </ul>
	<u>Wetland soil profile disturbance</u> <ul style="list-style-type: none"> <li>• There is a risk of soil compaction, draining, drying and desiccation from stockpiling and soil profile disturbance during construction activities.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• Soil should be stored in different layers in different locations according to the different layers of the soil profile.</li> <li>• The WfWetlands Manual for general guidelines should be consulted.</li> </ul>
	<u>Sourcing borrow material</u> <ul style="list-style-type: none"> <li>• Sourcing borrow material (earth) when unavailable on-site, can have a detrimental effect on the biophysical stability of the area that it is borrowed from.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• Material will be sourced from existing ridges / berms in the wetland that are already having a detrimental impact on wetland functioning.</li> <li>• Appropriate re-sloping and re-vegetation of the area that the borrow material was acquired from must be undertaken after use.</li> </ul>

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Activity	Impact summary	Significance	Proposed mitigation
	<p><b><i>Indirect Impacts</i></b></p> <p><u>Job creation</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Increased awareness of wetland</u></p> <ul style="list-style-type: none"> <li>As an indirect impact there is likely to be some increased awareness amongst the construction teams and land-owners regarding wetland ecology and the importance of rehabilitation.</li> </ul> <p><b><i>Cumulative impacts:</i></b></p> <p><u>Job creation</u></p> <ul style="list-style-type: none"> <li>Cumulatively, the impact of the rehabilitation plan is judged to be of high positive significance. The programme will create jobs and transferred skills to numerous previously unskilled persons.</li> </ul> <p><u>Increased awareness of wetland</u></p> <ul style="list-style-type: none"> <li>The programme is creating increased awareness amongst the construction teams and landowners regarding wetland ecology, the importance of rehabilitation and the importance of protecting biodiversity.</li> </ul>	<p><i>Without mitigation:</i> Medium (+) <i>With mitigation:</i> High (+)</p> <p><i>Without mitigation:</i> Medium (+) <i>With mitigation:</i> High (+)</p> <p><i>Without mitigation:</i> Medium (+) <i>With mitigation:</i> High (+)</p> <p><i>Without mitigation:</i> Medium (+) <i>With mitigation:</i> High (+)</p> <p><i>Without mitigation:</i> Medium (+) <i>With mitigation:</i> High (+)</p>	<ul style="list-style-type: none"> <li>Ensure that the required Project workers are sourced from local communities and that maximum employment numbers are maintained throughout the Project duration.</li> <li>Project implementers to support local businesses (e.g. local quarry owners to obtain rock for gabions) where possible.</li> </ul> <ul style="list-style-type: none"> <li>Encourage landowners to become more aware of, and educated in, the ecological values and sensitivity of the wetland environments.</li> <li>Consider the erection of a SANBI information signs to describe, and increase awareness of, the activities and the 'ecological' investment taking place in the Project areas.</li> </ul> <ul style="list-style-type: none"> <li>Ensure that the required Project workers are sourced from local communities and that maximum employment numbers are maintained throughout the Project duration.</li> <li>Project implementers to support local businesses (e.g. local quarry owners to obtain rock for gabions) where possible.</li> </ul> <ul style="list-style-type: none"> <li>Encourage landowners to become more aware of, and educated in, the ecological values and sensitivity of the wetland environments.</li> <li>Consider the erection of a SANBI information signs to describe, and increase awareness of, the activities and the 'ecological' investment taking place in the Project areas.</li> </ul>
<b>No-go option</b>	<p><b><i>Direct, Indirect and Cumulative impacts:</i></b></p> <p><u>Aquatic ecosystem</u></p> <ul style="list-style-type: none"> <li>If the no-go alternative is pursued, then the construction-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. Although the no-go option is likely to have significant long-term negative consequences, only the expected</li> </ul>	<p><b>Very Low (-)</b></p>	<ul style="list-style-type: none"> <li>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.</li> </ul>

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Activity	Impact summary	Significance	Proposed mitigation
	impact of the no-go in the short term (i.e. construction-related time frame) has been assessed in this section so as to facilitate comparison between the no-go and preferred alternative during the construction period. The longer term impact of the no-go is assessed in the operational phase.		
	<u>Heritage</u> <ul style="list-style-type: none"> <li>The no-go alternative is unlikely to have a significant impact – either positive or negative – due to the low likelihood of disturbance to heritage resources.</li> </ul>	Neutral	
	<u>Nuisance impacts</u> <ul style="list-style-type: none"> <li>Pursuing the no-go alternative will mean that the nuisance impacts associated with construction will not be realised.</li> </ul>	Neutral	
	<u>Socio-economic</u> <ul style="list-style-type: none"> <li>Pursuing the no-go alternative in this case will mean that the positive socio-economic benefits of job creation, skills transfer and support of the local economy will not be realised.</li> </ul>	Medium (-)	

### B) Operational Phase

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred alternative)</b>			
	<b>Direct impacts:</b>		•
	<u>Wetland rehabilitation benefits the biophysical environment as follows:</u> <ul style="list-style-type: none"> <li>Addressing the acid-mine drainage' generated by the mines (through the enhanced ability of the Wetland to remove excess iron and other harmful substances in the water).</li> <li>General toxicant removal through improved ability to purify waters.</li> <li>Improved water quality enhancement function and filtration services of the wetland.</li> <li>Increase in wetland vegetation, which contributes to water quality enhancement function.</li> <li>Improved and increased flora and fauna habitat through improved water quality and wetland vegetation (especially for wetland-dependant vulnerable and threatened species of the Mpumalanga region).</li> <li>Increased biodiversity through restoration of wetland habitat increases species richness in Mpumalanga, reversing the ecological</li> </ul>	<p>High</p> <p>High</p> <p>High</p> <p>High</p>	<p>•</p> <p>N/A</p>

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Activity	Impact summary	Significance	Proposed mitigation
	<p>damage associated to agriculture, forestry and mining.</p> <ul style="list-style-type: none"> <li>• Decreased sediment downstream reduces the sedimentation of downstream water storage facilities, such as dams and reduces water storage and treatment costs.</li> <li>• Stream flow regulation for downstream users with a more reliable and cleaner source of water.</li> <li>• Reduced soil erosion through reduced exposure of ground surface and consequent surface runoff velocity.</li> <li>• Flood attenuation will improve as rehabilitation activities will help to increase residence times of floodwaters.</li> <li>• Restoration of the wider wetland corridor will result once areas previously drained become wet, linking up areas that were previously wet, allowing for greater ecosystem connectivity.</li> <li>• An increase in water is significant given the water scarcity that faces South Africa.</li> <li>• Carbon storage will increase with greater plant growth and organic matter accumulation which will improve climate regulation and carbon storage functions.</li> </ul>	<p>Medium</p> <p>Low</p> <p>High</p> <p>High</p>	
	<p><u>Employment and skills capacity impact:</u></p> <ul style="list-style-type: none"> <li>• Skills learned by the project team during the construction phase will increase the overall skills capacity of the country and can assist in finding permanent employment.</li> </ul>	High	N/A
	<p><u>Food for livestock</u></p> <ul style="list-style-type: none"> <li>• More frequent inundation of wetland areas will result in the rehabilitation of areas currently dominated by palatable terrestrial species. This will slightly reduce the availability of grazing.</li> </ul>	Low	N/A
	<p><u>Fire management:</u></p> <ul style="list-style-type: none"> <li>• Incorrect application of fire management in the Wetland could reduce the potential for the vegetation to establish and hinder the rehabilitation process, thereby affecting the Wetlands ability to improve its water quality enhancement function.</li> <li>• Flora and fauna need the opportunity to seed and breed respectively. Burning regimes that are too frequent can lead to impairing the habitats ability to renew itself.</li> </ul>	Low	<ul style="list-style-type: none"> <li>• Burning should be applied to a Wetland of low rainfall region (&lt;900 mm p. a.) every 4 to 5 years.</li> <li>• Adhere to the Wetland management recommendations for burning practices on this Wetland.</li> </ul>
	<p><u>Obstruction of movement of aquatic biota:</u></p> <ul style="list-style-type: none"> <li>• There is the potential that the movement of fresh water fish could be obstructed after the rehabilitation interventions have become</li> </ul>	Low	N/A

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Activity	Impact summary	Significance	Proposed mitigation
	<p>established (though presence of fish species is unlikely due to poor water quality). However, water conditions for aquatic biota will be improved due the increase in the quality of the habitat and the interventions have the potential to curb the spread of alien fish. The positive impact of the wetland rehabilitation therefore outweighs the impact of this risk.</p>		
	<p><u>Change in species composition:</u></p> <ul style="list-style-type: none"> <li>Where areas of the Wetland have dried out due to artificial drainage and other factors, drier conditions have attracted and sustained particular species that are tolerant thereof. It is probable that as the areas become wetter through the rehabilitation interventions, that wetland-adapted species will become established and replace the current vegetation profile. However, this will constitute a composition shift back to historical species which is a positive impact.</li> </ul>	Low	N/A
	<p><u>Monitoring and Management:</u></p> <ul style="list-style-type: none"> <li>The monitoring and management of the Wetland and important biota should be conducted, at agreed frequencies, after the rehabilitation has been completed for a prescribed length of time. Failure to keep records of this nature will undermine the ability of the Managers to establish evidence of wetland health improvements or otherwise, and justify remedial action where required. Lessons learnt from rehabilitation efforts can provide evidence based justification for the improvement of project implementation elsewhere.</li> </ul>	Medium	<p><u>Monitoring and management should include the following:</u></p> <ul style="list-style-type: none"> <li>Visual habitat assessment.</li> <li>Vegetation sample plots.</li> <li>Water Quality Monitoring.</li> <li>Regular inspections of rehabilitation interventions.</li> <li>A re-evaluation of the state of the wetland-health should be undertaken approximately 3-5 years post-implementation to assess the wetlands response to the rehabilitation measures and to evaluate the anticipated benefits.</li> <li>Records of fauna and flora sightings should be kept (especially for endangered species), to establish the impact of the rehabilitation effort.</li> <li>No threatened flora should be collected or harvested and no threatened fauna should be hunted.</li> </ul>
	<p><u>Education and research</u></p> <ul style="list-style-type: none"> <li>Coaltech research will add to the understanding of the role of wetlands in water quality enhancement. This is likely to promote further research activities on the wetland in future.</li> </ul>	Medium	<ul style="list-style-type: none"> <li></li> </ul>
	<p><b><i>Cumulative impacts:</i></b></p> <p><u>ECOSYSTEM FUNCTIONING</u> <u>Restoring wetland corridors</u></p>	<p><i>Without mitigation:</i> High (+)</p>	<ul style="list-style-type: none"> <li>The interventions identified for the proposed rehabilitation project were identified during a screening process that was</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Changes in water quality and quantity</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>This improvement in water quality and a more reliable supply of water is particularly important given the water scarcity that faces South Africa.</li> </ul> <p><u>FLORA &amp; FAUNA</u> <u>Increased habitat</u></p> <ul style="list-style-type: none"> <li>Increasing the wetland area through rehabilitation will result in an increase in habitat for wetland-dependent species. This is a positive impact, especially in light of the fact that a number of the Mpumalanga wetlands are utilised by the vulnerable and endangered species.</li> </ul> <p><u>Increased biodiversity</u></p> <ul style="list-style-type: none"> <li>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 reestablishment of wetland species.</li> </ul> <p><u>Obstruction of movement of aquatic biota</u> The potential for the proposed interventions to hinder the movement of aquatic species such as fish was considered and the following noted:</p> <ul style="list-style-type: none"> <li>Records from the South African Institute for Aquatic Biodiversity (SAIAB) do not indicate the presence of any red data fish species in the affected systems.</li> <li>The overall impact of the structures on aquatic biota is expected to be positive due to the increase in quality and quantity of habitat.</li> <li>The interventions may help to contain the spread of alien exotic fish.</li> <li>Based on the above, fish ladders were not considered critical and</li> </ul>	<p><i>With mitigation:</i> High (+)</p> <p><i>Without mitigation:</i> Medium (+)</p> <p><i>With mitigation:</i> Medium (+)</p>	<p>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.</p> <ul style="list-style-type: none"> <li>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 project, the overall programme objectives<sup>9</sup> and the EPWP requirements would not be realised.</li> </ul>



## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	<p>were thus not designed for this system.</p> <p><u>Change in species composition</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul>		
<b>No-go option</b>			
	<p><b><i>Direct, Indirect and Cumulative impacts:</i></b></p> <p><u>Ecosystem functioning</u></p> <ul style="list-style-type: none"> <li>Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts include desiccation, erosion, channel incision etc.</li> </ul> <p><u>Fauna &amp; flora</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Socio-economic</u></p> <ul style="list-style-type: none"> <li>The no go alternative would mean that the positive impacts identified above would not be realised.</li> </ul>	<p><b>Medium (-)</b></p> <p><b>Medium (-)</b></p> <p><b>Low (-)</b></p>	<ul style="list-style-type: none"> <li>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.</li> </ul>

### C) Decommissioning and Closure Phase

There were no anticipated situations where any decommissioning would be required.

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

## BASIC ASSESSMENT REPORT

### 2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

#### Alternative A (preferred alternative)

Type of impact	Negative/Positive environmental impact	Likelihood of potential impacts occurring	Duration of impact	Significance of impact
<b>Planning</b>				
Mining activities management	Positive	Medium probability	Long-term	Medium
Agricultural management	Positive	Medium probability	Long-term	Medium
Livestock management	Positive	Medium probability	Long-term	Medium
Dam management	Positive	Medium probability	Long-term	Medium
Alien invasive vegetation	Positive	Medium probability	Long-term	Medium
Road management	Positive	Medium probability	Long-term	Medium
<b>Construction</b>				
Job creation	Positive	Certain	Temporary	High
Construction nuisance	Negative	Low probability	Temporary	Low
Heritage impacts	Negative	Low probability	Temporary	Neutral
Fire risks	Negative	Low probability	Temporary	Low
Waste management	Negative	Low probability	Temporary	Low
Soil erosion	Negative	Low probability	Temporary	Low
Safety	Negative	Low probability	Temporary	Low
Flora and fauna disturbance	Negative	Low probability	Temporary	Low
Aquatic eco-system impacts	Negative	Low probability	Temporary	Low
Wetland soil profile disturbance	Negative	Low probability	Temporary	Low
Sourcing borrow material	Negative	Low probability	Temporary	Low
<b>Operational</b>				
Acid-mine drainage <sup>1</sup>	Positive	High probability	Long-term	High
Toxicant removal	Positive	High probability	Long-term	High
Water quality enhancement	Positive	High probability	Long-term	High
Increase in wetland vegetation	Positive	High probability	Long-term	Medium
Improved and increased flora and fauna habitat	Positive	High probability	Long-term	High
Increased biodiversity	Positive	High probability	Long-term	Medium
Decreased sediment downstream	Positive	High probability	Long-term	Medium
Stream flow regulation	Positive	High probability	Long-term	Medium
Reduced soil erosion	Positive	High probability	Long-term	Low
Flood attenuation	Positive	High probability	Long-term	Medium
Restoration of the wider wetland	Positive	High probability	Long-term	High
Employment and skills capacity	Positive	High probability	Long-term	High
Food for livestock	Negative	High probability	Long-term	Low
Fire management	Negative	Low probability	Long-term	Low
Obstruction of movement of aquatic biota	Negative	Medium probability	Long-term	Low
Change in species composition	Positive	High probability	Long-term	Low
Monitoring and Management	Positive	Medium probability	Long-term	Medium
Education and research	Positive	Medium probability	Long-term	Medium

The proposed Project activities, involving the construction of thirteen specifically placed and designed interventions within the Wetland, will result in a number of impacts during the Construction and

Operational phases.

During the Construction Phase, there will be general disturbance to flora and fauna during implementation of the rehabilitation activities. However, these are considered acceptable, given the improvements that will be afforded to these species and habitats medium to long-term. The negative human impacts associated with construction nuisances are considered to have low significance, considering that the mitigations are easy to apply, and that the Construction Phase is temporary.

The negative impacts related to the operational phase relate to the obstruction of movement to existing aquatic biota. This is considered acceptable given the medium to long-term improvements afforded to water quality and habitat.

Positive impacts related to the Construction phase are job creation and improved skills capacity. Rehabilitation of the Wetland will lead to overwhelming medium to long-term positive impacts associated with the improved hydrological functioning of the Wetland with cumulative benefits.

It is thus concluded that the proposed rehabilitation project will have a negligible, short-term, negative effect on the receiving environment during construction; and a moderate positive effect, which would be permanent during operation.

**No-go alternative (compulsory)**

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 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.

**SECTION E. RECOMMENDATION OF PRACTITIONER**

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	
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If “NO”, indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

N/A
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If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

The Zaalklapspruit Wetland is a ‘moderately modified’ wetland. The Wetland area has a good overall cover of wetland vegetation species except for where Poplar Trees have invaded on the upper reaches. The catchment area features cultivated lands and coalmines. Within the Wetland itself, historic agricultural practices (artificial drainage, ridge and furrow cultivation) have led to a major incised channel. It is this channel, together with drainage associated with historic ridge and furrow cultivation in the central area of the Wetland that is causing canalised flow and compromising the Wetlands’ water quality enhancement function.

The Zaalklapspruit Wetland is classified as a ‘critically endangered wetland type’. The mining discharge upstream (acid-mine drainage) presents the Wetland with significant water quality issues. The ability of the Wetland to clean and filter receiving water will be improved through diffuse flow and encouragement of vigorous wetland plant life. To improve the distribution and movement of the water through the Wetland and its soils, the areas affected by ridge and furrow cultivation must be re-activated. The central incised channel must be de-activated and to prevent further channel incision, the head-cut upstream of the main channel must also be de-activated.

Thirteen interventions have been proposed as part of planned rehabilitation activities. The objective and associated intervention types are summarised in Table 1 below:

**Table 1: Summary of Zaalklapspruit Rehabilitation Plan**

Objective	Intervention
<ul style="list-style-type: none"> <li>Deactivate head cut upstream of main dam</li> </ul>	<ul style="list-style-type: none"> <li>Concrete weir</li> </ul>
<ul style="list-style-type: none"> <li>Promote diffuse flows and re-establish wetland vegetation</li> </ul>	<ul style="list-style-type: none"> <li>Low concrete wall x 2</li> <li>Removal of berms</li> <li>Earthworks levelling</li> <li>Earthworks berm x 3</li> </ul>
<ul style="list-style-type: none"> <li>Deactivate areas of ridge and furrow cultivation and promote diffuse flow across wetland</li> </ul>	<ul style="list-style-type: none"> <li>Earthworks distribution berm x 2</li> </ul>
<ul style="list-style-type: none"> <li>Deactivate secondary channel to deflect flows into downstream wetland area</li> </ul>	<ul style="list-style-type: none"> <li>Concrete weir</li> </ul>
<ul style="list-style-type: none"> <li>Raise the water level in the main channel and distribute to wetland</li> </ul>	<ul style="list-style-type: none"> <li>Concrete weir</li> </ul>
<ul style="list-style-type: none"> <li>Deactivate the main channel and deflect water into adjacent wetland areas</li> </ul>	<ul style="list-style-type: none"> <li>Concrete weir x 2</li> </ul>

## BASIC ASSESSMENT REPORT

The impacts of the proposed rehabilitation of the Zaalklapspruit Wetland will result in biophysical (wetland hydrological function optimised and wetland habitat improved) and social impacts (Job creation and skills capacity) that will be positive and will result in a net environmental gain for the area.

Based on the above, the EAP is of the opinion that the proposed wetland rehabilitation activities being applied for should be authorised, as the benefits substantially outweigh the minimal localised negative impacts that have been identified.

The following recommendations are provided, and recommend that these recommendation by made a condition of the Environmental Authorisation:

- It is recommended that the rehabilitation of the Wetland be undertaken with strict management controls in place, through the effective implementation of the Wetland Rehabilitation Plan and associated supporting documents.
- It is recommended that monitoring and measuring of the Wetland be conducted pre and post project implementation as per the recommendations provided in this Basic Assessment Report, the Rehabilitation Plan and any relevant WfWetlands/SANBI documentation. This should include a Wetland-Health Assessment on the present ecological state of the wetland prior to rehabilitation and post rehabilitation (measures include visual habitat assessment, vegetation sample plots, water quality monitoring).
- It is recommended that a report detailing the annual habitat assessments undertaken for three years, to ensure that the rehabilitation is stable, must be attended to by SANBI, post-implementation.
- If any solid waste is created on site (e.g. domestic waste, concrete bags) it must be collected and disposed of at the nearest recycling depot. If it emerges that any part of this waste cannot be recycled, it must be disposed of at the nearest permitted landfill site.
- If chemical toilets are required, these toilets must be located away from areas of open water or flood risk, and must be properly maintained and emptied by an appropriate waste removal company.

Is an EMPr attached?

YES

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

\_\_\_\_\_  
NAME OF EAP

\_\_\_\_\_  
SIGNATURE OF EAP

\_\_\_\_\_  
DATE

**SECTION F: APPENDIXES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information