

BOJANALA PLATINUM DISTRICT MUNICIPALITY WETLAND REPORT | 2017

LOCAL ACTION FOR BIODIVERSITY (LAB): WETLANDS SOUTH AFRICA



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SANBI 
Biodiversity for Life
South African National Biodiversity Institute



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in a Changing Climate

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FOREWORD



I am pleased and feel honoured to have been afforded this opportunity to put forward my word on this platform, where issues of wetlands are being put into perspective. We may know that wetlands are part of our environmental matters that needs attention just as many other environmental systems.

We will continue to recognize the vital role our wetlands play, it is therefore essential that we also direct our focus to the many threats they face. The wetlands within Bojanala Platinum District Municipality are currently under threat from mining and agriculture, inappropriate development as well as sewage and storm water seeps into the wetlands. This puts the municipality at risk from losing the valuable ecosystem services the wetlands provide.

We truly need to understand and appreciate the role of wetlands. Wetland ecosystems, in a landscape, are like kidneys in our human bodies, they play a vital role in sustaining healthy watercourses which in turn have direct implications on the lives of the people. Let us therefore work together to secure our wetlands for the sake of biodiversity, and effort to make a meaningful contribution towards mitigating the effects of climate change and securing the livelihoods of local communities.

We cannot ignore the fact that South Africa, and many other countries in the world, is bound to observe the month of February as a month to celebrate wetlands, and again, let's remember that this month has been set aside to continuously strive

to bring awareness and behaviour change towards the conservation of wetlands.

It is important that everybody is involved in the many initiatives in place to conserve this resource. Communities can be proactive by ensuring that they know more about wetlands and what other departments – both local and national - are doing to protect wetlands. Our communities are also advised to report any illegal activities occurring near or in wetlands.

I hope I am still relevant when I take this opportunity to wish all the readers of this Wetland Report a successful 2017 and encourage them to continue to preserve our nature to benefit all the citizens.

Ke a leboga.

CLLR. MF MOKATI
Executive Mayor
Bojanala Platinum District
Municipality

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



ICLEI – LOCAL GOVERNMENTS FOR SUSTAINABILITY

@ ICLEI-Africa@iclei.org +27 21 202 0381 www.africa.iclei.org www.twitter.com/ICLEIAfrica



ICLEI – Local Governments for Sustainability is the leading global network of over 1,500 cities, towns and regions committed to building a sustainable future. By helping the ICLEI Network to become sustainable, low-carbon, ecomobile, resilient, biodiverse, resource-efficient, healthy and happy, with a green economy and smart infrastructure, we impact over 25% of the global urban population.

ICLEI Africa’s work is conducted by a dynamic and passionate team of professionals that seek to work with cities to ensure a more sustainable future, with a specific focus on urban biodiversity matters.

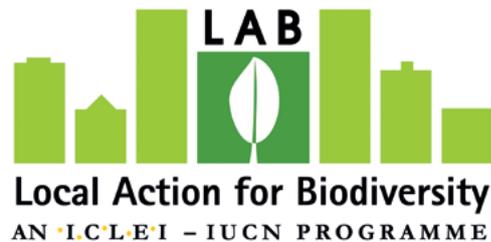
In order to strengthen the role cities and local governments play in the pursuit of greater sustainability through the collaborative design and implementation of integrated urban development and effective biodiversity management, the ICLEI Cities Biodiversity Center (ICLEI CBC) was created in 2009. The ICLEI CBC is located in Cape Town, South Africa, embedded in the Africa Regional Office of ICLEI. We offer cities a broad portfolio of supportive services through our dedicated team of passionate, skilled and dynamic biodiversity and urban development experts.



ICLEI CITIES BIODIVERSITY CENTER

LOCAL ACTION FOR BIODIVERSITY PROGRAMME

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The ICLEI Cities Biodiversity Center aims to create BiodiverCities, which promote urban biodiversity for the many benefits they offer, including human well-being, poverty alleviation, habitat conservation, air and water quality, climate change adaptation and mitigation, food provision, fortified infrastructure resilience, and happiness of citizens.

BiodiverCities are aware that ecosystem services contribute towards many essential municipal services, as well as towards the local economy, sustainability and social well-being of their cities. Biodiversity in cities provides a critical contribution towards achieving the global biodiversity targets. It

buffers further biodiversity loss, improves the urban standard of living, and provides local opportunities for global education and awareness.

ICLEI's Local Action for Biodiversity (LAB) programme is a unique global biodiversity programme run by The ICLEI Cities Biodiversity Center. The LAB Program is aimed at improving and enhancing ecosystem management at the local level, and is recognized globally as the leading results-driven local government biodiversity initiative. Currently, LAB is working on wetland restoration in South Africa under the Local Action for Biodiversity: Wetlands South Africa (LAB Wetlands SA) project.



TABLE OF CONTENTS

Foreword	1
ICLEI – Local Governments for Sustainability.....	2
ICLEI Cities Biodiversity Center.....	3
Local Action for Biodiversity Programme.....	3
List of Acronyms and Abbreviations.....	6
List of Tables.....	6
List of Figures.....	7
Executive Summary.....	8
Introduction.....	9
1 WHAT IS A WETLAND?.....	10
2 WHAT IS BIODIVERSITY?	12
3 WETLANDS AND BIODIVERSITY IN BOJANALA PLATINUM DISTRICT MUNICIPALITY.....	13
3.1 Mapping Wetlands in Bojanala Platinum District Municipality.....	14
3.2 Key Wetlands in the Bojanala Platinum District Municipality	16
3.2.1 Rietfontein Wetland	16
3.2.2 Pilanesberg Ntshwe Wetland.....	18
3.2.3 Pilanesberg Kgama Wetland	19
3.2.4 Pilanesberg Tlhwane Wetland	19
3.3 Wetlands value and links to service delivery	20
3.4 Threats to Wetlands.....	22
4 DISASTER MANAGEMENT AND CLIMATE CHANGE	24
4.1 Disaster Risk Management in the Bojanala Platinum District Municipality	24
4.1.1 Risk mapping.....	25
4.1.2 Role of Wetlands in Disaster Risk Mitigation	25
4.2 Climate Change and Wetlands in Bojanala Platinum District Municipality.....	26
4.2.1 Historical Climate in Bojanala Platinum District Municipality	27
4.2.2 Projected Climate Change in Bojanala Platinum District Municipality.....	28
4.2.3 Impacts of Climate Change in Bojanala Platinum District Municipality.....	29
4.2.4 Role of Wetlands in Mitigating the Impacts of Climate Change.....	29
5 GOVERNANCE & MANAGEMENT.....	30
5.1 Policy Framework	30
5.2 Wetland Management within the municipality.....	32

6 LOCAL AND REGIONAL PARTNERSHIPS AND PROGRAMMES.....	33
7 COMMUNICATION AND PUBLIC AWARENESS	34
7.1. Public Participation and Awareness	34
Conclusion	35
Definitions	36
Acknowledgements.....	38
Resources.....	39
Footnotes.....	40



LIST OF ACRONYMS AND ABBREVIATIONS

AS	Africa Secretariat	NEMWA	National Environmental Management: Water Act
BGIS	Biodiversity Geographic Information System	NFEPA	National Freshwater Ecosystem Priority Areas
BPDM	Bojanala Platinum District Municipality	NGO	Non-governmental Organisation
CBA	Critical Biodiversity Area	NRF	National Research Fund
CEPA	Communication, Education and Public Awareness	NWA	National Water Act
CIP	Climate Information Portal	READ	Department of Rural, Environment & Agricultural Development
CSAG	Climate Systems Analysis Group	SA	South Africa
DEA	Department of Environmental Affairs	SANBI	South African National Biodiversity Institute
DRM	Disaster Risk Management	SDF	Spatial Development Framework
DRMC	Disaster Risk Management Centre	SANParks	South Africa National Parks
DRMP	Disaster Risk Management Plan	SMA	Special Management Area
EIA	Environmental Impact Assessment	SPLUMA	Spatial Planning and Land Use Management Act
EMF	Environmental Management Framework	UNFCCC	United Nations Framework Convention on Climate Change
GIS	Geographic Information System	USAID	United States Agency for International Development
IAP	Invasive Alien Plant	WFW	Working for Wetlands
IDP	Integrated Development Plan	WWTW	Waste Water Treatment Works
LAB	Local Action for Biodiversity		
LM	Local Municipality		
MTSF	Medium Term Strategic Framework		
NDP	National Development Plan		
NEMA	National Environmental Management Act		
NEMBA	National Environmental Management: Biodiversity Act		

LIST OF TABLES

Table 1	Ecosystem services provided by wetlands
Table 2	Ecosystem services identified in Bojanala Platinum District Municipality
Table 3	Priority disaster risks as per the BPDM Disaster Management Plan
Table 4	Wetlands can play several roles in disaster risk mitigation in Bojanala Platinum District Municipality
Table 5	Legislation governing wetland management in Bojanala Platinum District Municipality
Table 6	Working for Wetlands initiatives in Bojanala Platinum District Municipality

LIST OF FIGURES

- Figure 1** Bojanala District Municipality in relation to the rest of South Africa.
- Figure 2 & 3** Mottled soils indicative of a wetland (top) and specially adapted wetland vegetation (bottom).
- Figure 4** Wetland systems within South Africa.
- Figure 5, 6 & 7** African clawed frog (*Xenopus laevis*) (left), Bushveld rain frog (*Breviceps adspersus*) (centre) and Natal sand frog (*Tomopterna natalensis*) (right), three key Amphibia species found in the North West Province area.
- Figure 8** Map depicting the locations of the Local Municipalities within Bojanala Platinum District Municipality.
- Figure 9** Rustenberg Local Municipality Wetland Map (wetland and river areas indicated in blue).
- Figure 10** Map indicating the spatial distribution of the NFEPA wetlands within Bojanala Platinum District Municipality. The wetland areas are indicated in blue.
- Figure 11 & 12** Maps indicating the spatial distribution of the NFEPA wetlands within Moretele Local Municipality (left) and Madibeng Local Municipality (right). The wetland are indicated in blue.
- Figure 13, 14 & 15** Maps indicating the spatial distribution of the NFEPA wetlands within Rustenberg Local Municipality (left), Kgetlengriver Local Municipality (centre) Moses Kotane Municipality (right). The wetland and riparian areas are indicated in blue.
- Figure 16, 17, 18 & 19** River Pumpkin (*Gunnera purpensa*), a hydrophyte that is a species of conservation concern, was recorded within the wetland (top left and right). Other prominent species within the wetland included the ferns Common Tree Fern (*Cyathea cf. dregei*) and Eagle Fern (*Pteridium aquilinum*) (bottom left and right).
- Figure 20** Map of Pilanesberg: Ntshwe Wetland located within the Pilanesberg Nature Reserve.
- Figure 21, 22, 23 & 24** Illustrations of the Pilanesberg Kgama wetland System.
- Figure 25** Locality Map of the Pilanesberg: Tlhwane wetland.
- Figure 26** Image depicting a small tributary where the water filtration capabilities of wetlands higher up in the catchment is illustrated.
- Figure 27 & 28** Solid waste dumping on the bank of a watercourse in the Moses Kotane Local Municipality.
- Figure 29** Flooding in Majakaneng near Brits in the Bojanala Bojanala Platinum District Municipality.
- Figure 30** Graph depicting the typical climate of Bojanala Platinum District Municipality.
- Figure 31** Graph depicting the anticipated changes in average maximum temperature patterns for Bojanala Platinum District Municipality.
- Figure 32** Graph depicting the anticipated changes in total monthly rainfall patterns within Bojanala Platinum District Municipality.
- Figure 33** Schematic representation on the hydrological buffering capability of wetlands.
- Figure 34 & 35** LAB Wetlands SA project municipal delegates including BPDM receiving on the ground wetland and Google Earth training at the 2016 National Wetlands Indaba.

EXECUTIVE SUMMARY

The Bojanala Platinum District Municipality (BPDM) is located within the North West Province of South Africa. Whilst the total land area of the North West province is 106 512 square kilometres or 8.7% of South Africa's land area, the BPDM takes up 18 332 square kilometres or 17% of the provinces land area. The municipality falls almost entirely within the Savannah Biome with a small portion falling within the Grassland Biome. Numerous wetlands occur throughout the district and provide crucial habitat for the unique biodiversity in the region, particularly the high variety of endangered flora and fauna species.

The wetlands throughout Bojanala Platinum District Municipality are considered to be high-value 'ecological infrastructure' as they provide habitat for flora and fauna, but also provide critical ecosystem services to the municipality. These include flood attenuation, water filtration, erosion control and water storage (regulatory services) as well as food provision, supply of raw materials and clean drinking water (provisioning services). The wetlands within the municipality also play a pivotal role in disaster risk management as well as reducing the impacts of climate change within the district.

Despite the wetlands within Bojanala Platinum District Municipality being of high value to the municipality in terms of ecosystem service provision, a large number of the wetlands in the region are under threat or have already been lost, largely due to extensive and excessive platinum mining and agriculture. Mining and quarrying industry in the province and certainly in the district remains the backbone of the district's economic output. It is said 94% of the country's platinum is found in the Rustenburg and Brits areas, areas which are also said to produce more platinum than any other single area in the world.

Degraded wetlands are unable to function to the same degree as healthy wetlands and as such ecosystem service provision is severely hindered or even lost altogether. As such, careful management as well as the investment in the maintenance of healthy wetlands and the rehabilitation and restoration of damaged or degraded wetlands is required. This will ensure the continued provision of these vital ecosystem services to the municipality.

Currently there is no specific designated wetland management authority within Bojanala Platinum District Municipality. Instead, the management of wetlands is a collective effort between various stakeholders, each of which manage wetlands through their own key mandates and legislative requirements. Various external local stakeholders play an active role in wetland management through the implementation of local projects including invasive alien plant clearing, indigenous vegetation restoration, introduction of indigenous fauna species and general monitoring and regulation initiatives.

In order to streamline and improve the management of wetlands, Bojanala Platinum District Municipality is implementing the Local Action for Biodiversity: Wetlands South Africa (LAB: Wetlands SA) programme with support from ICLEI Africa Secretariat (ICLEI AS). The LAB: Wetlands SA project aims to ensure the protection of priority natural wetland resources, thus enabling the supply of ecosystem services, and promoting resilient communities and sustainable local economies under a changing climate within South African local governments. Through the development of this Wetland Report, ICLEI AS will assist Bojanala Platinum District Municipality in identifying the gaps in management and assist with devising new and better wetlands management strategies going forward.

INTRODUCTION

South Africa is endowed with a rich wealth of biodiversity, which offers an immense opportunity to support the country's development path by providing many goods and services which contribute to municipal service delivery, water and food security, and quality of life, especially under a changing climate. Wetlands in particular, are high-value 'ecological infrastructure', providing critical ecosystem services such as clean water, clean air, food, medicines, water storage and habitat for biodiversity. Wetlands also play a role in disaster management, and could lessen the negative effects of climate change through flood attenuation, temperature regulation and water and food security.

Wetlands however are South Africa's most threatened ecosystems, with 48% of wetland ecosystems critically endangered,¹ resulting in an urgent need to increase awareness of wetland importance to incorporate natural wetland resource considerations into municipal governance mechanisms and planning.

Bojanala Platinum District Municipality is located in the North West Province of South Africa. Numerous wetlands of high ecological value and exceptional beauty, occur within the region and provide crucial habitat for a variety of critically endangered flora and fauna species as well as provide key ecosystem services for local communities living in the area. A large number of the wetlands in the region however are under threat due to mining activities, agriculture, encroachment of invasive alien plants (IAPs) and historical inappropriate development.

This report draws together the knowledge about wetlands in Bojanala Platinum District Municipality, and provides a detailed overview of the stakeholders and programmes working towards improved wetland management in this region.



FIGURE 1: Bojanala District Municipality in relation to the rest of South Africa.²

1 | WHAT IS A WETLAND?

“Wetlands are land which is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.”

National Water Act No. 36 of 1998

In simpler terms, a wetland is a feature in the landscape which is saturated with water for a long enough period that the soil conditions change (mottling as a result of the anaerobic conditions) and the vegetation shifts to respond to these changes.³

Six different types of wetlands occur across the country. These vary based on the underlying geology and include seeps, depressions, wetland flats, floodplain wetlands, channelled valley-bottom wetlands and unchannelled valley bottom wetlands.⁵ SANBI has compiled a detailed hydrogeomorphic classification system to assist with wetland identification. An illustrative overview from this document of the different types of wetlands is included in **Figure 4**.

Wetlands also vary on a temporal scale based on the climate and season. As such, once a wetland type has been established, it can then be categorised into either a temporary, seasonal or permanent wetland. A temporary wetland is saturated for a very short period (approximately one month) during the rainy season only. Vegetation associated with this type of wetland are predominantly grass species, as well as a mixture of species that occur in non-wetland areas and hydrophytic plants that are largely restricted to wetland areas. A seasonal wetland is saturated for most of the growing season. Vegetation associated with this type of wetland are predominantly sedges and grasses that are restricted to wetland areas, usually < 1m tall. Lastly, a permanent wetland is saturated all year round. This type of wetland is dominated by highly specialised aquatic plants adapted to permanently wet conditions.⁶ For further detail regarding specific wetlands located within Bojanala Platinum District Municipality, please refer to **Section 3.2** of this report.



FIGURE 2 & 3: Mottled soils indicative of a wetland (top) and specially adapted wetland vegetation (bottom).⁴

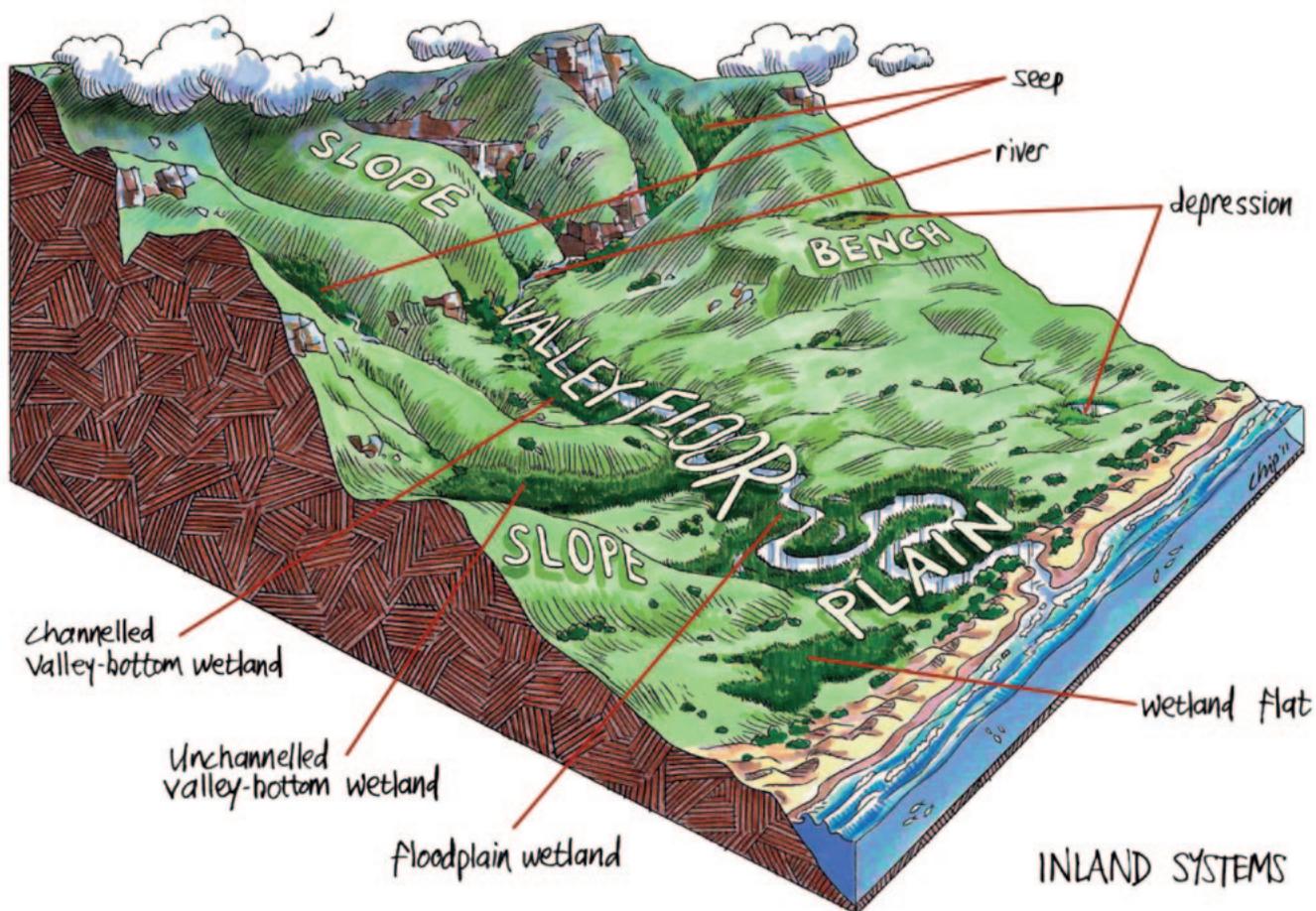


FIGURE 4: Wetland systems within South Africa.⁷

All wetland types can be classified as high value 'ecological infrastructure' due to the large number of ecosystem services that they provide. Wetland ecosystem services can be classified into four separate categories namely 'provisioning services', 'regulating services', 'cultural services' and 'supporting services'.⁸ Provisioning services can be described as the products one can physically obtain from wetlands such as fresh water, food and natural medicines. Regulatory services can be described as the benefits one receives from the wetland such as stream flow regulation, erosion control, water filtration and flood attenuation. Cultural services are the nonmaterial benefits that one can obtain from wetlands such as spiritual enrichment, sense of place and aesthetic experience. Lastly supporting services are the services provided that are necessary for the production of all

other ecosystem services namely, nutrient cycling and water cycling.⁸ Please refer to **Section 3.3** of this report for a detailed description of the ecosystem services that wetlands within Bojanala Platinum District Municipality provide.

It should be noted that ecosystem services provided by wetlands come at no cost to the municipality and as such, all that needs to be done to ensure continued provision of these services is to protect and maintain local wetlands. However, the inappropriate management of wetlands, can cause a loss of wetland area and subsequent loss of ecosystem services. This results in the municipalities having to invest in expensive infrastructure (e.g. water filtration plants or flood barriers) to ensure the same level of service delivery.

2 | WHAT IS BIODIVERSITY?

“The variability among living organisms from all sources, including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems.”

National Environmental Management: Biodiversity Act No. 10 of 2004

To expand on this, biological diversity or the shorter more commonly used term 'biodiversity', is the variety of genes, species and ecosystems on Earth, and the processes that maintain this diversity. It is the living species and natural processes that constitute nature. Rather than simply considering plant and animal populations (i.e. total numbers), biodiversity reflects the variability of plants and animals and crucially, the processes by which they are supported, and the functions that they deliver.

Essentially, as biodiversity includes natural processes, it describes the health and functioning of a given

area. For example, if a wetland becomes polluted and its ecological condition deteriorates, it is no longer able to function correctly and natural processes such as providing food (e.g. fish), materials (e.g. reeds) and water purification no longer take place. The real value in the term biodiversity is that by describing the variety of life forms rather than total numbers, biodiversity can be used at any scale (e.g. for landscapes such as grasslands or a habitat such as a woodland or koppie) to reflect the health of any area – not just wild landscapes, but pockets of biodiversity such as wetlands, too.



FIGURE 5, 6 & 7: African clawed frog (*Xenopus laevis*) (left), Bushveld rain frog (*Breviceps adpersus*) (centre) and Natal sand frog (*Tomopterna natalensis*) (right), three key Amphibia species found in the North West Province area.⁹

3 | WETLANDS AND BIODIVERSITY IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

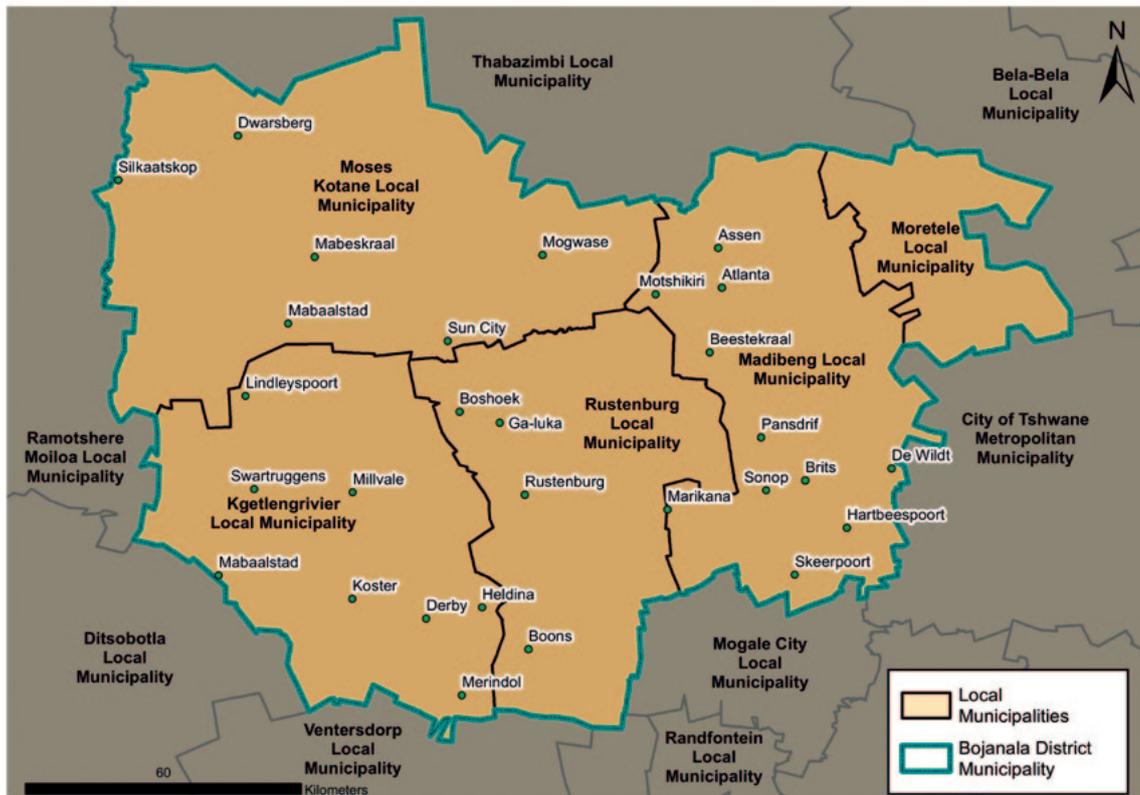


FIGURE 8: Map depicting the locations of the Local Municipalities within Bojanala Platinum District Municipality.

The North West Province falls largely within the Savanna and Grassland biomes. A total of 41 South African vegetation types and two (2) subtypes occur in the province. Thirteen (13) of these are considered threatened ecosystems due to the amount of habitat converted to other land uses. Eight (8) vegetation types are endemic to the province. Aquatic biodiversity is high, with 98 wetland systems and 35 river systems present in the province. The majority of these aquatic features are threatened ecosystems, with 52% of the wetland systems and 80% of the river systems classified as threatened.¹⁰

The Bojanala Platinum District Municipality (BPDM) is located within the North West Province of South Africa. Whilst the total land area of the North West province is 106 512 square kilometres or 8.7% of South Africa’s land area, the BPDM takes up 18 332 square kilometres or 17% of the provinces land area. According to the BPDM IDP 2007–2012, the BPDM is a Category C municipality that comprises of five

Category B local municipalities namely:

- Kgetlengrivier
- Moretele
- Moses Kotane
- Madibeng, and
- Rustenburg¹¹

The Bojanala Platinum District Municipality falls almost entirely within the Savannah biome with a small portion falling within the Grassland biome. Numerous wetlands occur throughout the district and provide crucial habitat for the unique biodiversity in the region, particularly the high variety of endangered flora and fauna species.

This section will provide an overview of the existing maps and relevant information pertaining to the known key wetlands in the in the district. It will provide details on the value of and threats to wetlands in the district.

3.1 MAPPING WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

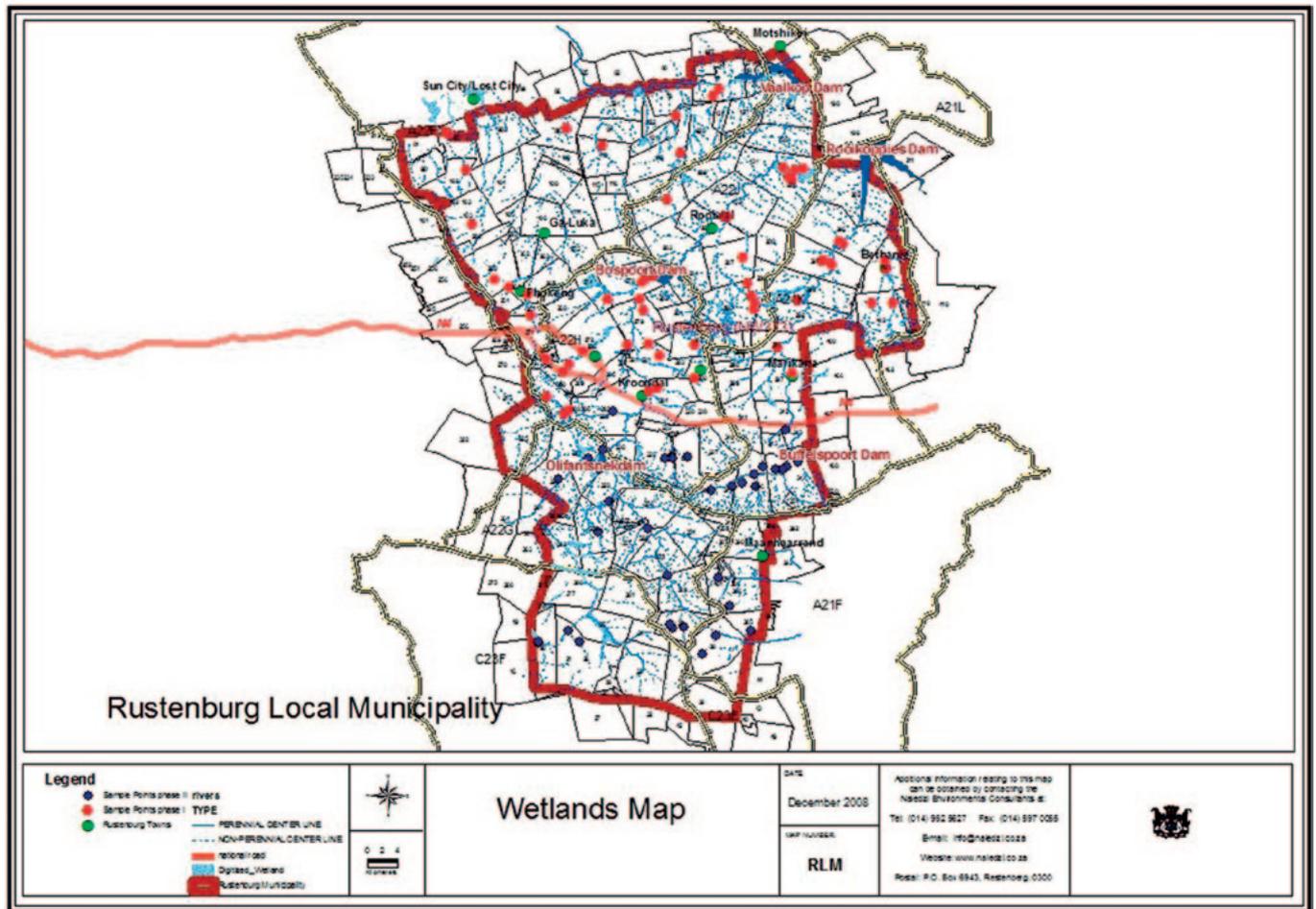


FIGURE 9: Rustenburg Local Municipality Wetland Map (wetland and river areas indicated in blue).¹²

Currently there is no specific ground-truthed wetland map available for Bojanala Platinum District Municipality. Out of the five local municipalities located within Bojanala District, only Rustenburg Local Municipality has an existing wetland specific map which is contained in the municipality's "Wetlands Inventory: Identification, Mapping, Classification, and Basic Assessment & Delineation of Wetlands within the Rustenburg Local Municipality Report", which can be requested from the town planning department. The Rustenburg Local Municipality Wetland Map (Figure 9) is only an overview however and does not use ground-truthed data and as such its usefulness for on the ground planning is limited.

Using the mapping tool on the SANBI BGIS website, <http://bgis.sanbi.org/MapView>, it is possible to generate a National Freshwater Ecosystem Protection Area (NFEPA) Wetland map for a given area with minimal GIS skills (see Figure 10 for Bojanala Platinum District Municipality, and Figures 11–15 for the local municipalities within BPD). The map generated provides a broad national-level overview of where wetlands are located within the landscape. It should be noted however, that the information is largely outdated and not all ground-truthed and as such these maps are only useful for initial planning in a given area.

3.1 MAPPING WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

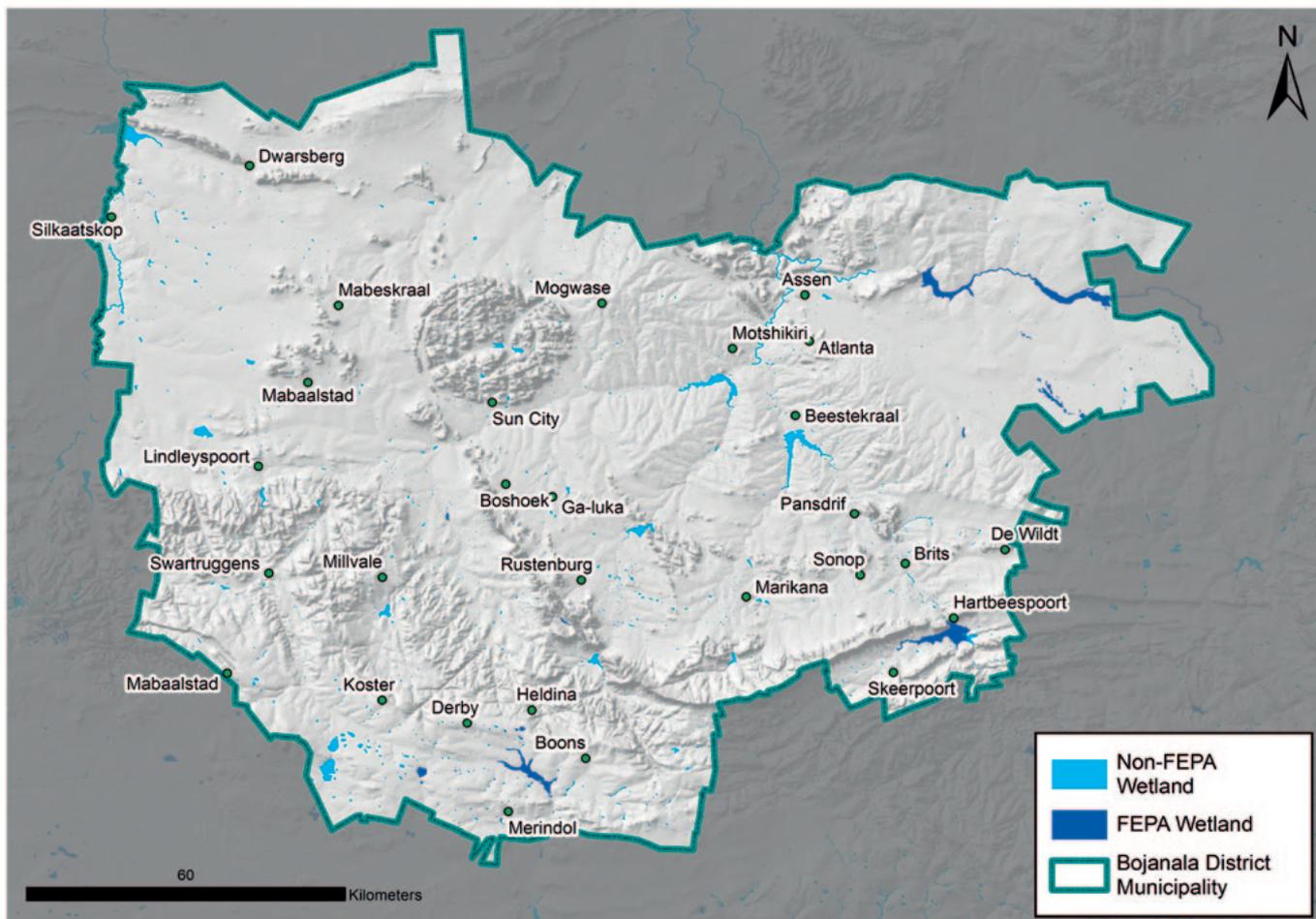


FIGURE 10: Map indicating the spatial distribution of the NFEPA wetlands within Bojanala Platinum District Municipality. The wetland areas are indicated in blue.¹³

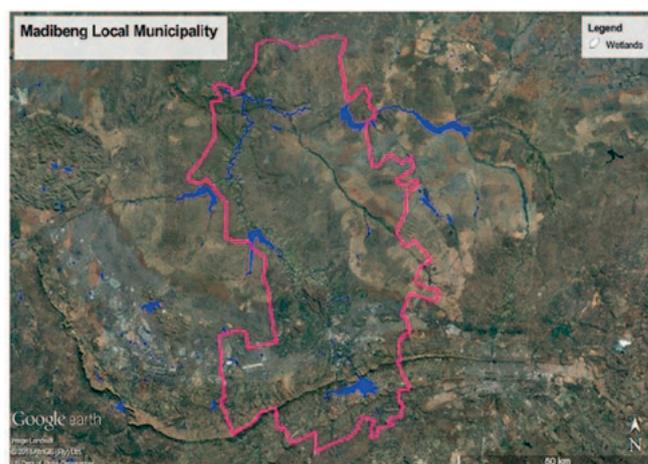
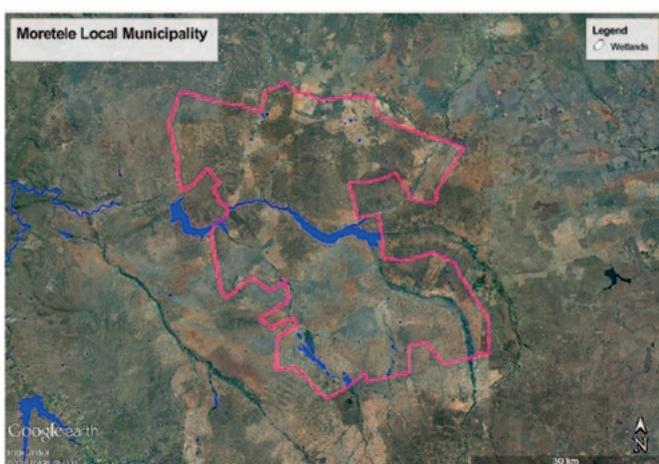


FIGURE 11 & 12: Maps indicating the spatial distribution of the NFEPA wetlands within Moretele Local Municipality (left) and Madibeng Local Municipality (right). The wetland are indicated in blue.¹⁴

3.1 MAPPING WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*



FIGURE 13, 14 & 15: Maps indicating the spatial distribution of the NFEPA wetlands within Rustenberg Local Municipality (left), Kgetlengrivier Local Municipality (centre) Moses Kotane Municipality (right). The wetland and riparian areas are indicated in blue.¹⁵

Based on the maps currently available, it is clear that there is a real need for wetland mapping to be undertaken within the municipality in order to assist with accurate planning going forward. This could be achieved by incorporating a GIS specialist

into the existing municipal structure to undertake the required mapping or by employing a wetland specialist to ground-truth wetlands within Bojanala Platinum District Municipality and developing a map accordingly.

3.2 KEY WETLANDS IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY

Several wetland systems associated with the Madikwene Rivers and its associated tributaries are located in the western portion of the district. The Moretele and Pienaars River and associated tributaries are located in the east portion of the district. The Gwathle, Hex and Selons Rivers, are located within the south region of the district. The central and north region is comprised of the Elands and Crocodile rivers and includes the Pilanesberg Nature Reserve, which include several rehabilitated wetlands. No RAMSAR wetlands are found within the Bojanala Platinum District Municipality.

This section, will go into some detail on the key wetlands identified by Working for Wetlands within the district. The case studies outlined below are not exhaustive, as numerous other wetlands of high ecological value occur throughout the district.

3.2.1 Rietfontein Wetland

The Rietfontein wetland is located in quaternary catchment A21K in the Sterkstroom River catchment of the North West Province. The wetland catchment covers an area of approximately 86 383 ha with the Magaliesberg Mountain Range forming a prominent catchment divide along its southern boundary. The Magaliesberg Protected Natural Environment, under the auspices of North West Parks Board, is a protected area along the Magaliesberg range, which provides a green corridor that links the catchment to other protected areas located to the east and west. The wetland has been classified as a channelled valley bottom wetland with a size of approximately 8.8 ha. Seep zones and a spring are also present within the delineated wetland area, but the general character of the system is still regarded as a channelled valley bottom with seepage zones. This results in

3.2 KEY WETLANDS IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

the presence of riparian woody vegetation, such as Sage Bush (*Buddleja salviifolia*) along portions of the channel, and obligated hydrophytes, such as River Pumpkin (*Gunnera perpensa*) on areas characterised by seepage. As a result, the wetland has a relatively high sensitivity to change in the local hydrology. The wetland is located on the Gold Reef Mountain

Bushveld vegetation unit. As described by Mucina & Rutherford (2006), Gold Reef Mountain Bushveld has a Least Threatened Conservation Status. The wetland does not overlap with natural or artificial wetland habitat identified in the National Freshwater Ecosystem Priority Area (NFEPA) database.¹⁶



FIGURE 16, 17, 18 & 19: River Pumpkin (*Gunnera perpensa*), a hydrophyte that is a species of conservation concern, was recorded within the wetland (top left and right). Other prominent species within the wetland included the ferns Common Tree Fern (*Cyathea cf. dregei*) and Eagle Fern (*Pteridium aquilinum*) (bottom left and right).¹⁷

3.2 KEY WETLANDS IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

3.2.2 Pilanesberg Ntshwe Wetland

Quaternary catchment A22F is located in the Elands River catchment area, with the Mankwe River forming the closest river tributary of the Elands River system (Driver et al., 2004) within the Crocodile and Marico West Water Management Area. The Pilanesberg Ntshwe wetland forms part of headwater systems for this quaternary catchment and consists primarily

of seeps. Wetland condition and rehabilitation opportunities were investigated in seepage and unchannelled valley bottom wetland areas which mainly displayed wetland conditions ranging from marginal temporary to seasonally wet. As erosion problems have been identified, the wetland has been earmarked by WfW to be rehabilitated.¹⁷

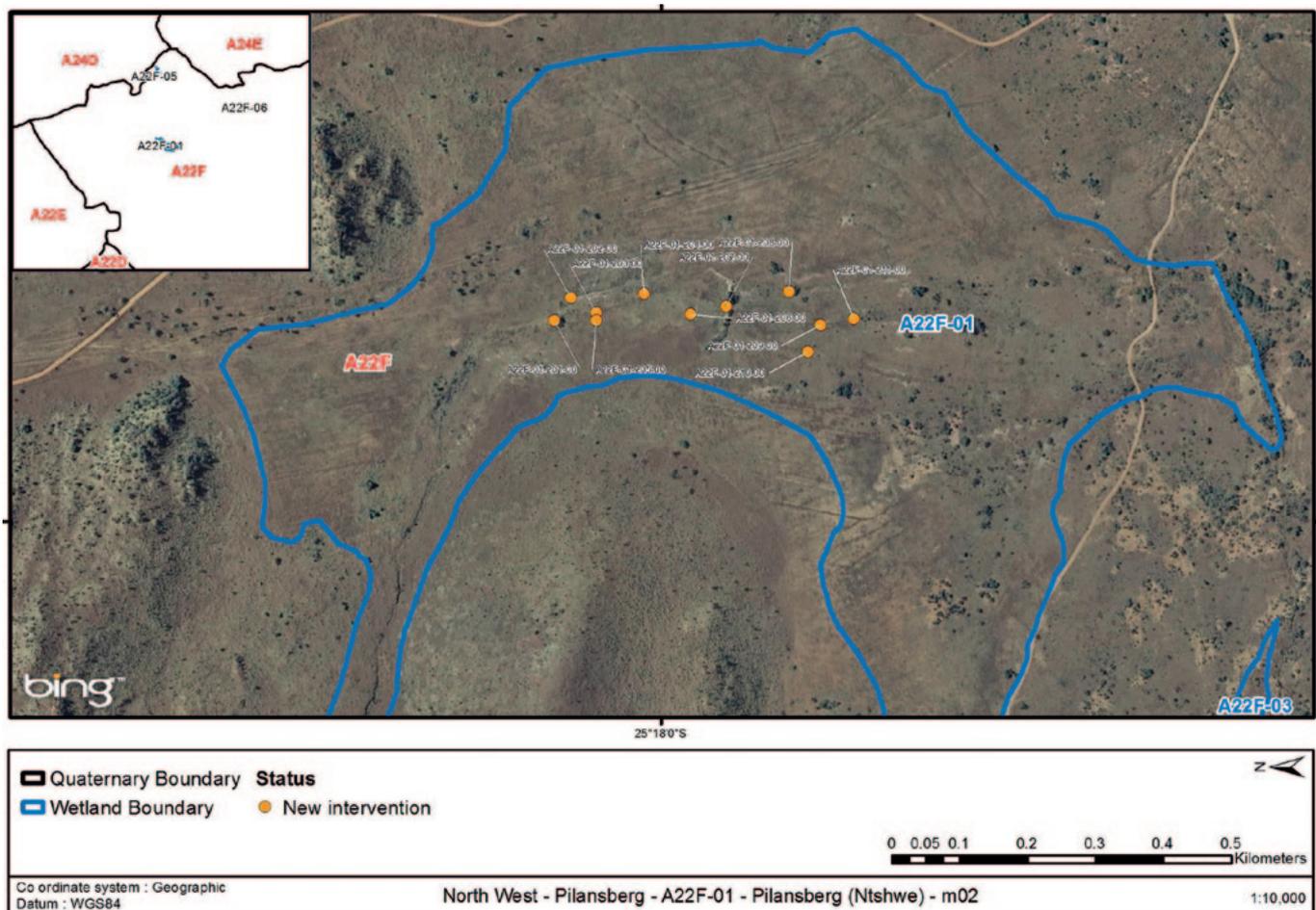


FIGURE 20: Map of Pilanesberg: Ntshwe Wetland located within the Pilanesberg Nature Reserve.¹⁷

3.2 KEY WETLANDS IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*



FIGURE 21, 22, 23 & 24: Illustrations of the Pilanesberg Kgama wetland System.

3.2.3 Pilanesberg Kgama Wetland

The water course associated with this wetland is regarded as a non-wetland drainage line/channel that supports intermittent flow for a short duration after rainfall events. The wetland is located within quaternary catchment A22F and falls within the Pilanesberg Mountain Bushveld vegetation unit. The area has a climate characterised by low mean annual precipitation and high mean annual evaporation which therefore indicates that the wetland is sensitive to local hydrology changes.¹⁸

3.2.4 Pilanesberg Tlhwane Wetland

This wetland has been classified as an un-channelled valley bottom area which displays conditions ranging from marginal temporary to seasonally wet. The wetland overlaps the Pilanesberg Mountain Bushveld and the Zeerust Thornveld vegetation units. Local climate is characterised by low mean annual precipitation and high mean annual evaporation and therefore indicates that the wetland is sensitive to change in local hydrology.¹⁸

3.2 KEY WETLANDS IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

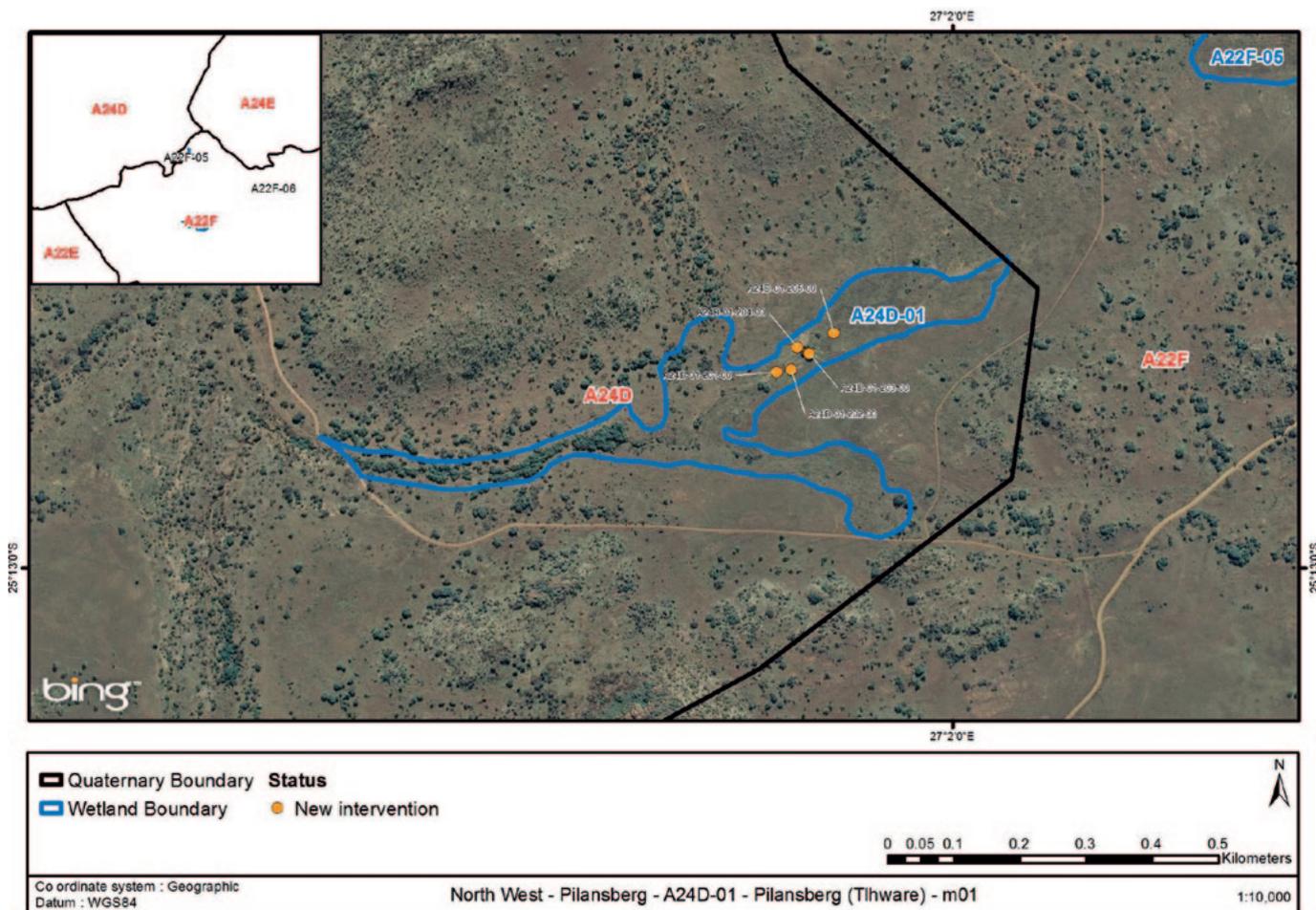


FIGURE 25: Locality Map of the Pilanesberg: Tlhware Wetland.

3.3 WETLANDS VALUE AND LINKS TO SERVICE DELIVERY

Wetlands provide many benefits at very little cost. They are unique and vital ecological resources, providing a host of services to society. Thus, every individual wetland is important. However, individual wetlands differ according to their characteristics and the particular ecosystem services that they supply to society. Thus, society may deem some wetlands to be more important than others. **Table 1** describes ecosystem services provided by South African wetlands. The list is by no means complete, but only

includes those benefits that can be readily and rapidly described. Other potentially important benefits including groundwater recharge and discharge and biomass export are difficult to characterize at a rapid assessment level. No proper assessment of ecosystem goods and services was undertaken in this project, however based on the different wetlands Hydro-geomorphic (HGM) types, a basic assessment of functionality was achieved.

3.3 WETLANDS VALUE AND LINKS TO SERVICE DELIVERY *(continued)*

TABLE 1 ECOSYSTEM SERVICES PROVIDED BY WETLANDS

Ecosystem services supplied by wetlands	Indirect benefits	Hydro geochemical benefits	Water quality enhancement benefits	Flood attenuation
				Stream flow regulation
				Sediment trapping
				Phosphate assimilation
				Nitrate assimilation
				Toxicant assimilation
				Erosion control
	Carbon storage			
	Direct benefits	Biodiversity maintenance		
		Provision of water for human use		
		Provision of harvestable resources		
		Provision of cultivated foods		
		Cultural significance		
		Tourism and recreation		
Education and research				

As outlined in **Section 1: “What is a Wetland”**, wetlands provide innumerable goods and services to local communities and municipalities in the form of provisioning, regulatory, cultural and supporting services. Wetlands are not isolated environments; much like large forests are the planet’s “lungs”, they are the world’s “kidneys”. They act like sponges, filtering contaminants out of water and releasing the

cleaner water to surrounding areas when rainfall is low, or soaking it up when rainfall is high. They are effective bulk wards against destructive flooding, soaking up large volumes of water, and help keep rivers clean. Following verbal communications with active stakeholders working in Bojanala Platinum District Municipality, the following ecosystem services have been identified and are summarised in **Table 2**.

TABLE 2 ECOSYSTEM SERVICES IDENTIFIED IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

ECOSYSTEM SERVICE TYPE	ECOSYSTEM SERVICE	DESCRIPTION/CASE STUDY
Provisioning	Food and medicinal plants	Communities harvest local plants and animals as a food source.
	Raw materials supporting local economies and livelihoods	Communities harvest reeds from the wetlands to make products they can sell for income.
	Clean drinking water	Local communities use clean water supplied by the wetlands for drinking purposes (both human and livestock).

continued

3.3 WETLANDS VALUE AND LINKS TO SERVICE DELIVERY *(continued)*

TABLE 2 ECOSYSTEM SERVICES IDENTIFIED IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

ECOSYSTEM SERVICE TYPE	ECOSYSTEM SERVICE	DESCRIPTION/CASE STUDY
Regulatory	Water storage and stream flow regulation	The local wetlands store stormwater runoff and slowly release the water as the water table drops. This contributes to sustained streamflow throughout the year.
	Flood attenuation and control	Wetlands and the associated plants absorb flood water and reduce the velocity of flood waters moving through the system. This contributes to the protection of infrastructure downstream.
	Erosion control	Wetland plants strengthen the banks of wetlands and thereby contribute to sediment stabilisation and soil retention within the catchment.
	Water filtration	Wetlands contribute substantially to improving water quality by modifying or trapping a wide range of substances commonly considered to be pollutants. This includes suspended sediment, excess nutrients, toxicants and pathogenic bacteria and viruses. This contributes to clean drinkable water downstream.
Cultural	Recreation	Recreation activities undertaken within the wetlands within Bojanala includes bird watching.
	Tourism	The wetlands within Bojanala provide a diverse landscape and rich biodiversity that promote tourism within the district.
	Social upliftment	The rehabilitation and maintenance of wetlands within the district provide opportunities for job creation for the local communities. These opportunities not only support local incomes but also include important skills development as well as environmental education.

3.4 THREATS TO WETLANDS

Despite the huge benefits that wetlands provide in terms of ecosystem services, 50% of wetlands in South Africa have already been lost, and 48% of the remaining wetlands are critically endangered and/or degraded.¹⁹ This loss is a direct result of several impacts including deliberate draining of wetlands, development and expansion (both urban and agricultural) and pollution. Damage to wetlands results in increasingly limited functionality and subsequently a decrease in the ability to provide valuable ecosystem services.

In the Bojanala Platinum District Municipality the mining, quarrying and agricultural sectors impact severely on wetland ecosystems, stressing the need for urgent intervention.

Further threats to wetlands in the district are summarised in the list below:

- Spread of IAPs;
- Deliberate drainage of wetlands to make way for development and agriculture;

3.4 THREATS TO WETLANDS *(continued)*

- Inappropriate development without including suitable buffers around the wetland systems;
- Inappropriate or poorly regulated agricultural practices such as overgrazing, ploughing within wetland;
- Stormwater and sewage into wetlands;
- Erosion of banks and subsequent sedimentation;
- Deliberate burning of wetland vegetation;
- Dumping in wetlands;
- Climate change.



FIGURE 26: Image depicting a small tributary where the water filtration capabilities of wetlands higher up in the catchment is illustrated. The brown water on the left has moved through a wetland that has been compromised by land use change whilst the clear water on the right has moved through a pristine wetland that has not been impacted by human activities.



FIGURE 27 & 28: Solid waste dumping on the bank of a watercourse in the Moses Kotane Local Municipality.

4 | DISASTER MANAGEMENT AND CLIMATE CHANGE

“ **Disaster** means a progressive or sudden, widespread or localised, natural or human-caused occurrence which is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. ”

Disaster Management Act No. 57 of 2002

4.1 DISASTER RISK MANAGEMENT IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY

The Disaster Management Act (Act No. 57 of 2002) stipulates that every Metropolitan and District Municipality within South Africa must establish and implement a framework for disaster management within the municipality. This is to ensure that each municipality takes responsibility for hazard monitoring and risk mapping (“disaster risk assessment”), takes the necessary remedial steps to prevent and/or mitigate the occurrence or re-occurrence of disasters in their area of jurisdiction

and that there is an integrated and uniform approach to disaster management.

The Bojanala Platinum District Municipality 2012–2017 Integrated Development Plan (IDP) contains details of a macro disaster risk assessment conducted as part of the District Disaster Management Plan. Soil erosion and loss of biodiversity were identified as key priority risks.



FIGURE 29: Flooding in Majakaneng near Brits in the Bojanala Platinum District Municipality. Image by: North West Provincial Government.

4.1 DISASTER RISK MANAGEMENT IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

4.1.1 Risk mapping

TABLE 3 PRIORITY DISASTER RISKS AS PER THE BPDM DISASTER MANAGEMENT PLAN

NATURAL HAZARDS	ACCEPTABLE 0–10	HARMFUL 11–15	DANGEROUS 16–20	EXTREMELY DANGEROUS 21–25	DEVASTATING 25+
Geological	Earthquakes				
Biological	Animal infestations		Endemics		
Hydro meteorological	Famine	Extreme weather events Seasonal drought Veld fires		Seasonal floods Tornadoes	
TECHNOLOGICAL HAZARDS	ACCEPTABLE 0–10	HARMFUL 11–15	DANGEROUS 16–20	EXTREMELY DANGEROUS 21–25	DEVASTATING 25+
Technological	Domestic fires Industrial Fires Transportation accidents Political unrest	Hazardous Materials accidents Transportation spills Dam failures	Air pollution	Water pollution Mining Activities Nuclear Accidents	
Environmental degradation		Soil erosion Loss of biodiversity			

4.1.2 Role of Wetlands in Disaster Risk Mitigation

As noted in **Section 3.4**, wetlands are considered to be high-value ecological infrastructure as they provide a substantial number of ecosystem services to the surrounding local area as well as downstream. Wetlands also have the ability to buffer and reduce the

impacts of a substantial array of disasters including flooding, drought, and inconsistent water supply, and soil erosion, loss of biodiversity and groundwater pollution. Given that these are considered to be the main risks to Bojanala Platinum District Municipality, wetlands can play a key role in disaster risk mitigation within the district. This is summarised in **Table 4**.

4.1 DISASTER RISK MANAGEMENT IN THE BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

TABLE 4 WETLANDS CAN PLAY SEVERAL ROLES IN DISASTER RISK MITIGATION IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

DISASTER	ROLE OF WETLANDS IN DISASTER RISK MITIGATION ²⁰
Flooding	Wetlands have the ability to reduce the velocity of flowing water and absorb some of the water into the wetland system. As such, rather than the flood water moving through the system in one go, water is retained and released at a slower rate. This means that not only is the intensity of the flood reduced but it can be prevented all together. This results in reduced impact on downstream housing and infrastructure whilst sustaining water flow long after the rainfall event.
Inconsistent Water Flow & Drought	Wetlands have the ability to act like sponges in that throughout the rainy season they absorb water. During the dry season, and even in times of drought, this water is slowly released thereby ensuring that rivers and streams maintain sustainable flows and supply continuous water despite lack of rainfall.
Groundwater Pollution	Wetlands have the ability to purify water by trapping pollutants, sediments, excess nutrients (especially nitrogen and phosphorus), heavy metals, disease-causing bacteria and viruses, and synthesized organic pollutants such as pesticides, thereby ensuring that the water leaving the wetland is cleaner than the water that entered it.
Loss of Biodiversity	Wetlands can be considered as biodiversity hotspots in themselves as they provide key habitat to a number of plant and animal species. Often these species are considered to be unique and are completely dependent on the system. Maintaining healthy wetlands therefore can contribute to halting loss of biodiversity within the municipality.
Soil Erosion	Due to the fact that wetlands are covered by specially adapted vegetation, little to no erosion occurs in wetland areas as the wetland plants have the ability to stabilise and bind the soil, reducing the risk of top soil loss downstream.

4.2 CLIMATE CHANGE AND WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

‘Climate change’ means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. 9

United Nations Framework Convention on Climate Change (UNFCCC)

In simpler terms, climate change can best be described as a long term change in the Earth’s global climate patterns including shifts in historical seasonality, rainfall patterns and average temperature ranges. These shifts are caused by an increase in global temperatures which are caused by increasing greenhouse gases (e.g. carbon dioxide) being emitted

into the atmosphere. The raising of greenhouse gases in the atmosphere is caused by large scale human activities including industry, agriculture, transport and land use change. As a result, the long term historical climate is shifting towards unstable and unpredictable future climate conditions.

4.2 CLIMATE CHANGE AND WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

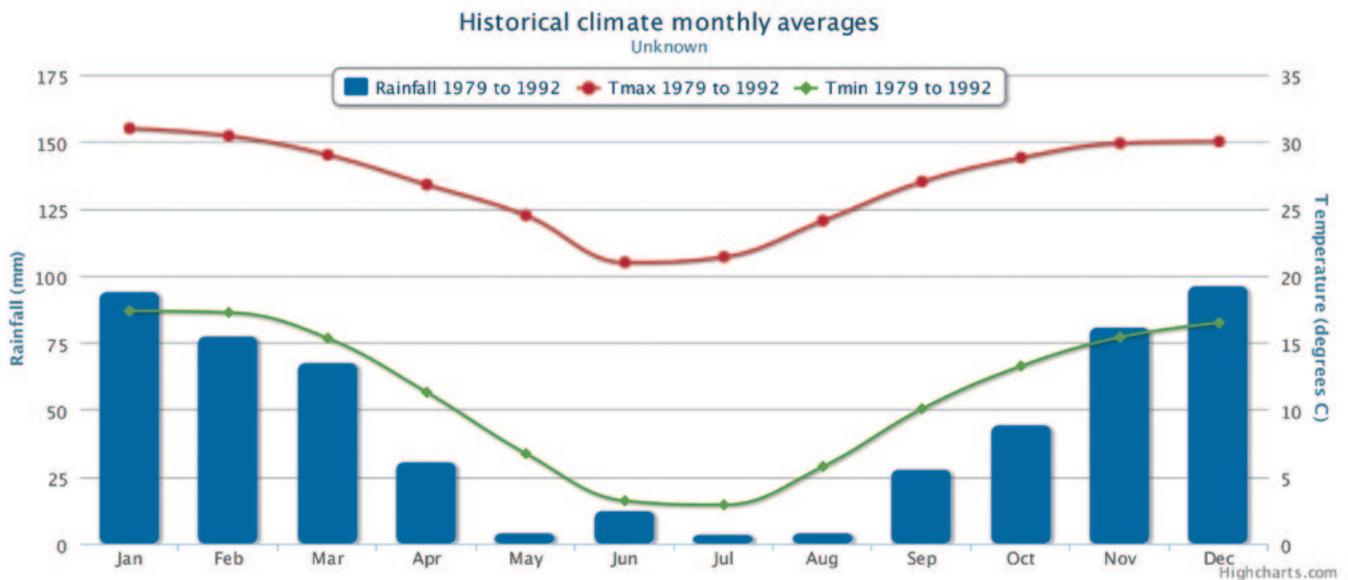


FIGURE 30: Graph depicting the typical climate of Bojanala Platinum District Municipality.²¹

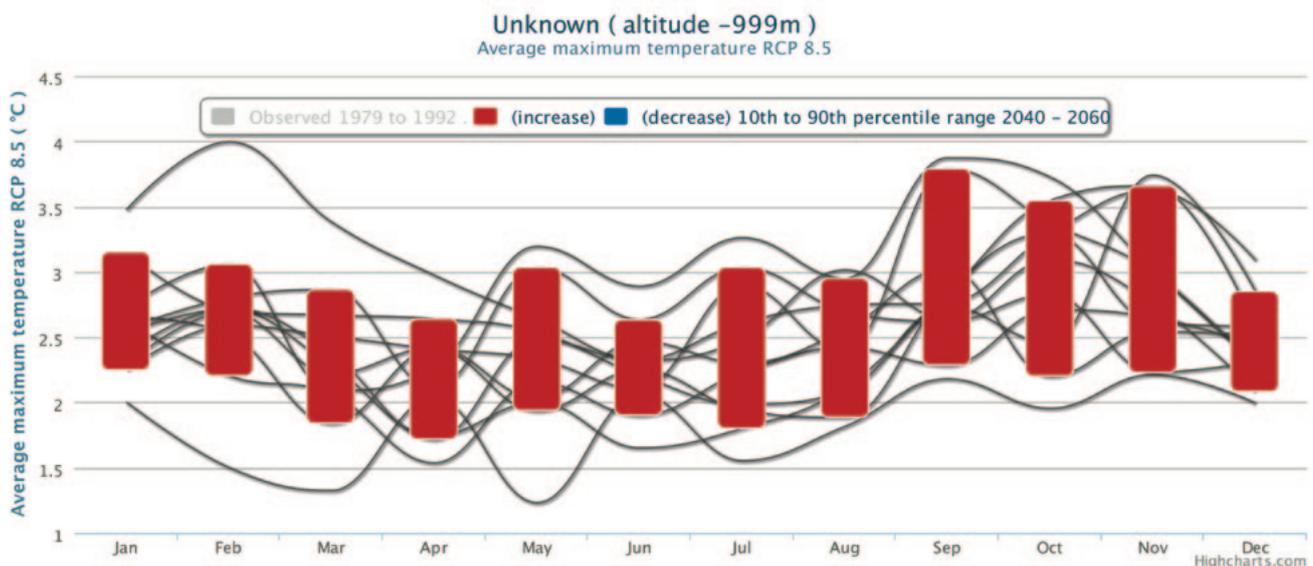


FIGURE 31: Graph depicting the anticipated changes in average maximum temperature patterns for Bojanala Platinum District Municipality.

4.2.1 Historical Climate in Bojanala Platinum District Municipality

Bojanala falls in the Highveld region of the North West Province and experiences typical Highveld climate conditions: warm to hot summers and moderate to cool winters.

In terms of temperature, historically there has been a strong seasonality between the winter and summer months. As illustrated in **Figure 30**, the coolest month is July whilst the hottest months are December and January. As with the temperature, historically rainfall has also been strongly tied to the seasons. Bojanala

4.2 CLIMATE CHANGE AND WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

experiences high rainfall in the summer months, with most of the annual rainfall falling between November and March, mainly as a result of thunderstorms, with the highest amount of rainfall falling between December and January (wettest month). Little to no rainfall occurs during the winter months (May – August). The driest month is July. Annual rainfall averages for the district are approximately 650 mm. Historically, Bojanala has been subject to cycles of prolonged drought, lasting for several years at a time. Extreme weather events are extremely rare, however may start to increase due to climate change.

4.2.2 Projected Climate Change in Bojanala Platinum District Municipality

The Climate Systems Analysis Group (CSAG) from the University of Cape Town (UCT) has developed the Climate Information Platform (CIP) which seeks to provide climate related information. The CIP runs a series of climate models which collectively provide a database of historical climate patterns as well as future projections for regions and districts throughout the world.

Temperature:

In terms of temperature, the climate models all agree that warming within Bojanala Platinum District Municipality will most certainly occur and that there will be an overall increase in average monthly temperatures by 1.5–2.5°C. Summer temperatures will increase slightly more than the winter temperatures. The summer maximum temperature range will increase slightly more than the minimum temperature range with an associated increased risk of heat waves.

Rainfall:

In terms of rainfall, the climate models all agree that shifts in the historical rainfall patterns will most certainly occur. The models however do not agree on the direction of change and as such there is uncertainty as to whether there will be an increase or a decrease in annual rainfall in the district. Despite uncertainty however, models generally indicate that there will be a shift to generally drier conditions overall, particularly in the winter months. Models also indicate that there will be a shift in timing of seasonal

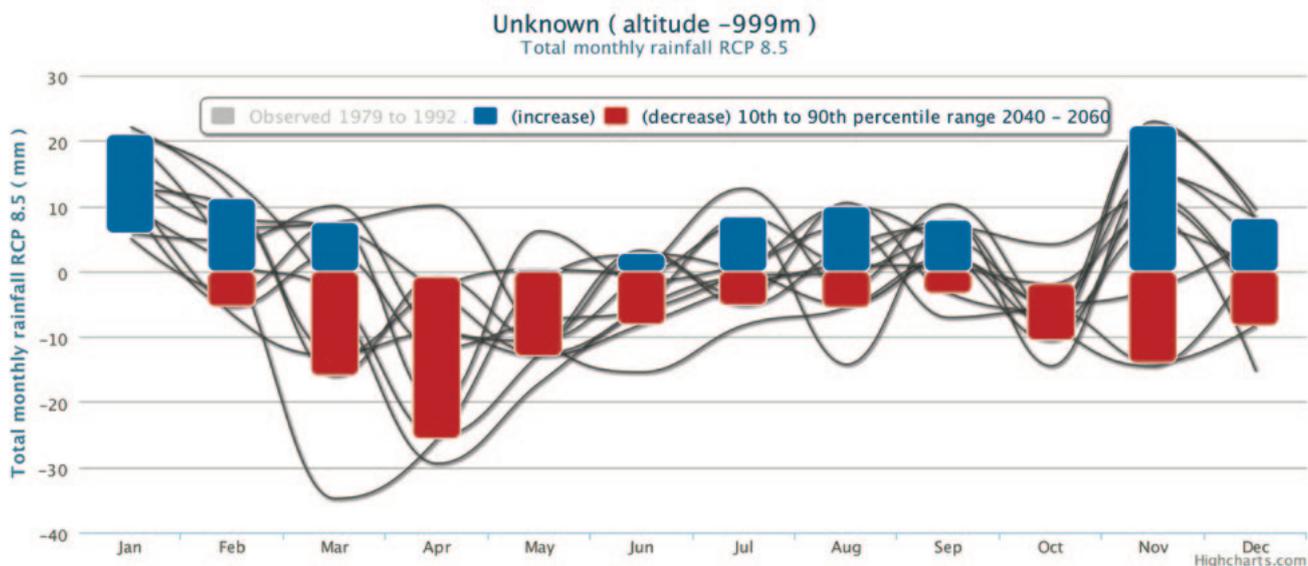


FIGURE 32: Graph depicting the anticipated changes in total monthly rainfall patterns within Bojanala Platinum District Municipality.

4.2 CLIMATE CHANGE AND WETLANDS IN BOJANALA PLATINUM DISTRICT MUNICIPALITY *(continued)*

rainfall as well as a shift in the rainfall patterns. Rainfall quantity is likely to remain the same or decrease overall, however there could be an increase in the frequency and intensity of rainfall events during the summer months. It is anticipated that there will be an exacerbation of the existing climate conditions.

4.2.3 Impacts of Climate Change in Bojanala Platinum District Municipality

A shifting climate means that the historical seasonality and rainfall and temperature patterns no longer apply.

The predicted increase in temperature will result in, on average, hotter days throughout the year, as well as an increased likelihood of hot spells and heat waves occurring more frequently in the summer months. The uncertain changes in rainfall patterns mean that resulting impacts could go one of two ways. Should there be an increase in annual rainfall, there will also most likely be an increase in the magnitude and frequency of storm events (i.e. more severe storms happening more often) resulting in an increased number of annual flooding incidents (and very likely increased severity), particularly in the winter months. Should there be a decrease in rainfall however, there will be an increased number of annual dry days resulting in subsequent increased risk of water scarcity and drought as well as more intense fires occurring throughout the district.

In short, climate change in Bojanala Platinum District Municipality will result in an exacerbation of the existing impacts historically occurring in district. The municipality should therefore continue to plan for historical climate related impacts whilst being mindful that these impacts will become more severe over time.

4.2.4 Role of Wetlands in Mitigating the Impacts of Climate Change

Climate change can also have an impact on wetlands. The most pronounced effect will be through alteration in flow patterns and decrease in wetland size. Wetlands which are in poor condition have a reduced ability to respond and adapt to a shift in climate which means climate impacts (e.g. flooding) are more likely to damage or destroy the wetland. Subsequently the wetland is compromised in its ability to perform vital ecosystem services (including most importantly flood attenuation, water storage and flow regulation).

Healthy wetlands however have a high resilience to climate change impacts, meaning that they are able to maintain their capabilities to supply ecosystem services despite significant shifts in climate. As such, healthy wetlands are able to maintain the ecosystem services which means they are able to play a highly significant role in reducing the impacts of climate change within the municipality.

Investment in the maintenance of healthy wetlands and the rehabilitation and restoration of damaged or degraded wetlands will not only ensure wetland resilience to climate change but will ensure increased resilience of the municipality to the impacts of climate change.

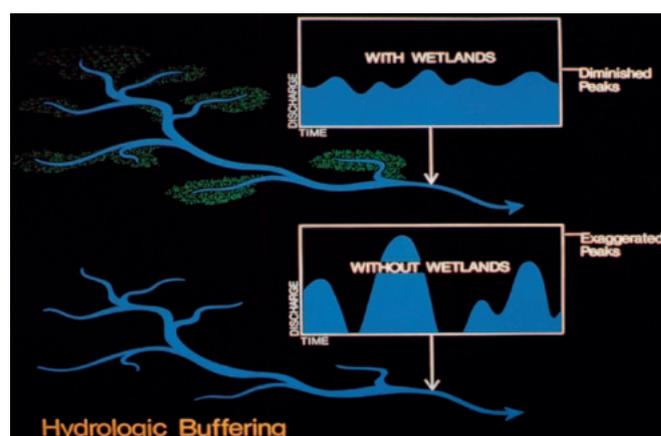


FIGURE 33: Schematic representation on the hydrological buffering capability of wetlands.

5 | GOVERNANCE & MANAGEMENT

South Africa has an extensive legislative framework concerning the environment and biodiversity is considered in both development planning as well as national government priorities. This section outlines

key legislation and policies as well as the governance structure within Bojanala Platinum District Municipality which leads to the current wetland management strategy within the district.

5.1 POLICY FRAMEWORK

The table below provides a comprehensive summary of all South African legislation, policies and strategies pertinent to the management of wetlands within Bojanala Platinum District Municipality. It is important to note that some of the legislation such as the National

Environmental Management Act provides specific instructions regarding wetland management whilst other legislation indirectly supports management of wetlands such as the National Environmental Management: Waste Act.

TABLE 5 LEGISLATION GOVERNING WETLAND MANAGEMENT IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

LEGISLATION/POLICY/STRATEGY	HOW IT RELATES TO WETLANDS
Legislation	
South African Constitution	<ul style="list-style-type: none"> Overarching principles of care for the environment.
National Water Act	<ul style="list-style-type: none"> Water use control, including extraction and construction within the vicinity of a watercourse or wetland.
National Environmental Management Act	<ul style="list-style-type: none"> Environmental impact assessments (EIAs) for the development of a new or disturbed site within the vicinity of a watercourse or wetland.
National Environmental Management: Biodiversity Act	<ul style="list-style-type: none"> Protection of biodiversity and the formulation of a number of tools (e.g. bioregional plans and threatened ecosystem lists) that feed into land use planning and EIA procedures.
National Environmental Management: Biodiversity Act - Alien and Invasive Species Regulations	<ul style="list-style-type: none"> All matters related to invasive species management (fauna and flora).
National Environmental Management: Integrated Coastal Management Act	<ul style="list-style-type: none"> Integrated landscape protection from catchment to the coast.
National Environmental Management: Protected Areas Act	<ul style="list-style-type: none"> Protection of national parks, protected areas and conservation sites. This includes the protection of wetland site.
National Environmental Management: Waste Act	<ul style="list-style-type: none"> Regulation of illegal dumping.
Conservation of Agricultural Resources Act	<ul style="list-style-type: none"> Protect the utilization of the natural agricultural resources to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invasive plants.
Municipal Systems Act	<ul style="list-style-type: none"> Role of local governments and the requirements for IDPs, SDFs and Disaster Management Plans.
Municipal Structures Act	<ul style="list-style-type: none"> Promotion of regional planning and spatial planning categories.

continued

5.1 POLICY FRAMEWORK *(continued)*

TABLE 5 LEGISLATION GOVERNING WETLAND MANAGEMENT IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

LEGISLATION/POLICY/STRATEGY	HOW IT RELATES TO WETLANDS
Municipal Health Act	<ul style="list-style-type: none"> Monitoring of WWTW discharge.
Policies	
National Development Plan, and associated Medium Term Strategic Framework.	<ul style="list-style-type: none"> The NDP sets out measures to protect natural resources in South Africa. Through the creation of the MTSF and associated 'Delivery Agreements', required outputs and targets are set.
Local and Provincial Development Policies	<ul style="list-style-type: none"> Considers the role of biodiversity.
Municipal Planning	
Integrated Development Plan (IDP)	<ul style="list-style-type: none"> Overall strategy document for the municipality.
Provincial Strategic Development Framework (SDF)	<ul style="list-style-type: none"> Overarching spatial planning guidelines for the province.
District SDF	<ul style="list-style-type: none"> Broad spatial planning guidelines for the district (including a map of land use within the district).
Local Municipal SDFs	<ul style="list-style-type: none"> Strategic plans to manage municipal land at the local level.
Open Space Framework	<ul style="list-style-type: none"> Demarcation of Open Space Areas.
Environmental Management Framework	<ul style="list-style-type: none"> Map and land use guidelines for areas of environmental importance.
Sector Plans	<ul style="list-style-type: none"> e.g. Disaster Management Plan.
Strategies	
The National Biodiversity Framework	<ul style="list-style-type: none"> Provides biodiversity targets for South Africa.
National Water Resource Strategy	<ul style="list-style-type: none"> Speaks to protection and rehabilitation of wetlands.
Other	
Bioregional plans (draft or gazetted)	<ul style="list-style-type: none"> Maps Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs).
Spatial Planning and Land Use Management Act	<ul style="list-style-type: none"> Provides a framework for spatial planning and land use management in South Africa. It sets out in its definitions that municipal planning is primarily the executive function of the local sphere of government and requires that biodiversity is adequately considered in spatial planning.
Disaster Management Amendment Bill	<ul style="list-style-type: none"> Outlines how ecosystems should be considered in the updated Disaster Management Act.

5.1 POLICY FRAMEWORK *(continued)*

Taking the above legislation into account, the Mandate for Bojanala Platinum District Municipality as per the 2012–2017 IDP are currently as follows:

- To provide democratic and accountable government for local communities;
- To ensure the provision of services to communities in a sustainable manner;
- To promote social and economic development;
- To promote a safe and healthy environment;
- To encourage the involvement of communities and community organisations in the matters of local government.

5.2 WETLAND MANAGEMENT WITHIN THE MUNICIPALITY

Currently there is no designated wetland management authority within Bojanala Platinum District Municipality. Instead, the management of wetlands is a collective but disconnected effort between the various departments of the municipality, the local municipalities within the district, and other external stakeholders such as Working for Wetlands. Some municipalities are more capacitated and resourced in terms of wetland management than others. Rustenburg Local Municipality for example has a municipal wetland inventory which includes maps and the status of wetland ecosystems in the region. The wetland inventory provides the municipality with the necessary information to assist with land use planning application. The municipality also engages

communities, creating awareness around wetland/ biodiversity and why it is important to protect and conserve.²² Smaller municipalities like Kgethlengrivier Local Municipality have limited capacity and depend on the Bojanala Platinum District Municipality for guidance and support regarding issues related to environmental management in general.²³

There is a real need for a consolidated platform for municipalities and other relevant stakeholders to engage and work together. The potential for the establishment of a district-wide forum is a real opportunity to drive integration. The forum could focus on a broader scope of environmental management, with wetland management as a thematic focus area.

6 | LOCAL AND REGIONAL PARTNERSHIPS AND PROGRAMMES

In addition to the collective municipal work that is being undertaken at both the district and local level to monitor and manage wetlands within Bojanala Platinum District Municipality, there are numerous projects and activities currently being implemented within and around wetlands by both the public and

private sector as well as several NGOs. Wetland related projects currently underway within the district are Working for Wetlands rehabilitation ventures which include the appointment of and partnership with local business stakeholders. These initiatives are outlined in **Table 6**.

TABLE 6 WORKING FOR WETLANDS INITIATIVES IN BOJANALA PLATINUM DISTRICT MUNICIPALITY

PROJECT NAME	PROJECT DESCRIPTION	PROJECT IMPLEMENTING ENTITY
Kgaswane Mounain Reserve	A headcut which is threatening the wetland has been rehabilitated by the construction of a Rock masonry structure which deactivates the headcut and stops erosion completely. This in turn secures the wetland within Kgaswane Mountain Reserve in Rustenburg.	WfW, Naledzi Environmental Consulting, Rainbow Moon Trading, Central Wetland Rehabilitation
Borakalalo Game Reserve	The rehabilitation objectives was to reinstate hydrological function of the system; to arrest erosion and facilitate vegetation regrowth. This can be achieved through implementation of the following strategy: <ul style="list-style-type: none"> • Construction of berms with mitre drains to facilitate water flow and drainage on all of the roads; • Maintenance and changes made to existing structures to secure the structures and ensure functionality of these interventions; • Deactivate headcut and even-out the energy differential to minimise the erosion; and • Brush-pack bare soil for the sake of protecting the soil and to enhance vegetation establishment and growth. 	WfW, Naledzi Environmental Consulting, Rainbow Moon Trading, Central Wetland Rehabilitation
Boekenhoutfontein farm Wetland	Working for Wetlands have done invaluable work removing alien vegetation and restoring the wetlands, which attract a wide variety of birdlife to the area.	WfW, Naledzi Environmental Consulting, Rainbow Moon Trading
Boitekong Wetland	The predominant land use surrounding the wetlands is communal grazing (overgrazing) coupled with housing developments and associated infrastructure which include roads and sewer lines. There is some evidence that these activities influence not only the vegetation but also the runoff characteristics. In particular grazing and the tracks created by livestock appear to have had a marked impact on channelled valley bottom wetlands. The objectives for rehabilitation activities at this site include: <ul style="list-style-type: none"> • prevention of sedimentation associated with this wetland to flow downstream into the Bospoortdam, • restore a degree of wetland functioning and eco services to the area, and • raise the local water table and allow the redistribution of water to the entire wetland front. 	WfW, Naledzi Environmental Consulting, Rainbow Moon Trading, Central Wetland Rehabilitation

7 | COMMUNICATION AND PUBLIC AWARENESS

Communication, education and public awareness (CEPA) play an essential role in gaining the cooperation and collaboration of individuals and organizations in the public, political and economic sectors to act to

reduce wetland loss and degradation. This section details the current activities that the municipality engages in for raising awareness and educating the community at large.

7.1. PUBLIC PARTICIPATION AND AWARENESS

Strategic documents such as the IDP, Spatial Development Framework (SDF), Coastal Management Programme and Environmental Management Framework (EMF) are reviewed and updated regularly. Formal public participation processes are followed whenever these documents are updated to ensure that the public has ample opportunity to submit comments and engage with the municipality.

In addition, Bojanala Platinum District Municipality are responsible for commenting on all Environmental Impact Assessment (EIA) applications which falls within the municipal jurisdiction. The process of which requires two rounds of public participation before a decision is made by either The Department of Rural, Environment & Agricultural Development (READ) or the National DEA.



FIGURE 34 & 35: LAB Wetlands SA project municipal delegates including BPDM receiving on the ground wetland and Google Earth training at the 2016 National Wetlands Indaba.

CONCLUSION

The aim of the Bojanala Wetland Report was to bring together all the available wetland related information for the municipality as well as highlight gaps where wetland management within the municipality could be strengthened going forward.

Through an extensive desktop study, as well as multiple bi-lateral meetings with stakeholders working within Bojanala Platinum District Municipality, it was found that the district has a huge wealth of wetlands. The wetlands within the municipality not only provide a wide range of ecosystem services including flood attenuation, water storage, water filtration and food provision, but also provide key habitat for a number of rare and critically endangered flora and fauna. The wetlands within the municipality also play a pivotal role in reducing the impacts of climate change as well as disaster risk management within the district.

The wetlands within Bojanala Platinum District Municipality however, are currently under threat from mining and agriculture, inappropriate development as well as sewage and stormwater seeps into the wetlands. This puts the municipality at risk from losing the valuable ecosystem services the wetlands provide.

In terms of wetland management, it was found that other than the SANBI BGIS NFEPA map, there is currently no formal ground-truthed wetland map for the district, clearly depicting where the wetlands are located within the landscape. This makes development planning around wetlands extremely challenging. As such, it would be useful to develop a ground-truthed wetland map which not only highlights where wetlands are on the ground but also indicates their status (i.e. pristine condition or degraded) as this would assist town planners and farmers with future planning of developments and farm expansion/redevelopment.

Finally, there is a real need for integration across all spheres and stakeholders in the district. The first step towards addressing this need could be the development of a district-wide forum, whose main focus could be the management and protection of wetland ecosystems and can be driven and coordinated by the Bojanala Platinum District Municipality.

DEFINITIONS

Biodiversity²⁴

The variability among living organisms from all sources, including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems.

Climate Change²⁵

Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Critically Biodiversity Areas²⁶

CBAs incorporate: (i) areas that need to be safeguarded in order to meet national biodiversity thresholds (ii) areas required to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services; and/or (iii) important locations for biodiversity features or rare species.

Disaster²⁷

Disaster means a progressive or sudden, widespread or localised, natural or human-caused occurrence which is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disaster Management

Disaster Management means a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures to prevent or reduce the risk of disasters; mitigate the severity or consequences of disasters; emergency preparedness; a rapid and effective response to disasters; and post-disaster recovery and rehabilitation. It is the systematic process of using administrative directives, organisations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster. Disaster Management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.

Ecological Support Areas²⁸

ESAs are supporting zones required to prevent the degradation of Critical Biodiversity Areas and Protected Areas. An ESA may be an ecological process area that connects and therefore sustains Critical Biodiversity Areas or a terrestrial feature, e.g. the riparian habitat surrounding and supporting aquatic Critical Biodiversity Areas.

Ecosystem services

This is the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth.

Invasive Species

Means species that have been introduced into an area, and are able to outcompete and displace indigenous or useful alien species.

Ramsar Site²⁹

Ramsar Sites are designated because they meet the Criteria for identifying Wetlands of International Importance. The first criterion refers to Sites containing representative, rare or unique wetland types, and the other eight cover Sites of international importance for conserving biological diversity. These criteria emphasize the importance the Convention places on sustaining biodiversity.

Wetland³⁰

Land which is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

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FOOTNOTES

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