

SEEKOEIVLEI NATURE RESERVE  
SOUTH AFRICA

Information sheet for the site designated to the  
List of Wetlands of International Importance  
in terms of the  
Convention on Wetlands of International Importance  
especially as Waterfowl Habitat

South African Wetlands Conservation Programme  
Document No 24/21/3/3/16 (1996)  
Department of Environmental Affairs and Tourism  
Private Bag X447  
PRETORIA 0001  
South Africa

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**RAMSAR DATA**

- 1. COUNTRY** South Africa
- 2. DATE OF COMPILATION** Originally completed: December 1994  
Revised: November 1996
- 3. REFERENCE NUMBER** 1ZA015

**4. NAME AND ADDRESS OF COMPILER**

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- 5. NAME OF WETLAND** Seekoeivlei
- 6. DATE OF RAMSAR DESIGNATION** 21/01/1997
- 7. GEOGRAPHICAL COORDINATES** 27 27' to 27 41' South and 29 34' to 29 37' East
- 8. GENERAL LOCATION**

The area is situated in the north-eastern corner of the Free State, in the Memel District. The nearest town is Memel (500 metres SSW) and the wetland stretches from there northwards up to the Mpumalanga border (20 km). The width varies from 200 m to 1 000 m.

## 9. AREA

Total floodplain (Memel to Mpumalanga border):	3 721.53 ha
Designated area (nature reserve & floodplain):	4 754.00 ha
Designated area (floodplain):	2 810.53 ha

## 10. WETLAND TYPE

Seasonal and intermittent freshwater lakes;  
Riverine floodplain, including river flats and seasonally flooded grassland;  
Seasonal and intermittent freshwater marshes and pools; and  
Peatlands.

## 11. ALTITUDE

1 680 m to 1 700 m above sea level

## 12. OVERVIEW OF SITE

This wetland consists of a floodplain drained by the Klip River. The floodplain has numerous small oxbow lakes (ca. 220) which are seasonally flooded. This is a wetland of particular importance as it is the largest one on the southern African Highveld. It performs an outstanding ecological role in that it supports large numbers of local and migratory waterbirds. Although the wetland does not have a very high plant diversity, it harbours a rich species diversity of waterfowl and other birds associated with water.

Unfortunately, canals dug by farmers drain the wetland. The first canal was dug in 1890 in order to drain parts of the farms Seekoeivlei, Schoon Gesicht and Seekoeivleipoort. The marsh bears the Afrikaans name for hippopotamus *Hippopotamus amphibius* (seekoei), the last of which was shot in 1894.

## 13. PHYSICAL FEATURES

### *Geology and Geomorphology*

This site is underlain by sediments of the lower Beaufort and upper Ecca Groups of the Karoo Sequence. Dolerite dykes and sills cut through the sediments. The area is generally flat to slightly undulating, becoming more rugged in the mountainous catchment area south-east of the floodplain and the site.

### *Origin*

The wetland is of natural origin.

### *Hydrology*

The catchment area, which is on the southern side of the Memel-Newcastle road, covers a total area of 380 km<sup>2</sup>. The annual rainfall varies from 875 mm/annum to approximately 1 200 mm/annum in the mountainous areas of the catchment. The catchment produces an average annual flow of 46 000 000 m<sup>3</sup> of water. The following percentages represent the monthly variation in the water supply from the catchment:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
21.0	19.4	10.7	4.7	2.1	1.2	0.9	0.7	2.6	8.2	12.8	15.9

The outflow from the wetland is currently increased by the drainage canals.

### *Soil type and chemistry*

The soils vary from deep (>500 mm) vertic Rensburg and Arcadia forms to exposed rocky and gravel deposits in the stream beds. In the marshy areas the soils are seasonally waterlogged. Peat occurs in some areas and consists of loosely compacted, half decayed plant materials, which can consist of up to 97% water.

#### *Water quality*

No information is available to date of the water quality. It is however expected to be good.

#### *Water depth, fluctuations and permanence*

Flooding of the wetland can only take place after substantial rains. During drought conditions, the only water available in the entire wetland occurs in the standing pools (2 m deep) in the Klip River, directly north of Memel as well as at a weir to the south of the town.

#### *Tidal variation*

Not applicable.

#### *Catchment area*

This area is used for farming. In areas where the soil is arable, maize and wheat are cultivated. Cattle and sheep are grazed on the typical short dense grassland.

#### *Downstream area*

This wetland stretches northwards for approximately 20 km to a point (on the farm Kadies Drift) where the Klip River floodplain narrows. The Klip River eventually flows south-west of Standerton into the Vaal River.

#### *Climate*

a) Rainfall: The wetland is situated in the summer rainfall zone with an mean annual rainfall of 720 mm (Frankfort/Standerton area). In the catchment area the annual rainfall can be as high as 1 200 mm/annum. Precipitation is mostly in the form of thunderstorms between November and March. Mid-summer droughts occur towards the end of December to the middle of January.

b) Temperature: The maximum mean monthly temperatures for Frankfort and Standerton are 28.3C and 27.3C respectively. The minimum mean monthly temperatures for these two stations are -3.7C and -2.1C respectively.

Frost occurs commonly during winter and snow has been recorded on several occasions.

## **14. ECOLOGICAL FEATURES**

### *Vegetation:*

The vegetation of the area can be classified as:

1. grassland;
2. woodland and thicket; and
3. hygrophilous communities.

#### **1. Grassland**

The high altitude plateau of the catchment is flat to slightly undulating, and is characterised by Afromontane grasslands. It is dominated by the grasses *Themeda triandra* and *Tristachya leucothrix*. In the drier bottomland and floodplains a *Themeda triandra-Eragrostis curvula* dominated grassland occurs. The herbaceous layer forms a relatively dense cover, often over utilized by livestock. This terrain is particularly vulnerable to the overgrazing and trampling effect of livestock.

#### **2. Woodland and thicket communities:**

These communities are mostly encountered in the catchment on the slopes with a moderate to high relief and along streams. Woodland and thicket communities represent a *Rhus pyroides - Leucosidea sericea* low thicket/woodland. This broadly defined vegetation is further divided into woodlands and thickets of moist and dry slopes and is characterized by the tree *Leucosidea sericea*.

#### **3. Hygrophilous communities:**

These communities are restricted to streambanks and streambeds in the wetland. The vegetation can broadly be described as a *Eragrostis plana-Agrostis lachnantha* wetland community. The major communities in the wetland are classified as follows:

*Fuirena pubescens-Mariscus congestus*;  
*Berkheya pinnatifida-Eragrostis plana*;  
*Hyparrhenia hirta-Agrostis lachnantha*;  
*Eragrostis curvula-Cyperus fastigiatus*;  
*Senecio inaquidens-Cynodon transvaalensis*;  
*Diplachna fusca-Cynodon transvaalensis*; and  
*Schoenoplectus sp.-Cynodon transvaalensis*.

The species composition does however vary between the different wetland habitats and further study in this regard is needed.

## **15. LAND TENURE**

a.Ramsar site:

Seekoeivlei Nature Reserve - Provincial Administration of the Free State.

b.Surrounding area:

Catchment and downstream areas - private landowners.

*Legal status*

Seekoeivlei Nature Reserve is a provincial protected area.

## **16. CONSERVATION MEASURES TAKEN**

A large portion of the whole wetland is presently included in the nature reserve. It is called Seekoeivlei Nature Reserve and the original reserve was proclaimed on the 9<sup>th</sup> January 1978. This was subsequently expanded by purchasing adjacent farms which contain large sections of the wetland, in 1993.

There are two nature conservators and 20 general labourers. Fire breaks are maintained by controlled burns and cutting. There are three observation hides for visitors, and a birdwatcher's trail is being planned through a part of the wetland.

*Management plans*

A draft management plan, which discusses both management policy and needs within the nature reserve, exists. This plan is subject to official approval.

## **17. CONSERVATION MEASURES PROPOSED BUT NOT YET IMPLEMENTED**

- a. Proper fencing of the nature reserve. (Currently in progress).
- b. Rehabilitation of the hydrology of the wetland by blocking the drainage canals (made by farmers).
- c. Rehabilitation of eroded areas.
- d. The Klip River catchment area must be carefully managed. This includes the management of land, water, vegetating and other physical resources, and the activities within the catchment. For this purpose the closest co-ordination and collaboration between the relevant departments, authorities and individuals (eg. farmers, the community of Memel, the Department of Agriculture, the Department of Water Affairs as well as the Nature and Environmental Conservation Directorate of the Free State) must be established in order to have some effect on conservation and sustainable use of the catchment.

## **18. LAND USE**

a.Ramsar site :

Grazing and mowing of the grassland.

b.Surroundings and catchment :

The human population of the town, is ca. 7 000, and of the district is ca. 18 000. It is mainly a farming community. The main farming activities are grazing, and mowing of the grasslands for hay. There is cultivation of maize and wheat in arable areas. There are no industrial activities. The water supply to

the town is from mainly two weirs in the Klip River, and one borehole. The water supply for domestic stock is mainly from boreholes, and open water (streams and dams) where available.

*Resource utilization of the site*

1. Consumptive utilization includes cattle grazing and mowing for hay.
2. Non-consumptive utilization includes bird watching and photography.

## **19. POSSIBLE CHANGES IN LAND USE AND PROPOSED DEVELOPMENT PROJECTS**

No development projects are proposed at the site. The Rand Water Board, in conjunction with other interested and affected parties as well as Free State Nature and Environmental Conservation, is funding a rehabilitation project at the site. It is hoped that rehabilitation, by closing a number of canals which presently drain the site, will restore the natural hydrological regime and in so doing improve the current condition of the wetland.

## **20. DISTURBANCES AND THREATS**

### **a. Ramsar site**

The most obvious and immediate threats to the site include the following:

1. Uncontrolled burning of the vegetation which results from fires spreading into the reserve from adjacent grasslands.
2. Inappropriate management practices.
3. Invasion of exotic plants such as the black wattle *Acacia mearnsii* which was introduced into the area for the production of tannin. This species is used in the hide industry in KwaZulu-Natal. Another exotic invasive plant species is the Scottish thistle *Cirsium vulgare* which was probably introduced as a garden plant, or accidentally, during the previous century.

### **b. Catchment:**

In the catchment area inappropriate farming practices, such as increasing use of fertilizer, as well as increasing erosion caused by overgrazing and trampling by cattle, will have a severe impact on the water quality in the wetland and as such pose threats to the wetland. Siltation will become a problem in the future.

## **21. HYDROLOGY AND PHYSICAL VALUES**

As mentioned, the catchment produces an average annual flow of 46 000 000 m<sup>3</sup> of water with flooding of the wetland taking place only after substantial rains. Two weirs built upstream from Memel, in the Klip River to supply water to the town and also act as sediment traps.

## **22. SOCIAL AND CULTURAL VALUES**

This is one of the largest inland wetlands in South Africa. It has a high conservation priority as it lies in one of the tributaries of the Vaal River which provides water to the highly industrialized and densely populated Gauteng Province. It is also a sanctuary with a rich birdlife well known amongst professional and amateur ornithologists and photographers. Before the nature reserve was proclaimed the wetland was used for grazing. Mowing was also carried out in order to provide a source of fodder. These practices still take place downstream of the nature reserve, as well as in smaller wetlands in the catchment area.

## **23. NOTEWORTHY FAUNA**

- a. Birds: Checklist compiled Kok and Roos (1979).

Seekoeivlei is a breeding site for the Whiskered terns *Chlidonias hybridus*, Crowned and Blue cranes (*Balearica regulorum* and *Anthropoides paradisea*), and the endangered Wattled crane *Bugeranus*

*carunculatus*. Waterfowl such as the Spurwinged goose *Plectropterus gambensis*, Egyptian goose *Alopochen aegyptiacus* and Yellowbilled duck *Anas undulata* are also common in the area.

b.Mammals:

As a result of long private ownership of the whole wetland and catchment area, wild animals were driven away by farming practices, or hunted to local extinction, such as the hippopotamus was. Some mammals, such as small antelope, honey badgers *Mellivora capensis* and serval *Felis serval*, are sporadically sighted or trapped. Smaller mammals, such as mongooses, rodents and hares, still occur in undisturbed areas.

*Species counts*

None available

## **24. NOTEWORTHY FLORA**

As mentioned earlier the wetland vegetation is not particularly rich in plant species. It is dominated by grasses, and bulbs while forbs are scarce (e.g. *Gladiolus elliottii*, *G. robertsoniae* (rare), *Nerine angustifolia*). Further detailed studies of the vegetation and the conservation status of certain species are needed.

## **25. CURRENT SCIENTIFIC RESEARCH AND FACILITIES**

None

## **26. CURRENT CONSERVATION EDUCATION**

Environmental education programmes are run for schools, members of the Wildlife Society of South Africa, farmers and other members of the public.

## **27. CURRENT RECREATION AND TOURISM**

The nature reserve is still in the planning and development stage. There are three observation hides for visitors, and a birdwatcher's trail is being planned through a part of the wetland.

## **28. MANAGEMENT AUTHORITY**

Free State Nature and Environmental Conservation Directorate, P O Box 517, Bloemfontein, South Africa, 9300.

## **29. JURISDICTION**

Territorial: Provincial Administration of the Free State.

Functional: Free State Nature and Environmental Conservation Directorate, the Department of Environmental Affairs, and the Department of Agriculture and Water Affairs.

## **30. REFERENCES**

*Research articles and theses:*

Eckhardt, H.C. 1993. A synecological study of the vegetation of the north-eastern Orange Free State. Unpublished M.Sc. thesis. University of Pretoria, South Africa.

Eckhardt, H.C., van Rooyen, N., Bredenkamp, G.J. and Theron, G.K. 1993. An overview of the vegetation of the Vrede-Memel-Warden area, north-eastern Orange Free State. South African Journal of Botany 59(4): 391-400.

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Kok, O.B. and Roos, Z.N. 1979. Die avifauna van Seekoeivlei, Memel. *Southern Birds* No. 7.

Smit, C.M. 1992. Phytosociology of the Newcastle-Memel-Chelmsford Dam area. Unpublished M.Sc. thesis. University of Pretoria, South Africa.

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*Technical reports:*

Erasmus, C. 1994 Voorgestelde ontwikkeling van Seekoeivlei natuurresewaat. Internal report of the Nature and Environmental Conservation Directorate, Provincial Administration of the Free State, South Africa.

Erasmus, C., Jordaan, H., Niewoud, F., and Collins N, B. 1994. Rehabilering van die hidrologie van Seekoeivlei natuurresewaat. Internal report of the Nature and Environmental Conservation Directorate, Provincial Administration of the Free State, South Africa.

Krause, J.B. 1993. Herstel van Seekoeivlei. Internal report of the Nature and Environmental Conservation Directorate, Provincial Administration of the Free State, South Africa.

Pienaar, P. 1993. Bestuur en bewaring van Seekoeivlei. Internal report of Department of Agriculture, South Africa.

### **30. REASONS FOR INCLUSION IN THE LIST OF WETLANDS OF INTERNATIONAL IMPORTANCE**

*Criteria for representative or unique wetlands*

Criterion 1(a). The area is a particularly good representative example of a natural or near-natural wetland, characteristic of a biological region.

Motivation: Seekoeivlei is a particularly good representative example and one of the largest natural wetland systems in the grassland biome of South Africa. This wetland thus is one of the most significant wetland systems in South Africa.

Criterion 1(c). The area is a particularly good representative example of a wetland which plays a substantial hydrological, biological or ecological role in the natural functioning of a major river basin or coastal system, especially where it is located in a transborder position.

Motivation: The Drakensberg escarpment is regarded as the most important mountain catchment in South Africa because of the high water yield and high quality water flows from it. The Seekoeivlei wetland plays a substantial hydrological and ecological role in the natural functioning of the Klip River as well as the upper Vaal River which is the major water source to the highly industrialized and densely populated Pretoria-Witwatersrand-Vereeniging (PWV) area. This high altitude wetland plays a vital role in regulating flow and in maintaining the highest water quality standards.

*General criteria based on plants or animals*

Criterion 2(a). The area supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies or plants or animals.

Motivation: One Red Data mammal species, 5 Red Data bird species and 1 Red Data fish species are partially or wholly dependent on the wetland. These are the serval *Felis serval*, Little bittern *Ixobrychus minutus*, Yellowbilled stork *Mycteria ibis*, Wattled crane *Bugeranus carunculatus*, White-winged flufftail *Sarothrura ayresii*, Grass owl *Tyto capensis* and the Rock barble *Austroglanis sclateri* respectively. In addition, 4 Red Data plant species are associated with or dependent on the wetland.

Criterion 2(b). The area is of special value for maintaining the genetic and ecological diversity of a region because of the quality or peculiarities of its flora and fauna.

Motivation: The recommendation in the World Conservation Strategy that the Drakensberg be regarded as a priority Biogeographic Region in which major protected areas should be established, is well founded. The Seekoeivlei Nature Reserve falls within this Drakensberg Biogeographic Region and contain a unique assemblage of complex ecosystems and habitats. This nature reserve is of great significance for the maintenance and permanent protection of the genetic and ecological diversity on the drier western side of the Drakensberg escarpment.

*Conservation importance*

This is a wetland of particular importance as it is the largest one on the southern African Highveld. The Seekoeivlei wetland plays a vital role in regulating flow and in maintaining the highest water quality standards of the upper Vaal River, which is the major water source of the highly industrialized and densely populated Gauteng Province. It performs an important ecological role in that it supports large numbers of locally resident as well as migratory waterbirds. Although the wetland does not have a very high plant diversity, it harbours a rich species diversity of waterfowl and other birds associated with water.

**31. OUTLINE MAP OF SITE:**



## APPENDIX 1

### Red Data and endemic plants partly or totally dependent on the wetland habitats of Seekoeivlei Nature Reserve

SPECIES	STATUS
<b>Amaryllidaceae</b>	
<i>Nerine bowdenii</i>	Rare
<i>Nerine platypetala</i>	Rare
<b>Iridaceae</b>	
<i>Gladiolus robertsoniae</i>	Rare
<b>Crassulaceae</b>	
<i>Crassula tuberella</i>	Rare

**APPENDIX 2**  
**Red Data and endemic animal species partly or totally dependent on the wetlands of**  
**Seekoeivlei Nature Reserve**

<b>SPECIES</b>	<b>COMMON NAME</b>	<b>STATUS</b>
<b>Mammals</b>		
<i>Felis serval</i>	Serval	Rare
<b>Birds</b>		
<i>Ixobrychus minutus</i>	Little Bittern	Rare
<i>Mycteria ibis</i>	Yellowbilled Stork	Rare
<i>Bugeranus carunculatus</i>	Wattled Crane	Endangered
<i>Sarothrura ayresii</i> *	White-winged Flufftail	Rare
<i>Tyto capensis</i>	Grass Owl	Indeterminate
<b>Fish</b>		
<i>Austroglanis sclateri</i> *	Rock Barble	Rare

\* Not yet recorded in the reserve, but have been reported from this region, or from similar habitat in the adjacent Volksrust District, Mpumalanga Province.