

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

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**NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004
(ACT NO. 10 OF 2004)****DRAFT BIODIVERSITY MANAGEMENT PLAN FOR HARTEBEESSPRUIT ECOSYSTEM**

I, Bomo Edith Edna Molewa, Minister of Environmental Affairs, hereby under section 43(1)(a)(ii) read with sections 43(3) and 100 of the National Environmental Management: Biodiversity Act, 2004, publish the Biodiversity Management Plan for the Hartebeesspruit Ecosystem, set out in the Schedule hereto.

Members of the public are invited to submit to the Minister, within 30 days of the publication of the notice in a *Gazette*, written representations on, or objections to the draft Biodiversity Management Plan to the following addresses:

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An electronic copy of the draft BMP can be downloaded from the link:
<http://www.environment.gov.za/Documents/>.

Comments received after the closing date may not be considered.

BOMO EDITH EDNA MOLEWA
MINISTER OF ENVIRONMENTAL AFFAIRS

SCHEDULE

DRAFT BIODIVERSITY MANAGEMENT PLAN FOR HARTEBEESSPRUIT ECOSYSTEM

DRAFT BIODIVERSITY MANAGEMENT PLAN FOR THE HARTBEESSPRUIT ECOSYSTEM



Date: Final draft

Drafted by: Department of Environmental Affairs



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



CITY OF
TSHWANE
IGNITING EXCELLENCE



WATER
RESEARCH
COMMISSION



Executive Summary

Inter-connectivity between biodiversity conservation, poverty alleviation and sustainable development is well-recognised as an integral part to sustaining life and livelihoods. Humankind and all other forms of life directly depend on biodiversity for their very existence. Our rich biodiversity forms an ecological treasure chest used by humankind for agricultural, medicinal, horticultural, structural, spiritual and many other purposes. Cities take up only about 2% of the world's land area, yet they consume 75% of all resources, and therefore utilise far more resources than those contained within their boundaries. This highlights the critical role that local governments play in the management and conservation of biodiversity in the urban context. Local governments are in the front-line for managing urban biodiversity, and can have a significant impact on conserving and managing the world's biodiversity in a sustainable manner (ICLEI Cities Biodiversity Center Programme).

The Aichi Biodiversity Targets are 20 ambitious goals that make up part of the Convention on Biological Diversity (CBD's) Strategic Plan for Biodiversity 2011–2020, adopted in Nagoya, Japan, in 2010. The targets provide a framework for action by all stakeholders—including cities—to save biodiversity and enhance its benefits for people. Below, are a few of the targets most prevalent to local governments:

AICHI TARGET 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably:

No level of government can reach citizens for education, communication, and awareness-raising as regularly, clearly, and effectively as city officers. National governments need to help cities achieve this target.

AICHI TARGET 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems:

Mainstreaming of biodiversity needs to be done at national as well as subnational and local levels to be effective. Biodiversity values are different for each level of "vertical" (i.e., national, provincial, and local) and "horizontal" (i.e., divisions such as environment, planning, transportation, education, finance, and nutrition) government.

AICHI TARGET 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

No other level of government does as much restoration as local governments. Many "brown" and transition (ex-industrial) areas under city governments are either in the process of being restored or could be. City governments can also promote the use of green infrastructure and roofing.

In recognition for the need for conservation action, the Department of Environmental Affairs (DEA) developed the requisite legal framework that caters for the protection and sustainable use of natural resources. The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) through Articles 9 and 43 (1)(a) provides for the development of Biodiversity Management Plans for Ecosystems (BMP-E). Through the development of BMP-Es, interest and action of landowners, resource users and other key stakeholders are mobilised. BMP-Es also provide a platform for an implementing organisation or responsible entity as appointed by the Minister to monitor and report (annually) on progress.

DEA, in collaboration with key stakeholders – ICLEI, Tshwane Municipality and Friends of Colbyn Valley – initiated the process to develop the BMP-E for the Hartbeesspruit-Colbyn Valley Wetland ecosystem by holding a stakeholder workshop in November 2014 which included the above key stakeholders. The support of the key role players for the BMP process was given, followed by the development of the first draft of the BMP-E. A second stakeholder workshop took place on June 2015, with the aim to further develop the BMP-E by setting in place an action plan with specific objectives for each action and responsibilities for implementation actions assigned to various role players. This was followed by two more focused stakeholder engagements with key stakeholders in September 2015. The draft BMP-E consists of the background and rationale for a BMP-E and sets out an action plan aimed at implementing priority actions over a five year implementation period against the aims and objectives of the BMP-E.

One of the main aims of the development and subsequent implementation of the Hartbeesspruit-Colbyn Valley Wetland BMP-E is that the BMP-E will serve as a pilot for local government support to mainstreaming biodiversity at the local-government level, particularly in achieving protection of the threatened wetland and associated peatland through collaboration and buy-in between various spheres of government, stakeholders and resource users. The BMP-E will furthermore, serve as a pilot to test the robustness of the Norms and Standards for BMP-Es (Government Gazette No 37302 7 February 2014).

The need to protect threatened ecosystems, particularly those occurring within the urban edge, such as the Hartbeesspruit and Colbyn Valley Wetland, is increasingly important, as the threats relating to urban encroachment become more and more apparent. This was highlighted by the recent intention of the City of Tshwane to auction remaining portions of the Farm (Koedoespoort 456-JR) on which the Colbyn Valley Wetland occurs for development (November 2014). This was met with overwhelming opposition from residents and interested and affected stakeholders through many written objections and caused uncertainty around the future existence of the Colbyn Valley Wetland and Nature Reserve. Fortunately the City of Tshwane only intends selling off a small portion of land adjacent to the wetland for development. This however, would most likely be an additional contributing threat to the future integrity of the wetland and thus emphasises the need for a collaborative effort to conserve Colbyn Valley Wetland as a threatened ecosystem, which plays an integral role in water quality and flood attenuation as part of the Hartbeesspruit system, which in turn supplies the Roodeplaat Dam, a source of drinking water for Pretoria.

The Moreletaspruit, which drains the far eastern suburbs of Pretoria, is a tributary of the Hartbeesspruit, joining it a few kilometres downstream of the Colbyn Wetland. The Hartbeesspruit-Moreletaspruit catchment lies in the upper reaches of the Pienaars River catchment, which forms part of the Limpopo Water Management

"Most decisions that impact biodiversity happen in cities, most of the consumption that impacts biodiversity happens in cities."

-Bráulio Ferriera de Souza Dias,
Executive Secretary,
Convention on
Biological Diversity

Area. After its confluence with the Moreletaspruit, the Hartbeesspruit winds through the smallholdings of Kameeldrift before its confluence with the Pienaars River in Roodeplaat Dam (Figure 1).

The Colbyn Valley Wetland is protected within the formally declared Colbyn Wetland Nature Reserve (Provincial Gazette, 25 June 2014) and is managed by the City of Tshwane Municipality. The Reserve extends over 80 hectares, adjoining the Pretoria suburbs of Colbyn, Kilner Park and Hatfield, and located only 5 km from Pretoria's central business district. Together with the Meintjieskop ridge, Pretoria National Botanical Garden, and the University of Pretoria experimental farm and sports grounds, Colbyn Valley plays an important role in forming a 'green' corridor in Pretoria's urban landscape, a refuge and migration route for wildlife. The Reserve forms part of a nicely confined urban catchment namely the Moreleta and Hartbeesspruit Catchment. The Moreleta and Hartbeesspruit tributaries drain a number of the southern and eastern suburbs of Pretoria. Aside from its role as an urban biodiversity hotspot, this nature reserve, visible from several major transport routes, also forms a vital part of the aesthetics and sense-of-place of the surrounding suburbs.

According to Natural Vegetation Types for South Africa, Lesotho and Swaziland (updated 2009) the area falls within the Marikana Thornveld Type, which is listed as Vulnerable (National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) National List of Ecosystems that are Threatened or in Need of Protection (Government Gazette No. 34809, 9 December 2011).

The Colbyn Wetland Nature Reserve consists of a wetland, peatland and grassland as well as the relatively unspoilt vegetation of the neighbouring rocky ridges. Surveys of the fauna of the Colbyn Valley in 1991 revealed the area to be home to a variety of insect, bird and small mammal species. A rare Lycaenid butterfly species was recorded in the insect survey, and the threatened red rock rabbit has been spotted here in the past. The wetland has been noted to be a top birding spot, with 108 bird species having been recorded in the Colbyn Valley during the 1991 study, 6 of which are considered to be 'threatened'. A list of bird sightings in the greater Colbyn Valley area between 1982 and the present reveals a total of 152 bird species.

The wetland, which covers an area of approximately 15 ha within the Nature Reserve, is formed by back-flooding of the Hartbeesspruit as it flows through a poort between two quartzitic ridges, along with the contribution of groundwater and subsurface drainage from seeps upstream of the poort. This has also resulted in favourable conditions for the accumulation of peat in parts of the wetland. Peat forms in wetlands when low-energy flows and permanent waterlogging enable partially-decomposed plant material to accumulate. Active accumulation of peat depends on a slow rate of decay of organic material in oxygen-deprived (anaerobic) conditions. The Colbyn peatland occupies just over a hectare, or 7%, of the total wetland area. The peat layer is estimated to be about 7 000 years old, and is 2.4 m thick at its deepest point, with an average thickness of 1.5 m.

Though its urban location makes the Colbyn Valley Wetland a fairly unique biodiversity asset, this location also makes the wetland vulnerable to a number of serious and ever-increasing impacts. Threats facing the Colbyn Valley Wetland include increased development in the catchment resulting in increased stormwater inflows and deteriorating water quality, the spread of invasive alien plants, and the influx of vagrants living in and using the wetland area and its resources. There are also threats of new developments in the wetland buffer zone, most seriously, the identification of an area directly adjacent to the wetland as the potential future location of a park-and-ride facility, as proposed in the Hatfield Spatial Development Framework published by the City of Tshwane Municipality in September 2011 and March 2012.

In order to protect the wetland, a broader river ecosystem approach was identified as an important consideration. As such the ecosystem has been delineated to include the Hartbeesspruit, which feeds

into the Colbyn Valley Wetland, which in turn joins the Pienaars River to the north, which then eventually flows into Roodeplaat Dam.



The Colbyn Valley Wetland

Definitions

Biological diversity or biodiversity means 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.

Biodiversity Management Plan - Ecosystem means an ecosystem management plan in terms of section 43 of the National Environmental Management: Biodiversity Act (No 10 of 2004)

Collaborators means those individuals and/or organisations that will be approached/included in the process to complete the action.

Conservation Authorities means those organisations mandated in terms of legislation with the conservation of South Africa's biota.

Ecosystem means a dynamic complex of animal, plant and micro-organism communities and their non-living environment interacting as a functional unit.

Endangered Ecosystem means any ecosystem listed as endangered in terms of section 56 of NEMBA

Ecological Infrastructure refers to naturally functioning ecosystems that deliver valuable services to people such as fresh water, climate regulation, soil formation and disaster risk reduction. It is the nature-based equivalent of built or hard infrastructure, and is just as important for providing services and underpinning socio-economic development.

Listed Ecosystem means any ecosystem listed in terms of section 52(1) of the National Environmental Management: Biodiversity Act.

Management Authorities means those organisations or individuals managing the land either for themselves where they are the owners or on behalf of the owners through an agreement.

Role player means a natural or juristic person(s) who have a direct role to play in the implementation of the Biodiversity Management Plan for the ecosystem and whose role is captured in this Biodiversity Management Plan.

Species means a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population.

Stakeholder means a natural or juristic person(s) that has an interest in, or may be affected by, a particular obligation or decision or activity, relating to or resulting from a management plan, either as individuals or representatives of a group and includes land owners where applicable.

Threat means any action that causes a decline in species populations and compromises the future survival of an ecosystem or anything that has a detrimental effect on an ecosystem.

Viable in relation to an ecosystem means the ability to function in such a way that the integrity of the ecosystem is maintained or is in a functional state.

Abbreviations

ARC:	Agricultural Research Council
BGIS:	Biodiversity GIS (http://bgis.sanbi.org)
BMA:	Biodiversity Management Agreement
BMP:	Biodiversity Management Plan
BMP-E:	Biodiversity Management Plan for an Ecosystem
CBA:	Critical Biodiversity Area
CMA:	Catchment Management Agency
CMS:	Catchment Management Strategy
CoT:	City of Tshwane
CR:	Critically Endangered
DEA:	Department of Environmental Affairs
DEA NRM:	Department of Environmental Affairs, Natural Resource Management
DWS:	Department of Water and Sanitation
EIA:	Environmental Impact Assessment
EIP:	Environmental Implementation Plan
EMF:	Environmental Management Framework
EMP:	Environmental Management Plan
EN:	Endangered
ESA:	Ecological Support Area
FEPA:	Freshwater Ecosystem Priority Area
GDARD:	Gauteng Department of Agriculture and Rural Development
ICLEI:	Local Governments for Sustainability
IDP:	Integrated Development Plan
MEA:	Multilateral Environmental Agreement
NBA:	National Biodiversity Assessment
NEMBA:	National Environmental Management: Biodiversity Act, (Act. 10 of 2004)
NEMA:	National Environmental Management Act, (Act 107 of 1998)
NFEPA:	National Freshwater Ecosystem Priority Areas Project
NEMPAA:	National Environmental Management: Protected Areas Act, (Act 57 of 2003)
NGO:	Non-government organisation
PES:	Present Ecological State
SANBI:	South African National Biodiversity Institute
SDF:	Spatial Development Framework
SDP:	Spatial Development Plan
TOPS:	Threatened or Protected Species
VU:	Vulnerable
WfWet:	Working for Wetlands
WRC:	Water Research Commission

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1. Introduction

The quality of life experienced in local communities is fundamental to the human wellbeing of its residents. In South Africa, the Constitution (Act 108 of 1996) creates the overall framework for cooperative governance with three “distinctive, interdependent and interrelated” spheres of government. Concurrent function augmented by the Intergovernmental Relations Framework Act (Act 13 of 2005) allows for decentralised governance. Local government is the implementation arm of the three spheres of government, and is strategically placed to address the needs of its citizens and communities. Service provision is a key priority along with local economic development. Some of the basic essential services to sustain the livelihoods of local residents include transport, housing, clean air, and clean water, energy, health, sanitation, risk and disaster management and recreation.

It is important to note that biodiversity is a key umbrella service from which all other value streams flow. Local authorities are some of the biggest beneficiaries of biodiversity and ecosystem services. Urban areas are the consumption centres of natural resources. However, increasing urbanisation creates new challenges for improving service delivery. Migration of people from the rural areas to the urban areas who are seeking better opportunities for a better quality of life places added pressure on our biological resources to provide the necessary services.

There is global recognition that local actions impact on biodiversity and it is through local actions that the situation can be addressed most effectively. It is therefore becoming increasingly clear, worldwide, that the structures of local or municipal government are better placed than any other sphere of government to manage biodiversity and, in so doing, to raise awareness amongst citizens about the importance of protecting the environment. (Framework for Biodiversity Mainstreaming in Local Authorities, DEA, 2011).



2. Description and significance of the Hartbeesspruit Ecosystem

2.1 *Importance to local governance*

Local governance will be seriously compromised as the tolerance for change is often low at the local level. Current land use patterns in urban environments are locked in with some flexibility provided by open spaces. Ecosystem services could be further compromised which reduces opportunities to mitigate and adapt to climate change. By the end of the century, climate change and its impacts may be the dominant direct driver of biodiversity loss and changes in ecosystem services globally (MEA (2006).

In addition, the following are just a few of the other threats that contribute to the dire situation at local level:

- Habitat transformation and degradation resulting from uncontrolled urban development;
- The growing occurrence of invasive alien plant species;
- Unsustainable use of natural resources, including all forms of land degradation (rangeland and soil degradation, e.g. overgrazing, soil erosion etc) and the illegal harvesting, especially of marine resources, and of plants for medicinal purposes;
- Domestic, industrial, and agricultural, pollution;
- The over-extraction of water for a range of uses, including agricultural irrigation and industrial and residential consumption are placing aquatic ecosystems under terrible pressure;
- Lack of awareness and understanding at municipal level of the importance of biodiversity and its ecosystem goods and services, underpinning service delivery.

Responses to these challenges are varied at present and tend to be largely policy-driven and derived from legal directives arising from the country's Constitution.

However, recent policy instruments and processes that have emerged have identified local government as a fundamental actor to create better governance mechanisms in cooperative fashion with other stakeholders for the biodiversity challenges presented here.

Local authorities have a profound potential to affect positive change. Innovations in lifestyle, technology and governance by local government are crucial for our transition to a sustainable green economy. During the last few years, several biodiversity initiatives have greatly contributed to ensuring that cities and local authorities become part of the solution in response to the biodiversity challenges that South Africa is facing. This constitutes significant progress in the transition from a policy driven arena towards action oriented implementation on the ground.

The area now known as Colbyn Valley was originally part of the farm Koedoespoort, allocated to Lourens Cornelius Bronkhorst in 1859, whose heir sold the farm to the Wesleyan Methodist Missionary Trust in 1885. The portion of the farm on which the wetland is located was later allocated to the University of Pretoria for agricultural research, and eventually donated to the then Pretoria City Council as a 'nature area'.

The Colbyn Valley comprises grassland, wetland, peatland and the vegetation of a relatively unspoilt koppie. The wetland occurs at an altitude of between 1 335 and 1 320 m above mean sea level, faces east-northeast with a gradual slope of 1.36% and is approximately 15 ha in extent (Grundling, *et al.*, 2000). The wetland is situated on shales of the Silverton Formation and the key point of the wetland is the quartzite ridge of the Daspoort Formation in the North (Grundling, *et al.*, 2000).

The Hartbeesspruit (9.2 kilometers in length) flows through a poort or breach in the quartzite ridge as result of a diabase dyke that penetrated through the quartzite ridge. Localized backflooding of the Hartbeesspruit as a result of restricted flow through the poort and flow from seeps upstream above the poort resulted in the formation of the wetland and the accumulation of peat under the associated favorable conditions (Grundling, *et al.*, 2000). The peat in the wetland is a medium fibrous to fine reed-sedge peat and the stream in which it is located has a hierarchical stream order of 1, which means it occurs at the head of the catchment.

The wetland ecosystem is approximately 15 ha in extent occurring within the 60 ha Colbyn Wetland Nature Reserve. The groundwater and subsurface drainage upstream of the poort contribute water to the wetland, and as such has resulted in favourable conditions for the formation of peat in parts of the wetland (Grundling, *et al.*, 2000).

The Colbyn Wetland Nature Reserve was declared in terms of National Environmental Management: Protected Areas Act, 2003, (Act No. 57 of 2003), as a municipal nature reserve by the Gauteng Province in June 2014 (Provincial Gazette, 25 June 2014) and is managed by the City of Tshwane Metropolitan Municipality. It is situated next to the suburb of Colbyn in the west and the N1/N4 intersection in the east (fig. 1), and is part of a “green corridor” together with adjoining areas Meintjieskop and the Pretoria National Botanical Garden.

The area falls within the Rocky Highveld zone of the Grassveld biome (Low and Rebelo, 1996), with an average summer rainfall of between 650 and 750 mm per annum (Low and Rebelo, 1996; in Grundling and Marneweck, 2000) and falls within the Marikana Thornveld Type, which is listed as Vulnerable, in terms of NEMBA National List of Ecosystems that are Threatened or in Need of Protection (Government Gazette No. 34809, 9 December 2011).

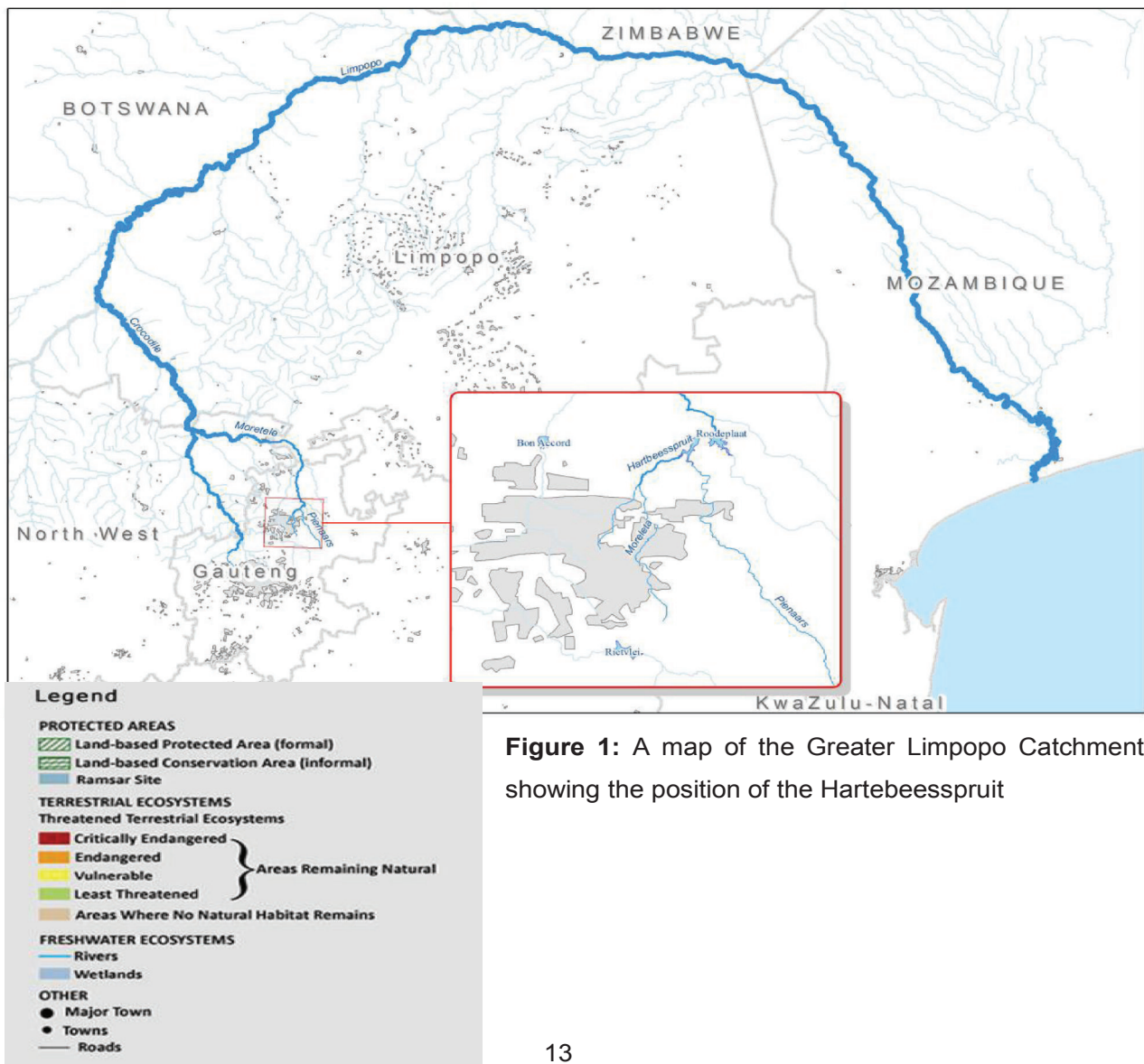


Figure 1: A map of the Greater Limpopo Catchment showing the position of the Hartebeesspruit

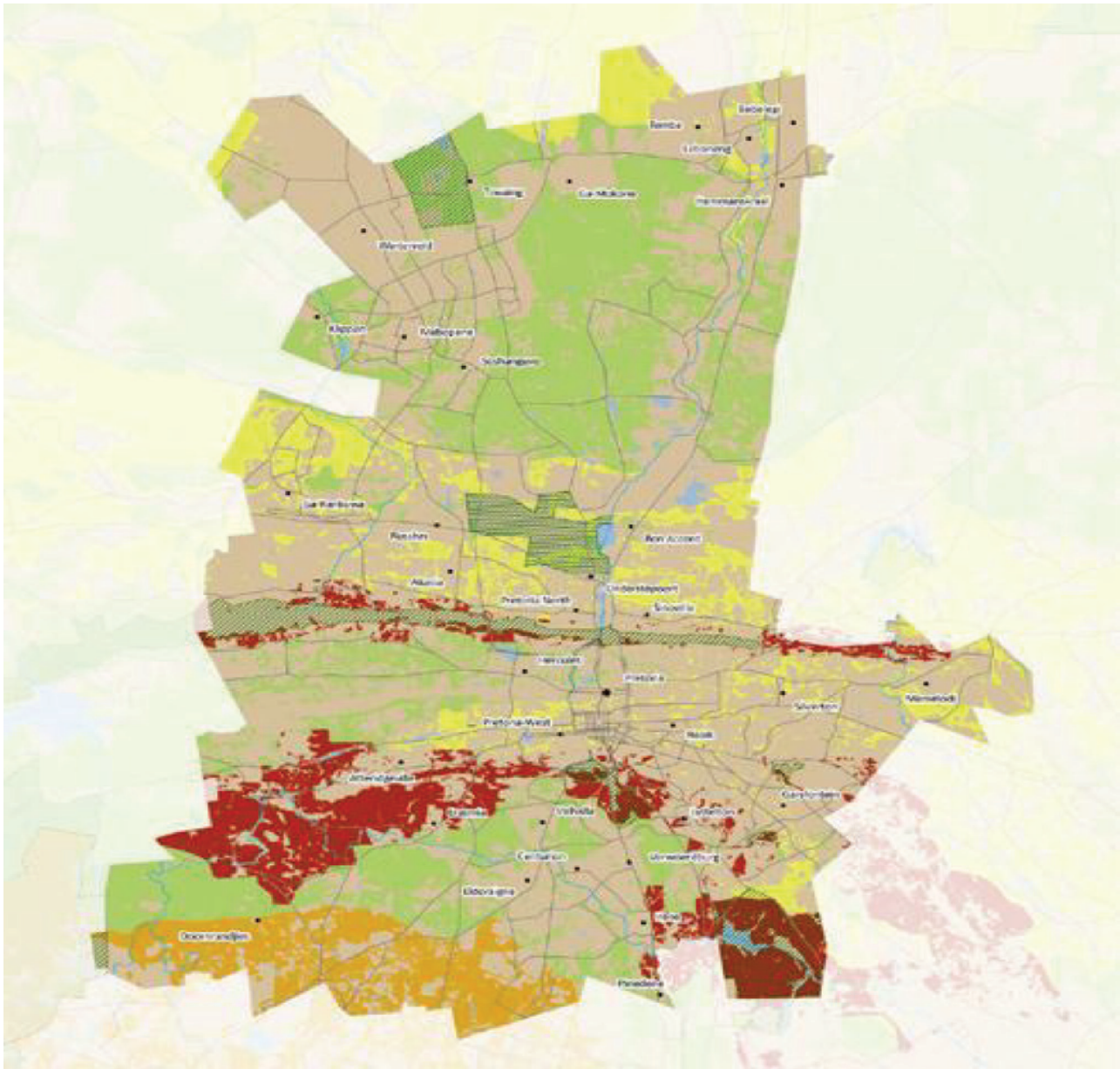
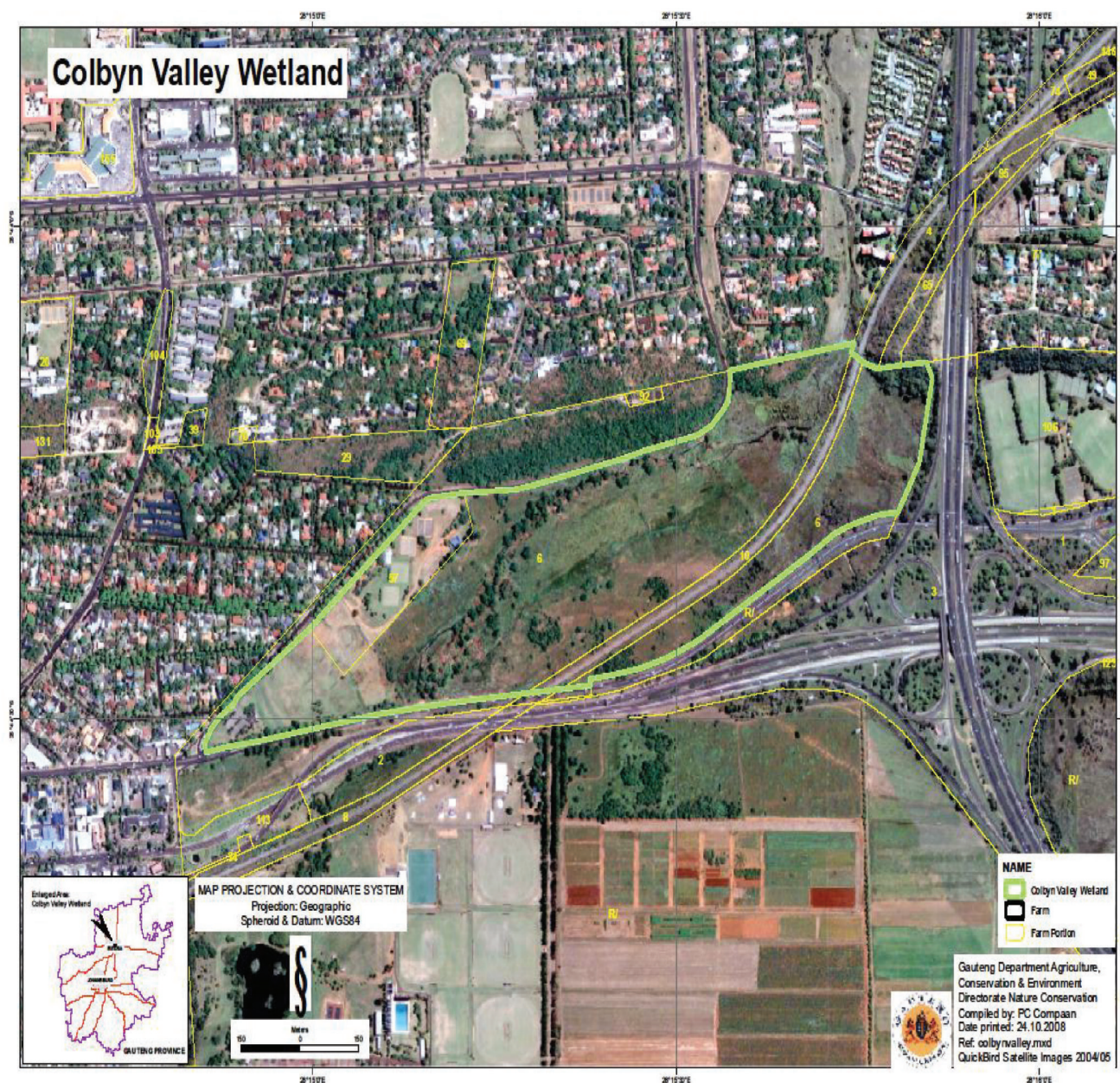


Figure 2: City of Tshwane Protected Areas and Terrestrial and Freshwater Ecosystems



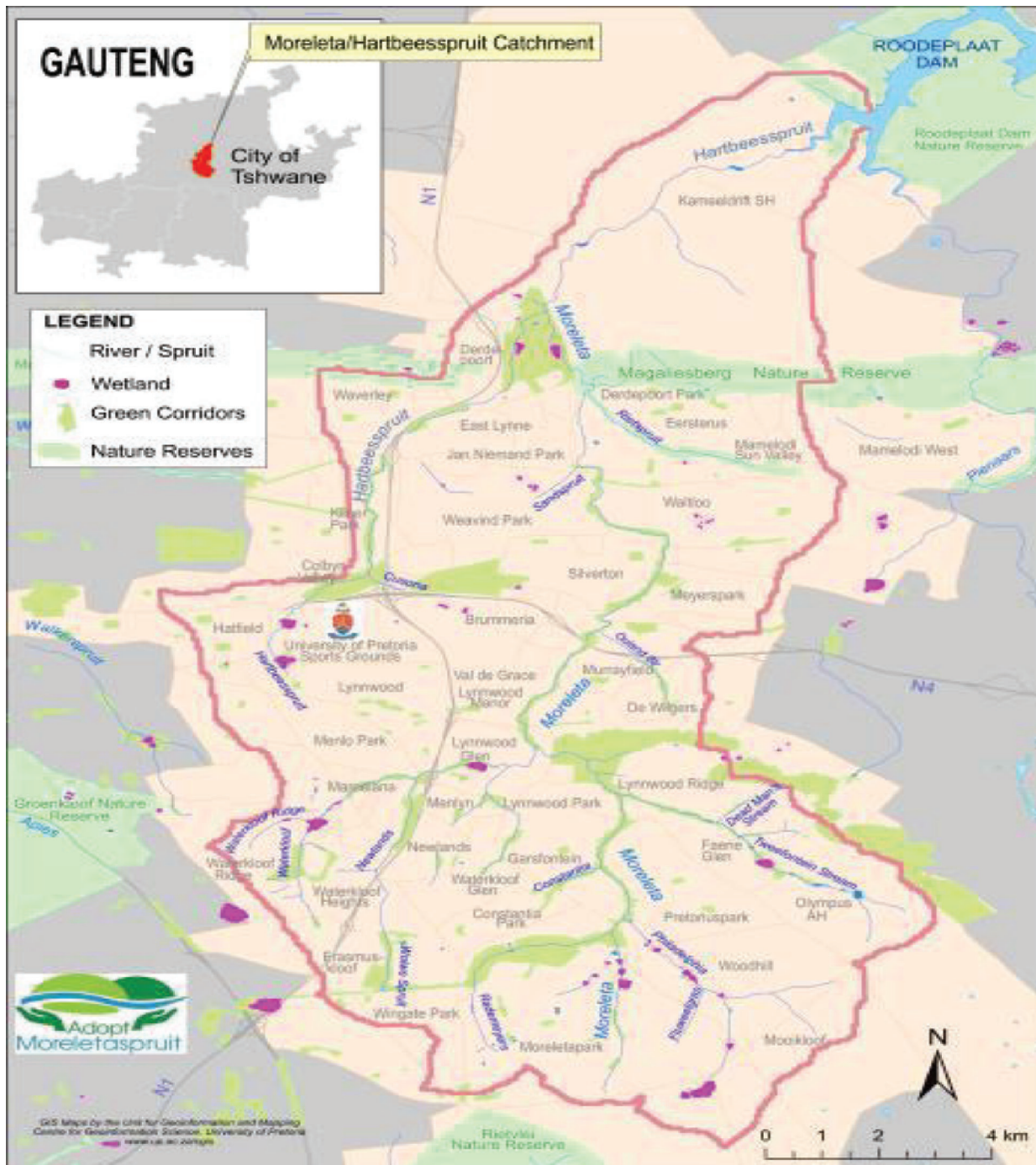


Figure 3: Moreleta/Hartbeesspruit Catchment Area (courtesy of Adopt Moreletaspruit)

The Colbyn Valley Wetland has only recently been identified as a peatland and is under severe threat from different kinds of developmental pressures. The Colbyn peatland occupies just over a hectare, or 7%, of the total wetland area.

Colbyn Wetland Nature Reserve extends over 60 hectares, adjoining the Pretoria suburbs of Colbyn, Kilner Park and Hatfield. Together with the Meintjieskop ridge, Pretoria National Botanical Garden, the University of Pretoria experimental farm and sports grounds, Colbyn Valley plays an important

role in forming a 'green' corridor in Pretoria's urban landscape, a refuge and migration route for wildlife. In addition, the Hartbeesspruit, which flows through the Colbyn Valley, forms a further important north–south route, linking the Strubenkop and Meintjieskop ridges with the Magaliesberg.

Aside from its role as an urban biodiversity hotspot, this natural area, visible from several major transport routes, also forms a vital part of the aesthetics and sense-of-place of the surrounding suburbs.

The Colbyn Valley is of particular interest due to its distinct wetland structure, as it comprises 15 hectares of wetland containing a unique soil type called Peat within the 60 ha Nature Reserve. Peat soil enhances normal wetland functions by making wetlands highly efficient for nutrient storage and effective filters and are unique as organic sinks containing a quarter of the earth's soil carbon. Peatlands are extremely rare in South Africa, with less than 1% of the world's peatlands found in the Southern Hemisphere, especially in urban areas, as they require specific environmental conditions to form which are more common in the warmer regions of the world. A permanent water source is required for the peatland to function optimally. The water source can be either rainfall or a raised water table or sometimes even both. Conditions under which peat can form include poor drainage and a plant litter production rate that is higher than the decomposition rate. The Colbyn Wetland area falls within the Rocky Highveld zone of the Grassveld biome, with an average summer rainfall of between 650 – 750 mm per annum which fits the natural requirements for a peatland to form.

The Valley has already been partially drained due to agriculture and the development of roads and railways and is receiving increasing pressure from further urban developments. The valley is still home to several species that are in danger from further development and the spread of alien invasive species.

The Reserve is a good site for birding, as a wide variety of bird species occur here. The Nature Reserve thus has potential to generate income from interested birders wanting to visit the Nature Reserve. In addition, a number of mammal species have also been found to occur in the area and are listed below:

Table 1: List of Birds and Mammals found in the Colbyn Valley Nature Reserve

BIRDS	MAMMALS
<i>Asio capensis</i> (Marsh Owl)	<i>Suncus lixus</i> (Greater Dwarf Shrew)
<i>Bubo africanus</i> (Spotted Eagle Owl)	<i>Crocidura cyanea</i> (Reddish-grey Musk Shrew)
<i>Scopus umbretta</i> (Hamerkop)	<i>Elephantulus brachyrhynchus</i> (Short-snouted Elephant Shrew)
<i>Elanus caeruleus</i> (Blackshouldered Kite)	<i>Atelerix frontalis</i> (South African Hedgehog)
<i>Vanellus senegallus</i> (Wattled Plover)	<i>Galago senegalensis</i> (Lesser Bushbaby)
<i>Burhinus capensis</i> (Spotted Dikkop)	<i>Soccostomus campestris</i> (Pouched Mouse)
<i>Apus caffer</i> (Whiterumped Swift)	<i>Mus minutoides</i> (Pygmy Mouse)
<i>A affinis</i> (Little Swift)	<i>Cryptomys hottentotus</i> (Common Mole Rat)
<i>Ceryle rudis</i> (Pied Kingfisher)	<i>Thryonomys gregorianus</i> (Lesser Cane Rat)
<i>Dricurus adsimilis</i> (Forktailed Drongo)	<i>Hystrix africaustralis</i> (Cape Porcupine)
<i>Acrocephalus arundinaceus</i> (Great Reed)	<i>Pronolagus rupestris</i> (Red Rock Rabbit)

Warbler)	
	<i>Galerella sanguine</i> (Slender Mongoose)
	<i>Ichneumia albicauda</i> (White-tailed Mongoose)
	<i>Genetta genetta</i> (Small Spotted Genet)



Figure 4: Birders enjoying Colbyn Valley

2.2. Ecological Infrastructure and Wetland Protection

The Colbyn Valley Wetland and Hartbeesspruit River ecosystem is furthermore considered to play a crucial role in providing ecological infrastructure in an urban environment. Ecological infrastructure includes, for instance, healthy mountain catchments, rivers, wetlands, coastal dunes, and nodes and corridors of natural habitat, which together form a network of interconnected structural elements in the landscape. Ecological infrastructure essentially enhances built infrastructure. Strategic investment in ecological infrastructure lengthens the life of existing built infrastructure and can reduce the need for additional built infrastructure – often with significant cost savings.

South Africa's wetlands are arguably its most valuable ecological infrastructure. Not only do these special ecosystems support water resources by purifying water and regulating flows, they also act as sponges that store water and release it slowly, filtering pollutants and reducing the impacts of droughts and floods in the process. Sustaining a rich diversity of faunal and floral species, wetlands also support the economic activities of many rural and urban communities, including the provision of food and fuel. Recent studies have shown that wetlands have become South Africa's most threatened ecosystem, with almost 50% listed as Critically Endangered (NBA 2011).

As with all forms of infrastructure, ecological infrastructure needs to be maintained and managed, and in some cases restored. By assessing existing biodiversity and applying systematic biodiversity planning techniques, the management and conservation of wetlands can ensure that this critical ecological infrastructure is secure for the future. Well managed ecological infrastructure can buffer human settlements and built infrastructure against the extreme events that are likely with climate change, playing a crucial and cost effective role in disaster risk reduction. This is predominantly true for wetlands as they play an important role in flood control, water retention and purification. The Colbyn Valley Wetland contains peat soil that makes these wetlands even more valuable from a climate change perspective, as this soil type is a highly effective and extremely rare carbon sink. It is for this reason, that this biodiversity management plan for the Colbyn Valley Ecosystem is so significant.

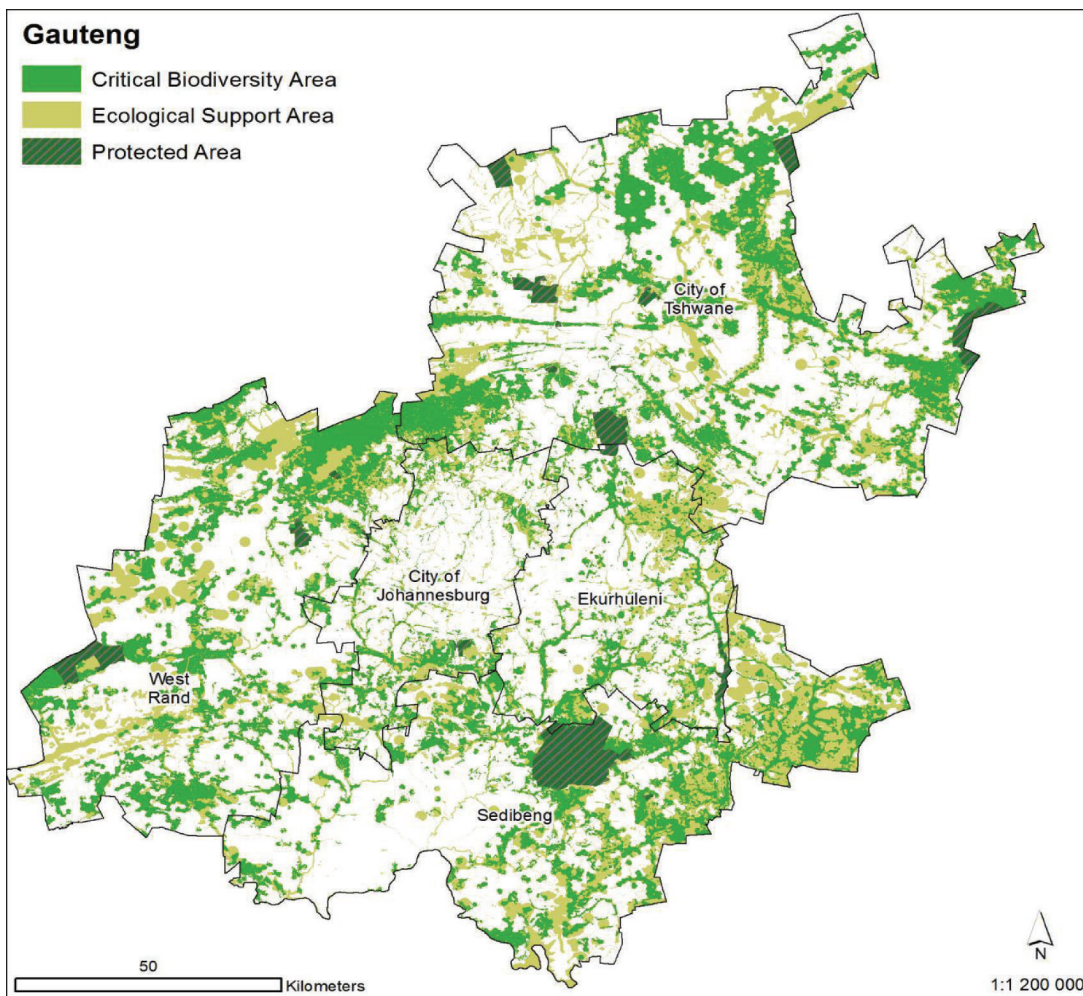
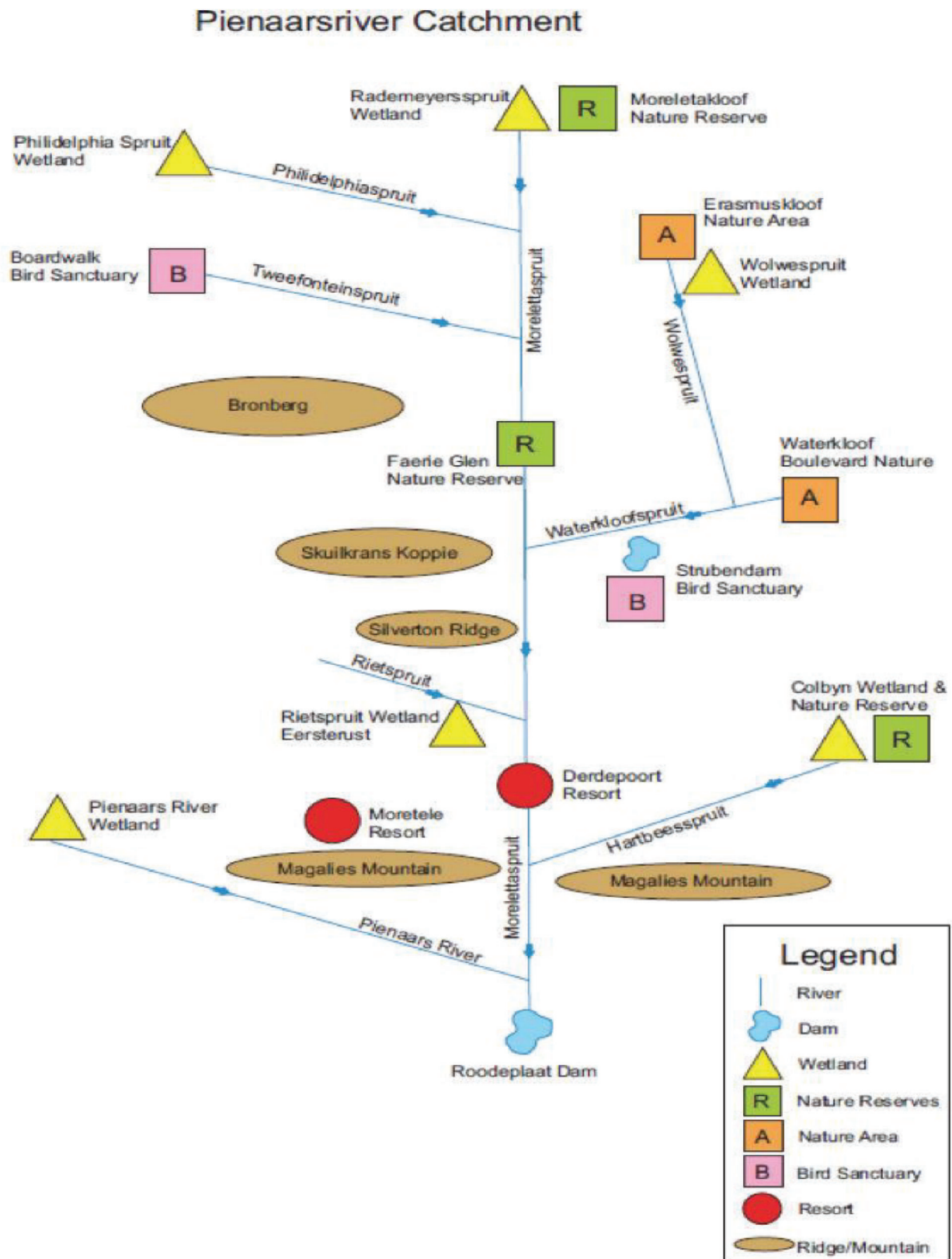


Figure 5: Critical Biodiversity Areas in Gauteng (Gauteng Conservation Plan v3.3, March 2014)

Figure 6: Diagram showing the Pienaarsriver Catchment

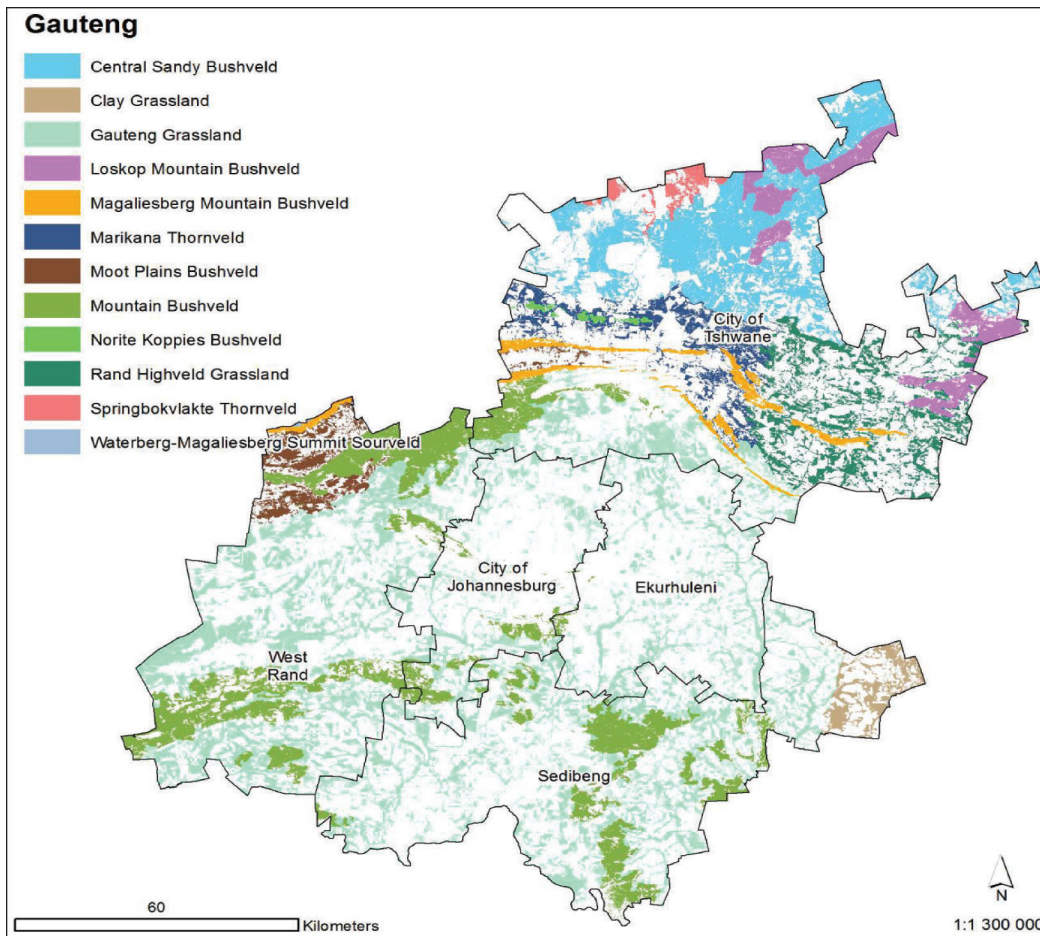


Figure 7: Remaining Areas of Primary Vegetation in Gauteng (Gauteng Conservation Plan v3.3, March 2014)

3. The Aim of the Biodiversity Management Plan for an Ecosystem

NEMBA provides for the development and publication of Biodiversity Management Plans for ecosystems (BMP-E). The NEMBA Norms and Standards for BMP-Es were developed and published in February 2014, and provide for a national approach, but with sufficient flexibility to accommodate the variability of ecosystems and their management requirements.

It is important to note from the outset that in order for a management plan to be effective it must be seen as a product of an iterative management planning process. NEMBA specifies that all BMPs are to be revised every five years of implementation. As such, this plan will be the first in a series of five-year iterations where the success of the previous five years is measured and adaptations are made to ensure that the plan for the next five years is appropriate to changing circumstances.

Section 43 of NEMBA makes provision for the development of a BMP-E for:

- an ecosystem which has been listed in terms of Section 52 of the Act, or
- an ecosystem which has not been listed "but which does warrant special conservation attention, such as:

- Threatened ecosystems identified in the National Biodiversity Assessment (NBA)
- Ecosystems in Critical Biodiversity Areas (CBAs)
- Freshwater Ecosystem Priority Areas (NFEPA)
- High water yield areas or groundwater discharge areas
- Focus area for National Protected Area Expansion Strategy (NPAES)
- Buffers or corridors to protected areas
- Ecosystems that play an important role as ecological infrastructure
- Important for ecosystem-based adaptation to climate change

The Department of Environmental Affairs (DEA) identified Colbyn Valley as a threatened wetland ecosystem in an urban environment that would benefit from a Biodiversity Management Agreement, according to the following Norms and Standards for BMP-Es criteria:

- ✓ It falls within the Marikana Thornveld ecosystem listed as Vulnerable, (Central Variation, criterium 6 in the NEMBA National List of Ecosystems that are Threatened or in Need of Protection)
- ✓ It is an important ecological support area within the urban environment
- ✓ It is a peatland of significance, which in this region is rare, and its continued existence in such a vulnerable urban location is even more unusual
- ✓ It plays an important role as ecological infrastructure, supporting the provision of ecosystem services and
- ✓ It is also considered to be important for ecosystem-based adaptation to climate change

In addition:

- ✓ Colbyn Valley, as a natural area, plays an important role as an urban biodiversity hotspot
- ✓ It contributes to the Tshwane's Open Space and Regional Development Framework
- ✓ It is visible from several major transport routes and therefore is of scenic importance
- ✓ It forms a vital part of the aesthetics and sense-of-place of the surrounding suburbs.

Though its urban location makes the Colbyn Valley Wetland a fairly unique biodiversity asset, this location also makes the wetland vulnerable to a number of serious and ever-increasing impacts. Threats facing the Colbyn Valley Wetland include increased development in the catchment resulting in deteriorating water quality and increased stormwater inflows, which could lead to increased erosion of the wetland and a loss of hydrological integrity, as could failure to maintain the series of gabion weirs installed to mitigate against this, the spread of invasive alien plants, and the influx of vagrants living in and using the wetland area and its resources.

It is envisaged that the development and subsequent implementation of the Colbyn Valley Wetland BMP will serve as a good pilot for local government support to mainstreaming biodiversity protection, particularly the protection of the wetland and the associated threatened peatland, through collaboration and buy-in by government, land-owners and resource users.

The overall aim of this BMP is therefore to provide a mechanism to achieve the sustainable use and management of the Colbyn Valley Wetland ecosystem.

4. Benefits of a BMP-E for the Hartbeesspruit Ecosystem

Through a participatory process, comprising stakeholders and interested and affected parties, the following benefits of a BMP-E were identified:

- The consultation process involved in developing a BMP-E increases awareness of the importance of the area and the impacts of activities/stakeholders.
- As BMP-Es are provisioned under NEMBA it is legally binding, ensuring implementation.
- Biodiversity Management Agreements that may form part of the BMP-E are also legally binding, forming a contract with the implementing agent.
- BMP-Es should be considered in revisions of Integrated Development Plans (IDP) and Strategic Development Frameworks (SDF).
- The BMP-E would ensure co-operative governance, and integration of plans. The creation of a BMP forum of key stakeholders would be a useful mechanism here.

Furthermore, apart from the fact that the Colbyn Valley Wetland is mostly under formal protection within the Colbyn Wetland Nature Reserve, declared by the Gauteng Department of Agriculture and Rural Development (GDARD) and managed by the City of Tshwane, many of the threats to the wetland and associated grassland occur outside the boundaries of the nature reserve. A BMP-E for Colbyn Valley Wetland therefore provides an opportunity for wider collaboration and commitment from various role players whose activities impact on the wetland, enabling them to contribute towards more effective management and sustainable utilisation of the wetland and associated grassland ecosystem, which in effect would result in more responsible and improved management of the water quality contributed by the wetland and its river catchment to Roodeplaat Dam.

5. Legislative Context

5.1 *National Environmental Legislation*

Since the early 1990s, South Africa's policy and legislative framework has been strongly influenced by the principles of sustainable development and other international instruments and processes. With the advent of democratic government in 1994, South Africa embarked on an extensive process to introduce new policies and legislation that aligns with the new Constitution. These laws and policies based on best practice have sought to dismantle the discriminatory laws of the past and create a society based on the principles of equity, non-racialism and non-sexism.

5.1.1 *South Africa's Constitution and Bill of Rights*

The Bill of Rights in South Africa's Constitution recognises the importance of a healthy environment. Section 24 of the Constitution enshrines the right to an environment that is not harmful to any citizen's health. This right has important implications for the development of national legislation and the ratification of international conventions and it states:

Everyone has the right:

- (a) to an environment that is not harmful to their health and well-being; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation; and
 - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

In addition, the Constitution makes provision for a single sovereign state, in which the national government has full powers to pass legislation on matters other than those that fall within the exclusive mandate of the provinces. The provinces have only those powers and functions allocated to them by the Constitution.

Schedules 4 and 5 of the Constitution allocate certain powers to both national and provincial spheres of government, and certain powers exclusively to the provinces. Most areas of functional relevance to the conservation and use of biodiversity are set out in Schedule 4. Here, the Constitution provides mechanisms to enable national and provincial government to perform functions for other levels of government, on an agency or delegation basis; agencies outside of government can also be given specific tasks on a contractual basis.

In conclusion, national government can make and administer laws on residual matters and matters listed in Part A of schedule 5 of the constitution. Provincial government can make and administer laws on matters listed in Part A of schedules 4 and 5. Local government can make and administer laws on matters listed in part B of schedules 4 and 5. Environment is a concurrent competence of National and Provincial.

Provincial legislature

- Any matter within a functional area listed in schedules 4 and 5 of constitution
- Any matter outside 4 & 5 assigned by national legislation
- Any matter for which the Constitution envisages enactment of provincial legislation

Local government

- Matters listed in parts B of schedules 4 & 5.

Table 2: Constitutional functional areas of local government

Schedule 4- Functional areas of concurrent national and provincial competence	
PART A	PART B (Local Government)
<ul style="list-style-type: none"> • Agriculture • Environment • Health services • Housing • Disaster management • Pollution control • Public Transport • Public works • Population development • Regional planning and development • Tourism • Urban & rural development • Trade 	<ul style="list-style-type: none"> • Air pollution • Municipal planning • Local tourism • Municipal health services • Municipal public transport • Municipal public works • Pontoons, ferries, jetties, piers and harbours • Stormwater management in built-up areas • Water and sanitation services (ltd – potable water supply systems & domestic waste water & sewage disposal systems)

Schedule 5- Functional areas of exclusive provincial competence	
PART A	PART B (Local Government)
<ul style="list-style-type: none"> • Provincial planning 	<ul style="list-style-type: none"> • Beaches & amusement facilities • Billboards and display of advertisements in public spaces • Cleansing • Control of public nuisances • Noise pollution

- Refuse removal
- Refuse dumps
- Solid waste disposal

5.1.2 The National Environmental Management Act (No. 107 of 1998)

This Act, widely known as NEMA, is the first of several Acts related to environmental issues enacted since 1994. It has provided a solid foundation on which subsequent Acts have been based. Its purpose is to provide for co-operative environmental governance by establishing: principles for decision-making on matters affecting the environment; institutions that promote co-operative governance; procedures for co-ordinating environmental functions exercised by organs of state. Table 2 lists the specific sections applicable to local government.

Table3: Sections of the National Environmental Management Act applicable to local government

Sections applicable	Implications for local government
<i>Section 17 (1) Fair decision-making and conflict management: with reference to conciliation</i>	<i>Any municipal council may consider the desirability of first referring a matter to conciliation where a difference or disagreement arises concerning the exercise of any of its functions which may significantly affect the environment, or before which an appeal arising from a difference or disagreement regarding the protection of the environment is brought under any law.</i>
<i>Section 35 (1) Environmental-management co-operation agreements: the conclusion of agreements</i>	<i>A municipality may enter into environmental-management co-operation agreements with any person or community for the purpose of promoting compliance with the principles laid down in this Act.</i>
<i>Section 45 (2) Administration of the Act: regulations for the management of co-operation agreements</i>	<i>A municipal council may substitute its own regulations or by-laws, as the case may be, for the regulations issued by the Minister, provided that such provincial regulations or municipal by-laws comply with the principles laid down in this Act</i>
<i>Section 46 (2,3) Administration of the Act: model environmental-management by-laws</i>	<i>Any municipality may request the Director-General to assist it with the preparation of by-laws on matters affecting the environment and the Director-General may not unreasonably refuse such a request. The Director-General may institute programmes to assist municipalities with the preparation of by-laws for the purposes of implementing this Act.</i>

NEMA is an example of broad or 'pillar-type' legislation that needs further Acts to provide meaning and detail to its broad statements. It has therefore resulted in the crafting of several additional Acts influenced by several processes including multilateral environmental agreements. It is noteworthy to mention how international governance mechanisms through multilateral environmental agreements have shaped and informed our legislation, particularly biodiversity legislation.

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

This Act, also known as NEMBA, is of particular importance in relation to South Africa's commitments under the CBD. The Act seeks to resolve the fragmented nature of biodiversity-related legislation that existed at national and provincial levels by consolidating different laws and giving effect to the principle of co-operative governance, while responding to commitments made under the CBD where for the first time, the CBD allocating time to hear the voice of local municipalities during the annual meeting of its governing body, the Conference of the Parties (COP), in 2008. This resulted in the COP

agreeing to Decision IX/28, which elevated biodiversity issues in local government areas to the international level. Further decisions also prompted national governments to engage with their respective municipalities to develop strategies and plans to combat biodiversity loss. Further international advocacy for local action culminated in Decision X/23 in 2010 of the contracting parties to the CBD which endorsed a Plan of Action on subnational governments, cities and other local authorities for biodiversity, which recognises the crucial role that local authorities play in conserving biodiversity

In line with the objectives of the CBD, NEMBA provides for, *inter alia*:

- the management and conservation of biodiversity in South Africa and of the components of such biodiversity;
- the use of indigenous biological resources in a sustainable manner;
- the fair and equitable sharing among stakeholders of the benefits arising from bio-prospecting involving indigenous biodiversity;
- the management and conservation of South Africa's biodiversity within NEMA's framework;
- the protection of species and ecosystems that warrant national protection

Table 4: Sections of the National Environmental Management: Biodiversity Act applicable to local government

Sections applicable	Implications for local government
Section 48 (1)	<i>The national biodiversity framework, bioregional plans and biodiversity management plans may not conflict with any integrated development plan (IDP) adopted by municipalities.</i>
Section 54	<i>Municipalities must adopt an IDP that takes into account the need for the protection of listed ecosystems.</i>
Section 76 (2)	<i>Municipalities must prepare an invasive-species monitoring, control and eradication plan for land under their control, as part of their IDP-related environmental plans in accordance with Section 11 of this Act.</i>

As indicated above, NEMBA is a piece of legislation that articulates the commitments that South Africa made in ratifying the CBD. Several policy frameworks and strategies that need to be implemented by local government are derived from this Act.

5.1.4 Other Acts applicable to local governments

5.1.4.1 The National Environment Management: Air Quality Act (No. 39 of 2004)

To quote from the Act, the purpose of the National Environment Management: Air Quality Act is:

"To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation, and for securing ecologically sustainable development while promoting justifiable economic and social development...."

5.1.4.2 The National Environmental Management: Waste Management Act (No. 59 of 2008)

South Africa's waste management record has generally been poor in the past. This has had a negative impact, at both local and global levels, often leaving poorer communities' worst affected. This Act aims to address this situation. The Act has a three-tiered perspective on waste; in other

words, the first priority is to avoid waste entirely, the second is to ensure that waste is minimised, re-used, recycled or recovered, and the third is to safely treat and dispose of waste as a last resort. The Act seeks to generally give effect to Section 24 of the Constitution to secure an environment that is not harmful to the health and well-being of people.

5.1.4.3 SPATIAL PLANNING AND LAND USE MANAGEMENT ACT

The **Spatial Planning and Land Use Management Act 16 of 2013** aims to provide a uniform, effective and comprehensive system of spatial planning and land use management throughout South Africa. It emphasises redressing spatial-developmental imbalances of the past, while promoting the sustainable and efficient use of land. The Act *inter alia* provides for:

- A nested hierarchy of spatial development frameworks, from the national to the provincial and the local spheres respectively;
- The management and facilitation of land use by means of means of legally-binding land use schemes;
- Aligning land use measures with environmental management instruments;
- Strategic assessments of environmental pressures and opportunities within municipal areas; and
- A 20-year spatial development perspective for municipal planning.

6. Threats to the Hartbeesspruit Ecosystem

Ecosystem threat status tell us about the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends.

Healthy terrestrial ecosystems are vital for healthy catchments, which supply South Africa's water, one of the scarcest of natural resources. Rivers store and transport water and combined with manmade storage and transfer schemes, bring water to urban areas, take away waste and provide cultural and aesthetic services.

Wetlands are exceptionally high value ecosystems that make up a small fraction of the country. Given their strategic importance as ecological infrastructure for ensuring water quality and regulating water supplies, investments in conserving, managing and restoring wetlands are likely to generate disproportionately large returns.

Wetland ecosystems are vital for purifying water and regulating water flows, acting as sponges that store water and release it slowly, filtering pollutants and easing impacts of droughts and floods in the process. They also support a rich diversity of species, which have both intrinsic and economic value. The main pressures faced by the Hartbeesspruit and wetland ecosystem were identified as follows

- Increased development in the catchment area leading to increased high energy runoff and deteriorating water quality and increased stormwater inflows and potentially increased erosion of the wetland
- loss of hydrological integrity of the wetland, i.e. drainage of the wetland due to head-ward erosion of the stream/Hartbeesspruit
- Inadequate management of gabion weirs

- Increased pollution of waterway with litter and refuse
- Spread of invasive alien plants
- Influx of vagrants
- Illegal/accidental and uncontrolled fires

Protected areas alone are unlikely ever to do the full job of protecting wetlands, which are vulnerable to impacts in their catchments beyond the boundaries of protected areas. This highlights the importance of integrated water resource management in securing the quality quantity and timing of freshwater flows on which the functioning of wetlands depends.



Figure 8: Gabion infrastructure constructed to control erosion in the Colbyn Valley Wetland

7. Biodiversity Management Plan for the Hartbeesspruit Ecosystem

7.1 Long-term Objectives of the BMP

The following are the views expressed by the workshop participants (November 2014) and should be considered to reflect some of the aspirations for the long-term outcome of the BMP for Colbyn Wetland:

That Colbyn Valley Wetland and Hartbeesspruit Ecosystem would be viewed as a resource, both in terms of the benefits that wetlands and open spaces provide and in terms of the Nature Reserve providing the ideal location for an environmental education centre, which could provide schools, universities, community groups, and researchers with a centre of excellence for wetland environmental education and/or wetland research.

It would furthermore, provide a safe, secure area for people to enjoy the wetland and to benefit from the recreational value of the area through trails, signage, etc. This could be secured through corporate sponsorship.

7.2 Aim

The overall aim of the BMP is as follows:

Improve the overall management of the ecosystem and, to ensure the ecological integrity of Colbyn Valley Wetland and Hartbeesspruit River Ecosystem is maintained and that Colbyn Wetland is a safe place to visit.

7.3 Action Plan

The action plan below was agreed upon by all the stakeholders:

Action Plan Summary

GOAL	ACTIONS
Operational Goal 1: Financial sponsorship/management budget is secured	Action 7.1.1 Source funding to secure a capital operational budget for Colbyn Valley Wetland and Hartbeesspruit River ecosystem
Operational Goal 2: Commitment from City of Tshwane Council to support community/citizen science initiatives	Action 7.2.1 Support community/citizen scientist activities and initiatives within the Hartbeesspruit and Colbyn Valley Wetland Ecosystem
	Action 7.2.2 Measuring community/citizen scientist activities and initiatives within the Hartbeesspruit and Colbyn Valley Ecosystem
Operational Goal 3: <i>Conservation Management of Colbyn Valley Wetland and Hartbeesspruit River Ecosystem</i>	Action 7.3.1 Identify and manage impacts on the River Catchment
	Action 7.3.2 Database for baseline data for Colbyn Valley Nature

	Reserve established and maintained
	Action 7.3.3 Active management of Colbyn Valley Wetland Ecosystem
	Action 7.3.4 Colbyn Valley Nature Reserve Management Plan completed and implemented
	Action: 7.3.5 Integrate City of Tshwane and Provincial river and wetland projects
Operational Goal 4: Create public awareness of Colbyn Valley Wetland and Hartbeesspruit River Ecosystem	Action: 7.4.1 Increased stakeholder collaboration through the Friends group
	Action 7.4.2 Brand Colbyn Valley catchment and host regular public-stakeholder awareness events
Operational Goal 5: <i>Monitoring and Evaluation</i>	Action 7.5.1 Establish indicators for effective monitoring and reporting in management of Colbyn Valley NR and the Hartbeesspruit River
	Action 7.5.2 Establish a Colbyn Valley Wetland/Water Catchment Working Group

The objectives and aim have been presented in section 7.1 and 7.2 respectively and consultations with the role players confirmed that these are relevant and serve as the point of departure for the identification of further components necessary to complete the BMP-E.

In recognition of the need for planning statements which increase in their level of specificity each of the objectives are broken down into a series of operational goals which have been articulated according to the "SMART" rule, i.e. specific, measurable, attainable, realistic and time-bound. Each of these are then broken down into the actions which specify the nature of the action, responsibilities, resource requirements, time frames and indicators of achievement. The latter will be used for monitoring and evaluation and to track implementation.

Operational Goal 1: Financial sponsorship/management budget is secured

Action 7.1.1: Source funding to secure a capital operational budget for Colbyn Valley Wetland and Hartbeesspruit River ecosystem	
Responsibility	City of Tshwane
Timeline	First financial year of implementation
Resources needed	Internal and external (human and financial)
Collaborators	Friends of Colbyn Valley, SANBI, Universities, private sector, DEA (NRM)
Deliverables	<ul style="list-style-type: none"> • Collaboration with identified funders • A clear indication of responsibilities and targets must be specified • All stakeholders and role players have to be allocated responsibilities within their respective capacities.
Measurable outcomes	An operational budget established

Operational Goal 2: Commitment from City of Tshwane Council to support community/citizen science initiatives

Action 7.2.1: Support community/citizen scientist activities and initiatives within the Hartbeesspruit and Colbyn Valley Wetland Ecosystem	
Responsibility	City of Tshwane
Timeline	Within first year of implementation
Resources needed	Financial and human resources
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit
Deliverables	<ul style="list-style-type: none"> • Specific goals and priorities for community/citizen science support established • Responsibilities set according to the respective capacities of community/citizen scientists
Measurable outcomes	Goals, priorities and responsibilities established for community support

Action 7.2.2: Measuring community/citizen scientist activities and initiatives within the Hartbeesspruit and Colbyn Valley Wetland Ecosystem	
Responsibility	City of Tshwane
Timeline	Annually over 5 year implementation period
Resources needed	Financial and human resources
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit
Deliverables	<ul style="list-style-type: none"> • Reports on activities and initiatives developed
Measurable outcomes	Annual monitoring reports on community/citizen science activities and initiatives

Operational Goal 3: Conservation Management of Colbyn Valley Wetland and Hartbeesspruit River Ecosystem

Action 7.3.1 : Identify and manage impacts on the River Catchment	
Responsibility	CoT
Timeline	Ongoing
Resources needed	Annual operational budget, human resources
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit, private sector, DEA WfWet, (NRM)
Deliverables	<p>Hydrology- Identify all water inlet to the wetland catchment.</p> <ul style="list-style-type: none"> - Install pollution control structures at all water inlet points - Install biological oxygen traps in the water flowing system that feed the wetland system. <p>Geomorphology:</p> <ul style="list-style-type: none"> - Monitor erosion - Prevent infilling - Do rehabilitation where needed <p>Vegetation:</p> <ul style="list-style-type: none"> - Do alien plant control
Measurable outcomes	Management reports

Action 7.3.2: Database for baseline data for Colbyn Valley Nature Reserve established and maintained	
Responsibility	City of Tshwane and SANBI
Timeline	Initiated within first year of implementation and annually over period of implementation
Resources needed	Annual operational budget, human resources
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit
Deliverables	<ul style="list-style-type: none"> Database established and maintained
Measurable outcomes	Annual database reports

Action 7.3.3: Active management of Colbyn Valley Wetland Ecosystem	
Responsibility	City of Tshwane
Timeline	Annually over 5 year implementation period
Resources needed	Annual operational budget, internal and external human resources
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit, private sector, DEA WfWet (NRM)
Deliverables	<ul style="list-style-type: none"> Identify and prioritise all threats to wetland Establish physical protection measures of prioritised threats Set targets within capacity and resources available Implement physical protection measures on wetland
Measurable outcomes	Annual management plan reports Improved management of Colbyn Valley Wetland

Action 7.3.4: Colbyn Valley Nature Reserve Management Plan completed and implemented	
Responsibility	City of Tshwane
Timeline	Reserve management plan completed within first year of implementation of BMP-E and implemented annually over 5 year implementation period
Resources needed	Annual operational budget, internal and external human resources
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit, private sector, DEA WfWet, (NRM)
Deliverables	<ul style="list-style-type: none"> Identify and prioritise all threats to wetland Establish physical protection measures of prioritised threats Set targets within capacity and resources available Implement physical protection measures on wetland
Measurable outcomes	Annual management plan reports Improved management of Colbyn Valley Wetland

Action: 7.3.5. Integrate City of Tshwane and Provincial river and wetland projects	
Responsibility	City of Tshwane
Timeline	Annually within 5 year implementation period
Resources needed	Operational budget, human resources (internal and external)
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit, private sector, DEA WfWet, (NRM)
Deliverables	Communicate management plans with role players - Management plan should be in line with CoT Ecological Management Plans and Wetland Management plans. Wetland Forum meetings
Measurable outcomes	Minutes and reports of Wetland Forum meetings

Operational Goal 4: *Create public awareness of Colbyn Valley Wetland and Hartbeesspruit River Ecosystem*

Action: 7.4.1. Increased stakeholder collaboration through the Friends group	
Responsibility	Friends of Colbyn
Timeline	Ongoing (To be determined)
Resources needed	Internal and external
Collaborators	City of Tshwane, Provincial Conservation Authority, Friends of Colbyn Valley, SANBI, private sector
Deliverables	Roles and responsibilities are clearly stated and revised every five years Establish "adopt a wetland" program Streamline wetland forums
Measurable outcomes	Forum broadened

Action 7.4.2 : Brand Colbyn Valley catchment and host regular public-stakeholder awareness events	
Responsibility	City of Tshwane
Timeline	Ongoing
Resources needed	Internal and external
Collaborators	Friends of Colbyn Valley, SANBI, Universities, Adopt Moreletaspruit
Deliverables	<ul style="list-style-type: none"> • Brand wetlands with information and signage • Develop educational programs
Measurable outcomes	Information boards erected as strategic points School education programmes undertaken Wetland Forum established with wetland role players

Operational Goal 5: Monitoring and Evaluation

Action 7.5.1 : Establish indicators for effective monitoring and reporting in management of Hartebeesspruit and Colbyn Valley Nature Reserve	
Responsibility	City of Tshwane
Timeline	Within first year of implementation
Resources needed	Operational budget, human resources (internal and external)
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority
Deliverables	Indicators developed for monitoring and reporting Monitoring reports
Measurable outcomes	Monitoring reports

Action 7.5.2 : Establish a Colbyn Valley Wetland/Water Catchment Working Group	
Responsibility	City of Tshwane
Timeline	Within first year of implementation
Resources needed	Internal and external
Collaborators	Friends of Colbyn Valley, Universities, SANBI, Provincial Conservation Authority, Adopt Moreletaspruit, private sector, DEA WfWet (NRM)
Deliverables	Terms of reference developed
Measurable outcomes	Colbyn Valley Wetland/Water Catchment Working Group established Meeting reports and action plans

8. Monitoring and evaluation

The actions captured in section 5 above should clearly indicate applicable and measurable outcomes where relevant. From these it will be possible to derive an overall understanding of performance of this BMP.

An annual report reflecting the progress made within the following over-arching outcomes:

1. Enhanced and sustained cooperation between role players through the Colbyn Valley Wetland/Water Catchment Working Group.
2. Comprehensive and up to date population census and habitat condition data.
3. Enhanced conservation status of the wetland and water catchment area.
4. Enhanced ecosystem management.
5. Improved wetland ecosystem functioning and maintaining of integrity towards improved water quality.

On the basis of this annual progress report, relevant officials from CoT, DEA and SANBI must facilitate the review of the BMP in collaboration with the Colbyn Valley Wetland/Water Catchment Working Group and make recommendations to amend and adapt it where necessary.

9. Useful contacts

Table 5: A list of role players required for the development of this management plan

Name	Organisation
Mr Piet-Louis Grundling	Centre for Wetland Research and Training
Ms Althea Grundling	Agricultural Research Council
Ms Shela Patrickson	ICLEI
Mr Ryan Nawn	Friends of Colbyn Valley
Mr Andre Swart	Friends of Colbyn Valley, Hatfield Village community group
Mr Alexander Heunis	City of Tshwane
Mr Eric Munzhedzi	Working for Wetlands
Mr Conride Mhlari	Working for Wetlands
Mr Retief Grobler	Working for Wetlands
Mr Ernst Wohltitz	City of Tshwane
Mrs Hlengiwe Cele	Friends of Colbyn Valley
Mr Piet Snyman	Friends of Colbyn Valley/Agricultural Research Council
Ms Wilma Lutsch	Department of Environmental Affairs
Mr Philip Calinikos	Friends of Colbyn Valley
Ms Anneli Kuhn	Adopt Moreletaspruit Forum
Ms Tamsyn Sherwill	Friends of Colbyn Valley
Ms Claire Wagner	Friends of Colbyn Valley
Mr Mike Silberbauer	Adopt Moreletaspruit, Dept Water & Sanitation
Mr Matthys Dippenaar	University of Pretoria
Ms Siobhan Muller	Ward Councillor, Friends of Colbyn Valley
Ms Santhuri Naidoo	Department of Environmental Affairs
Ms Lucia Motaung	Department of Environmental Affairs
Ms Pamela Kershaw	Department of Environmental Affairs
Ms Shannon Mayne	5 th Hillcrest-Colbyn Scout Group/Friends of Colbyn Valley
Ms Liz Metcalfe	ICLEI Cities Biodiversity Centre
Dr Geoff Cowan	Department of Environmental Affairs
Mr Karl Naude	Department of Environmental Affairs
Ms Budu Manake	South African National Biodiversity Institute
Ms Abigail Kamaneth	Gauteng Provincial Department of Agriculture and Rural Development
Ms Christina Seegers	Gauteng Provincial Department of Agriculture and Rural Development
Mr Petrus Links	Gauteng Provincial Department of Agriculture and Rural Development

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11. Appendices

11.1 Appendix 1: List of workshop stakeholders (1 November 2014)

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11.2 Appendix 2: 1 November 2014 Stakeholder Workshop Report

11.3 Appendix 3: Declaration of an Area as the Colbyn Wetland Nature Reserve, Provincial Gazette 126 No. 166, 25 June 2014

11.4 Appendix 4: Map of Colbyn Valley Wetland and Water Catchment Area