

## MDTP - SADC/GIZ Project

### “Transboundary Use and Protection of Natural Resources in the SADC Region”

#### Cross Border Climate Change Adaptation

#### ***Project Title: Implementing wetland rehabilitation to respond to drought in the Maloti Drakensberg Transfrontier Focus Area`***

### 1. Background

The area that has been considered for the implementation of the MDTP-GIZ Wetland rehabilitation project to contribute to climate change adaptation is KwaZulu Natal Upper uThukela District. Two areas have been identified to make up a 100 hectare wetland rehabilitation project. Both these areas are within the Maloti Drakensberg Transfrontier Conservation Area (MDTFCA) in the Maloti Drakensberg known for its critical importance for water supply and its high diversity of wetland types (Dely *et al.*, 1999). The areas identified also contribute to the values of the Maloti Drakensberg Park World Heritage Site (MDP WHS) which was inscribed on the list of **World Heritage Sites** on 29 November 2000 and listed as a **Wetland of International Importance** on 21 January 1997.

Ezemvelo KZNWildlife - EKZNW (who is an implementing agency for the project) staff have been key in identifying suitable sites at Culfargie and Cathedral Peak Didima.

The project main function to improve the climate change (the below figure 1 shows efforts by the EKZNW to monitor daily climate variations as part of a long term project on monitoring climate change by EKZNW and the South African Environmental Observation Network (SAEON)) adaptive capabilities of the wetland through restoring, improving and maintaining the following wetlands functions - **Recharge of groundwater storage:** Wetlands facilitate the movement of large volumes of water into the underground aquifers, resulting in the recharge of the groundwater storage. This process maintains a high water table and supports healthy plant growth. Such groundwater may also be drawn for human consumption and industrial activities. **Flood and Erosion Prevention:** Wetlands prevent surface run-off from moving swiftly and overflowing the river banks downstream thus preventing erosive flood conditions. **Water Purification:** Wetlands remove sediments, nutrients, toxic substances and other pollutants in surface run-off. This improves the water quality and prevents the siltation of downstream river and lake watercourses. **Micro-climate Stabilization:** Wetlands vegetation may also evaporate or transpire water into the atmosphere. This falls as rain which helps to maintain stable climatic conditions. This, in turn, supports stable agriculture and other resource-based activities. **Water Supply:** Because of their ability to purify and retain large volumes of water, wetlands provide clean and reliable sources of water for human consumption, agriculture and industry. Many rivers flow throughout the year because the wetlands release their stored water slowly into them, thus extending the period when water is available in dryer times. Wetlands are, therefore, important in maintaining perennial rivers and streams. **Carbon sequestration:** Wetlands provide a sink for carbon, absorbs atmospheric carbon therefore reducing one of the greenhouse gases in the atmosphere. **Recreation/Tourism:** The spectacular concentration of different species of animals and plant in wetlands provide opportunities for tourism and recreational activities. These include bird- watching, game-viewing. **Biological Diversity:** Most wetlands are hotspots for plant and animal species. This attribute is of value in itself as it contributes immensely to the maintenance of their ecological processes for the benefit of the present and future generations. **Forage:** Wetland grasslands provide critical areas for livestock grazing, especially during

the dry season. **Cultural/Heritage Value:** Many wetlands are protected through various structural and non-structural practices aimed at maintaining and preserving them for ecosystems' conservation and socio-economic development.

The implementation of this project is underpinned by the below policies.

## 2. Wetland Rehabilitation Policy Context

- National Environmental Management Act, Act 107 of 1998.
- The Convention on Wetlands (Ramsar, Iran, 1971).



**Figure 1:** Shows equipment implemented at Cathedral Peak Didima to monitor climate variations – temperature, windspeed, rain, humidity. Data from the equipment is downloaded, stored for analysis of climate variations over time.

## 3. Areas of implementation identified

### 3.1 Culfargie wetland

#### 3.1.1 Culfargie wetland and its importance

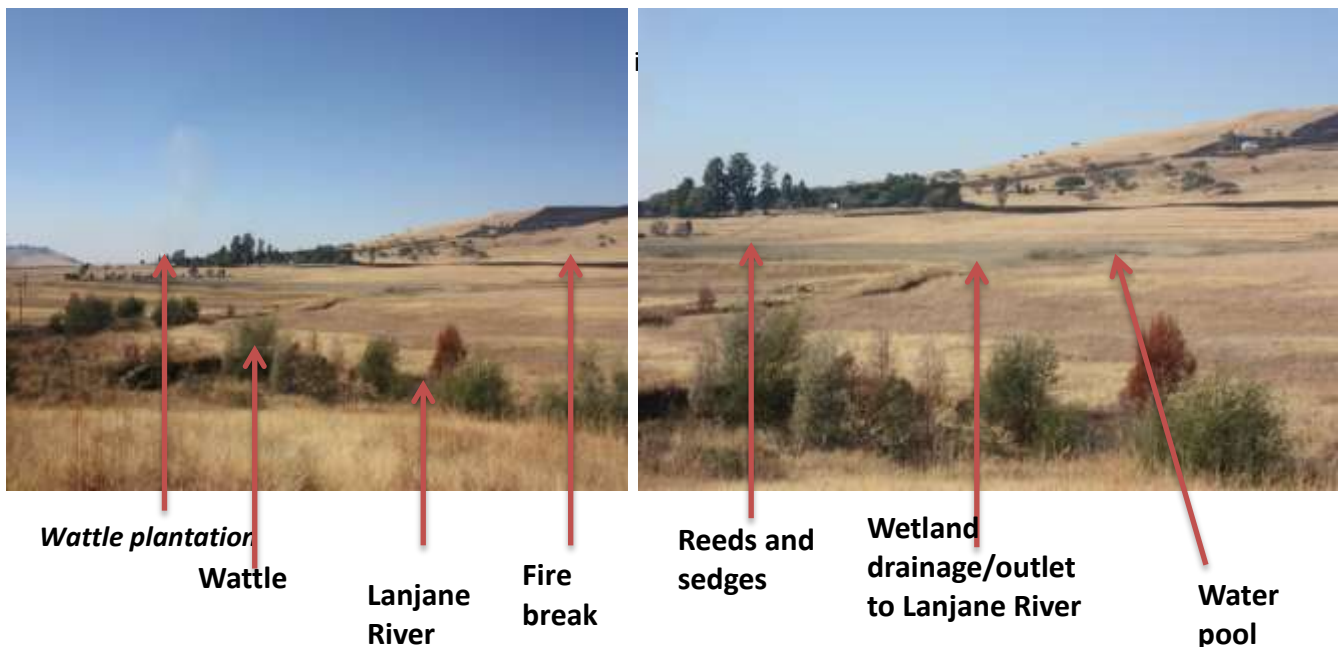
The Culfargie nature serve is part of the Maloti Drakensberg Park World Heritage Site (MDP WHS) which was inscribed on the list of **World Heritage Sites** on 29 November 2000 and listed as a **Wetland of International Importance** on 21 January 1997.

The wetland identified at Culfargie is based a few kilometers away from the boundary of the Culfargie Nature Reserve, within its buffer and at coordinates *Latitude 28.96678S Longitude 29.41481E*. The buffer of the reserve forms an important protective layer of the reserve and has to be managed in a manner that supports the objectives of the park (which is a part of a WHS as mentioned above). Apart from this area being buffer to the Culfargie Nature Reserve, it is also within the Maloti Drakensberg Transfrontier Conservation Area (MDTFCA) which is a conservation and development area.

The wetland forms part of a network of rivers that open up to Bell Park Dam. The Bell Park Dam is a privately owned dam used to supply water to the local farming community in the Culfargie area. It is also popular for recreational purposes such as fishing and canoeing and attracts a significant number of tourists. According to local communities popular fish at the Bell Park Dam are carps, *Barbus anoplus* (Chubbyhead Minnow), *Labeobarbus natalensis* (Natal Yellowfish or Scaly), blue gill, and the *Amphilius natalensis* (Natal Mountain Catfish).

### 3.1.2 Culfargie Wetland Status

There is evidence that the wetland might have been drained, however what is most evident is the presence on IAPs such as, black and silver wattle (dominant species).



**Figure 2:** Depicts the conditions surrounding the wetland that need to be addressed and its importance

There are two fire breaks implemented in the catchment where the wetland is located as shown in figure 2 above. One firebreak is at the border of the Culfargie Nature Reserve in the upper catchment areas while the second fire break is within the privately owned land within the wetland area.

Part of the wetland as shown above, opens up to a river called Lanjane which in turn opens up to the bigger Bell Park Dam.

The main issue of this wetland is the infestation by IAPs such as the black (*Acacia mearnsii*) and the grey wattle (*Acacia dealbata*). Another concerning issue is the plantation right at the top of the catchment which has a potential to infest the rest of the area through seed dispersal.



**Historical clearing – ringbarking used to discourage growth**



**A flowing stream infested by wattle And other IAPs**

**Figure 3:** *Depicts historical clearing in the wetland that need to be addressed*

The Lanjane River forming an important part of this wetland area is a flowing stream with a fair water quality from a visual analysis (argument based on the turbidity). There is no analysis of water quality done yet using water analysis techniques such as the Mini SASS. Recommendations are to get assistance from the Department of Water Affairs to measure the streamflow and other water quality issues at the beginning of the project. This knowledge will support the clearing activity by depicting the benefits in terms of the difference that has been made by the clearing of IAPs to the streamflow. This means that the streamflow will be measured pre-clearing and also post-clearing.

As shown in the figure above, there has been clearing of IAPs done in the wetland area. Ring-barking was used to kill IAPs while standing. The work in the area was not completed and even some of the trees ringbarked were not done properly. There has not been any use of herbicides which makes sense given that the area is a wetland area, however further consultation will be done to acquire advice on the best method to use, and the best herbicide that can be applied.

There is also evidence of bird nests in the area as shown in the figure below. According to staff at Culfargie Bald ibis and Crowned cranes has also been spotted in the area.





**Figure 4:** Showing bird nests in the wetland area.

### **3.1.3 Scope of work and Method**

The main activity that will be implemented to address issues in the wetland area is the clearing of IAPs. As mentioned above the dominant species that will be cleared in the wattle. There are also reeds which are not necessarily IAPs that may be removed in smaller dams used for recreation as they become a nuisance. The reeds will be removed to improve water flow. The clearing method that will be range from:

- Handpulling
- Ringbarking
- Strip-barking
- Cut and slash – stack and remove.

Advice is still required with regards to the best method and the consideration of use of herbicides in wetland areas. The aim is to ensure that if the cut and slash method is used, the aboveground bioamss is not left along the stream, but debranched, logged, stacked and pulled out of the clearing area. This is aimed at ensuring that the aboveground bioamss is not washed down to the straems during rains, or contributes to the increase in the intensity of the fires if the area is burnt in the near future. The wood will be accessible to communities for energy provision. This is propobaly on of the benefits of the project to the community.

Another activity which is reccomended is the plugging of the wetland to address issues of historical drainange, however the challenge is that this practice requires an engineer and also requires environmental authorisations to be able to implement anu plugs and gabios. Acquiring these authorisations may take from 6 months up to a year. Apart from that the funding for the project does not make provision for engineer high costs.

The rea still requires mapping to determine the hectares covered by the wetland. The mapping will be done desktop, while in field verifications will be conducted to verify the results of the desktop digitising.

*Main scope of work is as detailed in the workplan attached.*

The wattle observed is mixed ages – young, and adult at about 70% infestations if only the Lanjane river bank is to be considered. Clearing will take place at 50 meters from the centre of the river.

#### **3.1.4 Role players in the wetland area**

The land is privately owned. The landowner has been briefly sensitised about the project and its purpose, and does not have reservations. There still needs to be a formal meeting with other role players such as the Working for Water Programme which dealt with the clearing of IAPs in the Lanjane River.

Other role players which have been consulted are iNkosi yaseMaswazini, Nkosi Hloatshwayo. There has also been an indication that there is a Nkosi Shabalala that needs to be consulted.

#### **3.1.6 Followup**

- Need to map the area to determine the total hectares and identify the existing Invasive Alien Plants (IAPs) together with participants in the project.
- Collect Nbal minimum attributes – species type, size and density.
- Get someone from the Department of Water Affairs to assist in measuring the streamflow in the Lenjane River.
- Meet with Nkosi Shabalala
- Consult with Working for Water programme Project Manager for the area, to make sure there is no conflict in working in the area.

### **3.2 Cathedral Peak Nature Reserve wetland**

#### **3.2.1 Cathedral Peak Nature Reserve– MDP WHS and its importance**

The wetland identified at this site is located within the boundary of the Cathedral Peak Nature Reserve– MDP WHS at coordinates – *Latitude = 28.93886S and Longitude = 29.24559E* Mazonjwana River runs through this wetland area. The Nature Reserve is one of the areas contributing to the values of the MDP WHS as mentioned above one of them being water provision and regulation. Apart from this, the Didima at Cathedral Peak is a visitor hotspot with visitors attracted by the Drakensberg's scenic beauty of the grasslands, streams, waterfalls, craggy cliffs and the cultural heritage in the form of rock art from the San people which has been reproduced and interpreted in the Rock Art Centre at Didima. Cathedral Peak is also a hiking hotspot which offers hiking routes ranging from a few hours to several days of camping and adventure.

It is important to also note that one of the objectives of this project is to contribute to climate change adaptation and mitigation. Observed at Cathedral Peak were equipment used to monitor climate variations as shown in figure 1 above.

#### **3.2.3 Cathedral Peak Nature Reserve Wetland Status**

The wetland in the reserve should by far also be contributing to the attractions of the area interested in the beautiful wetland bird species such as cranes; however, it is marred by a number of challenges. Historically, a camping site was established in the wetland area. This degraded part of the wetland. Apart from the degradation due to area being used as a camping site, the wetland is

also infested by poplar – *Populus canensis* (dominant species) and American bramble (*Rubus cuneifolius*).



**Poplar species**



**Clearing of IAPs**

**Mzonjwana River**

**Figure 5:** *Depicts historical clearing and also the dominant IAPs in the wetland that need to be addressed*

The park management recognised the need to implement a rehabilitation programme in the wetland area in order to revive its functioning. There has been clearing of IAP as shown in figure 5 above since August 2013. Three chainsaw operators and one general assistant have worked in the area conducting IAP clearing. The aboveground biomass has not been removed yet. This will be done as soon as the team has been relieved from the fire operations.



**Wetland vegetation**

**Water logged areas**



**Figure 6:** *Depicts the conditions surrounding the wetland that need to be addressed*

Although the wetland is degraded, there are areas still remaining which are still functioning as water retaining areas especially areas at the bottom of the wetlands where there are no IAP and areas not accessible to the public visiting the picnic area.

### **3.2.4 Scope of work and Method**

The main activity that will be implemented to address issues in the wetland area is the clearing of IAPs. As mentioned above the dominant species that will be cleared is the poplar. The clearing method that will be range from:

- Handpulling
- Ringbarking
- Strip-barking
- Cut and slash – stack and remove.

Advice is still required with regards to the best method and the consideration of use of herbicides in wetland areas. The aim is to ensure that if the cut and slash method is used, the aboveground biomass is not left along the stream, but debranched, logged, stacked and pulled out of the clearing area. This is aimed at ensuring that the aboveground biomass is not washed down to the streams during rains, or contributes to the increase in the intensity of the fires if the area is burnt in the near future. The wood will be accessible to communities for energy provision if required, otherwise it will be stacked and burnt.

Another activity which is recommended is the plugging of the wetland to address issues of historical degradation, however the challenge is that this practice requires an engineer and also requires environmental authorisations to be able to implement any plugs and gabions. Acquiring these authorisations may take from 6 months up to a year. Apart from that the funding for the project does not make provision for engineer high costs. Regeneration is also considered for this area.

The area still requires mapping to determine the hectares covered by the wetland. The mapping will be done desktop, while in field verifications will be conducted to verify the results of the desktop digitising.

*Main scope of work is as detailed in the workplan attached.*

The wattle observed is mixed ages – young, and adult at about 70% infestations if only the Lanjane river bank is to be considered. Clearing will take place at 50 meters from the centre of the river.

### **3.2.5 Role players in the wetland area**

The management authority for this area is EKZNW. There is clearing of IAPs occurring at the top of the catchment which is done by EKZNW in terrestrial environments. Another role player is reserve management which has taken an initiative to clear the wetland area with no adequate resources at this stage. There has been discussion around the staff in the park removing the aboveground biomass in areas that have been cleared. Inkosi yamaNgwane has been consulted with regards to the project as employment of participants will be from his kingship.



### **3.2.6 Followup**

- Need to map the area to determine the total hectares and identify the existing Invasive Alien Plants (IAPs) together with participants in the project.
- Collect Nbal minimum attributes – species type, size and density.
- Get someone from the Department of Water Affairs to assist in measuring the streamflow in the Mazonjwana River.

## **4. Benefits of working in Culfargie and Cathedral Peak**

*Efforts that will be made at the above sites will:*

- Improve the status of the wetland
- Assist the wetland recover its natural vegetation and fauna species inhabiting them.
- Improve its water retaining capabilities
- Improve its carbon sequestration capabilities.
- Contribute to the bigger picture water security, provision and regulation of the area.
- Improve visitor activities in areas such as Didima that are visitor hotspots – with bird-lovers birding in the wetland area in a manner that does not contribute to the degradation of the wetland.
- Improve the scenic beauty of the area especially in the most visited Cathedral Peak where these IAPs are observed not far from the main entrance to the reserve.

## **5. Recommendations**

It is obvious that the current funding from GIZ alone will not achieve the best out of the situations of these two wetlands identified. The funding that will be invested in this project area should be viewed as a short term investment to support initiatives already undertaken in these areas. There is also an argument that clearing of IAPs needs to be backed up by at least a 3 year plan that will ensure initial work, and at least two follow ups until the area is at a maintenance stage. A clear plan for follow up is required.

## **6. References**

DELY J L, KOTZE D C, QUINN N W, and MANDER J J, 1999. A pilot project to compile an inventory and classification of wetlands in the Natal Drakensberg Park. South African Wetlands Conservation Programme, Department of Environmental Affairs and Tourism, Pretoria.

