*Project Ref: 2012/Phase 2/Report 01-MPU Final*

# PHASE 2 - PLANNING REPORT
# FINAL BASIC ASSESSMENT REPORT
## MPUMALANGA

## February 2013

Environmental Affairs
Water Affairs
Agriculture, Forestry and Fisheries

SANBI
Biodiversity for Life

EXPANDED PUBLIC WORKS PROGRAMME
CONTRIBUTING TO A NATION AT WORK

*Aurecon Ref: 6535a/107406*

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# CONTEXT OF THIS BASIC ASSESSMENT REPORT

The environmental assessment process undertaken to date has culminated in the production of a Final Basic Assessment Report (BAR) and associated Final Rehabilitation Plan, which provide detailed information relevant to the project in the Mpumalanga Province.

In order to guide and focus the reader, the Table below indicates where in the Final Phase 2 reports (the BAR and/ or the Rehabilitation Plan) the requisite information as outlined in the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, can be found. General information detail is provided in the provincial BAR and indicated below, while project specific information required in terms of NEMA is provided in the relevant project specific Final Rehabilitation Plan. As a result, the Table below has been included at the front of each Rehabilitation Plan to guide the reader as to where project specific information can be found as required by NEMA.

**Table 1: Information requirements of the BAR as outlined in NEMA**

| REGULATION | CONTENT AS REQUIRED BY NEMA | SECTION / ANNEXURE[1] |
|---|---|---|
| 23 (2) (a) | (i) Details of the EAP who prepared the report; and | ***Introduction - BAR*** |
| | (ii) Details of the expertise of the EAP to carry out basic assessment procedures; | ***Introduction - BAR*** |
| 23 (2) (b) | A description of the proposed activity; | ***Section B - BAR*** ***Rehab Plan*** |
| 23 (2) (c) | A description of the property on which the activity is to be undertaken and the location of the activity on the property, | ***Rehab Plan*** |
| 23 (2) (d) | A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity; | ***Rehab Plan*** |
| 23 (2) (e) | An identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report; | ***Section B – BAR*** ***Rehab Plan*** |
| 23 (2) (f) | Details of the public participation process conducted in terms of regulation 22(a) in connection with the application, including – | ***Section D - BAR*** |
| | (i) The steps that were taken to notify potentially interested and affected parties of the proposed application; | ***Section D - BAR*** |
| | (ii) Proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; | ***Appendix E - BAR*** |
| | (iii) A list of all persons, organisations and organs of state that were registered in terms of Regulation 57 as interested and affected parties in relation to the application; | ***Appendix E - BAR*** |

[1] Note: BAR refers to the 2012 Mpumalanga BAR; Rehab plan refers to the 2012 Wakkerstroom Rehabilitation Plan

| REGULATION | CONTENT AS REQUIRED BY NEMA | SECTION / ANNEXURE[1] |
|---|---|---|
| | (iv) A summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues; | ***Appendix E - BAR*** |
| 23 (2) (g) | A description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity; | ***Executive summary Section B - BAR*** |
| 23 (2) (h) | A description and assessment of the significance of any environmental impacts, including cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity; | ***Section E - BAR*** |
| 23 (2) (i) | Any environmental management and mitigation measures proposed by the EAP; | ***Section E - BAR*** |
| 23 (2) (j) | Any inputs made by specialists to the extent that may be necessary; and | ***Wetland assessment attached to Rehab Plan*** |
| 23 (2) (k) | Any specific information required by the competent authority. | **-** |
| 23 (3) (a) | A BAR must take into account any relevant guidelines; and; | ***Section B - BAR*** |
| 23 (3) (b) | A BAR must take into account any practices that have been developed by the competent authority in respect of the kind of activity which is the subject of the application. | **-** |

**Please note:** This Basic Assessment Report must be read in conjunction with the Final Wakkerstroom Rehabilitation Plans.

# EAP competency

The basic assessment process has been undertaken by the following Environmental Assessment Practitioners (EAPs):

**Ms Claire Blanché**

Ms Claire Blanché is an Environmental Scientist with eleven years' experience in the research and consultancy sectors. She has a Master Degree in the field of Environment and Development, with specialisations in Water Resource and Catchment Management.

**Dr Jenny Youthed**

Jenny holds a PhD in Geography from Unisa, with the focus of her thesis being on assessing and managing compliance with conditions of environmental authorization. She has 14 years' experience in the integrated environmental management field, 10 of which were with the EIA section of the competent environmental authority in the Eastern Cape. She thus has experience in assessing applications for environmental authorisation and setting conditions

for authorisation. She also has experience in conducting basic assessments and EIAs; compiling environmental management plans; undertaking environmental audits and providing input into environmental planning documents.

# WORKING FOR WETLANDS REHABILITATION PROJECT IN THE MPUMALANGA PROVINCE: FINAL BASIC ASSESSMENT REPORT

## Summary Document

The South African National Biodiversity Institute (SANBI) appointed Aurecon South Africa (Pty) Ltd to undertake the project activities and associated reporting required for the various phases of the rehabilitation planning cycle. These include Phase 1 Reports, the wetland rehabilitation plans as well as the BARs required for each project area within four provinces. Refer to Figure 1 below that graphically depicts the entire 24 month planning and implementation process which begins in Phase 1 and ends in Phase 3. Phase 1 and 2 are undertaken in the first twelve months and Phase 3 in the second twelve months.

### Objectives of the Working for Wetlands Programme

Working for Wetlands (WfWetlands) is a government funded programme that started in 2001 with a R20 million budget that was implemented across 14 projects. The programme is managed by SANBI and is currently implemented across 35 projects countrywide with a budget of R83 million. Being part of the Expanded Public Works Programme (EPWP), more than 1 500 local people are recruited to work in projects on limited term contracts. Typical activities undertaken within the projects include:

- constructing structures (gabions, berms, weirs) in wetlands;
- removing invasive alien plants from the wetland and immediate catchment;
- plugging artificial drainage channels in the wetland;
- raising awareness of wetlands among workers, landowners and the general public;
- providing adult basic education and training, and technical skills; and
- developing management plans for the rehabilitated wetlands.

The two main objectives of the programme are **wetland conservation** in South Africa and **poverty reduction** through **job creation** and **skills development** amongst **vulnerable** and **marginalised** groups.

### Environmental legislation

**EIA listed activities**

The proposed project(s) triggers listed activities 11 and 18 of Regulation 544 and activities 13 and 16 or Regulation 546 of 18 June 2010of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended.

A Basic Assessment (BA) process must therefore be undertaken before the authorities, in this instance the national Department of Environmental Affairs (DEA), can make a decision

on whether the proposed activities and ultimately the proposed projects should be authorised.

**Exemption from independence**

The Public Participation process (PPP) was formally initiated with notifications to Interested and Affected Parties (I&APs) of the availability of this Draft BAR for comment on 5 December 2012. Adverts were also placed in *Die Burger* and *Sunday Times* on 1 and 2 December 2012, respectively. Aurecon applied for exemption from independence as its engineers are undertaking the design work for the interventions.

As part of the BA process, environmental (biophysical and socio-economic) impacts are identified and assessed to ascertain the consequences of the project on the environment and the people that live in it. Based on the findings from the impact assessment, specific mitigation measures are recommended to reduce the significance of negative impacts and enhance positive impacts (those that improve the integrity and health of an ecosystem or human health and well-being). The process also gives I&APs an opportunity to comment and to be kept informed about decisions that may impact them or the environment.

As planning continues over a 24 month period, prioritisation and planning (in terms of identifying which wetlands will be rehabilitated and how) is undertaken within the first 12 months, while the actual implementation (via the construction of the interventions) is undertaken within the second 12 months. Interventions may be postponed even if they have received environmental authorisation due to issues such as lack of budget, logistical problems in the area, and / or dramatic changes to the receiving environment (flooding etc.). In other words these structures would be 'banked' for implementation as/ when suitable or appropriate.

In terms of Section 39 of the National Water Act (No. 36 of 1998), a General Authorisation (GA) has been granted for certain activities that are listed under the NWA that usually require a Water Use Licence. Such a GA exists for wetland rehabilitation as long as the activities are for **conservation purposes**. As some of the rehabilitation activities 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 GAs have been registered with the Department of Water Affairs (DWA) for structures that would ordinarily require a Water Use Licence. For each planning cycle the proposed rehabilitation work will be submitted to DWA, the requisite approval sought and project monitoring reported as required.

### Phase 1, 2, and 3 explained

The purpose of **Phase 1** and the associated reporting is to identify within a province:

1. which are the priority catchments and associated wetlands / sites within which rehabilitation work needs to be undertaken; and to
2. identify key stakeholders who would review and comment on the detailed planning (Phase 2) reports.

As part of Phase 1, the Engineers peg / set-out the previous year's interventions that had been authorised by DEA. Refer to Figure 1 below that graphically depicts the entire 24 month planning process which begins in Phase 1 and ends in Phase 3.

***Wetland ecologist working in the Mpumalanga wetlands.***

Regular monitoring and evaluation (M&E) of the interventions is undertaken to establish the effectiveness of the structure in rehabilitating the identified wetland. This baseline data is also included in the Phase 2 reporting. BARs are compiled as separate documents (one for each province), while the Rehabilitation Plans are compiled for each project and are attached as an Appendix to the provincial BAR and submitted to DEA for their environmental authorisation decision. Summaries of the wetland prioritisation, problems and rehabilitation objectives are included in the rehabilitation plans.

As part of Phase 2, a maintenance inventory is undertaken by the PC, in consultation with the Engineer of any existing interventions that are damaged and/ or failing and thus requires maintenance.

Upon approval of the wetland rehabilitation plan by DEA, DWA, and the directly affected landowners, the work detailed for the project will be implemented within a year with on-going monitoring being undertaken thereafter. This occurs within **Phase 3** of the project cycle. The Rehabilitation Plans are considered to be the primary working document for the implementation of the project via the construction / undertaking of interventions[2] listed in the Plan. Seventeen implementing agents (IAs) are currently employed and are responsible for employing contractors and their teams (workers) to construct the interventions detailed in each of the Rehabilitation plans.

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

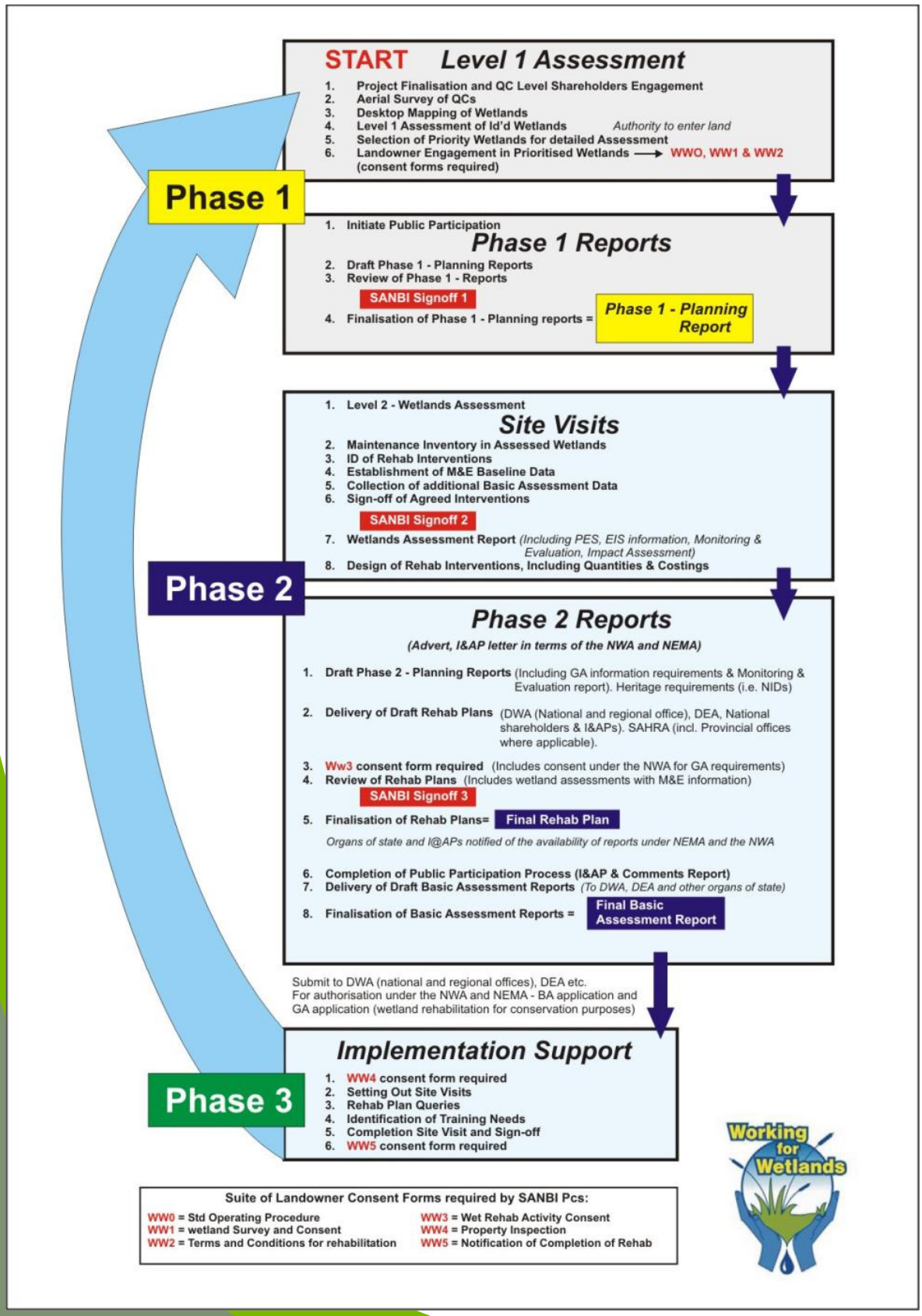


**Figure 1: The Working for Wetlands planning process (Phase 1 to Phase 3)**

***A buttress weir being built and a site being prepared by the Implementing agents***

### Wetland Assessments

Time and resources required for detailed assessments of the wetlands is limited, and thus using the WET-Tools methodology, a rapid procedure was adopted to assist the project team in systematically carrying out the assessments under constraints. The assessments entailed the following steps:

1. Assessment of the impacts and threats within each wetland system via establishing the current 'health' of the wetland;
2. Establishment of rehabilitation objectives and the selection of appropriate interventions to achieve the identified rehabilitation objectives; and finally; and
3. Assessment of the likely contribution of rehabilitation interventions to the wetland health and ecosystem delivery via determining the spatial area likely to be affected by the proposed intervention(s) and assessing the benefits to the health and / or eco-system services of the specific wetland i.e. the difference between the current health and the projected health of the wetland with and without the intervention(s).

### Screening process – Alternative

While on-site during Phase 2, the project team identify and locate the interventions that would meet the rehabilitation objectives as well as the programme's overall objectives (wetland conservation in South Africa and poverty reduction through job creation). The project team discuss and evaluate the potential intervention options; and factoring in environmental, social, and economic considerations into their discussions, they agree on the most appropriate intervention that would meet the rehabilitation objectives for the wetland.

**Increased labour requirement for the Working for Wetlands Programme**

As a result of changes to the donor fund requirements, an increase in the labour percentage requirement for the WfWetlands programme has been experienced since 2010. The project team were thus required to investigate more labour intensive intervention options for wetland rehabilitation. These included soft engineering options such as berms, eco-logs, as well as alien clearing.

This resulted in the project team having to investigate other wetland areas in order to meet the requirements. Consequently, some of the wetlands prioritised during 2012 in the Phase 1 reporting would not be rehabilitated during this planning cycle (due to the large amount of hard engineering required which was less labour intensive), while new additional wetlands were identified during the Phase 2 site visits as their rehabilitation requirements contributed towards meeting the increased labour component for the programme.

**Rehabilitation work within floodplain systems**

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

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

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

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

## Intervention design

After appropriate interventions have been decided upon by the project team, GPS coordinates and digital photographs are taken for record purposes. Appropriate dimensions of the locations are recorded in order to design and calculate quantities for the interventions. At the end of the site visit a location layout of the agreed interventions and rehabilitation objectives is agreed upon by the project team. Based on certain criteria and data measurements (water volumes, flow rates, and soil types); the availability of materials such as rock; labour intensive targets; maintenance requirements etc., the interventions are then

designed. Bills of quantity are calculated for the designs and cost estimates made. Maintenance requirements for existing interventions in the assessed wetlands are similarly detailed and costs calculated. The engineer also reviews and, if necessary, adjusts any previously planned interventions that are included into the historical rehabilitation plans.

### Maintenance and amendments to authorized interventions

Based on discussions with DEA, it was agreed that variations and deviations (in design or location) to the already authorised intervention(s) could be made via written notification to DEA which would include a motivation, supporting information, and the proposed changes clearly detailed. The DEA have formalised this approach by including a condition in the WfWetlands EA whereby any changes to, or deviations from, the project description require written approval from DEA. The proposed changes (type, design, location), motivation, as well as other project-related information (redesigns, site photographs etc.) are provided to DEA. Anticipated reasons for the changes could include modifications to the aquatic system as a result of unforeseen circumstances such as flooding, fires etc., savings to the project budget, improved rehabilitation and/ or enhanced protection from erosion etc.

As per the definition of maintenance[3], modifications would be made to existing (built) interventions as long as the changes occur within the same footprint, location etc. DEA would be informed of the changes in writing.

For a list of interventions requiring redesign, maintenance and or new structures, please refer to the summary in **Table 5** below.

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

### Monitoring and Evaluation

During the Phase 2 site visits, baseline monitoring is carried out prior to the rehabilitation of the wetland to provide comparable data for monitoring at a later stage (once the intervention(s) have been constructed). Monitoring and Evaluation (M&E) is thus a vital component of the project as it allows for the evaluation of the performance of the interventions in successfully rehabilitating the affected wetland. Baseline M&E data (fixed point photography, GPS co-ordinates, water quality measurements etc.) as well as information for the BAR is collected during the Phase 2 site visits.

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

Based on WET-Rehab Evaluate tool, protocols for data collection for monitoring purposes have been developed, which includes compulsory collection of certain data[4], while other data collection for monitoring would be considered to be optional[5] depending on the importance of the wetland, costs of rehabilitation undertaken etc.

Upon completion of the interventions within a wetland, the Engineer would revisit the site to sign-off on the interventions based on what was detailed in the rehabilitation plan; while the Wetland ecologist would assess the effectiveness of the intervention(s) in achieving the specified objectives and contributing towards the rehabilitation strategy. Appropriate corrective action would be specified if either of the project team members were unsatisfied with the intervention's effectiveness in terms of achieving the objectives and long-term stability. Ideally an annual M&E report would be compiled by the project team; however, this process is still being established and would require additional funding.

## Future planning for the project areas

**Table 2: Summary of possible budget allocations per project for the next 5 years in Mpumalanga**

| | 2009-10 | New project name | 2010-11 | 2011-12 | 2012-13 | 2013-14 | Tot for 5 years per Province |
|---|---|---|---|---|---|---|---|
| **Draaikraal** | R 920 000 | Steelpoort project | R 1 674 540 | R 1 758 267 | R 1 846 180 | R 1 938 490 | R 8 709 877 |
| **Verloren Valei** | R 572 400 | | | | | | - |
| **Steenkampsberg** | R 1 080 000 | Inkomati Project | R 1 674 540 | R 1 758 267 | R 1 846 180 | R 1 938 490 | R 8 297 477 |
| **Save the Sand** | R 1 132 000 | Lowveld Project | R 1 674 540 | R 1 758 267 | R 1 846 180 | R 1 938 490 | R 9 429 477 |
| **Sterkspruit** | R 1 080 000 | | | | | | - |
| **Upper Usutu** | R 682 014 | Highveld Project | R 1 432 500 | R 1 504 125 | R 1 579 331 | R 1 658 300 | R 7 538 284 |
| **Nooitgedacht** | R 682 014 | | | | | | - |
| **Wakkerstroom** | R 1 364 029 | Wakkerstroom Project | R 1 432 500 | R 1 504 125 | R1 633 725 | R 1 658 300 | R 7 538 285 |
| **Total for year** | **R 7 512 458** | | **R 7 888 620** | **R 8 283 051** | **R 8 697 202** | **R 9 132 070** | **R 41 513 400** |

**Key project objectives include:**

- Deactivation of head-cuts,
- restoration of hydrological integrity; e.g. rising the general water table or redistribution of water across wetland area;
- Recreation of wetland habitat;
- Biodiversity enhancement; and
- Job creation and social upliftment.

[4] Maintenance inventory, rehabilitation effectiveness, fixed point photography/ site photographs, and wetland assessments.
[5] Sediment and erosion control, hydrology, vegetation and water quality

## Summary of the Final BAR findings

Wetlands that were prioritised during Phase 1 and visited during Phase 2 are located within the following quaternary catchments- refer to **Figure 2** below.

Phase 2 site visits were undertaken for the following projects:

- Goedgevonden (Wakkerstroom): 14 August 2012
- Paardeplaats (Wakkerstroom): 15 August 2012

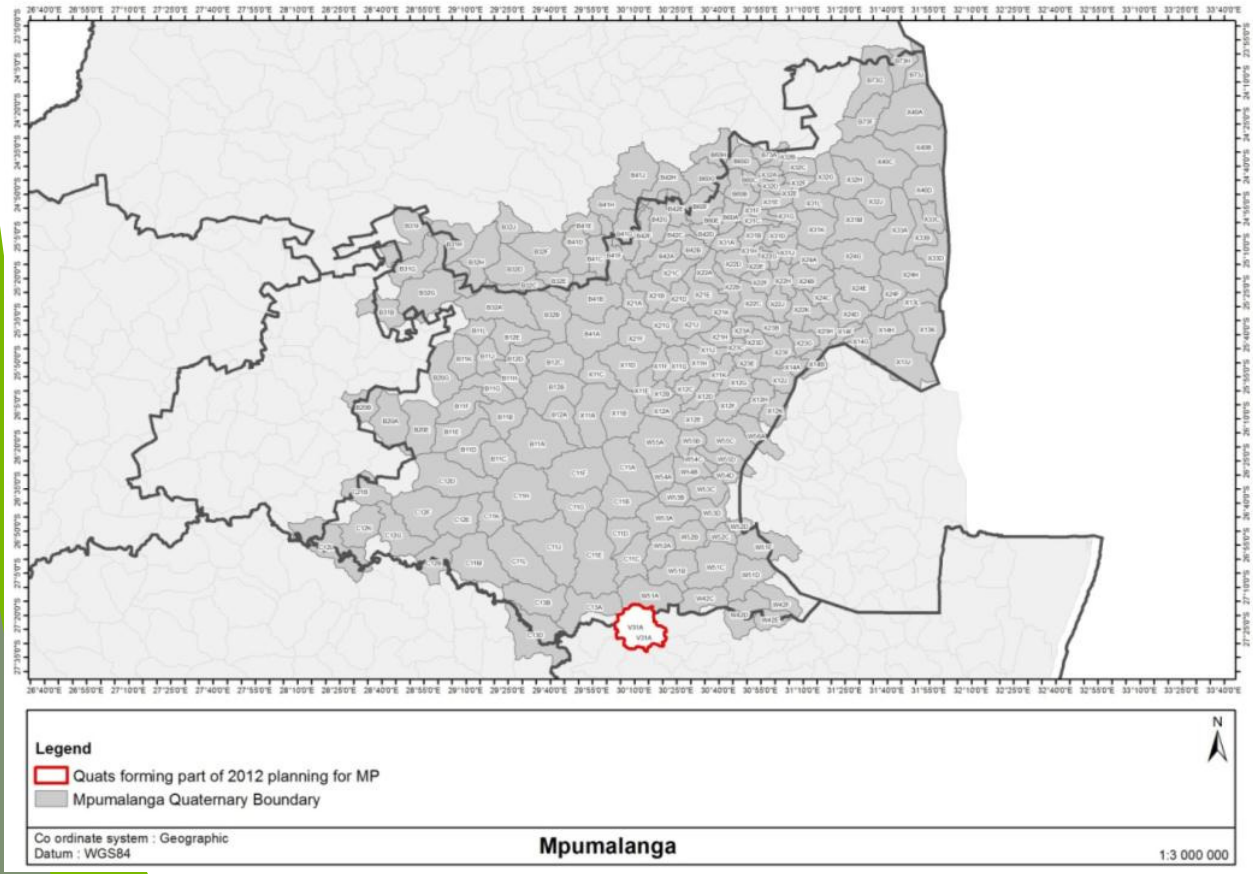


**Figure 2: Quaternary catchments that were visited during the Phase 2 site visits for the Mpumalanga Province**

Within the Mpumalanga Province, work for the 2012/2013 planning cycle will include the following:

**WAKKERSTROOM – W42C**

**Goedgevonden:**
The Wakkerstroom wetland rehabilitation project was historically located in the V31A and W42C quaternary catchments near the town of Wakkerstroom and Luneburg in the Mpumalanga province. After work in the Wakkerstroom wetlands was completed, the focus shifted to the Goedgevonden wetland (W42C) near Luneburg. The aim of the wetland

rehabilitation has been the stabilisation of active erosion and the deactivation of drainage canals and furrows resulting in the desiccation of the identified wetland systems. In 2011 work was also extended on the farm Goedgevonden to include alien clearing, follow up spraying of alien vegetation and the re-seeding of areas previously cleared by the landowner

The 2012/2013 planning cycle addresses the last interventions needed in the Goedgevonden wetland and future planning cycles will identify new wetlands and properties in the catchment area.

**Paardeplaats:**
Work on the farm Paardeplaats commenced in 2011 and included alien clearing, follow up spraying of alien vegetation and the re-seeding of areas previously cleared by the landowner.

The 2012/2013 planning cycle extended work on the farm to include the rehabilitation and stabilisation of an eroded dirt road, the decommissioning of a highly degraded dirt road, stabilisation of headcut erosion, rehabilitation of gullies and rehabilitation of a hillside seep area.

The project as a whole has further been aligned with the extent of the National Grasslands Biodiversity Programme's (NGBP) demonstration area in the Wakkerstroom/Luneburg area. Both Goedgevonden and Paardeplaats fall within the newly proclaimed Kwa Mandlangampisi Protected Environment. The project area does extend into KwaZulu-Natal, but the focus of the wetland rehabilitation is the wetlands and tributaries within the Mpumalanga province.

The Wakkerstroom project area in the W42C catchment occurs within the upper reaches of the KwaNtombe River, which is considered to be an important water resource within the region. A range of wetland types, characteristic of the region, are represented in the area, including permanent and seasonal marshes, peatlands and seepage areas. The wetlands within the area are considered to be important from a water quantity and quality perspective, especially due to their position in the upper reaches of the river.

A review of the Mpumalanga Biodiversity Conservation Plan (MBCP) highlights that the majority of the Wakkerstroom project area is considered as 'Irreplaceable' in terms of its contribution towards aquatic biodiversity and terrestrial biodiversity. The rehabilitation of the wetlands within the catchment is likely to contribute towards the maintenance of the aquatic and terrestrial biodiversity of the region. The Wakkerstroom wetland is also considered to be regionally important in terms of the maintenance of biological diversity, with the reserve supporting a number of Red Data species, mostly bird species**.**


**Figure 3: Goedgevonden wetland (left-hand image) and Paardeplaats seep area (right-hand image)**

The rehabilitation of the Goedgevonden wetland would involve the following interventions *inter alia*:

- Gabion and concrete weir
- Gabion diversion walls
- Earthen diversion berms
- Concrete diversion berm
- Reno Matrass
- Earthworks

Rehabilitation activities on the farm Paardeplaats would involve the following interventions *inter alia*:

- Concrete road strips
- Gabion diversion wall
- Earthen diversion berms
- Rock packs
- Surface cross drains

The number, type, scale and location of each of these interventions would vary according to the nature and magnitude of the problem and the state of the receiving environment.

The list of interventions which form part of this Basic Assessment process is summarised in **Table 3** below. The engineering designs for each of these interventions are included in the Final Wakkerstroom Rehabilitation Plan which forms part of the BAR.

## Summary of the potential impacts identified

**Table 3:Summary of impacts**

| *Construction Phase: Description of Impact* | *Significance of Impact* | | |
|---|---|---|---|
| | *Preferred Alternative* | | |
| | *No Mitigation* | *With mitigation* | *No Go* |
| Job creation | Medium (+) | High (+) | Medium (-) |
| Increased awareness of wetland importance | Medium (+) | High (+) | Medium (-) |
| Fire risk | High (-) | Low (-) | Neutral |
| Nuisance impacts | Low (-) | Very Low (-) | Neutral |
| Heritage impacts | Very Low (-) | Neutral | Neutral |
| Worker safety | Medium (-) | Low (-) | Neutral |
| Flora & Fauna | Medium (-) | Low (-) | Medium (-) |
| Aquatic eco-system impacts | Medium (-) | Low (-) | Medium (-) |
| Sourcing borrow material | Medium (-) | Low (-) | Neutral |
| Work within conservation areas | Medium (-) | Low (-) | Neutral |
| Disturbance of wetland soil profile | Medium (-) | Low (-) | Neutral |
| *Operational Phase: Description of Impact* | | | |
| Changes in land use | Low (+) | Medium (+) | |
| | Medium (-) | Low (-) | Low (-) |
| Reduced water storage and treatment costs | Medium (+) | Medium (+) | Low (-) |
| Employment | Medium (+) | Medium (+) | Medium (-) |
| Ecosystem functioning | Medium (+) | Medium (+) | High (-) |
| Flora and Fauna | Medium (+) | Medium (+) | Medium (-) |
| Reduced soil erosion | Medium (+) | Medium (+) | Medium (-) |
| Public safety | Medium (-) | Low (-) | Neutral |
| | | | |

## Key mitigation measures recommended

A summary of the key mitigation measures recommended to reduce the significance of the potential negative impacts and enhance potential positive impacts is provided in Table 3 below.

**Table 4: Key mitigation measures recommended for potential operational phase impacts**

| |
|---|
| **Construction phase impacts** |
| **Impacts on aquatic ecosystems** |
| Implement and enforce the CEMP |
| **Impacts on flora & fauna** |
| Consult the Crane Working Group with regards to identified wattled crane breeding sites and crowned crane foraging areas. |
| Implement and enforce the CEMP |
| **Impacts on heritage resources** |
| Contact the provincial heritage resource agency should any artefact be found or cultural use of a wetland be noted |
| **Nuisance impacts** |
| Workers to be given environmental awareness "toolbox talks" |
| Implement and enforce the CEMP |
| Liaise with landowner |
| **Socio-economic impacts** |
| Draw labour from the local community |
| Workers to be aware of fire risks and contingency plans |
| **Operational phase impacts** |
| **Impact on flora and fauna** |
| Consult with the Crane Working Group with respect to power line electrocutions |
| Consult Crane Working Group with respect to best practice relating to periodic burning of wetland. |

Regarding the construction phase impacts, the standard Construction Phase Environmental Management Programme (CEMP) (included as **Appendix G** of the BAR) and must be on site and complied with during the construction phase.

## Need and desirability

Wetlands play a critical role in improving the ecological health of an ecosystem by performing many functions that include flood control, water purification, sediment and nutrient retention and export, recharge of groundwater, as well as acting as vital habitats for diverse plant and animal species. Wetlands are thus considered to be extremely important in preserving biodiversity and are regarded as fundamental to the sustainable management of South Africa's water resources.

Wetlands also function as valuable open spaces and create recreational opportunities for people that include hiking, fishing, boating, and bird-watching. Many wetlands also have cultural and spiritual significance for the communities living nearby. Commercially, products such as reeds and peat, are also harvested from wetlands. Wetlands are thus considered to be critically important ecosystems as they provide both direct and indirect benefits to the environment and society.

Extensive damage to wetlands has occurred as a result of poor land use practices which has resulted in erosion and further degradation to aquatic ecosystems. Without the implementation of the planned rehabilitation activities (the **'no-go'** option or retaining the status quo), the programme's objectives would not be realized; and the loss of wetland habitat and its associated eco-system services would be significantly greater. The strategic importance of the WfWetlands programme is clear as evidenced by the distinct positive impacts associated with the programme which has resulted in a ***net benefit / gain*** as wetland health and integrity is improved and the associated eco-services enhanced. Overall the cumulative impact of wetland rehabilitation would thus be positive (refer to the summary of potential impacts identified above) to both human beings and the environment, now and in the future. Based on the above information, it is clear that rehabilitating wetlands is considered to be the '***best practicable environmental option***' as a result of the positive impact that the programme has on both the natural and socio-economic environment.

**Figure 4: Commercial products made by locals from reeds harvested from wetlands**

## Conclusions and recommendations

The potential impacts associated with the rehabilitation of various wetlands within the Mpumalanga Province would result in impacts (both biophysical and social) that would positively affect the area and result in a net environmental gain for the project. These include:

- Job creation and skills transfer for local communities;
- Increased habitat for conservation worthy species (Oribi, Wattled, Grey Crowned and Blue Cranes);
- Improvements in wetland functioning and area; and
- Improved water quality and quantity downstream.

Based on the above, the EAP (Aurecon) is of the opinion that the proposed wetland rehabilitation activities being applied for should be authorised, as the substantial benefits (both biophysical and socio-economic) substantially outweigh the minimal localised negative impacts that have been identified. Furthermore, the proposed activities undoubtedly meet the principles prescribed in NEMA.

## Public Participation Process and Way Forward

Public participation is an important part of the BA process, as it allows I&APs opportunity to obtain information about the proposed project and to provide input and raise any concerns at defined stages throughout the project.

The Public Participation process (PPP) was formally initiated with notifications to I&APs of the availability of this Draft BAR for comment on 5 December 2012. Adverts were also placed in *Die Burger* and *Sunday Times* on 1 and 2 December 2012, respectively. As part of the PPP, SANBI's Provincial Coordinators have been engaging with the directly affected landowners, while posters (in the key languages spoken in the Province) were erected at strategic locations in/ near the prioritised wetland(s).

As part of the 40 day public comment period on the draft Phase 2 reports, registered I&APs were sent copies of this Summary document, a letter notifying them of the public comment period as well as a response form. Based on the comments received, the draft reports have been updated. The final reports are now available for a 21 day comment period.

The Final BAR for the proposed wetland rehabilitation activities for the Mpumalanga Province has been made available for review from **Tuesday, 19 February 2013** for a 40 day comment period. SANBI's PC's and implementers have hard copies of the Phase 2 Reporting for their Province. Should you wish to review the report, please contact Franci Gresse to have this arranged. The Reports are also available for download from the Aurecon website (**http://www.aurecongroup.com** - follow the public participation links). I&APs have until **Monday, 11 March 2013** to submit comment on the Final BAR.

After the 21 day public comment period, any I&AP comments received on the Final BAR, will be submitted directly to DEA for their decision. Once DEA have made their decision on the proposed project, all registered I&APs on the project database will be notified of the outcome of the decision within twelve (12) calendar days of the date of the decision. If no appeals are received and the landowner(s) have signed (i.e. approved) the proposed rehabilitation work detailed in the Final Rehabilitation Plans, the interventions will be constructed from April 2013 until March 2014.

Should you wish to raise any issues, concerns and/or suggestions, and/ or register as an I&AP, please contact Franci Gresse at Tel: 021 526 6022, Fax: 021 526 9500, Mail: PO Box 494, Cape Town, 8000 or Email: franci.gresse@aurecongroup.com on/before **Monday, 11 March 2013.**

**List of Acronyms**

| | |
|---|---|
| BAR | Basic Assessment Report |
| CEMP | Construction phase Environmental Management Programme |
| DAFF | Department of Agriculture, Forestry and Fisheries |
| DEA | Department of Environmental Affairs |
| DWA | Department of Water Affairs |
| EAP | Environmental Assessment Practitioner |
| EIA | Environmental Impact Assessment |
| EPWP | Expanded Public Works Programme |
| GA | General authorisation in terms of the NWA |
| IA | Implementing Agent |
| I&APs | Interested and Affected Parties |
| M&E | Monitoring and evaluation |
| NEMA | National Environmental Management Act (Act 107 of 1998) |
| NWA | National Water Act (Act 36 of 1998) |
| PC | Provincial Coordinator |
| SANBI | South African National Biodiversity Institute |

**Table 5: Summary of the interventions included as part of this Basic Assessment process**

| Descriptive name | Old intervention number (if applicable) | New Intervention number | Proposed action | Reference document |
|---|---|---|---|---|
| NEW | | | | |
| Goedgevonden | | | | |
| Earthen Diversion Berm | W42C-01-027 | W42C-01-203-00 | Construct an earthen diversion berm to divert all flows out of the eastern channel. | Wakkerstroom Final Rehab Plan |
| Earthen Diversion Berm | W42C-01-028 | W42C-01-204-00 | Construct an earthen diversion berm to divert all flows out of the eastern channel | Wakkerstroom Final Rehab Plan |
| Reno Matrass | N/A | W42C-01-205-00 | Construct a reno mattress in-channel protection structure to set the base level of the eastern channel. | Wakkerstroom Final Rehab Plan |
| Gabion Weir | N/A | W42C-01-206-00 | Construct a gabion weir to divert flow out of the western channel onto the western parts of the wetland. | Wakkerstroom Final Rehab Plan |
| Gabion Diversion Wall | N/A | W42C-01-207-00 | Construct a gabion diversion berm to divert flow out of the eastern channel | Wakkerstroom Final Rehab Plan |
| Earthen Diversion Berm | N/A | W42C-01-208-00 | Construct an earthen diversion berm to divert all flows out of the eastern channel onto the eastern parts of the wetland. | Wakkerstroom Final Rehab Plan |
| Concrete Diversion Berm | N/A | W42C-01-209-00 | Construct a concrete diversion berm to divert flow out of the eastern channel onto the eastern parts of the wetland. | Wakkerstroom Final Rehab Plan |

| Descriptive name | Old intervention number (if applicable) | New Intervention number | Proposed action | Reference document |
|---|---|---|---|---|
| **Paardeplaats** | | | | |
| Gabions Diversion Wall and Earthen Berms with seeding and biojute | N/A | W42C-02-208-00 | Decommission and rehabilitate old road | Wakkerstroom Final Rehab Plan |
| Concrete strips and gabion protection | N/A | W42C-02-209-00 | Protection of road through construction of concrete strips and gabion cut off wall | Wakkerstroom Final Rehab Plan |
| Revegetation of hillslope | N/A | W42C-02-210-00 | Contouring, reseeding | Wakkerstroom Final Rehab Plan |
| Rockpacks | N/A | W42C-02-211-00 | Rock packs to control erosion next to road | Wakkerstroom Final Rehab Plan |
| Rockpacks | N/A | W42C-02-212-00 | Rock packs to control erosion next to road | Wakkerstroom Final Rehab Plan |
| Surface cross drain | N/A | W42C-02-213-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Revegetation | N/A | W42C-02-214-00 | Contouring, reseeding | Wakkerstroom Final Rehab Plan |
| Rockpacks | N/A | W42C-02-215-00 | Rock packs | Wakkerstroom Final Rehab Plan |
| Gully stabilisation | N/A | W42C-02-216-00 | Rock packs and gabion diversion walls | Wakkerstroom Final Rehab Plan |
| Surface cross drains, gabion diversion walls and earthen berms | N/A | W42C-02-217-00 | Deactivate old road and protect new road | Wakkerstroom Final Rehab Plan |

| Descriptive name | Old intervention number (if applicable) | New Intervention number | Proposed action | Reference document |
|---|---|---|---|---|
| Concrete strips and backfill trench | N/A | W42C-02-218-00 | Protect sensitive area | Wakkerstroom Final Rehab Plan |
| Concrete weir | N/A | W42C-02-219-00 | | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-220-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-221-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-222-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-223-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-224-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-225-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | W42C-02-226-00 | Construction of surface cross-drains | Wakkerstroom Final Rehab Plan |
| Surface Cross Drain | N/A | | Construction of surface cross-drains | |
| MAINTENANCE | | | | |
| Excavation | V31A-01-014 | V31A-01-201-01 | Excavate existing channel to spread a portion of the flows into the wetland area southwest of main channel | |

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.
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 | NO |

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

Rehabilitation activities will be focussed in this next planning cycle in Wakkerstroom (W42C).

***A. Wetland Problems***

The **Wakkerstroom** project historically occurred in close proximity to the town, but has, after completion of these earlier interventions, moved to the Luneburg valley. Due to implementation problems experienced in the previous year a number of approved interventions were not implemented and thus there is only one additional intervention (earthen berms) for this year. Alien clearing has also been added since the area falls within the National Grasslands Biodiversity Programme (NGBP) and the newly proclaimed KwaMandlangampisi Protected Environment.

The **Goedgevonden wetland (W42C)** is generally an unchannelled valley-bottom wetland that is characterised by soils with high organic matter content. The Goedgevonden wetland forms part of a large valley-bottom wetland system, with pristine peatlands 700m upstream of the Goedgevonden wetland, The system is considered critical in terms of habitat provision for wetland-dependant species, including Wattled Crane. The Goedgevonden wetland has been subjected to a number of impacts associated with the modification of the system's hydrology, which was likely to have been initiated to allow livestock access for grazing within the valley bottom. The confinement of flow within drainage channels and the straightening of channels in the lower reaches of the wetland system have resulted in the incision of the channels, especially the channel taking flows from the southern tributary. The incision of the channels has resulted in further impact on the system's hydrology, with the desiccation of the adjacent wetland habitat. The alteration of the system's hydrology has resulted in a change in the wetland vegetation, with more terrestrial and ruderal species present within the wetland. The primary objective of the rehabilitation (predominantly concrete weirs and some earthen and gabion structures) is to deactivate the incised drainage canals that were historically excavated throughout the length of the wetland unit. The secondary objective is to stabilise the incision of the channel and deactivate the head-cut erosion identified within the wetland system (by means of a gabion weir.

The **Paardeplaats seep** have been impacted upon by historical activities, including *inter alia*:

- construction of an access road through the wetland;
- the diversion of flow by a trench adjacent to the road; and
- partial flooding or impoundment of flow by the existing road.

The upper portion of the wetland has been subjected to a number of impacts associated with the modification of the system's hydrology, which was likely to have been initiated to allow access across the wetland. The problems identified within the wetland system can be addressed with the implementation of rehabilitation activities, which would include the deactivation of the headcut and trench, and the installation of concrete road strips.

### *B. Wetland Rehabilitation Objectives*

The rehabilitation objectives for the Goedgevonden wetland include:

a) Stabilisation of head-cuts in wetlands - Prevention of further erosion;
b) Securing the integrity of the wetland area;
c) Improving the value of the wetland for biodiversity conservation and the provision of natural resources;
d) Re-instating near natural hydrological conditions wherever possible; and
e) Raising the water table in order to rehydrate drained wetland areas and limit the chance of lateral head-cut formation.
f) Removal of berms and blocking of drains that affect flow patterns within a wetland.
g) Removal of all alien vegetation from a wetland and its immediate catchment.
h) Removal of debris dams on channels in catchments where this large woody debris was formerly scarce or absent.

Furthermore the wetland is likely to be of high importance for the conservation of biodiversity both regionally and nationally. For example, the Vulnerable Grey Crowned Cranes (*Balearica regulorum*) and Critically Endangered Wattled Cranes (*Bugeranus carunculatus*) are known to occur within wetlands in this catchment. Biodiversity conservation and the promotion of wetland habitat would thus also be important rehabilitation objectives.

The rehabilitation objectives for the Paardeplaats seep include:

- reduce the threat to the seep/wetland area by headcut erosion;
- promote diffuse flow;
- reduce further impacts from the road; and
- protect the wetland from cattle using it as a water point.

### *C. Other rehabilitation objectives:*

Other rehabilitation objectives on Paardeplaats include:

- deactivate headcut erosion,
- stabilise hillslope erosion and erosion gullies,
- protect sensitive wet areas from degradation by traffic and livestock;
- close and deactivate old roads and protect the steep sections of the existing roads with surface cross drains.

In order to achieve the above mentioned objectives, a number of interventions are being proposed, including weirs, earthen and concrete diversion berms, gabions and surface cross drains. During the site visits, the project team discussed and evaluated potential intervention options while taking into account environmental, social and economic considerations, as well as the rehabilitation objectives identified for the wetland. This screening process was undertaken to ensure that the most suitable intervention was identified, developed and assessed for each rehabilitation site.

**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 |
|---|---|
| ***GN R.544, Item 11:***<br>*The construction of: (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50m$^2$; (ix) slipways exceeding 50m$^2$ in size; (x) buildings exceeding 50m$^2$ in size; or (xi) infrastructure or structures covering 50m$^2$ or more where such construction occurs within a watercourse or within 32m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.* | The construction of weirs (concrete or gabions) within a watercourse (wetland). |
| ***GN R.544, Item 18:***<br>*The infilling or depositing of any material of more than 5m$^3$ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5m$^3$ from: (i) a watercourse; (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100m inland of the high-water mark of the sea or an estuary, whichever distance is the greater - but excluding where such infilling, depositing, dredging, excavation, removal or moving; (a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (b) occurs behind the development setback line.* | The potential wetland rehabilitation work will involve excavating and / or infilling of material exceeding 5m$^3$ in stream channel and wetland i.e. watercourse |
| ***GN R.546, Item 13:***<br>*The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation…*<br><br>*(a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.*<br>*(b) National Protected Area Expansion Strategy Focus areas.*<br>*(c) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo,* ***Mpumalanga,*** *Northern Cape and Western Cape: i. In an estuary; ii. Outside urban areas, the following: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Core areas in biosphere reserves; (ff) Areas within 10km from national parks or world heritage sites or 5km from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (gg) Areas seawards of the development setback line or within 1km from the high-water mark of the sea if no such development setback line is determined.* | The proposed rehabilitation work could potentially involve the cumulative clearance of an area of 1 hectare or more of indigenous vegetation within a critical biodiversity area to allow the establishment of gabions and earthen diversion berms. |
| ***GN R.546, Item 16:***<br>*The construction of: (i) jetties exceeding 10m$^2$ in size; (ii)* | The construction of a weir (concrete or |

| | |
|---|---|
| *slipways exceeding 10 $m^2$ in size; (iii) buildings with a footprint exceeding 10 $m^2$ in size; or (iv) infrastructure covering 10 $m^2$ or more where such construction occurs within a watercourse or within 32m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.*<br><br>*(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo,* ***Mpumalanga*** *and Northern Cape: i. In an estuary; ii. Outside urban areas, in: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an International Convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Core areas in biosphere reserves; (hh) Areas within 10km from national parks or world heritage sites or 5km from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (ii) Areas seawards of the development setback line or within 1km from the high-water mark of the sea if no such development setback line is determined.* | gabions) concrete strips and gabion wall within a watercourse/wetland within a critical biodiversity area. |

## 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.

**a) Site alternatives**

| **Alternative 1 (preferred alternative)** | | |
|---|---|---|
| As a result of the Phase 1 planning and Phase 2 screening process undertaken on site with the project team (consisting of the wetland ecologist, EAP, engineer and SANBI's Provincial Coordinator), coupled with the requirement of meeting the wetland rehabilitation and the overall the programme's objectives[6], possible site alternatives were considered and screened out during in-field discussions. For a detailed discussion whereby the various alternatives are discussed and screened out, refer to the 2013 Wakkerstroom Rehabilitation Plan. Each of the interventions and their associated location are therefore based on expert opinion from both the wetland specialist and engineer and are thus considered to be the most suitable and effective locations to achieve the rehabilitation objectives for the wetland. | | |
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| | | |
| **Alternative 2** | | |
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| | | |
| **Alternative 3** | | |
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| | | |

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 | | |
| Alternative S2 (if any) | | |
| • Starting point of the activity | | |
| • Middle/Additional point of the activity | | |
| • End point of the activity | | |
| Alternative S3 (if any) | | |
| • Starting point of the activity | | |
| • Middle/Additional point of the activity | | |
| • End point of the activity | | |

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.

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

**b) Lay-out alternatives**

| Alternative 1 (preferred alternative) | | |
|---|---|---|
| Please refer Section A(2)(a) of this document, as well as the 2013 Final Wakkerstroom Rehabilitation Plan for more information on alternatives. | | |
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| | | |
| Alternative 2 | | |
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| | | |
| Alternative 3 | | |
| Description | Lat (DDMMSS) | Long (DDMMSS) |
| | | |

**c) Technology alternatives**

| Alternative 1 (preferred alternative) |
|---|
| Please refer Section A(2)(a) of this document, as well as the 2013 Final Wakkerstroom Rehabilitation Plan for more information on alternatives. |
| Alternative 2 |
| |
| Alternative 3 |
| |

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

| Alternative 1 (preferred alternative) |
|---|
| The consideration of activity alternatives was a rigorous exercise which involved consideration of various factors such as:<br><br>• **Environmental Criteria** – hydrology, geology and soils, seasonal influences and site-specific constraints;<br>• **Engineering Criteria** – bio-physical aspects, risk and liability, construction material selection;<br>• **Social Criteria** – labour quota requirements, health and safety, availability of materials, skills levels and opportunity for skills development; and<br>• **Wetland Rehabilitation Criteria** – stabilisation of headcuts and erosion gullies, elevation of water table, sediment trapping, eradication of problem species (among others).<br><br>Interventions and key motivations considered for Mpumalanga projects were as follows:<br><br>• Concrete weirs – availability of appropriate foundation material, high water flows in catchment, opportunity for skills development, robust structure required, lifting of water table and allowing storm flows to spread across the wetland while maintaining flows within the channel. In case of Wakkerstroom an impermeable structure was needed and a gabion wall was therefore not considered. (See Section 6.4.12 of the 2013 Final Wakkerstroom Rehab Plan.)<br><br>• Gabion weirs – stone gabion baskets would perform a similar function to the concrete weirs, in trapping sediment, but will allow for a measure of water to pass through, unlike concrete. Some negative aspects associated with gabions: rock is not always readily available, they are vulnerable to vandalism and corrosive elements in some waters; and trampling by cattle and humans (this can be alleviated by concrete capping the gabions). (See Section 5.9.4 and 6.4.1 of the 2013 Wakkerstroom Rehab Plan.)<br><br>• Earth Berms – due to the higher labour requirement this has received extensive consideration and is thus used in most project sites to varying degrees. It is usually considered suitable in low flow areas; it can be susceptible to cattle trampling, but if properly vegetated or capped with rocks then it can be more resilient. (See Sections 5.9.1, 5.9.2, 5.9.6, 6.4.1 and 6.4.10 of the 2013 Wakkerstroom Rehab Plan.)<br><br>• Earthworks – this is usually used in areas which have been impacted by ridge/furrow farming and involves cutting the "ridges" and filling the "furrows" wherever possible. In the case of the Wakkerstroom Rehab Plan, this involves the excavation of a road which was constructed across the eastern channel of the Goedgevonden wetland and the backfilling of a trench which was excavated by the farmer to drain a hillside seep area. (See Section 5.9.3 and 6.4.11 of the 2013 Wakkerstroom Rehab Plan.) |

| |
|---|
| Alternative 2 |
| |
| Alternative 3 |
| |

**e) No-go alternative**

If the no-go alternative is pursued, the wetland would continue to deteriorate, resulting in an overall negative impact on the aquatic and terrestrial ecosystems. These impacts will especially be visible 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. Please also refer to Section D for the impact assessment of the no-go alternative.

**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:** | **Size of the activity:** |
|---|---|
| Alternative A1[7] (preferred activity alternative)<br>Alternative A2 (if any)<br>Alternative A3 (if any) | Please refer to the relevant wetland section in the Final Wakkerstroom Rehabilitation Plan. |

or, for linear activities:

| **Alternative:** | **Length of the activity:** |
|---|---|
| Alternative A1 (preferred activity alternative)<br>Alternative A2 (if any)<br>Alternative A3 (if any) | Please refer to the relevant wetland section in the Final Wakkerstroom Rehabilitation Plan. |

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

| **Alternative:** | **Size of the site/servitude:** |
|---|---|
| Alternative A1 (preferred activity alternative)<br>Alternative A2 (if any)<br>Alternative A3 (if any) | Please refer to the relevant wetland section in the Final Wakkerstroom Rehabilitation Plan. |

[7] "Alternative A.." refer to activity, process, technology or other alternatives.

## 4. SITE ACCESS

| | | |
|---|---|---|
| Does ready access to the site exist? | **YES** | ~~NO~~ |
| If NO, what is the distance over which a new access road will be built | | m |

Describe the type of access road planned:

Please note that although easy access to a point of all of the wetlands exists, some sections of the various wetlands will require that temporary access routes be created. These routes would be "created" simply by driving a small utility vehicle (i.e. bakkie) over the grass and will not be permanent nor require the removal of any vegetation. The location of these routes will depend on a number of factors including landowner requirements and the time of year and recent weather conditions (i.e. how wet or dry the area is). For this reason it is not possible to specify exactly where routes are needed or where they will be located, however they will be temporary and seldom more than a few hundred metres long. They are noted here for the sake of completeness.

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;
- 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):

| **1. Is the activity permitted in terms of the property's existing land use rights?** | **YES** | ~~NO~~ | Please explain |
|---|---|---|---|
| The property is zoned for agricultural purposes and the proposed wetland rehabilitation project will assist with the protection of agricultural and water resources. | | | |

| **2. Will the activity be in line with the following?** | | | |
|---|---|---|---|
| **(a) Provincial Spatial Development Framework (PSDF)** | **YES** | ~~NO~~ | Please explain |
| According to the Mpumalanga Provincial Government Five Year Review (2004-208), 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) Urban edge / Edge of Built environment for the area** | YES | NO | Please explain |
| N/A – The properties fall outside the urban edge. | | | |
| **(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?).** | **YES** | ~~NO~~ | Please explain |
| The Pixley ka Seme Local Municipality's SDF and IDP (2011-2012) specifically identifies the Wakkerstroom Wetland complex as a very important local and nationally wetland system of which a section has been declared a protected area. Furthermore, the area around the wetland contains the headwaters for three of the Province's major river systems and is considered to be vital part of the Vaal and Pongola catchments. Also, the IDP states that the Picley ka Seme Municipality (via the Gert Sibande District Municipality) aims to support all projects that protects and promote biodiversity, rehabilitate and revive local streams, wetlands and rivers and conserve the environment.<br><br>Therefore, the proposed rehabilitation project is considered to be in line with the objectives and aims of the local and district municipalities. | | | |
| **(d) Approved Structure Plan of the Municipality** | YES | NO | Please explain |
| N/A – Only structures for rehabilitation purposes will be implemented. | | | |
| **(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?)** | **YES** | ~~NO~~ | Please explain |
| The proposed project aims to rehabilitate degraded and eroded wetland systems to improve and protect aquatic ecosystems and biodiversity. In other words, the project would enhance existing environmental management priorities for the area. | | | |
| **(f) Any other Plans (e.g. Guide Plan)** | **YES** | ~~NO~~ | Please explain |
| A review of the Mpumalanga Biodiversity Conservation Plan (MBCP) highlights that a significant portion of the project area is considered 'Irreplaceable' in terms of its contribution towards aquatic biodiversity and terrestrial biodiversity. The rehabilitation of the wetlands within the area is therefore likely to contribute towards the maintenance of the aquatic and terrestrial biodiversity of the region. | | | |

| | | | |
|---|---|---|---|
| **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)?** | **YES** | ~~NO~~ | Please explain |
| Rehabilitation and protection of the Wakkerstroom wetland system is considered to be of vital importance and should thus be undertaken on an on-going base. The proposed rehabilitation project is thus considered to be in line with the priorities of the IDP. | | | |
| **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.)** | **YES** | ~~NO~~ | Please explain |
| The WfWetlands project is part of the Expanded Public Works Programme (EPWP) and more than 1 500 local people are recruited to work in projects on limited term contracts across the country. | | | |
| **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.)** | YES | NO | Please explain |
| N/A – No services will be required to undertake the rehabilitation work. | | | |
| **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.)** | YES | NO | Please explain |
| N/A – The proposed rehabilitation project does not have any infrastructure requirements. | | | |
| **7. Is this project part of a national programme to address an issue of national concern or importance?** | **YES** | ~~NO~~ | Please explain |
| WfWetlands is a government programme (similar to Working for Water, Working on Fire and LandCare) managed by the South African National Biodiversity Institute (SANBI) on behalf of the national government departments of Environmental Affairs (DEA), Water Affairs (DWA), and Agriculture, Forestry and Fisheries (DAFF), and forms part of the Expanded Public Works Programme (EPWP). | | | |
| **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.)** | **YES** | ~~NO~~ | Please explain |
| The activities applied for are for the rehabilitation of degraded and threatened wetland systems. | | | |

| | | | |
|---|---|---|---|
| **9. Is the development the best practicable environmental option for this land/site?** | **YES** | ~~NO~~ | Please explain |
| Without the implementation of the planned rehabilitation activities, the programme's objectives[8] would not be realized; and the loss of wetland habitat and its associated eco-system services would be significantly greater. The strategic importance of the WfWetlands programme is clear as evidenced by the distinct positive impacts associated with the programme which has resulted in a ***net benefit/ gain*** as wetland health and integrity is improved and the associated eco-services enhanced. Overall the cumulative impact of wetland rehabilitation would thus be positive to both human beings and the environment, now and in the future. Based on the above information, it is clear that rehabilitating wetlands is considered to be the '***best practicable environmental option***' as a result of the positive impact that the programme has on both the natural and socio-economic environment. | | | |
| **10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?** | **YES** | ~~NO~~ | Please explain |
| The proposed interventions aim to improve the ecological and hydrological functioning and state of the wetland within which rehabilitation is undertaken. Also see the above response. | | | |
| **11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?** | YES | NO | Please explain |
| N/A – The WfWetlands programme is implemented in a phased approach. Wetland rehabilitation work in a new area will set a precedent for future rehabilitation work in that area. In instances where rehabilitation work has already been undertaken in the area, a precedent has already been set. | | | |
| **12. Will any person's rights be negatively affected by the proposed activity/ies?** | ~~YES~~ | **NO** | Please explain |
| Rehabilitation work will improve the ecological and hydrological functioning and state of the wetland. | | | |
| **13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?** | ~~YES~~ | **NO** | Please explain |
| The proposed rehabilitation work will be undertaken outside the urban edge on agricultural land. | | | |
| **14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?** | ~~YES~~ | **NO** | Please explain |
| Wetland rehabilitation work is not included in any of the 17 SIPS. | | | |
| **15. What will the benefits be to society in general and to the local communities?** | | | Please explain |
| The two main objectives of the programme are wetland conservation in South Africa and poverty reduction through job creation and skills development amongst vulnerable and marginalised groups. Furthermore, many wetlands have cultural and spiritual significance for the communities living nearby. Commercially, products such as reeds and peat are also harvested from wetlands.<br><br>Wetlands play a critical role in improving the ecological health of an ecosystem by performing many functions that include flood control, water purification, sediment and nutrient retention and export, recharge of groundwater as well as acting as vital habitats for diverse plant and animal species. Wetlands are thus considered to be extremely important in preserving biodiversity and are regarded as fundamental to the sustainable management of South Africa's water resources. | | | |

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

Wetlands also function as valuable open spaces and create recreational opportunities for people that include hiking, fishing, boating and bird-watching. Wetlands are thus considered to be critically important ecosystems as they provide both direct and indirect benefits to the environment and society.

Without the implementation of the planned rehabilitation activities, the programme's objectives would not be realized; and the loss of wetland habitat and its associated eco-system services would be significantly greater. In addition to rehabilitating wetlands, the WfWetlands programme aims to reduce poverty through job creation and skills development amongst vulnerable and marginalised groups. The programme forms part of the Expanded Public Works Programme, which seeks to draw significant numbers of unemployed into the productive sector of the economy, gaining skills while they work and increasing their capacity to earn income. Projects are thus focused on rehabilitation, conservation and the appropriate use of wetlands in a way that attempts to maximize employment creation, support for small business and the transfer of skills to the unemployed and poor.

| **16. Any other need and desirability considerations related to the proposed activity?** | Please explain |
|---|---|

Overall the cumulative impact of wetland rehabilitation would be positive to both human beings and the environment, now and in the future. Based on the above information, it is clear that rehabilitating wetlands is considered to be the 'best practicable environmental option' as a result of the positive impact that the programme has on both the natural and socio-economic environment.

| **17. How does the project fit into the National Development Plan for 2030?** | Please explain |
|---|---|

Yes. Given the programme's linked wetland conservation to sustainable economic development approach, WfWetlands forms part of the EPWP, which seeks to draw significant numbers of unemployed into the productive sector of the economy. These individuals gain skills while they work thus increasing their capacity to earn an income.

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

The vision of WfWetalnds 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 therefore in line with the principles of NEMA (in particular: people and their needs – particularly women and children – are placed at the forefront of development via the EPWP; the development can be considered to be socially, environmentally and economically sustainable; the environmental impacts of the activity are not unfairly distributed and the potential environmental impacts have been assessed and evaluated). Please refer to the relevant Rehabilitation Plan for more information on the WfWetlands programme and its objectives.

**19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**

WfWetlands 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 WfWetlands 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 |
|---|---|---|---|
| The Constitution of South Africa (Act 108) | WfWetlands is a rehabilitation programme that aims to protect and conserve South Africa's wetland ecosystems. As such the listed legislation, policies and guidelines are of relevance to the project. | National Government | 1996 |
| National Environmental Management Act (107) | | Department of Environmental Affairs | 1998 |
| National Environmental Management Act (Act 107), Amendment Act | | Department of Environmental Affairs | 1998 |
| The National Water Act (Act 36) | | Department of Water Affairs | 1998 |
| Conservation of Agricultural Resources Act (Act 43) | | Department of Agriculture, Forestry & Fisheries | 1983 |
| Natural Heritage Resources Act (Act 25) | | National Heritage Resources Agency | 1999 |
| World Heritage Conventions Act (Act 49) | | Department of Environmental Affairs | 1999 |
| The National Environmental Management: Biodiversity Act (Act 10) | | Department of Environmental Affairs | 2004 |
| National Environmental Management: Protected Areas Act (Act 57) | | Department of Environmental Affairs | 2003 |
| The Mountain Catchments Areas Act (Act 63) | | Department of Water Affairs | 1970 |
| EIA Guideline Series, in particular:<br>o Guideline 3 – General Guide to the Environmental Impact Assessment Regulations, 2006 (DEAT 2006)<br>o Guideline 4 – Public Participation in support of the EIA regulations, 2006 (DEAT 2006)<br>o Guideline 5 – Assessment of Alternatives and Impacts, 2006 (DEAT 2006) | | Department of Environmental Affairs | |
| MTPA Biodiversity Conservation Plan | | Department of Economic Development & Environmental Affairs/ Mpumalanga Tourism and Parks Agency | |
| International Conventions, in particular: | | | |

| Title of legislation, policy or guideline | Applicability to the project | Administering authority | Date |
|---|---|---|---|
| ○ The Ramsar Convention<br>○ Convention on Biological Diversity<br>○ United Nations Conventions to Combat Desertification<br>○ New Partnership for Africa's Development (NEPAD)<br>○ 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~~ | **NO** |
|---|---|---|
| If YES, what estimated quantity will be produced per month? | | $m^3$ |
| How will the construction solid waste be disposed of (describe)? | | |

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

Limited quantities of construction waste such as empty cement bags and litter may be generated. These wastes are typically collected on site and would be disposed of as per the WfWetlands Construction Environmental Management Programme (CEMP) (**Annexure D** of the BAR).

Material that is excavated during construction or which results from the breaking down of old structures is typically re-used on site in the construction and long-term stabilization of other interventions on site. For example, rubble from an old structure is typically used to provide backfill.

Ablution waste is usually handled through the provision of chemical toilet facilities or pit latrines (where no chemical toilet hire facilities exist). Chemical toilet waste is regularly removed by the toilet hire company and disposed of at a waste water treatment works. Toilet facilities are located out of wet areas and in line with the WfWetlands best management practices.

Please note that strict audits are carried out to ensure that the project Implementers do not generate unnecessary waste.

| Will the activity produce solid waste during its operational phase? | ~~YES~~ | **NO** |
|---|---|---|
| If YES, what estimated quantity will be produced per month? | | $m^3$ |
| How will the solid waste be disposed of (describe)? | | |

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

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

*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? | ~~YES~~ | **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? | ~~YES~~ | **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~~ | **NO** |
| If YES, what estimated quantity will be produced per month? | $m^3$ | |
| Will the activity produce any effluent that will be treated and/or disposed of on site? | ~~YES~~ | **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? | ~~YES~~ | **NO** |

If YES, provide the particulars of the facility:

| | | | |
|---|---|---|---|
| **Facility name:** | | | |
| **Contact person:** | | | |
| **Postal address:** | | | |
| **Postal code:** | | | |
| **Telephone:** | | **Cell:** | |
| **E-mail:** | | **Fax:** | |

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

**c) Emissions into the atmosphere**

| | | |
|---|---|---|
| Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities? | ~~YES~~ | **NO** |
| If YES, is it controlled by any legislation of any sphere of government? | YES | 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:

**d) Waste permit**

| Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA? | ~~YES~~ | **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? | ~~YES~~ | **NO** |
|---|---|---|
| If YES, is it controlled by any legislation of any sphere of government? | YES | 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 generation would be limited to the workers interactions and activities; limited noise may result from concrete mixers or pumps if utilized. |
|---|

**13. WATER USE**

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

| Municipal | Water board | Groundwater | River, stream, dam or lake | Other | The activity will not use water |
|---|---|---|---|---|---|
| Water use would mainly consist of drinking water for the construction team and would be brought in daily. Concrete structures would however require minimal water during the construction phase for batching. | | | | | |

| 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: | 13728 litres | |
|---|---|---|
| Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs? | ~~YES~~ | **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 National Water Act (No. 36 of 1998) (NWA), a General Authorisation (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 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 GAs have been registered with the Department of Water Affairs (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, which have been taken to ensure that the activity is energy efficient:

| |
|---|
| Manual labour would be used during the construction phase, with material and labourers being brought to site each day. Energy would thus only be required in the form of vehicle/machine (limited) fuel. |

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

| |
|---|
| N/A |

## SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

**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:**

| | |
|---|---|
| **Province** | |
| **District Municipality** | |
| **Local Municipality** | |
| **Ward Number(s)** | |
| **Farm name and number** | |
| **Portion number** | |
| **SG Code** | |

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:**

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? YES | NO

### 1. GRADIENT OF THE SITE

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

## 2. LOCATION IN LANDSCAPE

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

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

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

## 4. GROUNDCOVER

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

## 5. SURFACE WATER

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

## 6. LAND USE CHARACTER OF SURROUNDING AREA

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

## 7. CULTURAL/HISTORICAL FEATURES

Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan.

## 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:

**Pixley ka Seme Local Municipality:** 49.58%

Economic profile of local municipality:

Approximately 44% of the Pixley ka Seme Local Municipality's population is employed – mainly in the domestic sector. Furthermore, 68.54% of the population have an income below minimum living standards. This situation is of great concern to the Municipality

| |
|---|
| and highlights the need for skills and capacity development to ensure economic growth and development within the municipal area. |

Level of education:

| |
|---|
| **No schooling:** 9 229; **Higher Diploma:** 281; **Grade 12/St 10/ Form 5:** 9 574 |

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

| | | |
|---|---|---|
| What is the expected capital value of the activity on completion? | R 7 805 705 | |
| 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? | ~~YES~~ | **NO** |
| Is the activity a public amenity? | ~~YES~~ | **NO** |
| How many new employment opportunities will be created in the development and construction phase of the activity/ies? | ~ 120* | |
| What is the expected value of the employment opportunities during the development and construction phase? | TBC | |
| What percentage of this will accrue to previously disadvantaged individuals? | ~70% | |
| 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 | |

*** Employment opportunities are only created during the construction phase and for many of the projects there are already teams (team size averages around 20-35 individuals) working on them and therefore there aren't new work opportunities as such. However, Working for Wetland principles ensure that a very large percentage of those employed are from local communities.**

## 9. BIODIVERSITY

| |
|---|
| Please refer to the relevant section in the Final Wakkerstroom Rehabilitation Plan. |

# SECTION C: PUBLIC PARTICIPATION

## 1. ADVERTISEMENT AND NOTICE

| | | |
|---|---|---|
| **Publication name** | Adverts were placed in *The Sunday Times* (in English) and in *Die Rapport* (in Afrikaans). | |
| **Date published** | 1 and 2 December 2012 | |
| **Site notice position** | **Latitude** | **Longitude** |
| | To be provided in Final BAR | |
| **Date placed** | 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.

I&APs were registered when they responded to the advertisements and site notice boards during the 2010/11 and 2011/12 public participation processes for the WfWetlands programme. New I&APs responding to advertisements and site notices for the 2012/13 cycle will also be registered on the project's database. Furthermore, proactive identification of I&APs was done via scrutiny of previous BAR processes and identifying potentially interested and/or affected parties based on previous experience with BAR processes. An Issues Register will be maintained to record any comments received from I&APs and the responses given to these comments. The Issues Register, along with copies of written submissions, will be included in Appendix E3.

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

| TITLE | INITIAL/NAME | SURNAME | ORGANISATION | Telephone | EMAIL |
|---|---|---|---|---|---|
| Mr | Gavin | Cowden | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 013 7594187 | Gcowden@mpg.gov.za |
| Mr | Jannsen | Davies | Mpumalanga Tourism & Parks Agency (MTPA) | 013 759 5310 / 77 | daviesathome@icon.co.za |
| Dr | Almari | de Lange | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 013 766 6119 | adelange@mpg.gov.za |
| Ms | Mbali Marcia | Dlamini | Department Agriculture Forestry and Fisheries (DAFF) | 013 759 7319 | dlaminim@dwa.gov.za |
| Mrs | Valerie | Du Plessis | Department Agriculture Forestry and Fisheries (DAFF) | 012 336 8679 | DEI@dwaf.gov.za |
| Mr | Martin | Fuwela | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 017 811 2326 | - |
| Mr | Hein | Geldenhuys | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 013 235 2641 | lenviro@telkomsa.net |
| Mrs | Marina | Geldenhuys | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 013 235 2641 | mgeldenhuys@telkomsa.net |
| Mr | Richard | Green | Department Agriculture Forestry and Fisheries (DAFF) | 013 759 7308 | greenr@dwaf.gov.za |
| Ms | Tania | Henning | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 017 811 4830 | taniahenning@mtnloaded.co.za |
| Mr | Brian | Jackson | Inkomati Catchment Management Agency (ICMA) | 013 753 9000 | jacksonb@inkomaticma.co.za |
| Mr | Sampie | Shabangu | DWA: Licensing | | shabangus2@dwa.gov.za |
| Mr | Themba | Khoza | Department Agriculture Forestry and Fisheries (DAFF) | 013 759 7435 | KhozaB@dwaf.gov.za |

| TITLE | INITIAL/NAME | SURNAME | ORGANISATION | Telephone | EMAIL |
|---|---|---|---|---|---|
| Mr | David | Kleyn | Department Agriculture Forestry and Fisheries (DAFF) | 012 319 7560 | davidkl@nda.agric.za |
| Mr | Frans | Krige | Mpumalanga Tourism and Parks Agency (MTPA) | 013 254 0279 | franskrige@telkomsa.net |
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| Ms | Pheko | Mabena | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 013 690 1269 | pmmabena@wit.mpu.gov.za |
| Mr | Stanford | Macevele | Department of Water Affairs (DWA) | 093 22061 | MaceveleS@dwa.gov.za |
| Ms | Busi | Mahlangu | Department of Water Affairs (DWA) | 013 759 7317 | mahlangul@dwa.gov.za |
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| | Tshepiso | Makola | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | 013 690 1279 | thmorokang@wit.mpu.gov.za.za |
| Mr | Hannes | Marais | Mpumalanga Tourism and Parks Agency (MTPA) | 083 579 2469 | hannesmarais@vodamail.co.za |
| Mr | Frans | Mashabela | Department Agriculture Forestry and Fisheries (DAFF) | 013 754 0730 | FransMas@nda.agric.za |
| | Kurisani | Mashava | Department of Water Affairs (DWA) | 013 759 7518 | MashavaK@dwa.gov.za |
| Mr | Kenneth | Mavhunga | Department of Agriculture, Forestry and Fisheries (DAFF) | 013 759 7440 / 7300 | MavhungaK@dwaf.gov.za |
| Mr | Paul | Meulenbeld | DWA: Gauteng S Water Quality | 012 336 7663 | meulenbeldp@dwa.gov.za |
| | Bheki | Mndawe | Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) | | bemndawe@mpg.gov.za |
| Ms | Mary | Mogale | Department of Agriculture, Forestry & Fisheries (DAFF) | 013 754 0728 | MaryM@daff.gov.za |
| | Shobate | Mohlahlana | Department Agriculture Forestry and Fisheries (DAFF) : Landcare Programme | | shobathem@nda.agric.za |
| Mr | Brian | Morris | Mpumalanga Tourism and Parks Agency (MTPA) | 013 759 5478 | enviroteq@gmail.com |
| | Nocawe | Mthombothi | DEDET | | nocawe@mpg.gov.za |
| Miss | Ronell | Niemand | Mpumalanga Tourism and Parks Agency (MTPA) | 013 759 5530 | ronell@mtpa.co.za |
| Mr | Thya | Pather | DWA | | thya@dwa.gov.za |
| | Love | Shabane | DAFF | 013 754 0734 | LoveS@nda.agric.za |
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| Ms | Lynette Sibongile | Van Damme | SAHRA | 012 462 4502 | svandamme@sahra.org.za |
| | Dan'sile | Cindi | Dept. Agriculture, Forestry & Fisheries - LUSM | 013 754 0701/27 | DansileS@nda.agric.za |
| Mr | Hennie | Laas | Mpumalanga Landbou / Agriculture | | mp.landbou@mweb.co.za |
| Mr | Johann | Van Aswegen | Department Agriculture Forestry and Fisheries (DAFF) | 013 932 2042 | VaswegJ@dwaf.gov.za |

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.

| |
|---|
| Proof of I&AP and key stakeholder notifications will be provided in Appendix E2 of the Final BAR. |

## 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

| Summary of main issues raised by I&APs | Summary of response from EAP |
|---|---|
| To date no comments have been received from I&APs. However, an Issues Register will be maintained to record any comments received from I&APs and the responses given to these comments. The Issues Register, along with copies of written submissions, will be included in Appendix E3. | |

## 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.

| |
|---|
| Please refer to the response under Section C(3). |

## 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

| TITLE | INITIAL/ NAME | SURNAME | ORGANISATION | Address 1 | City / Town | Postal Code | Telephone | Cellphone | Fax | EMAIL |
|---|---|---|---|---|---|---|---|---|---|---|
| Ms | Jackie | Jay | Department of Water Affairs | Private Bag X313 | Pretoria | 0001 | (012) 336 7443 | | (012) 336 7575 | javj@dwa.gov.za |
| Mr | David | Kleyn | Department of Agriculture Forestry & Fisheries | Private bag X120 | Pretoria | 0001 | | 082 789 6915 | | DavidKl@nda.agric.za |
| Mr | Christo | Marais | Department of Water Affairs | 14 Loop Street | Cape Town | 8000 | (021) 441 2727 | | | chris@dwa.gov.za |
| Ms | Kerryn | Morrison | Endangered Wildlife Trust | Private Bag X11 | Parkview | 2122 | | | | kerryn@ewt.org.za |
| Ms | Naomi | Fourie | Department of Water Affairs | Private Bag X313 | Pretoria | 0001 | (012) 336 7443 | | | FourieNaomi@dwa.gov.za |
| Ms | Valerie | du Plessis | Department of Water Affairs | Private Bag X313 | Pretoria | 0001 | (013) 336 7443 | | | DuPlessisV@dwa.gov.za |
| Mr | Guy | Preston | Department of Water Affairs | 14 Loop Street | Cape Town | 8000 | | 083 325 8700 | | GPreston@dwa.gov.za |
| Ms | Fulufhelo | Mafelatshuma | Department of Water Affairs : RQS | Private Bag X313 | Pretoria | 0001 | | | | MafelatshumaF@dwa.gov.za |
| Ms | Wilma | Lutsch | Department of Environmental Affairs | Private Bag X 447 | Pretoria | 0001 | (012) 310 3694 | | (012) 320 7026 | wlutsch@environment.gov.za |
| Mr | Bonani | Madikizela | Water Research Commission | Private Bag X03 | Gezina | 0031 | | | | bonanim@wrc.org.za |
| Mr | Tambubzani | Mulaudzi | Department of Environmental Affairs: Directorate: Sensitive Environments | Private Bag x 447 | Pretoria | 0001 | (012) 310 3144 | | (012) 320 7539 | tambum@environment.gov.za |
| Ms | Linda | Poll-Jonker | Department of Environmental Affairs | Private Bag x 447 | Pretoria | 0001 | (012) 395 1767 | | (012) 320 7539 | LPoll-Jonker@environment.gov.za |

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.

**Please Note:** Alternative sites were screened out during the planning and prioritisation process and will therefore not be assessed in further detail. Refer to the alternatives discussion in the Final Wakkerstroom Rehabilitation Plan.

#### A) Construction Phase

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| **Alternative 1 (preferred alternative)** | | | |
| GN R.544, Item 11 & 18<br><br>GN R.546, Item 13 & 16 | ***Direct impacts:*** | | |
| | **JOB CREATION**<br>One of the primary objectives of the WfWetlands programme is to create jobs and to teach transferrable skills to unemployed members of the local community so that they can be drawn into the permanent job market. | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>High (+) | • Ensure that the required Project workers are sourced from local communities and that maximum employment numbers are maintained throughout the Project duration.<br>• Project implementers to support local businesses (e.g. local quarry owners to obtain rock for gabions) where possible. |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | **FIRE RISK**<br>Construction usually takes place in the dry winter months when the danger of veld fires is highest. There is a possibility that construction workers could light a fire on site that could become out of control. The risk of this happening is assessed to be low, although the significance in terms of the economic damage that could be caused (especially in a commercial forestry area) is high. Adequate site supervision would considerably mitigate this impact. | ***Without mitigation:***<br>High (-)<br><br>***With mitigation:***<br>Low (-) | • Ensure that workers are aware of the potential for fires and the damage that could be caused.<br>• Ensure that a fire response procedure is in place and that all dry season work is organized in liaison with the landowners so that it fits into their firebreak/fire protection programme. |
| | **NUISANCE IMPACTS**<br>Construction can result in nuisance impacts, particularly for land-owners. These impacts include:<br>• Noise from construction activities, personnel and vehicles.<br>• An increase in the amount of litter being generated.<br>• Dust.<br>• Security concerns such as theft or leaving gates open.<br>• Non-use of sanitation facilities.<br>• Temporary loss of access to areas due to construction activities.<br><br>Given the isolated working environment (i.e. far from communities and public routes), the relatively few number of people on site and constant supervision by the project implementer, the above impacts are likely to be of low magnitude. | ***Without mitigation:***<br>Low (-)<br><br>***With mitigation:***<br>Very Low (-) | • All site workers to undergo environmental induction training ("toolbox talks") before undertaking work so that they are aware of the various environmental requirements.<br>• Landowners should be consulted regarding the placement of stockpile sites and toilets as well as access routes.<br>• Ensure that closed gates are kept closed. When in doubt, the landowner should be consulted.<br>• Follow CEMP with regards to sanitation facilities, waste management, noise and site management<br>• Utilise local labour wherever possible to reduce potential friction within the community caused by bringing outside personnel in.<br>• Ensure that all workers wear the yellow/blue attire indicative of WfWetlands personnel so that they are not mistaken for trespassers. |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | **HERITAGE IMPACTS**<br>No significant heritage resources within the wetlands were identified during the desktop research, I&AP interactions or site visit for the project.<br><br>Given the low likelihood of heritage sites being disturbed and provided that construction is immediately stopped should a heritage resource be encountered then the magnitude of this impact should be zero. | ***Without mitigation:***<br>Very Low (-)<br><br>***With mitigation:***<br>Neutral (-) | • Should any artefact or suspected artefact (including fossils and grave sites), or any site of cultural significance be encountered during construction, then the Contractor must immediately stop work in the vicinity of the artefact and alert the relevant authorities. The area around the discovery shall be cordoned off until such time that work is authorised to proceed. |
| | **WORKER SAFETY**<br>Alien clearing requires very specific training and involves high risk equipment such as chainsaws. It sometimes involves large trees and therefore extreme caution needs to be exercised. | ***Without mitigation:***<br>Medium (-)<br><br>***With mitigation:***<br>Low (-) | • All site workers to undergo specific safety training before undertaking this work so that they are aware of the various risks and measures to be taken in emergency situations.<br>• Follow CEMP with regards to Occupational Health and Safety requirements |
| | **FLORA & FAUNA**<br>**Habitat disturbance**<br>Habitat disturbance during the construction stage is typically temporary. In addition most species are relatively tolerant of disturbance and will be able to utilise the similar alternative habitat available in the study area. The area of habitat loss is also likely to be small and limited to the immediate surroundings of the intervention being constructed.<br><br>**Disturbance of fauna during the breeding season**<br>Construction of the interventions for this project takes place during winter (the dry period) which is when wattle cranes breed. Construction | ***Without mitigation:***<br>Medium (-)<br><br>***With mitigation:***<br>Low (-) | • There are tree ferns within the channel which will require permits prior to being moved. It is important to involve the MTPA in this process.<br>• Before moving onto site the project manager or implementer must liaise with the Endangered Wildlife Trust: Crane Working Group to determine if wattled cranes are known to be breeding in the project area. If cranes have been observed as being present then the advice of the Crane Working Group as to how best to proceed should be sought and discussed with the SANBI provincial co-ordinator.<br>• Implement the provisions of the CEMP regarding stockpiling borrowed material and rehabilitation after construction |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | activities could potentially result in disturbance to breeding pairs, possibly causing them to leave their nest site. Given the critically endangered status of these birds, this impact could be significant. It can however be almost completely mitigated by liaising with the Crane Working Group whose local representatives can advise on areas where breeding has been observed and where construction activities should not occur.<br><br>**Alien species invasion**<br>A potential construction-related impact on vegetation is the possibility of an increase in alien invasive species due to disturbance and weed seeds being brought in with borrow and construction material.<br><br>**Poaching**<br>Poaching by the construction teams is possible, but can be mitigated by the fact that the teams are not resident on site and are closely supervised. | | |
| | **AQUATIC ECO-SYSTEM IMPACTS**<br>**Temporary alteration to stream flow patterns**<br>Construction must often take place in areas that are permanently wet. This requires that water be diverted away from working areas, leading to temporary alterations in the current drainage characteristics. Water diversion is typically done using sand bags to slow/block flow and then a pump to remove water and discharge it further downstream. This can result in a slight drying in | ***Without mitigation:*** Medium (-)<br><br>***With mitigation:*** Low ( - ) | • Implement the provisions of the CEMP regarding stockpile location and site management.<br>• If sandbags are used to temporarily divert water then these bags should be in good condition.<br>• Sand/earth to fill the bags should come from and be returned to existing excavation points.<br>• Soil used in interventions must be stabilised as per the engineer's recommendations to |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | the working areas and may affect aquatic organisms. This will however be of a temporary nature and is unlikely to significantly alter flow patterns.<br><br>**Sedimentation**<br>Construction activities can result in additional sediment ending up in the water course (e.g. due to earthworks or breakage of sandbags used to divert water away from working areas). Sediment can result in silt build-up downstream, increase the turbidity of the water and result in habitat changes. However, as wetlands are typically low-energy systems, much of the excess sediment is likely to be trapped before it is washed far downstream. Also, given the limited nature of the earthworks, sedimentation is not anticipated to occur to a significant degree.<br><br>**Pollution of water-courses**<br>Construction activities close to a water-course/wetland carry the attendant risk that construction-related pollutants could end up in the wetland system. Typical pollutants include hydrocarbons (e.g. from fuel leaks, shutter oil and lubricating fluid spills), litter, cement and contaminated wash-down water.<br><br>**Disturbance of wetland vegetation and stream banks**<br>Some disturbance to stream banks and wetland vegetation will be inevitable in order to construct the proposed interventions. This impact generally occurs on a small scale and | | counteract the dispersive tendencies.<br>• Water abstracted above the General Authorization limits must be authorized by DWAF prior to such abstraction taking place. |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | can be mitigated via good management practices | | |
| | **Disturbance of wetland soil profile** | ***Without mitigation: Medium (-)*** ***With Mitigation:*** ***Low (-)*** | • Work only in low rainfall periods,<br>• Prevent compaction of soil<br>• Prevent draining, drying and desiccation of soil<br>• Use the general CEMP of the WfWetlands manual for working within wetlands<br>• Do not bring in any foreign vegetable matter (e.g. mulch) into the wetland area (especially from alien species).<br>• Store soils of different layers in different spots (stockpile soils according to the different soil layers as per the soil profile), in order not to mix layers of profile<br>• Cover with mulch or cloth (geotextile) and keep at least 40% moisture. If possible, stockpile soils in piles as high as possible (to retain moisture). |
| | **Sourcing borrow material**<br>Borrow material (earth and rocks) is not always sufficiently available on site, and has to be sourced elsewhere. This can have a negative biophysical impact to the area where it is sourced.<br><br>The quantities required are not such that they require a borrow pit licence. Costs increase the further one gets from site and therefore borrow material is sourced as close to site as possible. Sources include existing borrow areas on neighbouring farms, decommissioned dam walls, man-made berms which are no longer required. | ***Without mitigation:*** Medium (-)<br><br>***With mitigation:*** Low ( - ) | • Implement the provisions of the CEMP.<br>• Any quantities in excess of the minimum requirements for a borrow pit licence will require authorisation through DME.<br>• Borrow areas will need to be properly re-sloped and re-vegetated after use. |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | **Work within conservation areas**<br>A number of the projects fall within conservation areas which requires a more astute attitude on the part of the implementers to the surrounding environment and the possible negative impacts they can have on it. | ***Without mitigation:***<br>Medium (-)<br><br>***With mitigation:***<br>Low ( - ) | • Close co-operation is required with the conservation authorities. Any specific requirements need to be included in the documentation.<br>• Implement the provisions of the CEMP. |
| | ***Indirect impacts:*** | | |
| | **JOB CREATION**<br>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. | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>High (+) | • Ensure that the required Project workers are sourced from local communities and that maximum employment numbers are maintained throughout the Project duration.<br>• Project implementers to support local businesses (e.g. local quarry owners to obtain rock for gabions) where possible. |
| | **INCREASED AWARENESS OF WETLAND IMPORTANCE**<br>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. | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>High (+) | • Encourage landowners to become more aware of, and educated in, the ecological values and sensitivity of the wetland environments.<br>• Consider the erection of a SANBI/WfWetlands information signs to describe, and increase awareness of, the activities and the 'ecological' investment taking place in the Project areas |
| | ***Cumulative impacts:*** | | |
| | **Job Creation**<br>Cumulatively, the impact of the WfWetlands projects is judged to be of high positive significance. The programme has a budget of over R75 million, has created in the region of 1500 jobs and transferred skills to numerous previously unskilled persons. | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>High (+) | • Ensure that the required Project workers are sourced from local communities and that maximum employment numbers are maintained throughout the Project duration.<br>• Project implementers to support local businesses (e.g. local quarry owners to obtain rock for gabions) where possible. |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | **Increased Awareness Of Wetland Importance And Biodiversity**<br>The programme is creating increased awareness amongst the construction teams and land-owners regarding wetland ecology, the importance of rehabilitation and the importance of protecting biodiversity.<br><br>*Please also refer to the cumulative impact section under operational phase impacts.* | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>High (+) | • Encourage landowners to become more aware of, and educated in, the ecological values and sensitivity of the wetland environments.<br>• Consider the erection of a SANBI/WfWetlands information signs to describe, and increase awareness of, the activities and the 'ecological' investment taking place in the Project areas |
| **No-go option** | | | |
| | ***Direct, Indirect and Cumulative impacts:*** | | |
| | **Aquatic ecosystem**<br>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 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. | **Very Low ( - )** | ***Note:*** If the no go alternative is pursued, then the operational-related impacts will not be realised. However, the overall impact of the no go option on the aquatic ecosystem is likely to be negative, especially in the long-term as rehabilitation activities will not take place and the existing problems (such as erosion) in the wetland will continue. Over time these existing problems are likely to have a greater negative impact than the short-term and fairly minor construction related impacts. |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | **Heritage**<br>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. | **Neutral** | |
| | **Nuisance impacts**<br>Pursuing the no-go alternative will mean that the nuisance impacts associated with construction will not be realised. | **Neutral** | |
| | **Socio-economic**<br>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. | **Medium ( - )** | |

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

**B) Operational Phase**

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| **Alternative 1 (preferred alternative)** | | | |
| GN R.544, Item 11 & 18<br><br>GN R.546, Item 13 & 16 | ***Direct & Indirect impacts:*** | | |
| | **Changes in land use**<br>The increase in wetland area may have both positive and negative impacts for landowners. Wetlands are often utilised for winter grazing and an increase in wetland area will thus improve grazing conditions for the farmer. However the increase in wet areas may also make previously accessible areas inaccessible | ***Without mitigation:***<br>Low (+)<br>Medium ( - )<br><br>***With mitigation:***<br>Medium (+) | • Ensure good access for landowners in the form of crossing points<br>• Provision of watering points for stock to minimise extensive trampling in the wetlands (especially in the wetter times of year) |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | for farming purposes. The extent and magnitude of this impact will depend to a large degree on how much value each individual landowner places on wetland conservation. It is however assumed that if the landowner is willing to allow wetland rehabilitation to take place on their property that they see the value in the WfWetlands programme and are willing to accept the increase in wetland area. | Low ( - ) | |
| | **Reduced water storage and treatment costs**<br>Wetlands can offer valuable stream flow regulation and filtration services. By restoring wetland area it is likely that downstream users will benefit by having a more reliable and possibly cleaner source of water. In addition, by addressing erosion, wetland rehabilitation can decrease the amount of sediment downstream. This can help to reduce water treatment costs for downstream users and will also reduce the sedimentation of downstream water storage facilities such as dams. | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>Medium (+) | |
| | **Reduced soil erosion (Paardeplaats)**<br><br>By reducing exposed ground surfaces and surface runoff velocity, the sediment load in surface runoff is reduced, thereby contributing to better water quality in the sub-catchment area. | ***Without mitigation:***<br>*Medium (+)*<br><br>***With mitigation:***<br>*Medium (+)* | |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | **Employment**<br>Ideally, the skills learned by the project team during the construction phase – such as how to work with concrete, build gabions etc – can be used to assist them to find permanent employment. | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>Medium (+) | |
| | **Burning regimes in wetland areas**<br>Wetlands are considered high risk areas for runaway fires and therefore some farmers use the wetland areas as firebreaks to protect the rest of their property, with the result that the entire wetland is burnt every year. If burnt at the wrong time it could have very negative impacts on endangered fauna (particularly the breeding cranes) and flora. Wetlands do require burning, but in a responsible manner. | ***Without mitigation:***<br>High (-)<br><br>***With mitigation:***<br>Low ( - ) | • It is preferred that wetlands only get burnt every second year at the least, however, if this is not possible the optimum time is after Aug – end Sept. (Flora need opportunity to seed, and Cranes need an opportunity to breed). |
| | ***Cumulative impacts:*** | | |
| | **ECOSYSTEM FUNCTIONING**<br>**Restoring wetland corridors**<br>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.<br><br>**Changes in water quality and quantity**<br>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 | ***Without mitigation:***<br>High (+)<br><br>***With mitigation:***<br>High (+) | ***Note:*** The interventions identified for the proposed rehabilitation project were identified during a screening process that was undertaken to ensure that the most suitable intervention was identified, developed and assessed for each rehabilitation site. During this screening process the project team also took into account environmental, social and economic considerations, as well as the rehabilitation objectives identified for the wetland.<br><br>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 |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | rehabilitation.<br><br>This improvement in water quality and a more reliable supply of water is particularly important given the water scarcity that faces South Africa. | | possible to achieve the rehabilitation objectives identified for the wetlands (also see the Wakkerstroom Rehabilitation Plan). Without the implementation of wetland rehabilitation as part of the WfWetlands project, the overall programme objectives[9] and the EPWP requirements would not be realised. |
| | **FLORA & FAUNA**<br>**Increased habitat**<br>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.<br><br>**Increased biodiversity**<br>A large proportion of the natural vegetation in the greater area has already been lost to forestry and agriculture. Restoring wetland habitat will help to increase the species richness of the overall area by encouraging the re-establishment of wetland species.<br><br>**Obstruction of movement of aquatic biota**<br>The potential for the proposed interventions to hinder the movement of aquatic species such as fish was considered and the following noted:<br>o 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.<br>o The overall impact of the structures on | ***Without mitigation:***<br>Medium (+)<br><br>***With mitigation:***<br>Medium (+) | |

[9] Wetland conservation and poverty reduction through job creation and skills

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | aquatic biota is expected to be positive due the increase in quality and quantity of habitat.<br>o The interventions may help to contain the spread of alien exotic fish<br>Based on the above, fish ladders were not considered critical and were thus not designed for this system.<br><br>**Change in species composition**<br>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. | | |
| **No-go option** | | | |
| | ***Direct, Indirect and Cumulative impacts:*** | | |
| | **Ecosystem functioning**<br>Pursuing the no-go option would result in the current negative ecosystem impacts continuing. These impacts include desiccation, erosion, channel incision etc. | **Medium ( - )** | ***Note:*** If the no go alternative is pursued, then the operational-related impacts will not be realised. However, the overall impact of the no go option on the aquatic ecosystem is likely to be negative, especially in the long-term as rehabilitation activities will not take place and the existing problems (such as erosion) in the wetland will continue. Over time these existing problems are likely to have a greater negative impact than the short-term and fairly minor construction related impacts. |
| | **Fauna & Flora**<br>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 | **Medium ( - )** | |

| Activity | Impact summary | Significance | Proposed mitigation |
|---|---|---|---|
| | affect the achievement of conservation objectives for the area. | | |
| | **Socio-economic**<br>The no go alternative would mean that the positive impacts identified above would not be realised. | **Low ( - )** | |

### C) Decommissioning and Closure Phase

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

## 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)**

### IMPACT SUMMARY TABLE

| | |
|---|---|
| **High negative** | **Red** |
| **Medium negative** | **Green** |
| **Low negative** | **Blue** |
| **Very Low** | **Light Blue** |
| **Neutral** | |
| **Positive impact** | **Yellow** |

| ***Construction Phase*: Description of Impact** | ***Significance of Impact*** | | |
|---|---|---|---|
| | ***Preferred Alternative*** | | |
| | ***No Mitigation*** | ***With mitigation*** | ***No Go*** |
| **Job creation** | **Medium (+)** | **High (+)** | **Medium (-)** |
| **Increased awareness of wetland importance** | **Medium (+)** | **High (+)** | **Medium (-)** |
| **Fire risk** | **High (-)** | **Low (-)** | **Neutral** |
| **Nuisance impacts** | **Low (-)** | **Very Low (-)** | **Neutral** |
| **Heritage impacts** | **Very Low (-)** | **Neutral** | **Neutral** |
| **Worker safety** | **Medium (-)** | **Low (-)** | **Neutral** |
| **Flora & Fauna** | **Medium (-)** | **Low (-)** | **Medium (-)** |
| **Aquatic eco-system impacts** | **Medium (-)** | **Low (-)** | **Medium (-)** |
| **Sourcing borrow material** | **Medium (-)** | **Low (-)** | **Neutral** |
| **Work within conservation areas** | **Medium (-)** | **Low (-)** | **Neutral** |
| **Disturbance of wetland soil profile** | **Medium (-)** | **Low (-)** | **Neutral** |
| ***Operational Phase*: Description of Impact** | | | |
| **Changes in land use** | **Low (+)** | **Medium (+)** | |
| | **Medium (-)** | **Low (-)** | **Low (-)** |
| **Reduced water storage and treatment costs** | **Medium (+)** | **Medium (+)** | **Low (-)** |
| **Employment** | **Medium (+)** | **Medium (+)** | **Medium (-)** |
| **Ecosystem functioning** | **Medium (+)** | **Medium (+)** | **High (-)** |

| | | | |
|---|---|---|---|
| **Flora and Fauna** | **Medium (+)** | **Medium (+)** | **Medium (-)** |
| **Reduced soil erosion** | **Medium (+)** | **Medium (+)** | **Medium (-)** |
| **Public safety** | **Medium (-)** | **Low (-)** | **Neutral** |
| | | | |

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

**CONSTRUCTION PHASE:**

It is most likely that all identified construction related impacts would be limited to the duration of this phase. Impacts on the bio-physical environment are generally considered to be of **Medium (-)** to **Low (-)** significance, which can be reduced to **Low (-)** and **Very Low (-)** with the implementation of appropriate mitigation measures. Construction related impacts can generally be very effectively managed through the implementation and regular auditing of a CEMP. The impact on the socio-economic environment is expected to be **Medium** to **High (+)** due largely to the creation of jobs and up-skilling of local workers.

**OPERATIONAL PHASE:**

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

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

## 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 ✓ | NO |
|---|---|---|

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.

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

- The proposed rehabilitation activities are likely to have significant positive bio-physical and socio-economic benefits, not just for the local community for the country as a whole.
- Effective mitigation measures exist to manage the limited negative impacts that were identified.
- The proposed rehabilitation activities are in line with the principles of NEMA (in particular: people and their needs – particularly women and children – are placed at the forefront of development via the EPWP; the development can be considered to be socially, environmentally and economically sustainable; the environmental impacts of the activity are not unfairly distributed and the potential environmental impacts have been assessed and evaluated).
- The WfWetlands programme is an important part of the government's EPWP and given that the impacts of the proposed activities are not likely to be detrimental to the environment, this programme should be supported in the spirit of co-operative governance.

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

a) Mitigation measures listed in this BAR, as well as those indicated in the Final Mpumalanga Rehabilitation Plans, should be referenced as conditions of approval.
b) Construction activities must take place in accordance to the requirements of the attached CEMP, which also includes general requirements from the WfWetlands Best Management Practices Plan.
c) Regular auditing of the CEMP must take place as per the audit checklist in the Final Mpumalanga Rehabilitation Plans.

With regards to the auditing and associated reporting to the authorities during the construction phase, since the programme includes comprehensive project management and monthly sites visits by the SANBI Provincial Co-ordinator (PC) the requirements for the CEMP have been worked into the Programme's Project Inspection Report which is completed monthly by the SANBI PC. The WfWetlands Programme is responsible for ensuring the compliance of it by the contracted implementers and therefore any non-compliance identified is dealt with on site by the SANBI PC directly. It is therefore

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| recommended that a consolidated Environmental Project Inspection Report be submitted to DEA for each project on a bi-annual basis. This report would document any environmental non-compliance and corrective actions so that consideration can be given to these aspects in the following application for Environmental Authorisation. |

| | | |
|---|---|---|
| Is an EMPr attached? | **YES** | ~~NO~~ |

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

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| Refer to the locality maps and the wetland desktop maps included in the Final Wakkerstroom Rehabilitation Plan. |

Appendix B: Photographs

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| Refer to the site photographs included in the Final Wakkerstroom Rehabilitation Plan. |

Appendix C: Facility illustration(s)

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| Refer to the design drawings of each intervention included in the Final Wakkerstroom Rehabilitation Plan. |

Appendix D: Specialist reports (including terms of reference)

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| All rehabilitation plans include specialist wetland assessment and specialist engineering input. |

Appendix E: Public Participation

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| $E_1$ – Adverts and Posters<br>$E_2$ – Letters to I&AP's<br>$E_3$ – Comments and Response report<br>$E_4$ – Record of Commenting Authorities contacted<br>$E_5$ – I&AP database<br>$E_6$ – Record of meetings and minutes |

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

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| Refer to the Construction Phase EMP included in the Final Wakkerstroom Rehabilitation Plan. |

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

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| $H_1$ –Wetland forum minutes |