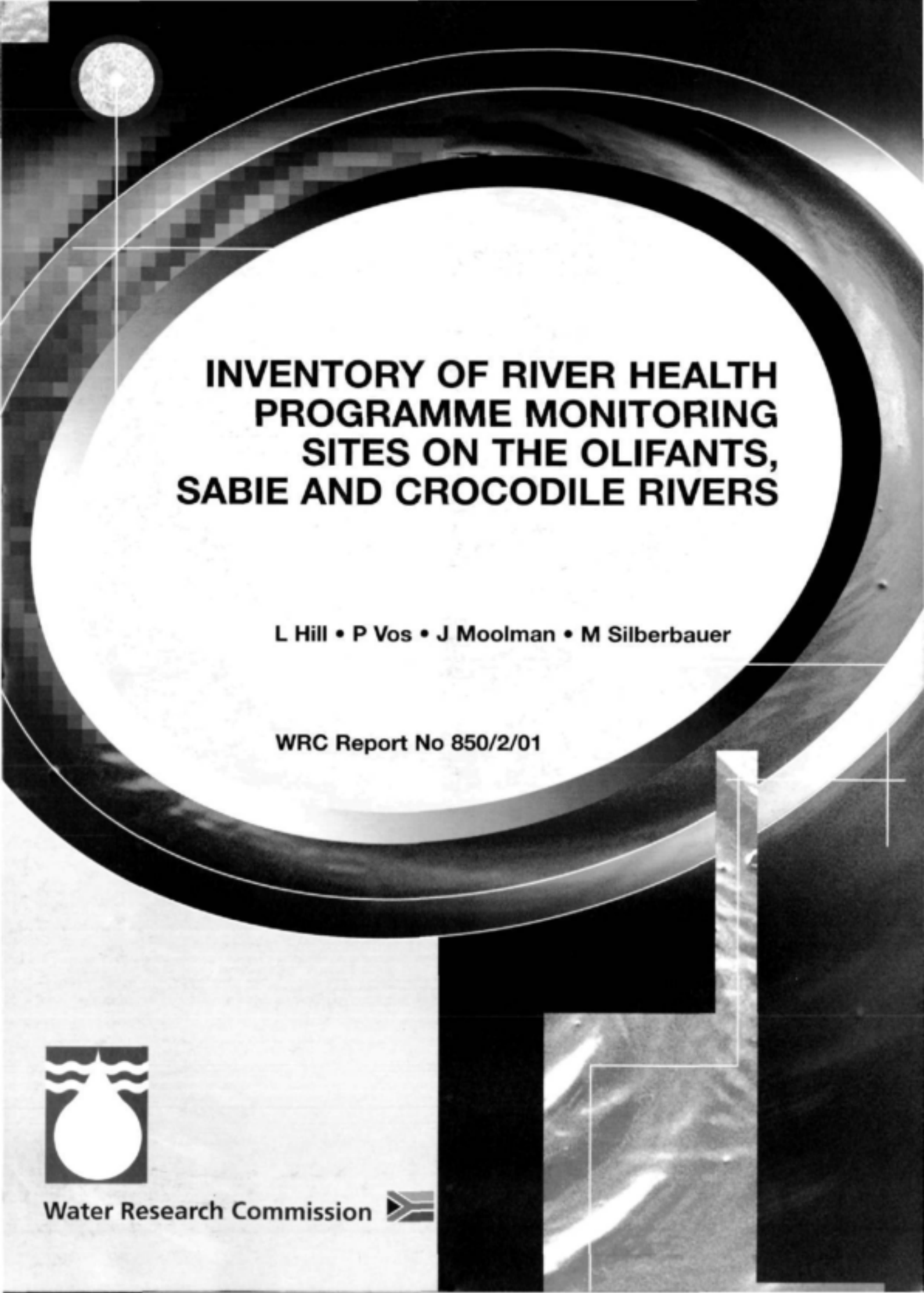




# **INVENTORY OF RIVER HEALTH PROGRAMME MONITORING SITES ON THE OLIFANTS, SABIE AND CROCODILE RIVERS**

**L Hill • P Vos • J Moolman • M Silberbauer**

**WRC Report No 850/2/01**



**Water Research Commission** 

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Compiled by

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## TABLE OF CONTENTS

|                                    | Page |
|------------------------------------|------|
| ACKNOWLEDGEMENTS.....              | ii   |
| EXECUTIVE SUMMARY.....             | iii  |
| LIST OF ABBREVIATIONS.....         | vi   |
| 1. INTRODUCTION .....              | 1    |
| 2. INVENTORY LAYOUT                |      |
| Site Information.....              | 3    |
| SASS4.....                         | 4    |
| Fish.....                          | 4    |
| Riparian Vegetation.....           | 5    |
| 3. THE STUDY AREA                  |      |
| The Olifants River Catchment.....  | 7    |
| The Sabie River Catchment.....     | 201  |
| The Crocodile River Catchment..... | 323  |
| 4. REFERENCES.....                 | 403  |

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## EXECUTIVE SUMMARY

### INTRODUCTION

The main purpose of the River Health Programme is to provide information regarding the overall ecological status of riverine ecosystems in South Africa. The programme focuses primarily on biological characteristics as indicators of river health using the following primary indicators and indices:

- communities of fish - Fish Assemblage Integrity Index (FAII) (Kleynhans, 1999);
- aquatic invertebrates - South African Scoring System (SASS 4) (Chutter, 1999) and,
- riparian vegetation - Riparian Vegetation Index (RVI) (Kemper, 2000 (in prep))

Most of these indices are either in a developmental stage or in the process of being refined. It is therefore crucial that testing, demonstration and integration of these different indicators take place to mould all the concepts into an operational programme

Mpumalanga province was used as the pilot area for conducting testing and demonstration. The provincial implementation initiative was made possible through collaboration and sharing of resources between the Mpumalanga Parks Board and the Kruger National Park, assisted by the Institute for Water Quality Studies, the Water Research Commission and the CSIR's Environmentek. The study focused on the Olifants, Sabie and Crocodile Rivers and monitoring commenced during late 1996 and was completed during 1999.

The design of the RHP allows comparisons between reference and monitoring sites or conditions. The question of where to monitor is, however, often problematic. This is particularly so in the case of establishing reference sites or conditions. One way to select representative sites so that they reflect the complete range of variation in river character is to geographically group riverine ecosystems on the basis of similarity between the catchments and subcatchments that they drain. Two approaches are currently followed in South Africa based on: 1) biogeographic (biotic) patterns (Eekhout *et al.*, 1996) and 2) delineation of ecoregions (DWAf, 1999). Both classifications need further refinement and validation.

The ecoregion approach was used in the Mpumalanga study. Ecoregional classification is a partially intuitive procedure that involves the delineation of regions with similar physical attributes. Eighteen preliminary Level I ecoregions are currently delineated for the country. The Olifants, Sabie and Crocodile River catchments span six of these ecoregions.

The institutions involved in the study identified the need to collate the information related to the location of sampling sites as well as the relevant data available for

---

each site into a single report. The intention with this inventory is not to duplicate the Rivers Database (Fowler *et al.*, 2000), but to present an overview of the extent of the monitoring network that was established during a particular project. The data contained in the Rivers Database are far more comprehensive than what is presented in this inventory. Users are advised to consult the Rivers Database for more detailed site information and associated biological, water quality and habitat data.

## **INVENTORY LAYOUT**

The inventory contains information on each of the 201 monitored during these surveys as well as summaries of the three primary biological indicators that are used in the River Health Programme. The inventory layout gives definitions and descriptions of the terms used in the inventory.

The layout provides, at a glance, details of each site in terms of date sampled, physical location (province, river, quaternary catchment, latitude and longitude, ecoregion, 1:50 000 map code) and a brief description of how to get to a site. Information about fish and macroinvertebrates includes the method of sampling, habitats sampled, and whether historical information is available. Riparian vegetation information includes the width of the riparian zone, observations made in terms of the river channel, the surroundings and dominant species.

## **STUDY AREA**

The study area covers the Olifants, Sabie and Crocodile River catchments which extend over the provinces of Gauteng, Mpumalanga and the Northern Province. A pull-out map of each of these catchments shows the monitoring and reference sites and the boundaries of each sampling authority. The Level I ecoregions are also indicated.

### **Olifants River Catchment**

Ninety five sites were sampled on the Olifants River and 18 of its tributaries. The catchment covers an area of approximately 54 600 km<sup>2</sup>. Altitudes range from 300 m at Mozambique border to 2 300 m above sea level in the Steenkampsberg Mountains near Lydenburg. The mean annual rainfall range between 500 – 1000 mm. Main types of land use in this catchment include power stations, agriculture, mining (concentrated on the eastern Mpumalanga coalfields), various industries and conservation areas.

### **Sabie River Catchment**

Fifty nine sites were sampled on the Sabie River and 11 of its tributaries. The catchment is approximately 7 100 km<sup>2</sup> in size. The annual rainfall pattern is related to the topography and varies between 600mm and 2 000mm. The main land uses are irrigation and dry land farming, forestry in the upper catchment, conservation areas, and limited mining and industries.

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### **Crocodile River Catchment**

Forty seven sites were sampled on the Crocodile River and 8 of its tributaries. The Crocodile River drains an area of 10 400 km<sup>2</sup>. The annual rainfall ranges from 500mm to above 1 600mm. This river system is not only one of the most economically productive catchments in South Africa, it is also one of the most biologically diverse. Land use in the catchment is concerned mainly in the different agricultural sectors which include forestry, game farming, dry land and irrigation and trout aquaculture and conservation areas.

---

## LIST OF ABBREVIATIONS

|               |                                          |
|---------------|------------------------------------------|
| <b>AQ VEG</b> | Aquatic Vegetation                       |
| <b>DWAF</b>   | Department of Water Affairs and Forestry |
| <b>FAII</b>   | Fish Assemblage Integrity Index          |
| <b>FD</b>     | Fast Deep                                |
| <b>FS</b>     | Fast Slow                                |
| <b>GPS</b>    | Geographical Positioning System          |
| <b>MVEG</b>   | Marginal Vegetation                      |
| <b>NDA</b>    | No Data Available                        |
| <b>RHP</b>    | River Health programme                   |
| <b>RVI</b>    | Riparian Vegetation Index                |
| <b>SASS4</b>  | South African Scoring System version 4   |
| <b>SD</b>     | Slow Deep                                |
| <b>SIC</b>    | Stones In Current                        |
| <b>SOOC</b>   | Stones Out Of Current                    |
| <b>SS</b>     | Slow Shallow                             |

---

## 1. INTRODUCTION

As resource managers are continually faced with increasingly complex challenges, they depend on the information provided by effective resource monitoring. To address the need for information on the state of aquatic ecosystems in South Africa, the Department of Water Affairs and Forestry (DWAF) launched an initiative to develop a programme for monitoring the health of aquatic ecosystems – the River Health Programme (RHP) (Roux, 1997). The main purpose of the RHP is to serve as a source of information regarding the overall ecological status of river ecosystems in South Africa.

Because aquatic organisms are adapted to live within certain environmental conditions, they give an indication of the combined effect of all (measurable and unmeasurable) disturbances or perturbations (Roux & Everett, 1994). These communities are, therefore, regarded as good indicators of overall ecological integrity (e.g. Karr & Chu, 1997). For this reason, the RHP makes use of instream biological response monitoring to characterise the response of the aquatic environment to multiple disturbances (Roux, *et al.*, 1999).

The primary indicators and indices used in the River Health Programme are:

- communities of fish - Fish Assemblage Integrity Index (FAII) (Kleynhans, 1999);
- aquatic invertebrates - South African Scoring System (SASS 4) (Chutter, 1998), and
- riparian vegetation - Riparian Vegetation Index (RVI) (Kemper, 2000 (in prep)).

To provide a framework within which to interpret the biological results, some abiotic indicators have also been selected (e.g. geomorphology, habitat, hydrology, water quality) (Roux, *et al.*, 1999). Because many of the mentioned indices are either in a developmental stage or in a process of being refined, it is crucial that testing, demonstration and integration of these different indicators take place to mould all the concepts into an operational programme.

Mpumalanga province was used as the pilot area for conducting testing and demonstration. The provincial implementation initiative was made possible through collaboration and sharing of resources between the Mpumalanga Parks Board and the Kruger National Park, assisted by the Institute for Water Quality Studies, the Water Research Commission and the CSIR's Environmentek. The study focused on the Olifants, Sabie and Crocodile Rivers and monitoring commenced during late 1996 and was completed during 1999. In addition to the three primary biological indicators, information was also collected on the diversity and quality of the aquatic habitats at each site.

The design of the RHP allows comparisons between reference and monitoring sites or conditions. The question of where to monitor is, however, often problematic. This is particularly so in the case of establishing reference sites or



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conditions. One way to select representative sites so that they reflect the complete range of variation in river character is to geographically group riverine ecosystems on the basis of similarity between catchments and subcatchments that they drain. Two approaches are currently followed in South Africa based on: 1) biogeographic (biotic) patterns (Eekhout *et al.*, 1996) and 2) delineation of ecoregions (DWAF, 1999). Both classifications need further refinement and validation.

The ecoregion approach was used in the Mpumalanga study. Ecoregional classification is a partially intuitive procedure that involves the delineation of regions with similar physical attributes. One of the advantages of such a system is the extrapolation of information from data rich rivers to data poor rivers within the same hierarchical typing context (DWAF, 1999). Eighteen preliminary Level I ecoregions are currently delineated for the country. The Olifants, Sabie and Crocodile River catchments span six of these ecoregions.

The institutions involved in the study identified the need to collate the information related to the location of sampling sites as well as the relevant data available for each site into a single report. The intention with this inventory is not to duplicate the Rivers Database (Fowler *et al.*, 2000), but to present an overview of the extent of the monitoring network that was established during a particular project. The data contained in the Rivers Database are far more comprehensive than what is presented in this inventory. Users are advised to consult the Rivers Database for more detailed site information and associated biological, water quality and habitat data.

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## 2. INVENTORY LAYOUT

The inventory contains locality information about each site monitored in the three river systems as well as summary data with regard to the aquatic invertebrate, fish and riparian vegetation indices used. The information included in each of these components is set out in the format explained below.

### Site Information

|                               |                                                                                                                                                         |                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Code:</b>                  | A short code which comprises the first, or first and second letter of the river name and a number that indicates the site location on the catchment map | <b>Site name:</b> is composed of the secondary catchment code; first four letters of river name; first five letters of location |
| <b>Province:</b>              | The province in which the monitoring site is located (e.g. Gauteng, Mpumalanga, Northern Province)                                                      | <b>Map:</b> a site map extracted from 1:50 000 topographical maps, but which are not represented to scale in this report        |
| <b>Sampling date:</b>         | The month and year during which the particular biomonitoring survey took place                                                                          |                                             |
| <b>River:</b>                 | The name of the river assessed                                                                                                                          |                                                                                                                                 |
| <b>Quaternary catchment:</b>  | The quaternary drainage region in which the monitoring site is situated                                                                                 |                                                                                                                                 |
| <b>Locality:</b>              | The latitude, longitude (GPS) and altitude (in metres above mean sea level) of the site                                                                 |                                                                                                                                 |
| <b>Ecoregion:</b>             | Regions of relative homogeneity in ecological systems or in relationships between organisms and their environments (DWAF, 1999)                         |                                                                                                                                 |
| <b>Stream classification:</b> | Geomorphological zonation of river channels (Rowntree & Ziervogel, 1999)                                                                                |                                                                                                                                 |

---

## **SASS4**

### **Biotope:**

- **Present**
- **Sampled**
- **Condition**
- **SIC**
- **SOOC**

- **MVEG**
  - **AQ VEG**
- Sand, mud, gravel

A biotope or microhabitat is an area in which the main environmental condition and biota adapted to them are uniform  
Biotopes present at the site

Biotopes sampled at the site

Good=5; Fair=3; Poor=1

Stones-In-Current; stones, bedrock and boulder areas in the current  
Stones-Out-Of-Current; stones, bedrock and boulder areas out of the current

Marginal Vegetation; at the water's edge

Aquatic Vegetation; in channel, submerged or partially submerged

All particles < 16 mm in diameter including silt and clay

### **Ecological Importance:**

Gives an indication of the ecological importance of the site scored as high (5), fair (3) or low (1) based on:

- **Habitat:** both quantity and quality of the available habitat at the site, and
- **Invertebrates:** sensitivity and diversity of macroinvertebrates at the site

### **Historical information:**

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

The availability of other macroinvertebrate results for the site

The time period for which the extra information is available

During which seasons was the site sampled

How many data sets are available

Which organisations did the sampling

## **Fish**

### **Fish habitat and sampling effort (Kleynhans, 1999):**

#### **Habitat**

Place within an ecosystem occupied by an organism, population, or community that contains both living and nonliving components with specific biological, chemical, and physical characteristics including the basic life requirements of food, water, and cover (Armantrout, 1998).

#### **Fast Deep (FD)**

Fast flow (>0.3m/s), deep water (>0.3m): deep runs, rapids and riffles fall in this category

#### **Fast Shallow (FS)**

Fast (>0.3m/s), shallow (<0.3m): shallow runs, rapids and riffles fall in this category

#### **Slow Deep (SD)**

Slow (<0.3m/s), deep (>0.3m): includes deep pools and backwaters

#### **Slow Shallow (SS)**

Slow (<0.3m/s), shallow (<0.3m): includes shallow pools and backwaters

---

**Sampling method and Effort (Kleynhans, 1999):**

|                                   |                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------|
| <b>Electro shocker (minutes)</b>  | The duration of use [insert space] of electrical shocking apparatus to collect fish  |
| <b>Small seine (no. of hauls)</b> | Number of hauls, using a small seine net (5m long, 1.5 m deep, mesh size = 1 mm)     |
| <b>Large seine (no. of hauls)</b> | Number of hauls, using a large seine net (70 m long, 1.5 m deep, mesh size = 2.5 cm) |
| <b>Cast net (throws)</b>          | Number of throws using a cast net (diameter = 1.85 m, mesh size = 2.5 cm)            |

**Fish habitat and cover ratings (Armantrout, 1998):**

|                                |                                                                                                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Abundance:</b>              | Qualitative indication of abundance of various habitat types                                                   |
| <b>Overhanging vegetation:</b> | Vegetation that projects over or into the river                                                                |
| <b>Undercut banks:</b>         | Bank with a cavity below the water line that is maintained by scour from substrates and high water velocities. |
| <b>Root wads:</b>              | Root mass from a tree                                                                                          |
| <b>Substrate:</b>              | Mineral and organic material forming the bottom of a waterway or water body                                    |
| <b>Aquatic macrophytes:</b>    | In-channel submerged and emergent plants                                                                       |
| <b>Species richness:</b>       | The number of indigenous fish species per site or per habitat type or per section of river                     |

**Riparian vegetation**

|                                |                                                                                                                                                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Width of riparian zone:</b> | The total width of the area adjacent to the river where plant species exclusively grow which are dependant on the river for their water requirements and other essential life functions                                          |
| <b>Dominant vegetation:</b>    | The type of plant or plant form which is most common at the site and which clearly characterise the site in terms of its riparian vegetation                                                                                     |
| <b>Substrate:</b>              | The type of substrate which is most common at the site due to the extent of the transportation or deposition of river bed material by the river                                                                                  |
| <b>Channel type:</b>           | The dominant channel-form that characterises the site particularly in terms of the number of channels present. A multiple channel may be anabranching or braided depending on the inherent stability of the bed material present |
| <b>Surrounding land use:</b>   | The type of use for which the surrounding land is exploited                                                                                                                                                                      |
| <b>Ecological importance:</b>  | A qualitative rating which considers the type of vegetation present, its abundance, species diversity and structural integrity                                                                                                   |
| <b>Dominant species:</b>       | The plant species which are most common at the site either in terms of their abundance or biomass, whichever is most relevant                                                                                                    |
| <b>Habitat:</b>                | The geomorphological features present on the banks of the river which provide habitat for riparian vegetation                                                                                                                    |

### 3. THE STUDY AREA

The study area (Figure 1) covers the Olifants, Sabie and Crocodile River catchments which extend over the provinces of Gauteng, Mpumalanga and the Northern Province. These three catchments fall into six of the 18 Level I ecoregions (Figure 2) that were classified for the country.

A pull-out map of each of these catchments (Figure 3 to 5) shows the monitoring and reference sites, the boundaries of each sampling authority and indicate the Level I ecoregions. Reference sites refer only to aquatic invertebrates, although fish and riparian vegetation may have also been sampled at these sites. The availability of instream habitat at each site determined whether both fish and aquatic invertebrates were sampled. The responsibility for monitoring, evaluation and reporting per monitoring site are being shared by national, provincial and local authorities which have a mandate for water resource management.

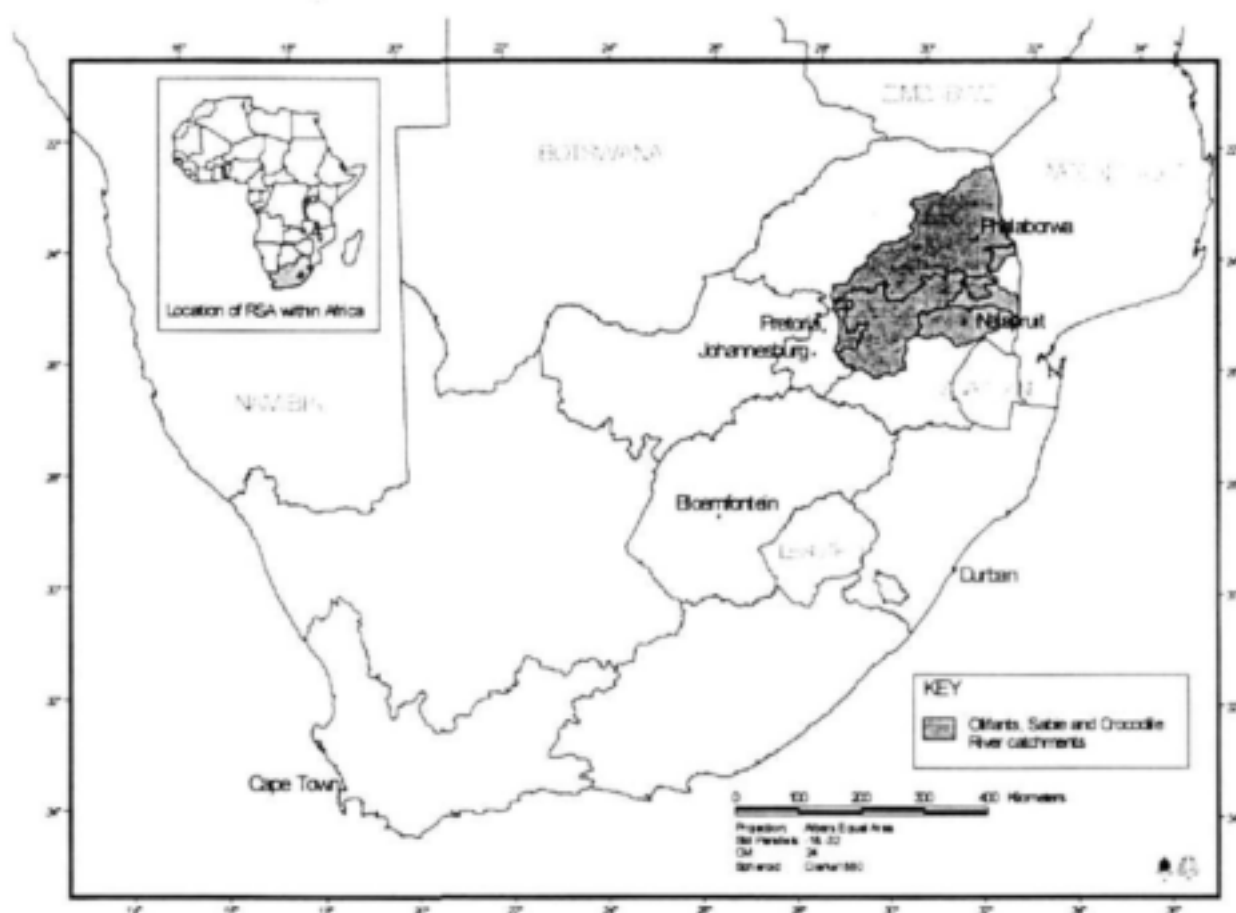
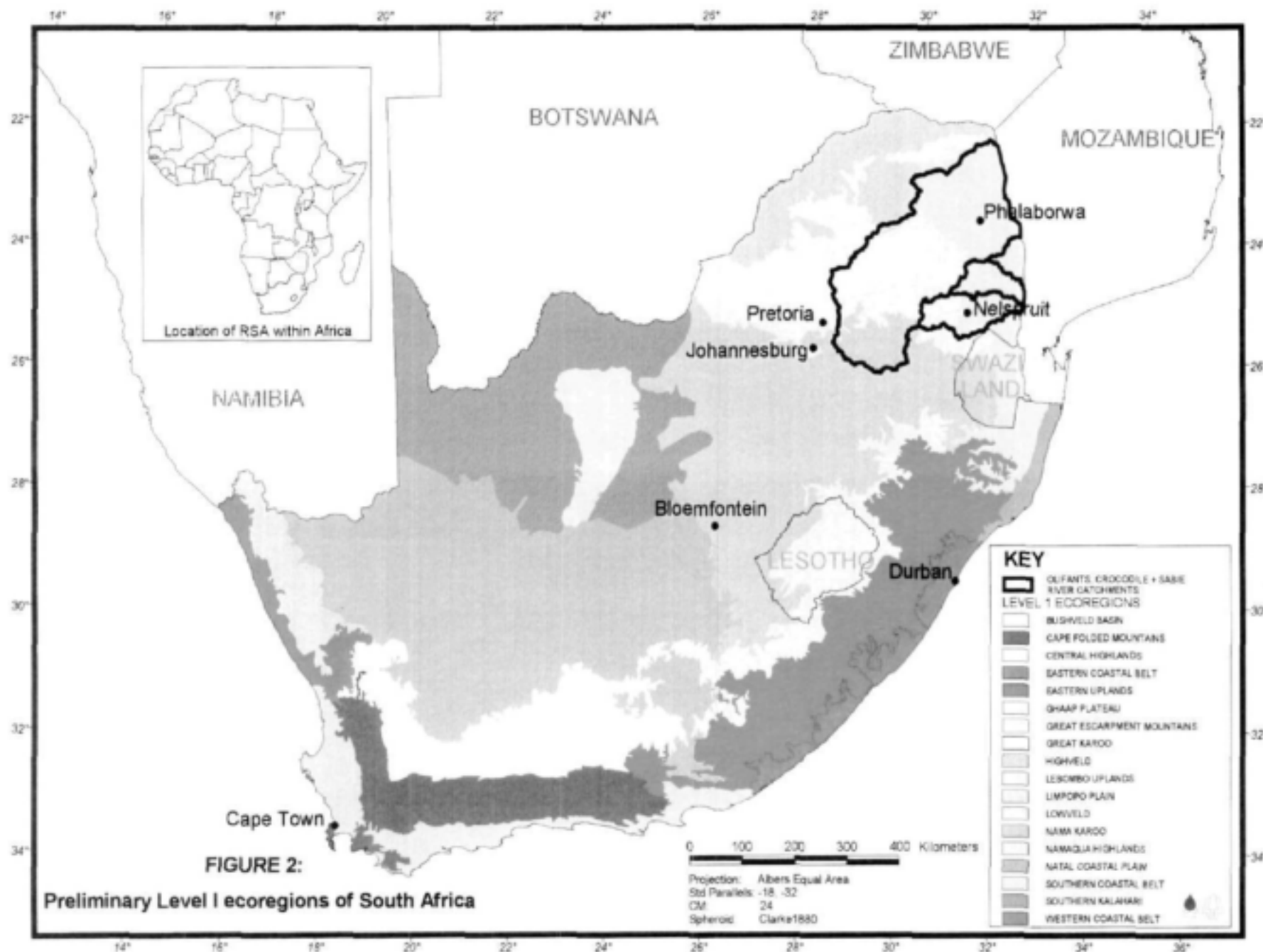


Figure 1: The study area



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## **Olifants River Catchment**

### **Introduction**

Ninety five sites were sampled on the Olifants River and tributaries of the Olifants River system (Figure 3). These tributaries are the Bronkhorstspuit, Wilge, Klein Olifants, Elands, Selons, Moses, Spekboom, Blyde, Treur, Mohlapiitse, Thongwane, Klaserie, Selati, Makhutswi, Steelpoort, Ohrigstad, and Belvedere Creek Rivers, as well as the Beetgekraalspruit.

### **Description of the Study Area**

#### **Locality**

The Olifants River basin drains an area of approximately 54 600 km<sup>2</sup>. The upper reaches of the river system drains a portion of the Mpumalanga Highveld where most of South Africa's thermal power stations are located. At the lower end of the catchment, the Olifants River traverses the Lowveld and passes through the Kruger National Park before entering Mozambique (TPG&P, 1991).

#### **Topography**

Topographically, the catchment is characterised by five distinct zones, varying from the Highveld in the upper reaches of the Olifants River through the Middleveld and Bushveld (consists mainly of the Springbok flats), and the Transvaal Drakensberg escarpment in the centre of the basin, to the Lowveld in the east. Altitudes range between 300 m - at the Mozambique border to 2 300 m above sea level in the Steenkamps Mountains near Lydenburg (TPG&P, 1991).

#### **Rainfall**

Rain falls mainly in the summer months, with a peak in January. The mean annual rainfall for most of the basin is in the range 500 – 1 000 mm and as much as 2 000 mm per annum occurs along the escarpment. Thunderstorms, with the associated low penetration and erosion in mountainous and highly cultivated areas, are common. Because the catchment is in the summer rainfall region, flow in the rivers is markedly seasonal (TPG&P, 1991).

#### **Geology**

The main geology underlying the Olifants River catchment, consists mainly of:

- Transvaal Sequence,
- Karoo Sequence, and
- Bushveld Complex
- A fair-sized outcrop of the Basement Complex (DWAF, 1988).

---

## **Soils**

The most widespread soil group in the area is the Hutton form. These well drained red apedal soils cover a wide range of terrain, climatic and geological conditions. The soil varies from loams to clays, from deep to shallow and covers all trophic ranges.

## **Natural vegetation**

Three of the South African vegetation biomes occur in the Olifants catchment area, namely the:

- Grassland Biome – which covers the south-eastern parts of the catchment area and extends slightly north of Pilgrim's Rest. The vegetation has a uniform physical appearance and is dominated by hemicryptophytes of the Poaceae.
- Savanna biome – a large part of the catchment is covered by the Savanna Biome. The vegetation comprises graminoid hemicryptophytes and perennial woody plants. The vegetation is well adapted to withstand both drought and fire.
- Forest Biome – forests occupy a small portion of the catchment area, along the Escarpment. The vegetation found in this biome consists primarily of evergreen woody plants (DWAF, 1988).

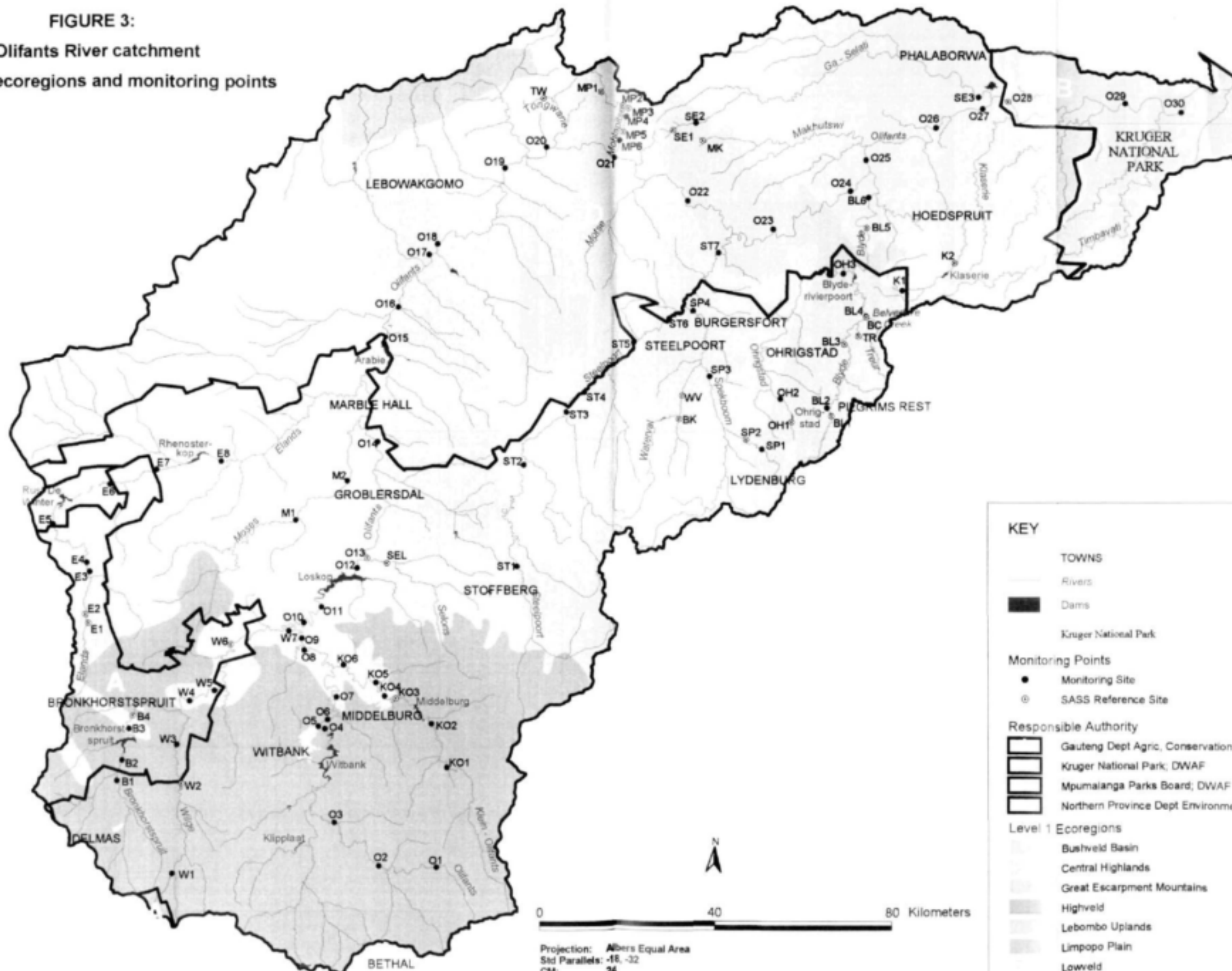
## **Land use**

The main forms of land use that occur are as follow:

- Towns: about forty proclaimed towns and numerous unproclaimed rural settlements of varying size and infrastructure exist in the catchment. Large urban concentrations include: Witbank, Middelburg, Lydenburg, Belfast and Phalaborwa.
- Power stations: Eight Eskom power stations occur in the southern part of the basin where there is an abundance of coal.
- Agriculture: The wide range of agriculture conditions that prevail in the study area results in varying crop patterns and concomitant irrigation water requirements, with irrigation being the single largest water user in the catchment. Maize is the dominant crop in the area.
- Mining: Considerable mineral deposits are found in the catchment and include important minerals like chrome, gold, vanadium and platinum. Mining is concentrated on the eastern Mpumalanga coalfields, in the Steelpoort River valley and at Phalaborwa.
- Industries: Several sawmills, canneries, flour mills, manufacturers of furniture and of agricultural equipment comprise the industrial development within the catchment (TPG&P, 1991).



**FIGURE 3:**  
Olifants River catchment  
showing ecoregions and monitoring points



**KEY**

**TOWNS**

Rivers

Dams

Kruger National Park

**Monitoring Points**

Monitoring Site

SASS Reference Site

**Responsible Authority**

Gauteng Dept Agric, Conservation + Environment; DWAF

Kruger National Park; DWAF

Mpumalanga Parks Board; DWAF

Northern Province Dept Environmental Affairs; DWAF

**Level 1 Ecoregions**

Bushveld Basin

Central Highlands

Great Escarpment Mountains

Highveld

Lebombo Uplands

Limpopo Plain

Lowveld

Projection: **Albers Equal Area**  
Std Parallels: **-18, -32**  
CM: **24**  
Spheroid: **Clarke1880**

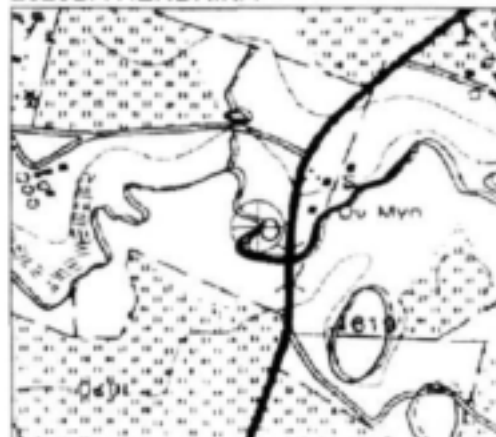
0 40 80 Kilometers



## SITE INFORMATION

Code: O1  
Province: Mpumalanga  
Sampling date: August 1998  
River: Olifants  
Quaternary catchment: B11A  
Locality:  
• Latitude (\*S): 26°13.1976  
• Longitude (\*E): 29°37.7794  
• Altitude (m.a.m.s.l): 1620  
Ecoregion: Highveld  
Stream classification: Foothill gravel bed

Site name: B1OLIF-KAFFE  
2629BA HENDRINA



## SASS4 (Not sampled)

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat:
- Invertebrates:

### Historical information

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 | 3                             |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      | 4         | 3                         | 1                                |           |                        |
| SS      | 3         | 4                         | 1                                |           |                        |

Species richness: 2

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

---

**Code:** O2  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B11A  
**Locality:**  
 • Latitude (°S): 26°13.2354  
 • Longitude (°E): 29°27.6284  
 • Altitude (m.a.m.s.l): 1580  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B1OLIF-MIDDE

2629AB VAN WYKSDRIFT



## SASS4

---

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

**Fish habitat and sampling effort:**

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 3.3                             |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 5.5                             | 1                             |                               |                     |                      |

**Fish habitat and cover ratings:**

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 1         | 1                         |                                  | 3         |                        |
| SD      | 4         | 3                         | 3                                | 2         |                        |
| SS      | 3         | 3                         | 3                                | 2         |                        |

**Species richness:** 1

**Width of riparian zone:** 10 m  
**Dominant vegetation:** Sedges  
**Substrate:** Soil/sand  
**Channel type:** Single  
**Surrounding land use:** Livestock farming/agriculture  
**Ecological importance:** High

**Dominant 5 species:**
  
1 *Gomphostigma virgatum*
  
2 Not available
   
3 Not available
   
4 Not available
   
5 Not available

**Biotopes:** (Not available)

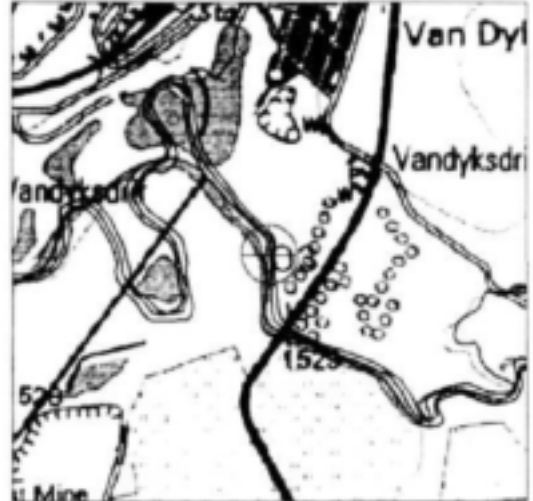
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** O3  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B11B  
**Locality:**  
 • Latitude (°S): 26°06.2400  
 • Longitude (°E): 29°19.3750  
 • Altitude (m.a.m.s.l): 1540  
**Ecoregion:** Highveld  
**Stream classification:** Upland flood plain

**Site name:** B1OLIF-VANDY

2629AB VAN WYKSDRIFT



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 1
- Invertebrates: 1

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  |                   |
| SS      | 9                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 4         | 1                      | 2                          | 1         |                     |
| SS      | 1         | 1                      | 2                          | 2         |                     |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 7 m  
 Dominant vegetation: Reeds/sedges  
 Substrate: Soil/sand/cobbles  
 Channel type: Single  
 Surrounding land use: Mining/dumping/informal settlement  
 Ecological importance: Low

Dominant 5 species:

- 1 *Phragmites sp.*
- 2 *Gomphostigma virgatum*
- 3 *Salix babylonica*
- 4 *Sesbania punicea*
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** O4  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B11J  
**Locality:**  
 • Latitude (°S): 25°50.8224  
 • Longitude (°E): 29°17.2300  
 • Altitude (m.a.m.s.l): 1440  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B1OLIF-ZEEKO

2529CD MIDDELBURG



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 18                         |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  |                   |
| SS      | 9                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 3         | 2                      | 2                          | 4         | 1                   |
| SD      | 3         | 3                      | 3                          | 2         | 2                   |
| SS      | 2         | 3                      | 2                          | 3         |                     |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 15 m  
 Dominant vegetation: Sedges  
 Substrate: Bedrock/cobbles/sediment  
 Channel type: Single  
 Surrounding land use: Livestock farming/sewage works  
 Ecological Importance: Low

Dominant 5 species:

- 1 *Rhus montana*
- 2 *Maytenus heterophylla*
- 3 *Populus sp.*
- 4 *Salix babylonica*
- 5 *Morus alba*

Biotopes: (Not available)

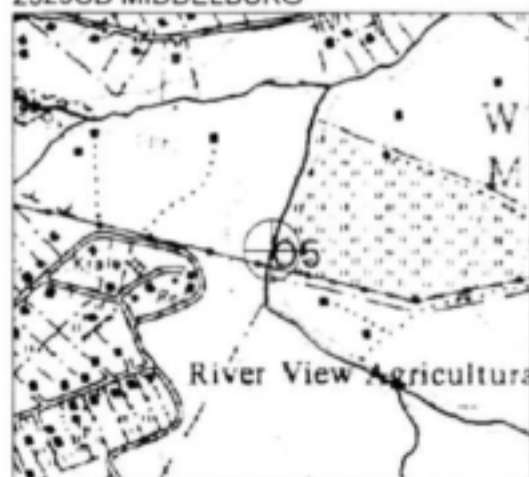
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

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**Code:** O5  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B11J  
**Locality:**  
 • Latitude (°S): 25°50.4558  
 • Longitude (°E): 29°15.9912  
 • Altitude (m.a.m.s.l): 1420  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B1OLIF-ZEEK2  
 2529CD MIDDELBURG



## SASS4

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### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            | X       |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 8.5                             |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 14                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 1         | 3                         | 1                                | 3         | 1                      |
| SD      | 3         | 4                         | 3                                | 3         | 1                      |
| SS      | 3         | 4                         | 3                                | 3         | 3                      |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 25 m  
 Dominant vegetation: Sedges  
 Substrate: Cobbles/soil  
 Channel type: Single/anabranching  
 Surrounding land use: Livestock farming/residential  
 Ecological importance: Low

Dominant 5 species:

- 1 *Gomphostigma virgatum*
- 2 *Rhus lanceae*
- 3 *Maytenus heterophylla*
- 4 *Salix babylonica*
- 5 Not available

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

Site name: B1OLIF-MOOIF  
2529CD MIDDELBURG



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 19                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 10                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 1                      | 1                          | 4         | 1                   |
| SD      | 4         | 2                      | 3                          | 4         | 1                   |
| SS      | 2         | 2                      | 3                          | 4         | 3                   |

Species richness: 2

## RIPARIAN VEGETATION

Width of riparian zone: 48 m  
 Dominant vegetation: Sedges  
 Substrate: Cobbles/sand/soil  
 Channel type: Single/anabranching  
 Surrounding land use: Livestock farming/agriculture  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Acacia mearnsii*
- 2 *Rhus montana*
- 3 *Salix mucronata*
- 4 *Gomphostigma virgatum*
- 5 *Diospyros lycioides*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O7  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B11J  
**Locality:**  
 • Latitude (°S): 25°45.4782  
 • Longitude (°E): 29°19.1002  
 • Altitude (m.a.m.s.l): 1380  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill-gravel bed

**Site name:** B10LIF-AASVO

2529CD MIDDELBURG



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 16                         |                            |                            |                  |                   |
| SD      | 8                          |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 3                      | 2                          | 4         |                     |
| FS      | 2         | 3                      | 2                          | 4         |                     |
| SD      | 4         | 4                      | 3                          | 3         |                     |
| SS      | 3         | 4                      | 3                          | 3         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 35 m  
 Dominant vegetation: Reeds/sedges  
 Substrate: Cobbles/soil/sand  
 Channel type: Single/anabranching  
 Surrounding land use: Natural  
 Ecological importance: Medium

Dominant 5 species:

- 1 *Acacia mearnsii*
- 2 *Maytenus heterophylla*
- 3 *Euclea crispa*
- 4 *Diospyros lycioides*
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

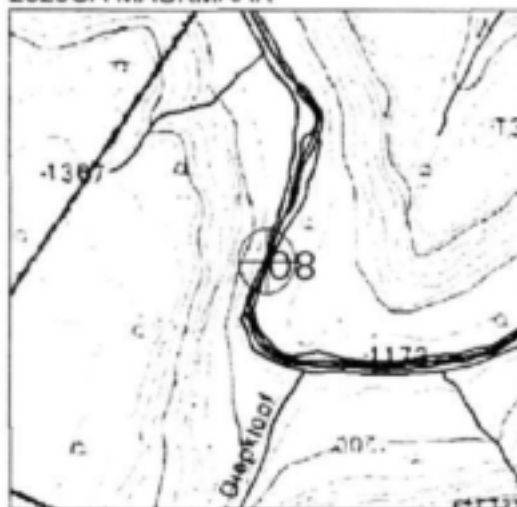


## SITE INFORMATION

|                               |                     |
|-------------------------------|---------------------|
| <b>Code:</b>                  | O8                  |
| <b>Province:</b>              | Mpumalanga          |
| <b>Sampling date:</b>         | June 1998           |
| <b>River:</b>                 | Olifants            |
| <b>Quaternary catchment:</b>  | B11L                |
| <b>Locality:</b>              |                     |
| • <b>Latitude (°S):</b>       | 25°37.9182          |
| • <b>Longitude (°E):</b>      | 29°13.0845          |
| • <b>Altitude (m.a.m.s.l)</b> | 1160                |
| <b>Ecoregion:</b>             | Central Highlands   |
| <b>Stream classification:</b> | Foothill gravel bed |

Site name: B1OLIF-SNAAK

2529CA MACKMAAR



**SASS4**

**Biotoxes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter/Spring/Summer
- Number of visits: 10
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 7                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 2                      | 2                          | 2         |                     |
| FS      | 4         | 2                      | 3                          | 2         |                     |
| SD      | 3         | 4                      | 3                          | 2         |                     |
| SS      | 3         | 3                      | 3                          | 2         |                     |

Species richness: 8

## RIPARIAN VEGETATION

Width of riparian zone: 35 m  
 Dominant vegetation: Sedges  
 Substrate: Cobbles/sand  
 Channel type: Anabranching  
 Surrounding land use: Natural  
 Ecological Importance: High

Dominant 5 species:

- 1 *Rhus montana*
- 2 *Combretum erythrophyllum*
- 3 *Phragmites sp.*
- 4 *Salix mucronata*
- 5 *Capparaceae*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O9  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Olifants  
**Quaternary catchment:** B11L  
**Locality:**  
 • Latitude (°S): 25°35.9400  
 • Longitude (°E): 29°12.5999  
 • Altitude (m.a.m.s.l): 1200  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B10LIF-SLAGT

2529CA MACKMAAR



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1993-1995
- Seasons sampled: All
- Number of visits: 13
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 11                         |                            |                            |                  |                   |
| FS      | 17                         |                            |                            |                  |                   |
| SD      | 5                          |                            |                            |                  |                   |
| SS      | 14                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         |                        |                            | 3         |                     |
| FS      | 3         | 3                      | 2                          | 2         | 1                   |
| SD      | 4         | 3                      | 3                          | 3         |                     |
| SS      | 3         | 3                      | 3                          | 3         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 6 m  
 Dominant vegetation: Reeds  
 Substrate: Sand/soil/cobbles  
 Channel type: Anabranching  
 Surrounding land use: Natural  
 Ecological importance: High  
  
 Dominant 5 species:
 

- 1 *Combretum erythrophylloides*
- 2 *Phragmites sp.*
- 3 *Cyperaceae*
- 4 *Nuxia oppositifolia*
- 5 *Acacia dealbata*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O10  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Olifants  
**Quaternary catchment:** B32A  
**Locality:**  
 • Latitude (°S): 25°33.3000  
 • Longitude (°E): 29°12.8590  
 • Altitude (m.a.m.s.l): 1080  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B3OLIF-KABEL

2529CA MACKMAAR



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 8                          |                            |                            |                  |                   |
| FS      | 28.5                       |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 12.5                       |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 1                      | 1                          | 2         |                     |
| FS      | 3         | 1                      | 1                          | 2         |                     |
| SD      | 3         | 3                      | 3                          | 2         |                     |
| SS      | 3         | 3                      | 3                          | 2         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Shrubs/grasses  
 Substrate: Cobbles/sand  
 Channel type: Single  
 Surrounding land use: Natural  
 Ecological Importance: High

Dominant 5 species:

- 1 *Phragmites* sp.
- 2 *Combretum erythrophyllum*
- 3 *Rhus montana*
- 4 *Nuxia oppositifolia*
- 5 *Securinega virosa*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O11  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Olifants  
**Quaternary catchment:** B32A  
**Locality:**  
 • Latitude (°S): 25°30.6504  
 • Longitude (°E): 29°15.9157  
 • Altitude (m.a.m.s.l): 1020  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B3OLIF-DONKE  
 2529CB LAMMERKOP



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 32                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 12                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         |                           |                                  | 4         |                        |
| FS      | 4         |                           |                                  | 4         |                        |
| SD      | 4         |                           | 2                                | 4         |                        |
| SS      | 1         | 1                         |                                  | 4         |                        |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 10 m  
 Dominant vegetation: Shrubs  
 Substrate: Cobbles  
 Channel type: Single  
 Surrounding land use: Nature reserve  
 Ecological importance: High

Dominant 5 species:

- 1 *Phragmites* sp.
- 2 *Combretum erythrophyllum*
- 3 *Capparaceae*
- 4 Not available
- 5 Not available

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |



## SITE INFORMATION

**Code:** O12  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B32C  
**Locality:**  
 • Latitude (°S): 25°24.0114  
 • Longitude (°E): 29°22.0629  
 • Altitude (m.a.m.s.l): 980  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B3OLIF-LOSKO

2529AD LOSKP DAM



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 3

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 11                         |                            |                            |                  |                   |
| FS      | 14                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 5                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 3                          | 4         | 2                   |
| FS      | 3         | 3                      | 3                          | 4         | 2                   |
| SD      | 3         | 4                      | 3                          | 3         | 3                   |
| SS      | 2         | 4                      | 3                          | 3         | 3                   |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 55 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/sand/cobbles  
 Channel type: Single/anabranching  
 Surrounding land use: Nature reserve  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Phragmites* sp.
- 2 *Combretum erythrophyllum*
- 3 *Populus* sp.
- 4 *Acacia sieberiana*
- 5 *Euclea crispa*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O13  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B32C  
**Locality:**  
 • Latitude (°S): 25°22.2600  
 • Longitude (°E): 29°23.7000  
 • Altitude (m.a.m.s.l): 940  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B3OLIF-DEWAG

2529AD LOSKOP DAM



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 15.5                       |                            |                            |                  |                   |
| FS      | 11                         |                            |                            |                  |                   |
| SD      |                            | 2                          |                            |                  |                   |
| SS      | 4                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 1                          | 4         |                     |
| FS      | 3         | 2                      | 1                          | 4         |                     |
| SD      | 3         | 2                      | 2                          | 2         |                     |
| SS      | 3         | 2                      | 2                          | 2         |                     |

Species richness: 8

## RIPARIAN VEGETATION

Width of riparian zone: 18 m  
 Dominant vegetation: Shrubs  
 Substrate: Soil/cobbles  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Nuxia oppositifolia*
- 3 *Salix mucronata*
- 4 *Euclea crispa*
- 5 *Asclepias fruticosa*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O14  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B32J  
**Locality:**  
 • Latitude (°S): 25°02.9148  
 • Longitude (°E): 29°24.8696  
 • Altitude (m.a.m.s.l): 880  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B3OLIF-VARKE  
 2529AB GROBLERSDAL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 13                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 5.5                        |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 1                          | 3         |                     |
| FS      | 2         | 1                      | 2                          | 4         |                     |
| SD      | 3         | 4                      | 4                          | 2         | 1                   |
| SS      | 2         | 4                      | 4                          | 2         | 1                   |

|                   |   |
|-------------------|---|
| Species richness: | 6 |
|-------------------|---|

## RIPARIAN VEGETATION

Width of riparian zone: 65 m  
 Dominant vegetation: Trees/grasses  
 Substrate: Sand/soil/cobbles/bedrock  
 Channel type: Single/anabranching  
 Surrounding land use: Livestock farming  
 Ecological Importance: Low

Dominant 5 species:
 

- 1 *Phragmites sp.*
- 2 *Combretum erythrophyllum*
- 3 *Acacia galpinii*
- 4 *Spirostachys africana*
- 5 *Gymnosporia buxifolia*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O15  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B51E  
**Locality:**  
 • Latitude (°S): 24°46.4868  
 • Longitude (°E): 29°25.3933  
 • Altitude (m.a.m.s.l): 800  
**Ecoregion:** Central Highlands  
**Stream classification:** Lowland floodplain

**Site name:** B50LIF-ROODE  
 2429CD MARBLE HALL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      | 18                         | 1                          |                            |                  |                   |
| SS      | 13                         | 1                          |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 1                          | 3         |                     |
| FS      | 1         |                        |                            | 3         |                     |
| SD      | 4         | 4                      | 2                          | 2         |                     |
| SS      | 2         | 4                      | 2                          | 2         |                     |

Species richness: 10

## RIPARIAN VEGETATION

Width of riparian zone: 65 m  
 Dominant vegetation: Trees/shrubs/reeds/grasses  
 Substrate: Soil/sand  
 Channel type: Single/braided  
 Surrounding land use: Agriculture  
 Ecological importance: Medium

Dominant 5 species:
 

- 1 *Combretum erythrophyllum*
- 2 *Gymnosporia senegalensis*
- 3 *Melia azedarach*
- 4 *Acacia karoo*
- 5 *Phragmites sp.*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

|                               |                     |                                |
|-------------------------------|---------------------|--------------------------------|
| <b>Code:</b>                  | O16                 | <b>Site name:</b> B5OLIF-VANDE |
| <b>Province:</b>              | Northern Province   | 2429CB GA-MOLAPA               |
| <b>Sampling date:</b>         | August 1998         |                                |
| <b>River:</b>                 | Olifants            |                                |
| <b>Quaternary catchment:</b>  | B51C                |                                |
| <b>Locality:</b>              |                     |                                |
| • Latitude (°S):              | 24°40.4382          |                                |
| • Longitude (°E):             | 29°27.6834          |                                |
| • Altitude (m.a.m.s.l)        | 780                 |                                |
| <b>Ecoregion:</b>             | Bushveld Basin      |                                |
| <b>Stream classification:</b> | Lowland flood plain |                                |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Eletcro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 28                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      | 2                               | 7                             |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 1                         | 2                                | 1         |                        |
| FS      | 3         | 1                         | 2                                | 1         |                        |
| SD      | 3         | 3                         | 3                                | 1         |                        |
| SS      | 3         | 3                         | 3                                | 1         |                        |

Species richness: 13

## RIPARIAN VEGETATION

Width of riparian zone: 15 m  
 Dominant vegetation: Reeds  
 Substrate: Soil/sand  
 Channel type: Single/braided  
 Surrounding land use: Agriculture  
 Ecological Importance: Low

Dominant 5 species:

- 1 *Phragmites sp.*
- 2 *Combretum erythrophyllum*
- 3 *Melia azedarach*
- 4 *Ziziphus mucronata*
- 5 *Acacia tortilis*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** O17  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B51G  
**Locality:**  
 • Latitude (°S): 24°31.6434  
 • Longitude (°E): 29°32.7676  
 • Altitude (m.a.m.s.l): 780  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Lowland flood plain

**Site name:** B5OLIF-ADRIA

2429DA GA-MASEMOLA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information

- Time period: 1999
- Seasons sampled: Autumn
- Number of visits: 1
- Organisations: AFRIDEV

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 23.5                       |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 17                         |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 1                      | 1                          | 2         |                     |
| FS      | 3         | 1                      | 1                          | 2         |                     |
| SD      | 2         | 3                      | 3                          | 1         |                     |
| SS      | 3         | 3                      | 3                          | 1         |                     |

Species richness: 10

## RIPARIAN VEGETATION

Width of riparian zone: 40 m  
 Dominant vegetation: Trees/shrubs  
 Substrate: Soil/sand  
 Channel type: Single/braided  
 Surrounding land use: Livestock farming  
 Ecological importance: Medium

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Ziziphus mucronata*
- 3 *Acacia tortilis*
- 4 *Gymnosporia buxifolia*
- 5 *Faidherbia albida*

Biotopes: (Not available)

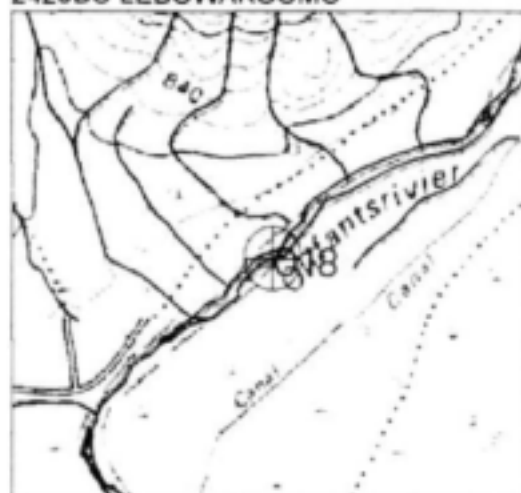
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O18  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B52A  
**Locality:**  
 • Latitude (°S): 24°29.8716  
 • Longitude (°E): 29°34.1972  
 • Altitude (m.a.m.s.l): 780  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Lowland flood plain

**Site name:** B5OLIF-VEEPL

2429BC LEBOWAKGOMO



## SASS4

**Biotores:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

**Ecological Importance**

- Habitat: 1
- Invertebrates: 2

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 2.5                             |                               |                               |                     |                      |
| FS      | 18                              |                               |                               |                     |                      |
| SD      | 8                               |                               |                               |                     |                      |
| SS      | 13                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 2                         | 2                                | 1         |                        |
| FS      | 3         | 2                         | 2                                | 1         |                        |
| SD      | 1         | 3                         | 3                                | 1         |                        |
| SS      | 2         | 3                         | 4                                | 1         |                        |

Species richness: 12

## RIPARIAN VEGETATION

Width of riparian zone: 195 m  
 Dominant vegetation: Grasses/trees/shrubs  
 Substrate: Soil/sand  
 Channel type: Single/braided  
 Surrounding land use: Livestock farming  
 Ecological importance: Medium

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Gymnosporia buxifolia*
- 3 *Ziziphus mucronata*
- 4 *Acacia tortilis*
- 5 *Phragmites sp.*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** O19  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B52G  
**Locality:**  
 • Latitude (°S): 24°16.9800  
 • Longitude (°E): 29°45.6046  
 • Altitude (m.a.m.s.l): 740  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B5OLIF-DIAMA  
 2429BD GA-MANKOPANA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 21                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      | 10.5                            |                               |                               |                     |                      |
| SS      | 13.5                            |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         |                           | 2                                | 4         |                        |
| FS      | 2         |                           | 1                                | 4         |                        |
| SD      | 2         | 3                         | 3                                | 1         | 1                      |
| SS      | 3         | 3                         | 3                                | 1         | 1                      |

Species richness: 9

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Trees  
 Substrate: Soil/sand  
 Channel type: Single/braided  
 Surrounding land use: Subsistence farming  
 Ecological Importance: Low

Dominant 5 species:
 

- 1 *Croton megalobotrys*
- 2 *Combretum hereroense*
- 3 *Ziziphus mucronata*
- 4 *Acacia karoo*
- 5 *Dovyalis caffra*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

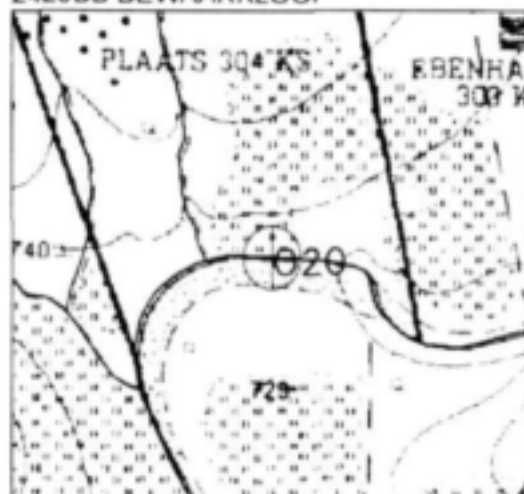


## SITE INFORMATION

**Code:** O20  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B71A  
**Locality:**  
 • Latitude (°S): 24°13.2780  
 • Longitude (°E): 29°52.6800  
 • Altitude (m.a.m.s.l): 740  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-PLAAT

2429BB BEWAARKLOOF



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 3
- Invertebrates: 3

**Historical information (Not available)**

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 15                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         |                        | 1                          | 4         |                     |
| FS      | 2         |                        | 1                          | 4         |                     |
| SD      | 2         | 2                      | 3                          | 1         | 2                   |
| SS      | 4         | 2                      | 3                          | 3         | 2                   |

Species richness: 13

## RIPARIAN VEGETATION

Width of riparian zone: 30 m  
 Dominant vegetation: Trees  
 Substrate: Sand/soil  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: High

Dominant 5 species:

- 1 *Faidherbia albida*
- 2 *Balanites maughamii*
- 3 *Ziziphus mucronata*
- 4 *Croton megalobotrys*
- 5 *Gymnosporia senegalensis*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O21  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B71D  
**Locality:**  
 • Latitude (°S): 24°14.2884  
 • Longitude (°E): 30°04.8923  
 • Altitude (m.a.m.s.l): 680  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-STELL  
 2430AA THE DOWNS



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 4         |
| AQ VEG            | X       | X       | 2         |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information

- Time period: 1999
- Seasons sampled: Autumn
- Number of visits: 1
- Organisations: AFRIDEV

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 12.5                       |                            |                            |                  |                   |
| FS      | 12                         |                            |                            |                  |                   |
| SD      | 5                          | 4                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         |                        |                            | 4         |                     |
| FS      | 2         |                        |                            | 4         |                     |
| SD      | 3         | 1                      | 1                          | 3         | 2                   |
| SS      | 2         | 2                      | 2                          | 1         | 2                   |

Species richness: 8

## RIPARIAN VEGETATION

Width of riparian zone: 60 m  
 Dominant vegetation: Trees  
 Substrate: Bedrock/sand/soil  
 Channel type: Single  
 Surrounding land use: Livestock farming/game farming  
 Ecological importance: Medium

Dominant 5 species:

- 1 *Acacia karoo*
- 2 *Croton megalobotrys*
- 3 *Combretum imberbe*
- 4 *Acacia schweinfurthii*
- 5 *Rhus pyroides*

Biotopes: (Not available)

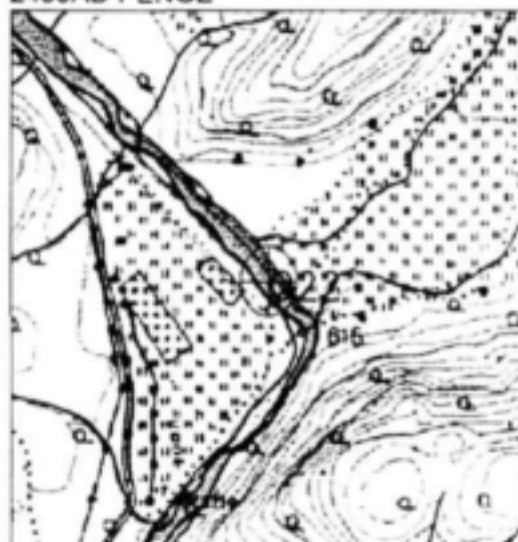
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O22  
**Province:** Northern Province  
**Sampling date:** August 1998  
**River:** Olifants  
**Quaternary catchment:** B71F  
**Locality:**  
 • Latitude (°S): 24°21.1656  
 • Longitude (°E): 30°18.3455  
 • Altitude (m.a.m.s.l): 620  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-PENGE

2430AD PENGE



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 2

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 21                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 11                         |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         |                        |                            | 3         |                     |
| FS      | 4         |                        |                            | 3         |                     |
| SD      | 2         |                        | 2                          | 1         |                     |
| SS      | 3         |                        | 2                          | 1         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 70 m  
 Dominant vegetation: Trees  
 Substrate: Sand/soil/cobbles  
 Channel type: Braided  
 Surrounding land use: Livestock farming/rural settlement/agriculture  
 Ecological importance: Medium

Dominant 5 species:
 

- 1 *Diospyros mespiliformis*
- 2 *Breonadia salicina*
- 3 *Gymnosporia senegalensis*
- 4 *Combretum imberbe*
- 5 *Ziziphus mucronata*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O23  
**Province:** Northern Province  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B71G  
**Locality:**  
 • Latitude (°S): 24°25.4400  
 • Longitude (°E): 30°33.3000  
 • Altitude (m.a.m.s.l): 520  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-FOCHA

2430BC STRIJDOMTONNEL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 34                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      | 11                              |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         |                           |                                  | 3         |                        |
| FS      | 3         |                           |                                  | 3         |                        |
| SD      | 2         | 1                         | 2                                | 3         | 1                      |
| SS      | 2         |                           | 2                                | 3         |                        |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Trees  
 Substrate: Soil/sand/cobbles  
 Channel type: Single  
 Surrounding land use: Livestock farming/rural settlement/burning  
 Ecological importance: Low

Dominant 5 species:
 

- 1 *Diospyros mespiliformis*
- 2 *Ficus sycomorus*
- 3 *Breonadia salicina*
- 4 *Acacia robusta*
- 5 *Faidherbia albida*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

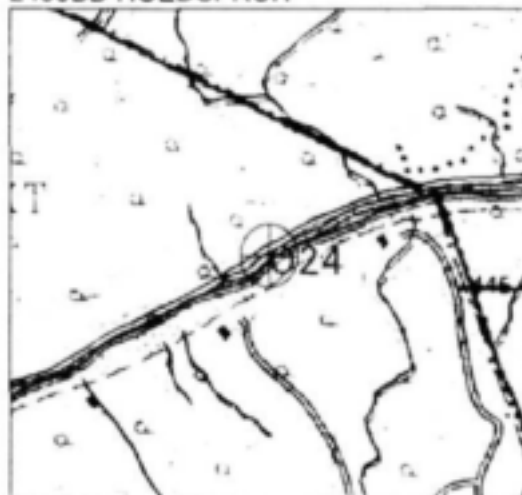


## SITE INFORMATION

**Code:** O24  
**Province:** Northern Province  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B71J  
**Locality:**  
 • Latitude (°S): 24°18.5508  
 • Longitude (°E): 30°46.6462  
 • Altitude (m.a.m.s.l): 420  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-BAZAI

2430BD HOEDSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1999
- Seasons sampled: Winter
- Number of visits: 1
- Organisations: AFRIDEV

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 27                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 27                |
| SS      | 18                         |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         |                        |                            | 3         |                     |
| FS      | 2         |                        |                            | 4         |                     |
| SD      | 1         | 2                      | 2                          | 2         | 1                   |
| SS      | 2         | 2                      | 2                          | 1         | 1                   |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 45 m  
 Dominant vegetation: Reeds  
 Substrate: Sand/bedrock/cobbles  
 Channel type: Single  
 Surrounding land use: Game farming  
 Ecological Importance: Low

Dominant 5 species:

- 1 *Phragmites sp.*
- 2 *Ficus sycomorus*
- 3 *Breonadia salicina*
- 4 *Nicotiana glauca*
- 5 *Xanthium strumarium*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O25  
**Province:** Northern Province  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B72D  
**Locality:**  
 • Latitude (°S): 24°13.3200  
 • Longitude (°E): 30°49.0983  
 • Altitude (m.a.m.s.l): 380  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-OXFOR

2430BB MICA



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 3

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 7.5                             |                               |                               |                     |                      |
| FS      | 11.5                            |                               |                               |                     |                      |
| SD      | 4                               |                               |                               |                     |                      |
| SS      | 4.5                             |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 2                         | 1                                | 3         | 1                      |
| FS      | 2         | 2                         | 1                                | 3         | 1                      |
| SD      | 4         | 3                         | 3                                | 2         | 1                      |
| SS      | 3         | 2                         | 2                                | 2         | 1                      |

Species richness: 13

## RIPARIAN VEGETATION

Width of riparian zone: 70 m  
 Dominant vegetation: Trees  
 Substrate: Sand/soil/cobbles  
 Channel type: Single  
 Surrounding land use: Game farming/recreation  
 Ecological Importance: High

Dominant 5 species:

- 1 *Xanthium strumarium*
- 2 *Croton megalobotrys*
- 3 *Phragmites* sp.
- 4 *Ficus sycomorus*
- 5 *Sesbania sesban*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** O26  
**Province:** Northern Province  
**Sampling date:** September 1998  
**River:** Olifants  
**Quaternary catchment:** B72D  
**Locality:**  
 • Latitude (°S): 24°07.5750  
 • Longitude (°E): 31°00.9966  
 • Altitude (m.a.m.s.l): 320  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-GRIET

2431AA GRIETJIE



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- **Habitat:** 2
- **Invertebrates:** 3

**Historical information**

- **Time period:** 1999
- **Seasons sampled:** W
- **Number of visits:** 1
- **Organisations:** AFRIDEV

## FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness:

## RIPARIAN VEGETATION

Width of riparian zone: 90 m  
 Dominant vegetation: Trees  
 Substrate: Sand/sediment/bedrock/cobles/soil/sediment  
 Channel type: Mixed anabranching  
 Surrounding land use: Game farming  
 Ecological importance: Medium

Dominant 5 species:
 

- 1 *Ficus sycomorus*
- 2 *Breonadia salicina*
- 3 *Gymnosporia senegalensis*
- 4 *Diospyros mespiliformis*
- 5 *Aneuvia sp.*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            | X       | X                  | X                   |             | X   | X               |             |
| Right | X            | X       |                    | X                   |             | X   |                 |             |

## SITE INFORMATION

**Code:** O27  
**Province:** Northern Province  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B72D  
**Locality:**  
 • Latitude (°S): 24°04.1268  
 • Longitude (°E): 31°08.9400  
 • Altitude (m.a.m.s.l): 300  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-ZEEKG

2431AA GRIETJIE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 21                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 11                         |                            |                            |                  | 12                |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         |                        |                            | 3         |                     |
| FS      | 3         | 2                      |                            | 4         |                     |
| SD      | 4         | 3                      | 3                          | 2         | 2                   |
| SS      | 2         | 3                      | 2                          | 2         | 1                   |

Species richness: 14

## RIPARIAN VEGETATION

Width of riparian zone: 45 m  
 Dominant vegetation: Reeds  
 Substrate: Soil/sand/cobbles/bedrock  
 Channel type: Single  
 Surrounding land use: Game farming  
 Ecological importance: Low

Dominant 5 species:

- 1 *Phragmites sp.*
- 2 *Cyperus textilis*
- 3 *Cynodon dactylon*
- 4 *Breonadia salicina*
- 5 *Gymnosporia senegalensis*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** O28  
**Province:** Northern Province  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B73C  
**Locality:**  
 • Latitude (°S): 24°02.6694  
 • Longitude (°E): 31°13.2483  
 • Altitude (m.a.m.s.l): 300  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-MAMBA

2431AA GRIETJIE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 3         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information

- Time period: 1993-1995
- Seasons sampled: W
- Number of visits: 4
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 26                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 25                   |
| SS      | 10                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         |                           |                                  | 3         |                        |
| FS      | 4         |                           |                                  | 3         |                        |
| SD      | 3         | 2                         | 2                                | 2         |                        |
| SS      | 3         | 2                         | 2                                | 2         | 1                      |

Species richness: 12

## RIPARIAN VEGETATION

Width of riparian zone: 100 m  
 Dominant vegetation: Grasses  
 Substrate: Sand/cobbles/soil/bedrock  
 Channel type: Single  
 Surrounding land use: Game reserve  
 Ecological importance: Low

Dominant 5 species:
 

- 1 *Cynodon dactylon*
- 2 *Phragmites sp.*
- 3 *Gymnosporia senegalensis*
- 4 *Croton megalobotrys*
- 5 *Asclepias fruticosa*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** O29  
**Province:** Mpumalanga  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B73G  
**Locality:**  
 • Latitude (°S): 24°02.0610  
 • Longitude (°E): 31°33.9620  
 • Altitude (m.a.m.s.l): 220  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-VYGE8

2432AA BALULE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  | 30                |
| FS      |                            | 1                          |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            | 5                          |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 2                          | 3         | 1                   |
| FS      | 3         | 1                      | 1                          | 4         | 1                   |
| SD      | 3         | 2                      | 3                          | 2         | 1                   |
| SS      | 3         | 3                      | 2                          | 3         | 1                   |

Species richness: 11

## RIPARIAN VEGETATION

Width of riparian zone: 115 m  
 Dominant vegetation: Trees  
 Substrate: Sand/bedrock/cobbles/soil  
 Channel type: Single  
 Surrounding land use: Game reserve  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Breonadia salicina*
- 2 *Diospyros mespiliformis*
- 3 *Ficus sycomorus*
- 4 *Phragmites* sp.
- 5 *Gymnosporia senegalensis*

Biotopes: (Not available)

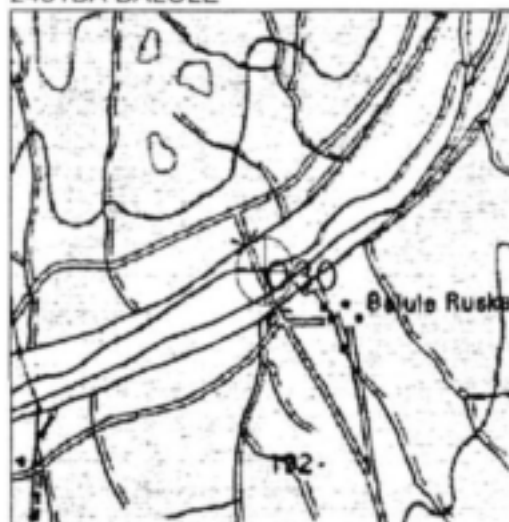
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** O30  
**Province:** Mpumalanga  
**Sampling date:** October 1998  
**River:** Olifants  
**Quaternary catchment:** B73H  
**Locality:**  
 • Latitude (°S): 24°03.1038  
 • Longitude (°E): 31°43.8099  
 • Altitude (m.a.m.s.l): 200  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B7OLIF-BALUL

2431BA BALULE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 1

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter
- **Number of visits:** 4
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 3                          |                            |                            |                  | 14                |
| FS      | 25                         |                            |                            |                  |                   |
| SD      | 10.5                       |                            |                            |                  |                   |
| SS      | 3.5                        |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      |                            | 2         |                     |
| FS      | 4         | 2                      |                            | 3         | 1                   |
| SD      | 1         | 2                      | 2                          | 1         |                     |
| SS      | 2         | 3                      | 3                          | 1         | 1                   |

Species richness: 11

## RIPARIAN VEGETATION

Width of riparian zone: 160 m  
 Dominant vegetation: Shrubs  
 Substrate: Sand/soil/cobbles/bedrock  
 Channel type: Braided  
 Surrounding land use: Game reserve  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Croton megalobotrys*
- 2 *Ficus sycomorus*
- 3 *Flueggea virosa*
- 4 *Combretum microphyllum*
- 5 *Acacia robusta*

Biotopes: (Not available)

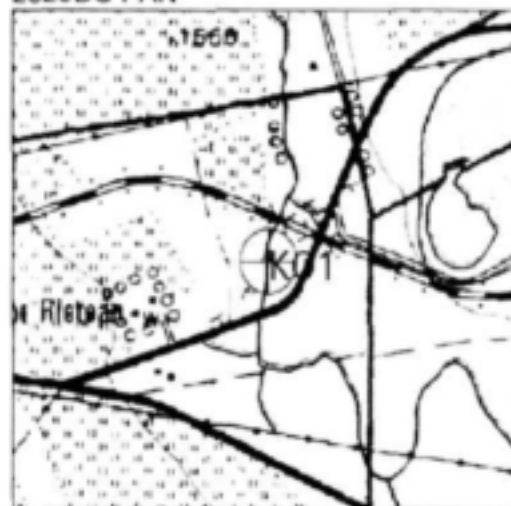
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** KO1  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Klein Olifants  
**Quaternary catchment:** B12B  
**Locality:**  
 • Latitude (°S): 25°56.6340  
 • Longitude (°E): 29°39.0997  
 • Altitude (m.a.m.s.l): 1580  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B1KOLI-DEGRO

2529DC PAN



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 1
- Invertebrates: 1

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 8.3                        |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 12.5                       |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         |                        |                            | 4         |                     |
| FS      | 2         |                        |                            | 4         |                     |
| SD      | 3         | 4                      | 4                          | 2         |                     |
| SS      | 4         | 4                      | 4                          | 2         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 10 m  
 Dominant vegetation: Grasses  
 Substrate: Sand/cobbles  
 Channel type: Single  
 Surrounding land use: Agriculture/livestock farming  
 Ecological Importance: Medium

Dominant 5 species:

- 1 Grasses
- 2 *Asclepias sp.*
- 3 *Populus sp.*
- 4 *Verbena sp.*
- 5 *Sesbania punicea*

Biotopes: (Not available)

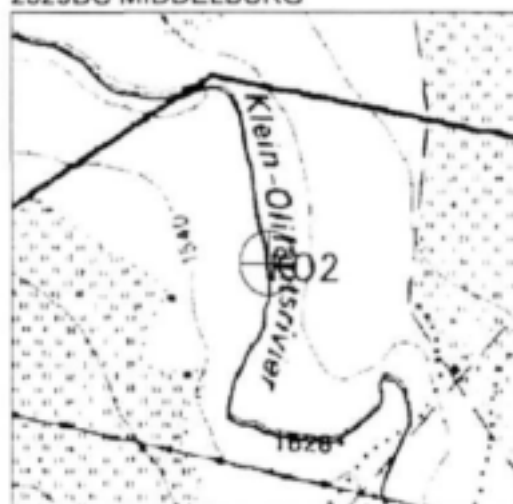
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** KO2  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Klein Olifants  
**Quaternary catchment:** B12C  
**Locality:**  
 • Latitude (°S): 25°49.5000  
 • Longitude (°E): 29°36.0570  
 • Altitude (m.a.m.s.l): 1540  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B1KOLI-ZAAIP  
 2529DC MIDDELBURG



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 23                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 9.5                        |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         |                        |                            | 3         |                     |
| FS      | 3         |                        |                            | 3         |                     |
| SD      | 4         | 2                      | 2                          | 2         |                     |
| SS      | 3         |                        |                            | 3         |                     |

Species richness: 8

## RIPARIAN VEGETATION

Width of riparian zone: 10 m  
 Dominant vegetation: Sedges  
 Substrate: Cobbles/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: High

Dominant 5 species:

- 1 Sedges
- 2 **Gomphostigma virgatum**
- 3 *Diospyros lycioides*
- 4 *Rhus sp.*
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** KO3  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Klein Olifants  
**Quaternary catchment:** B12D  
**Locality:**  
 • Latitude (°S): 25°45.4602  
 • Longitude (°E): 29°29.5603  
 • Altitude (m.a.m.s.l): 1440  
**Ecoregion:** Highveld  
**Stream classification:** Rejuvenated foothill

**Site name:** B1KOLI-RONDE

2529CD MIDDELBURG



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 1
- Invertebrates: 3

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 8                          |                            |                            |                  |                   |
| FS      | 17.5                       |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 12.6                       |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 2                          | 4         |                     |
| FS      | 3         | 1                      | 2                          | 4         |                     |
| SD      | 2         | 1                      | 2                          | 4         |                     |
| SS      | 4         | 1                      | 2                          | 4         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Grasses  
 Substrate: Cobbles/sand  
 Channel type: Anabranching  
 Surrounding land use: Residential/military  
 Ecological Importance: High

Dominant 5 species:

- 1 *Rhus sp.*
- 2 Sedges
- 3 **Gomphostigma virgatum**
- 4 *Sesbania punicea*
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** KO4  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Klein Olifants  
**Quaternary catchment:** B12D  
**Locality:**  
 • Latitude (°S): 25°45.1218  
 • Longitude (°E): 29°27.6763  
 • Altitude (m.a.m.s.l): 1440  
**Ecoregion:** Central highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B1KOLI-MIDDE  
 2529CD MIDDELBURG



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 21                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 7.5                        |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 3                      | 3                          | 2         |                     |
| FS      | 3         | 3                      | 3                          | 4         |                     |
| SD      | 4         | 4                      | 4                          | 2         |                     |
| SS      | 2         | 3                      | 2                          | 2         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 6 m  
 Dominant vegetation: Grasses  
 Substrate: Cobbles/sand  
 Channel type: Single  
 Surrounding land use: Recreational/residential  
 Ecological Importance: Low

Dominant 5 species:
 

- 1 *Pennisetum clandestinum*
- 2 *Cyperus sp.*
- 3 *Salix babylonica*
- 4 *Eucalyptus sp.*
- 5 Not available

Biotopes: (Not available)

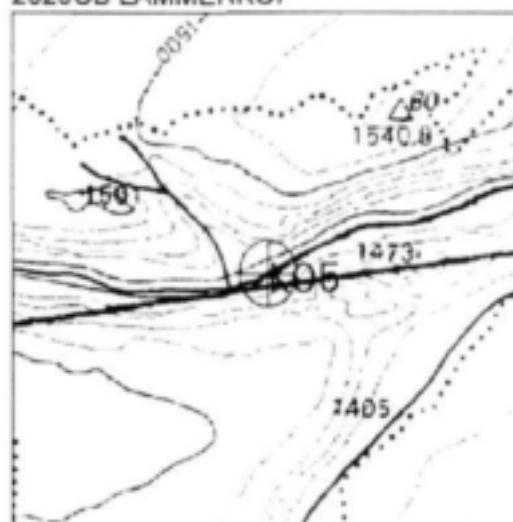
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** KO5  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Klein Olifants  
**Quaternary catchment:** B12E  
**Locality:**  
 • Latitude (°S): 25°42.8718  
 • Longitude (°E): 29°25.9918  
 • Altitude (m.a.m.s.l): 1360  
**Ecoregion:** Central highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B1KOLI-TOEVL

2529CB LAMMERKOP



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Eletcro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 10.3                            |                               |                               |                     |                      |
| FS      | 12.5                            |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 10.5                            |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 1                         | 1                                | 4         |                        |
| FS      | 4         | 1                         | 1                                | 4         |                        |
| SD      |           |                           |                                  |           |                        |
| SS      | 2         | 3                         | 4                                | 3         |                        |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 15 m  
 Dominant vegetation: Sedges  
 Substrate: Cobbles/sand  
 Channel type: Single  
 Surrounding land use: Nature reserve  
 Ecological Importance: High

Dominant 5 species:

- 1 Sedges
- 2 *Phragmites* sp.
- 3 *Rhus* sp.
- 4 Grasses
- 5 Not available

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |



## SITE INFORMATION

**Code:** KO6  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Klein Olifants  
**Quaternary catchment:** B12E  
**Locality:**  
 • **Latitude (°S):** 25°40.1364  
 • **Longitude (°E):** 29°20.1061  
 • **Altitude (m.a.m.s.l)** 1280  
**Ecoregion:** Central Highveld  
**Stream classification:** Rejuvenated foothill

**Site name:** B1KOLI-DOORN

2529CB LAMMERKOP



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information

- **Time period:** 1999
- **Seasons sampled:** Summer
- **Number of visits:** 1
- **Organisations:** AFRIDEV

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 6                          |                            |                            |                  |                   |
| FS      | 26                         |                            |                            |                  |                   |
| SD      | 4                          |                            |                            |                  |                   |
| SS      | 4                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      |                            | 4         |                     |
| FS      | 2         | 1                      |                            | 4         |                     |
| SD      | 4         | 4                      | 3                          | 4         |                     |
| SS      | 2         | 3                      | 3                          | 4         |                     |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 10 m  
 Dominant vegetation: Trees/grasses  
 Substrate: Cobbles/soil  
 Channel type: Single  
 Surrounding land use: Recreational  
 Ecological Importance: High

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Acacia dealbata*
- 3 *Melia azedarach*
- 4 *Rhus sp.*
- 5 *Celtis africana*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

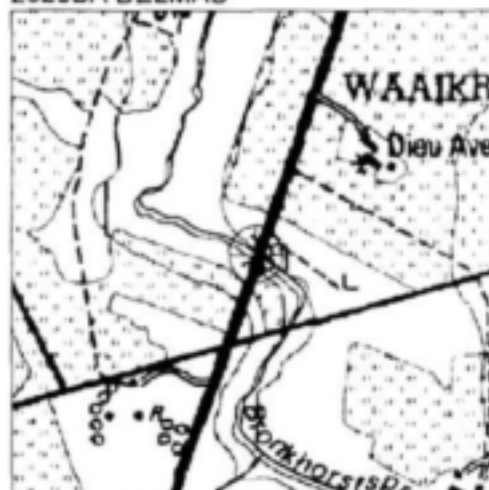
Code: B1  
Province: Mpumalanga  
Sampling date: August 1998  
River: Bronkhorstspuit  
Quaternary catchment: B20A  
Locality:

- Latitude (°S): 26°00.5736
- Longitude (°E): 28°40.6074
- Altitude (m.a.m.s.l): 1460

Ecoregion: Highveld  
Stream classification: Foothill gravel bed

Site name: B2BRON-WAAIK

2628BA DELMAS



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 1                          | 3                          | 2                          | 3                |                   |
| SD      | 4                          | 3                          | 4                          | 2                |                   |
| SS      | 3                          | 3                          | 4                          | 3                |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 11.5      |                        |                            |           |                     |
| SD      | 8.5       |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Grasses  
 Substrate: Soil  
 Channel type: Single  
 Surrounding land use: Agriculture/livestock farming  
 Ecological importance: Medium

Dominant 5 species:
 

- 1 *Phragmites* sp.
- 2 *Gomphostigma virgatum*
- 3 *Salix babylonica*
- 4 *Diospyros lycioides*
- 5 *Sesbania punicea*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** B2  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Bronkhorstspuit  
**Quaternary catchment:** B20C  
**Locality:**  
     • Latitude (°S): 25°57.1278  
     • Longitude (°E): 28°41.3868  
     • Altitude (m.a.s.l): 1448  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B2BRON-ROOIP

2528DC BRONKHORSTSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 17                         |                            |                            |                  |                   |
| SD      |                            | 4                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 1         | 2                      | 2                          | 4         |                     |
| SD      | 4         | 4                      | 3                          | 3         |                     |
| SS      | 3         | 2                      | 3                          | 3         |                     |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 6 m  
 Dominant vegetation: Sedges  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Agriculture  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Gomphostigma virgatum*
- 2 *Asclepias* sp.
- 3 *Thypha capensis*
- 4 *Phragmites* sp.
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** B3  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Bronkhorstspuit  
**Quaternary catchment:** B20D  
**Locality:**  
 • Latitude (°S): 25°51.8352  
 • Longitude (°E): 28°42.4911  
 • Altitude (m.a.m.s.l): 1402  
**Ecoregion:** Central highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B2BRON-VLAKF  
 2528DC BRONKHORSTSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 24.5                       |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 4                      | 4                          | 4         |                     |
| FS      | 4         | 4                      | 4                          | 4         |                     |
| SD      | 2         | 4                      | 4                          | 4         |                     |
| SS      | 3         | 4                      | 4                          | 4         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 40 m  
 Dominant vegetation: Grasses/sedges  
 Substrate: Soil/cobbles  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: Medium

Dominant 5 species:

- 1 **Gomphostigma virgatum**
- 2 *Phragmites* sp.
- 3 *Diospyros lycioides*
- 4 Not available
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** B4  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Bronkhorstspuit  
**Quaternary catchment:** B20D  
**Locality:**  
 • Latitude (°S): 25°49.6836  
 • Longitude (°E): 28°43.0219  
 • Altitude (m.a.m.s.l): 1396  
**Ecoregion:** Central highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B2BRON-KLIPE  
 2528DC BRONKHORSTSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 15.5                       |                            |                            |                  |                   |
| SD      | 6.5                        |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         |                        |                            | 3         |                     |
| FS      | 2         | 3                      | 1                          | 3         |                     |
| SD      | 3         | 4                      | 3                          | 2         |                     |
| SS      | 3         | 4                      | 4                          | 2         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 55 m  
 Dominant vegetation: Grasses/sedges  
 Substrate: Soil/sand  
 Channel type: Single/anabranching  
 Surrounding land use: Residential/old lands  
 Ecological Importance: Low

Dominant 5 species:

- 1 *Morus alba*
- 2 *Salix babylonica*
- 3 *Phragmites sp.*
- 4 *Rhus sp.*
- 5 *Melia azedarach*

Biotopes: (Not available)

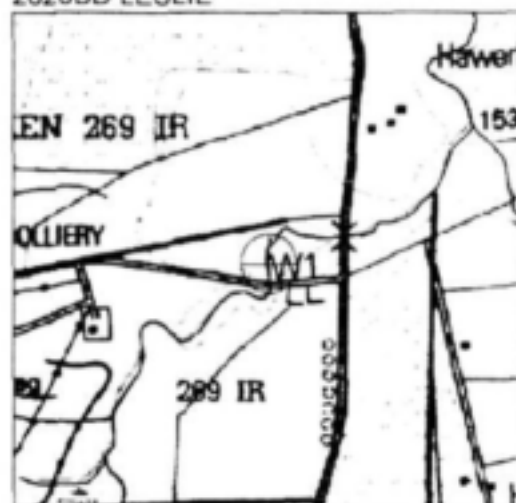
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** W1  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20E  
**Locality:**  
     • Latitude (°S): 26°15.6024  
     • Longitude (°E): 28°50.9656  
     • Altitude (m.a.m.s.l): 1540  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-HAVER

2628BD LESLIE



## SASS4 (Not sampled)

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

**Ecological Importance**

- Habitat:
- Invertebrates:

**Historical information**

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  |                   |
| SS      | 16                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 4         | 2                      | 3                          | 1         |                     |
| SS      | 2         | 2                      | 3                          | 1         |                     |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 6 m  
 Dominant vegetation: Sedges  
 Substrate: Soil  
 Channel type: Single  
 Surrounding land use: Mining/agriculture  
 Ecological Importance: Low

Dominant 5 species:
 

- 1 *Phragmites* sp.
- 2 *Asclepias fruticosa*
- 3 *Gomphostigma virgatum*
- 4 Not available
- 5 Not available

Biotopes: (Not available)

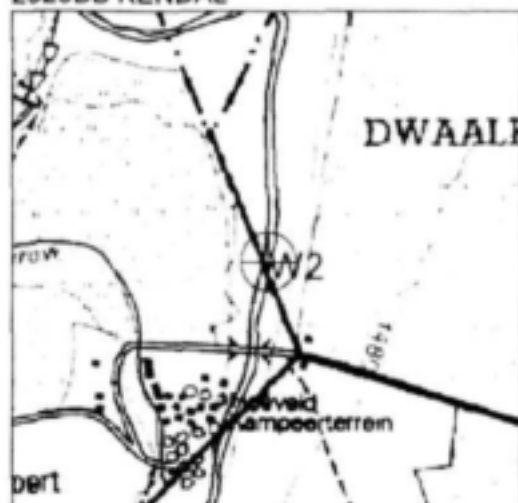
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** W2  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20F  
**Locality:**  
 • Latitude (°S): 26°00.6582  
 • Longitude (°E): 28°52.1761  
 • Altitude (m.a.m.s.l): 1460  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-DWAAL

2628BB KENDAL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 20.5                       |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 12.5                       |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 2                      | 2                          | 3         |                     |
| SD      | 2         | 3                      | 4                          | 3         |                     |
| SS      | 3         | 3                      | 4                          | 3         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 40 m  
 Dominant vegetation: Shrubs/grasses/sedges  
 Substrate: Soil/sand/cobbles  
 Channel type: Single/anabranching  
 Surrounding land use: Agriculture/recreational  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Sesbania punicea*
- 2 *Acacia mearnsii*
- 3 *Diospyros lycioides*
- 4 *Rhus montana*
- 5 *Salix babylonica*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** W3  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20F  
**Locality:**  
 • Latitude (°S): 25°54.2022  
 • Longitude (°E): 28°51.1161  
 • Altitude (m.a.m.s.l): 1400  
**Ecoregion:** Highveld  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-BOSSE  
 2528DD BALMORAL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      | 13.5                       |                            |                            |                  |                   |
| SS      | 10.5                       |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 2                          | 1         |                     |
| FS      | 2         | 3                      | 2                          | 2         |                     |
| SD      | 3         | 1                      | 3                          | 1         |                     |
| SS      | 2         | 1                      | 3                          | 1         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Trees/shrubs  
 Substrate: Soil/sand/cobbles  
 Channel type: Single  
 Surrounding land use: Agriculture  
 Ecological Importance: Low

Dominant 5 species:

- 1 *Salix babylonica*
- 2 *Rhus montana*
- 3 *Maytenus heterophylla*
- 4 *Diospyros lycioides*
- 5 *Combretum erythrophyllum*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** W4  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20H  
**Locality:**  
     • Latitude (°S): 25°46.8822  
     • Longitude (°E): 28°53.1604  
     • Altitude (m.a.m.s.l): 1360  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-SPITZ

2528DD BALMORAL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 13.5                       |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 5.5                        | 1                          |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 1                      | 1                          | 4         |                     |
| SD      | 4         | 4                      | 3                          | 3         | 2                   |
| SS      | 1         | 2                      | 1                          | 3         | 2                   |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 25 m  
 Dominant vegetation: Trees/shrubs/sedges  
 Substrate: Soil/sand/cobbles  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: Low

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Maytenus heterophylla*
- 3 *Eucalyptus sp.*
- 4 *Sesbania punicea*
- 5 *Euclea crispa*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** W5  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20H  
**Locality:**  
 • Latitude (°S): 25°45.0348  
 • Longitude (°E): 28°57.4907  
 • Altitude (m.a.m.s.l): 1320  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-WASCH

2528DD BALMORAL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information

- Time period: 1993-1999
- Seasons sampled: All
- Number of visits: 29
- Organisations: IWQS

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 19                         |                            |                            |                  |                   |
| SD      | 4.5                        |                            |                            |                  |                   |
| SS      | 8.5                        |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 2                      | 3                          | 4         |                     |
| SD      | 4         | 4                      | 1                          | 4         |                     |
| SS      | 3         | 2                      | 1                          | 4         |                     |

Species richness: 7

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Sedges  
 Substrate: Soil/sand/cobbles  
 Channel type: Single/anabranching  
 Surrounding land use: Nature reserve/recreational  
 Ecological importance: High

Dominant 5 species:
 

- 1 *Sesbania punicea*
- 2 *Combretum erythrophyllum*
- 3 *Gomphostigma virgatum*
- 4 *Englerophytum megalismontanum*
- 5 *Salix mucronata*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** W6  
**Province:** Gauteng  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20J  
**Locality:**  
 • Latitude (°S): 25°37.3200  
 • Longitude (°E): 29°00.0091  
 • Altitude (m.a.m.s.l): 1200  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-KRANS

2529CA MACKMAAR



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       |           |

**Ecological Importance**

- Habitat: 3
- Invertebrates: 3

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 28                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 11                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 1                         | 3                                | 4         |                        |
| FS      | 4         | 1                         | 3                                | 4         |                        |
| SD      | 1         | 4                         | 3                                | 4         |                        |
| SS      | 2         | 4                         | 3                                | 4         |                        |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 50 m  
 Dominant vegetation: Trees/sedges  
 Substrate: Cobbles/soil/sand  
 Channel type: Single/anabranching  
 Surrounding land use: Agriculture/natural  
 Ecological Importance: High

Dominant 5 species:

- 1 *Rhus montana*
- 2 *Combretum erythrophyllum*
- 3 *Gomphostigma virgatum*
- 4 *Euclea crispa*
- 5 *Maytenus heterophylla*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** W7  
**Province:** Mpumalanga  
**Sampling date:** August 1998  
**River:** Wilge  
**Quaternary catchment:** B20J  
**Locality:**  
 • Latitude (°S): 25°34.8018  
 • Longitude (°E): 29°10.2819  
 • Altitude (m.a.m.s.l): 1140  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B2WILG-BOOYZ

2529CA MACKMAAR



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       |         | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information

- Time period: 1993-1995
- Seasons sampled: Autumn/winter/Spring
- Number of visits: 5
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 23.25                      |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      | 8.5                        |                            |                            |                  |                   |
| SS      | 3.5                        |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 1                          | 4         |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 4         | 4                      | 4                          | 3         |                     |
| SS      | 2         | 4                      | 4                          | 4         |                     |

Species richness: 7

## RIPARIAN VEGETATION

Width of riparian zone: 40 m  
 Dominant vegetation: Shrubs/sedges  
 Substrate: Cobbles/sand/soil  
 Channel type: Anabranching  
 Surrounding land use: Livestock farming  
 Ecological importance: High

Dominant 5 species:

- 1 *Rhus sp.*
- 2 *Cyperus sp.*
- 3 *Phragmites sp.*
- 4 *Salix mucronata*
- 5 *Combretum erythrophyllum*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** SEL  
**Province:** Mpumalanga  
**Sampling date:** June 1999  
**River:** Kruis  
**Quaternary catchment:** B32C  
**Locality:**  
 • Latitude (°S): 25°23.0226  
 • Longitude (°E): 29°27.2361  
 • Altitude (m.a.m.s.l): 1000  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B3KRUI-DIEPK

2529AD LOSKOP DAM



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

**Ecological Importance**

- **Habitat:** 2
- **Invertebrates:** 3

**Historical information** (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 9.5                        |                            |                            |                  |                   |
| SD      |                            | 2                          |                            |                  |                   |
| SS      | 4.5                        |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 1         | 1                      |                            | 3         |                     |
| SD      | 4         | 4                      | 3                          | 2         |                     |
| SS      | 3         | 4                      | 3                          | 3         |                     |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 50 m  
 Dominant vegetation: Grasses/reeds  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Cotton farming/irrigation  
 Ecological Importance: Medium

Dominant 5 species:

- 1 **Melia azedarach**
- 2 Grasses
- 3 Reeds
- 4 *Combretum erythrophyllum*
- 5 *Solanum mauritianum*

### Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              | X       |                    |                     | X           | X   | X               |             |
| Right |              |         | X                  |                     |             | X   |                 |             |

## SITE INFORMATION

**Code:** M1  
**Province:** Mpumalanga  
**Sampling date:** June 1999  
**River:** Moses  
**Quaternary catchment:** B32G  
**Locality:**  
 • Latitude (°S): 25°16.3200  
 • Longitude (°E): 29°10.8600  
 • Altitude (m.a.m.s.l): 980  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B3MOSE-DENNI

2529AC DENNILTON



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 2

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 16                              |                               |                               |                     |                      |
| FS      | 13.5                            |                               |                               |                     |                      |
| SD      |                                 | 2                             |                               |                     |                      |
| SS      | 5                               |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 3                         | 3                                | 4         | 3                      |
| FS      | 4         | 2                         |                                  | 2         | 3                      |
| SD      | 3         | 3                         | 3                                | 1         | 2                      |
| SS      | 3         | 3                         | 3                                | 1         | 2                      |

Species richness: 8

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

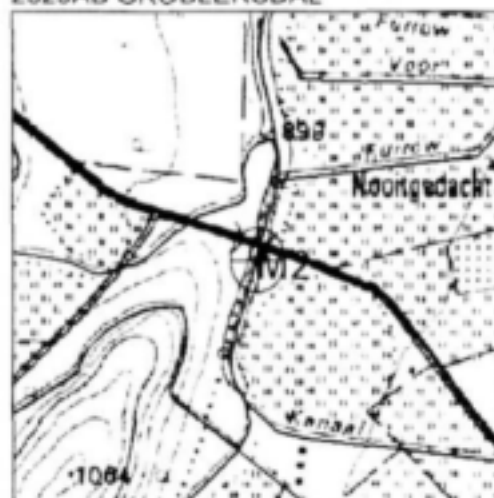
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** M2  
**Province:** Mpumalanga  
**Sampling date:** June 1998  
**River:** Moses  
**Quaternary catchment:** B32H  
**Locality:**  
 • Latitude (°S): 25°09.5400  
 • Longitude (°E): 29°19.7011  
 • Altitude (m.a.m.s.l): 900  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B3MOSE-GROEN  
 2529AB GROBLERSDAL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1999
- Seasons sampled: Winter
- Number of visits: 1
- Organisations: IWQS

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 19.5                       |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         |                        | 1                          | 4         | 1                   |
| FS      | 1         | 1                      | 1                          | 4         |                     |
| SD      | 4         | 4                      | 3                          | 3         | 2                   |
| SS      | 2         | 3                      | 3                          | 3         | 2                   |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 35 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/cobbles/bedrock  
 Channel type: Single  
 Surrounding land use: Old lands/irrigation  
 Ecological Importance: Medium

Dominant 5 species:

- 1 Reeds
- 2 **Melia azedarach**
- 3 Grasses
- 4 **Combretum erythrophyllum**
- 5 *Ricinus communis*

### Biotopes:

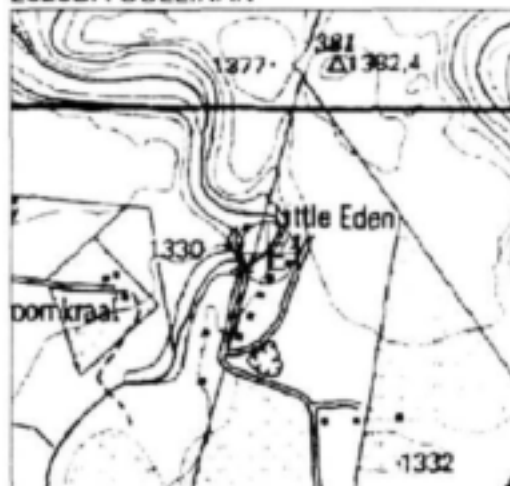
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              | X       |                    | X                   |             | X   | X               |             |
| Right |              | X       |                    | X                   |             | X   |                 |             |

## SITE INFORMATION

**Code:** E1  
**Province:** Gauteng  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31A  
**Locality:**  
 • Latitude (°S): 25°34.5222  
 • Longitude (°E): 28°34.6107  
 • Altitude (m.a.m.s.l): 1300  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Mountain stream

**Site name:** B3ELAN-DOORN

2528DA CULLINAN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 17.5                       |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 32.5                       |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 1                          | 4         |                     |
| FS      | 2         | 1                      | 1                          | 4         |                     |
| SD      | 4         | 2                      | 2                          | 3         |                     |
| SS      | 2         | 3                      | 2                          | 4         |                     |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 35 m  
 Dominant vegetation: Grasses/trees  
 Substrate: Sand/soil/cobbles/bedrock  
 Channel type: Single  
 Surrounding land use: Recreation  
 Ecological Importance: Medium

Dominant 5 species:

- 1 **Combretum erythrophyllum**
- 2 *Acacia mearnsii*
- 3 *Phragmites* sp.
- 4 *Euclea crispa*
- 5 *Diospyros lycioides*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         | X                  | X                   |             | X   | X               |             |
| Right |              |         | X                  | X                   |             | X   |                 |             |



## SITE INFORMATION

**Code:** E2  
**Province:** Gauteng  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31A  
**Locality:**  
 • Latitude (°S): 25°33.0849  
 • Longitude (°E): 28°34.0754  
 • Altitude (m.a.m.s.l): 1220  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Foothill cobble bed

**Site name:** B3ELAN-DETWE

2528DA CULLINAN



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 3
- Invertebrates: 4

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 6                          |                            |                            |                  |                   |
| FS      | 12.5                       |                            |                            |                  |                   |
| SD      | 25.5                       |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 1                          | 3         |                     |
| FS      | 2         | 3                      | 1                          | 3         |                     |
| SD      | 4         | 4                      | 3                          | 3         |                     |
| SS      | 3         | 3                      | 2                          | 1         |                     |

Species richness: 7

## RIPARIAN VEGETATION

Width of riparian zone: 60 m  
 Dominant vegetation: Trees  
 Substrate: Sand/soil/bedrock/cobbles  
 Channel type: Single/anabranching  
 Surrounding land use: Recreation/agriculture/irrigation  
 Ecological Importance: Medium

Dominant 5 species:

- 1 **Melia azedarach**
- 2 *Acacia mearnsii*
- 3 *Combretum erythrophyllum*
- 4 *Celtis africana*
- 5 *Phragmites sp.*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         | X                  | X                   |             | X   | X               |             |
| Right |              |         | X                  | X                   |             | X   |                 |             |

## SITE INFORMATION

**Code:** E3  
**Province:** Gauteng  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31C  
**Locality:**  
 • Latitude (°S): 25°25.9968  
 • Longitude (°E): 28°34.6670  
 • Altitude (m.a.m.s.l): 1200  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Foothill gravel bed

**Site name:** B3ELAN-FAIRF

2528BC MOLOTO



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 9.5                        |                            |                            |                  |                   |
| FS      | 15                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 11.5                       |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 2                          | 4         | 1                   |
| FS      | 3         | 2                      | 2                          | 4         | 1                   |
| SD      | 4         | 4                      | 4                          | 3         | 1                   |
| SS      | 2         | 4                      | 4                          | 3         | 1                   |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 50 m  
 Dominant vegetation: Grasses  
 Substrate: Cobble/sand/bedrock  
 Channel type: Anabranching  
 Surrounding land use: Livestock farming/game farming  
 Ecological importance: High

Dominant 5 species:

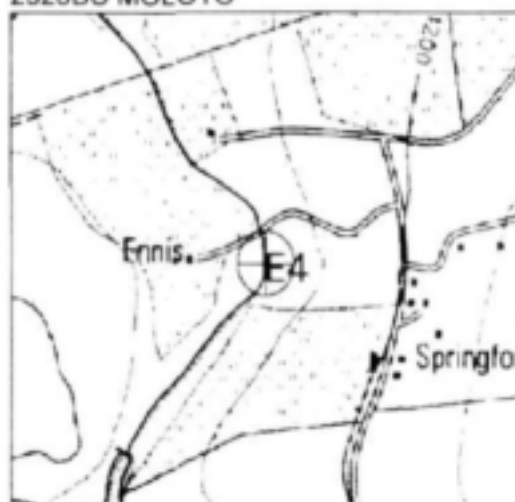
- 1 **Acacia karoo**
- 2 *Combretum erythrophyllum*
- 3 *Sesbania punicea*
- 4 *Melia azedarach*
- 5 *Rhus lanceae*

### Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    | X                   | X           | X   |                 |             |
| Right |              |         |                    | X                   | X           | X   |                 |             |

## SITE INFORMATION

**Code:** E4 **Site name:** B3ELAN-SPRIN  
**Province:** Gauteng **2528BC MOLOTO**  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31C  
**Locality:**  
     • **Latitude (°S):** 25°24.4800  
     • **Longitude (°E):** 28°34.1400  
     • **Altitude (m.a.m.s.l)** 1180  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Foothill gravel bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      | 9.5                        |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 1                          | 4         |                     |
| FS      | 2         | 1                      | 1                          | 4         |                     |
| SD      | 4         | 4                      | 3                          | 2         |                     |
| SS      | 1         | 1                      | 3                          | 2         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 50 m  
 Dominant vegetation: Grasses  
 Substrate: Sand/soil/cobbles  
 Channel type: Single  
 Surrounding land use: Livestock farming/game farming  
 Ecological importance: High

Dominant 5 species:

- 1 **Combretum erythrophyllum**
- 2 *Rhus lanceae*
- 3 *Acacia karoo*
- 4 *Melia azedarach*
- 5 *Diospyros lycioides*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            |         | X                  | X                   |             |     |                 |             |
| Right | X            |         | X                  | X                   |             |     |                 |             |

## SITE INFORMATION

**Code:** E5 **Site name:** B3ELAN-UITVL  
**Province:** Northern Province **2528AD HAMMANSKRAAL**  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31C  
**Locality:**  
 • Latitude (°S): 25°18.1842  
 • Longitude (°E): 28°27.8251  
 • Altitude (m.a.m.s.l): 1052  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Foothill cobble bed



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 4

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 11.5                       |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      | 13.5                       |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 3                          | 3         |                     |
| FS      | 3         | 2                      | 1                          | 3         |                     |
| SD      | 4         | 4                      | 3                          | 2         |                     |
| SS      | 3         | 4                      | 3                          | 2         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 40 m  
 Dominant vegetation: Trees/forbs/grasses  
 Substrate: Sand/soil/cobbles  
 Channel type: Single  
 Surrounding land use: Game farming/livestock farming  
 Ecological importance: Medium

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Melia azedarach*
- 3 *Sesbania punicea*
- 4 *Acacia dealbata*
- 5 *Heteropyxis natalensis*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    | X                   | X           | X   |                 |             |
| Right |              |         |                    | X                   | X           | X   |                 |             |



## SITE INFORMATION

**Code:** E6  
**Province:** Northern Province  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31D  
**Locality:**  
 • Latitude (°S): 25°11.3418  
 • Longitude (°E): 28°37.8178  
 • Altitude (m.a.m.s.l): 980  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Foothill gravel bed

**Site name:** B3ELAN-ROOIK

2528BA RUST DE WINTER



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 1
- Invertebrates: 1

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 11                         |                            |                            |                  |                   |
| FS      |                            | 4                          |                            |                  |                   |
| SD      | 7                          |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 1                      | 1                          | 1         |                     |
| SD      | 4         | 3                      |                            |           |                     |
| SS      | 2         | 4                      | 3                          | 1         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 30 m  
 Dominant vegetation: Trees/grasses  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming/informal settlement  
 Ecological importance: Medium

Dominant 5 species:

- 1 **Acacia karoo**
- 2 *Combretum erythrophyllum*
- 3 Reeds
- 4 *Maytenus heterophylla*
- 5 *Ziziphus mucronata*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         | X                  | X                   | X           | X   | X               |             |
| Right |              |         | X                  | X                   | X           | X   |                 |             |

## SITE INFORMATION

**Code:** E7  
**Province:** Mpumalanga  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31F  
**Locality:**  
     • **Latitude (°S):** 25°08.6766  
     • **Longitude (°E):** 28°46.0614  
     • **Altitude (m.a.m.s.l)** 960  
**Ecoregion:** Bushveld Basin  
**Stream classification:** Foothill gravel bed

**Site name:** B3ELAN-BEZUI  
 2528BB MAKOMETSANE



## SASS4 (Not sampled)

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

**Ecological Importance**

- **Habitat:**
- **Invertebrates:**

**Historical information**

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 | 2                             |                               |                     |                      |
| SS      | 19.5                            |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      | 4         | 2                         | 3                                | 3         |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 5

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

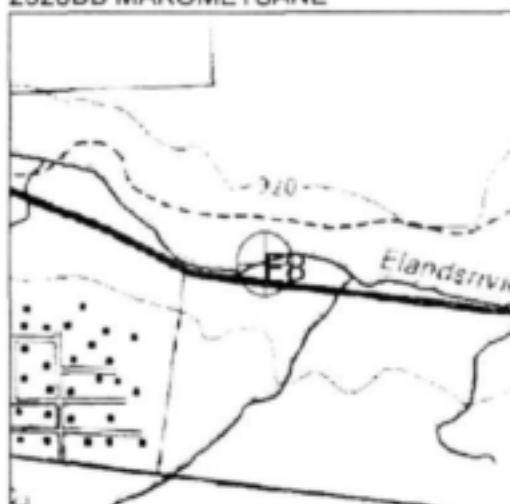
- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** E8 **Site name:** B3ELAN-RHENO  
**Province:** Mpumalanga 2528BB MAKOMETSANE  
**Sampling date:** June 1999  
**River:** Elands  
**Quaternary catchment:** B31G  
**Locality:**  
 • Latitude (°S): 25°06.9000  
 • Longitude (°E): 28°57.4200  
 • Altitude (m.a.m.s.l): 920  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort: (Not recorded)

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 2                      | 2                          | 3         |                     |
| SD      | 3         | 4                      | 3                          | 3         |                     |
| SS      | 3         | 4                      | 3                          | 3         |                     |

Species richness: 5

## RIPARIAN VEGETATION

Width of riparian zone: 30 m  
 Dominant vegetation: Trees/grasses  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming/informal settlement  
 Ecological importance: Medium

Dominant 5 species:

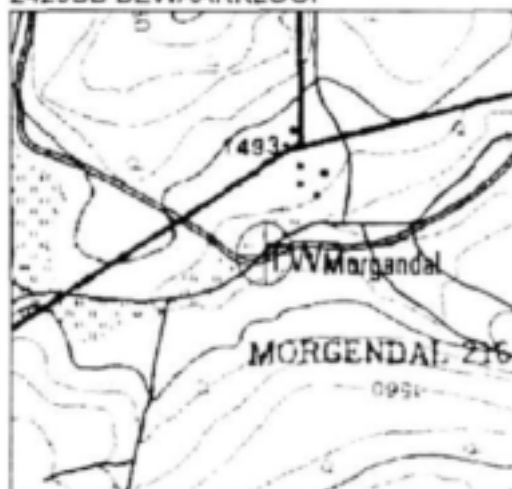
- 1 **Acacia karoo**
- 2 *Combretum erythrophyllum*
- 3 Reeds
- 4 *Maytenus heterophylla*
- 5 *Ziziphus mucronata*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         | X                  | X                   | X           | X   | X               |             |
| Right |              |         | X                  | X                   | X           | X   |                 |             |

## SITE INFORMATION

|                               |                      |                                |
|-------------------------------|----------------------|--------------------------------|
| <b>Code:</b>                  | TW                   | <b>Site name:</b> B7TONG-BEWAA |
| <b>Province:</b>              | Northern Province    | 2429BB BEWAARKLOOF             |
| <b>Sampling date:</b>         | <b>Not available</b> |                                |
| <b>River:</b>                 | Tongwane             |                                |
| <b>Quaternary catchment:</b>  | B71A                 |                                |
| <b>Locality:</b>              |                      |                                |
| • <b>Latitude (°S):</b>       | 24°03.7068           |                                |
| • <b>Longitude (°E):</b>      | 30°01.8384           |                                |
| • <b>Altitude (ma.m.s.l)</b>  | 1480                 |                                |
| <b>Ecoregion:</b>             | Central Highlands    |                                |
| <b>Stream classification:</b> | Mountain stream      |                                |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 4

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

### **FISH (Not sampled)**

**Fish habitat and sampling effort:**

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

**Fish habitat and cover ratings:**

| Habitat | Abunce | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|--------|------------------------|----------------------------|-----------|---------------------|
| FD      |        |                        |                            |           |                     |
| FS      |        |                        |                            |           |                     |
| SD      |        |                        |                            |           |                     |
| SS      |        |                        |                            |           |                     |

**Species richness:**

### **RIPARIAN VEGETATION (Not sampled)**

**Width of riparian zone:**

**Dominant vegetation:**

**Substrate:**

**Channel type:**

**Surrounding land use:**

**Ecological importance:**

**Dominant 5 species:**

- 1
- 2
- 3
- 4
- 5

**Biotopes:**

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** MP1 **Site name:** B7MOHL-WATER  
**Province:** Northern Province **2430AA THE DOWNS**  
**Sampling date:** *August 1999*  
**River:** Mohlapitse  
**Quaternary catchment:** B71C  
**Locality:**  
 • Latitude (°S): 24°03.7122  
 • Longitude (°E): 30°01.8385  
 • Altitude (m.a.m.s.l): 980  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

### FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of pulls) | Large seine<br>(no. of pulls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness:

### RIPARIAN VEGETATION (Not sampled)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:                   1  
                                                 2  
                                                 3  
                                                 4  
                                                 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MP2  
**Province:** Northern Province  
**Sampling date:** August 1999  
**River:** Mohlapitse  
**Quaternary catchment:** B71C  
**Locality:**  
 • Latitude (°S): 24°05.7534  
 • Longitude (°E): 30°06.0357  
 • Altitude (m.a.m.s.l): 820  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream

**Site name:** B7MOHL-BADEN  
 2430AA THE DOWNS



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information (Not available)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

### FISH (*Not sampled*)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness:

### RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MP3  
**Province:** Northern Province  
**Sampling date:** *August 1999*  
**River:** Mohlapiitse  
**Quaternary catchment:** B71C  
**Locality:**  
 • Latitude (°S): 24°06.1938  
 • Longitude (°E): 30°07.1126  
 • Altitude (m.a.m.s.l): 800  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream

**Site name:** B7MOHL-WOLKB  
 2430AA THE DOWNS



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

### FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness:

### RIPARIAN VEGETATION (Not sampled)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

1  
2  
3  
4  
5

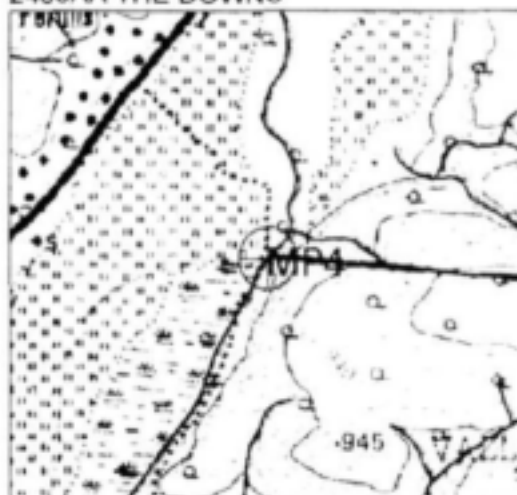
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MP4  
**Province:** Northern Province  
**Sampling date:** *August 1999*  
**River:** Mohlapiitse  
**Quaternary catchment:** B71C  
**Locality:**  
 • Latitude (°S): 24°07.5744  
 • Longitude (°E): 30°06.8293  
 • Altitude (m.a.m.s.l): 760  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B7MOHL-VALLI  
 2430AA THE DOWNS



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 4

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

### FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness:

### RIPARIAN VEGETATION (Not sampled)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

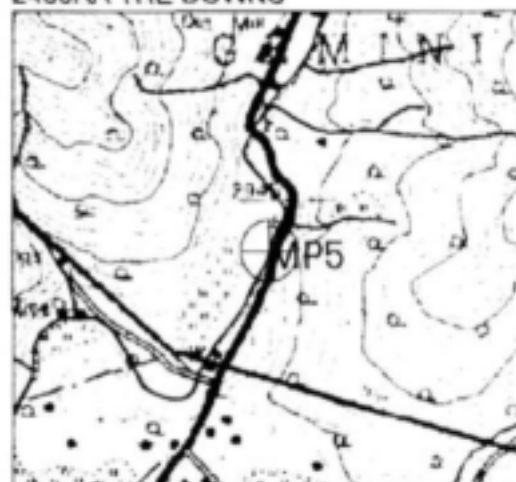


## SITE INFORMATION

**Code:** MP5  
**Province:** Northern Province  
**Sampling date:** *August 1999*  
**River:** Moliapitse  
**Quaternary catchment:** B71C  
**Locality:**  
 • Latitude (°S): 24°10.0974  
 • Longitude (°E): 30°06.3366  
 • Altitude (m.a.m.s.l): 740  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B7MOHL-GEMIN

2430AA THE DOWNS



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 4

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

### FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness:

### RIPARIAN VEGETATION (Not sampled)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

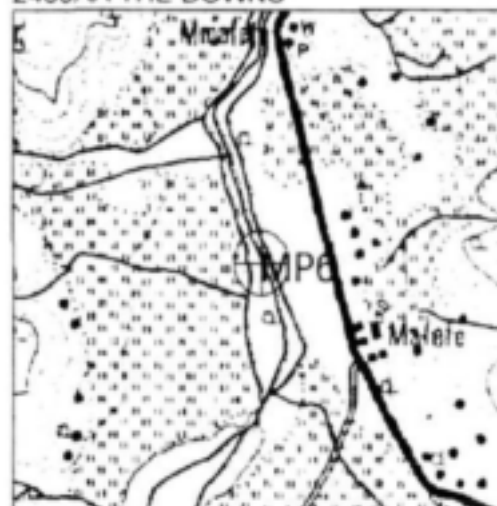
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MP6  
**Province:** Northern Province  
**Sampling date:** *August 1999*  
**River:** Mohlapitse  
**Quaternary catchment:** B71D  
**Locality:**  
 • **Latitude (°S):** 24°11.4582  
 • **Longitude (°E):** 30°05.7457  
 • **Altitude (m.a.m.s.l)** 700  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B7MOHL-MAFEF  
 2430AA THE DOWNS



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 24.5                            |                               |                               |                     |                      |
| FS      | 1.5                             |                               |                               |                     |                      |
| SD      | 13                              |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 2                                | 4         |                        |
| FS      | 1         | 2                         | 1                                | 2         |                        |
| SD      | 2         | 4                         | 3                                | 2         |                        |
| SS      | 1         | 2                         |                                  | 2         |                        |

Species richness: 10

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

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**Code:** BK **Site name:** B4BEET-WATER  
**Province:** Mpumalanga **2430CD BUFFELSVLEI**  
**Sampling date:** July 1999  
**River:** Beetgekraalspruit  
**Quaternary catchment:** B42G  
**Locality:**  
 • **Latitude (°S):** 24°57.4200  
 • **Longitude (°E):** 30°18.1200  
 • **Altitude (m.a.m.s.l)** 980  
**Ecoregion:** Central highlands  
**Stream classification:** Mountain stream



## SASS4

---

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 16                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 9                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 4         | 3                      | 2                          | 4         |                     |
| SD      | 1         | 4                      | 3                          | 3         |                     |
| SS      | 3         | 3                      | 2                          | 4         |                     |

Species richness: 9

## RIPARIAN VEGETATION

Width of riparian zone: 52 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Citrus farming  
 Ecological Importance: Low

Dominant 5 species:

- 1 **Arundo donax**
- 2 *Acacia caffra*
- 3 *Celtis africana*
- 4 *Acacia dealbata*
- 5 *Jacaranda mimosifolia*

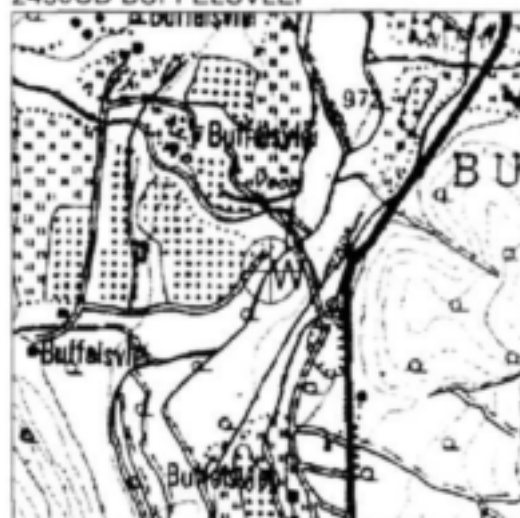
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            |         |                    |                     | X           | X   |                 |             |
| Right | X            |         |                    |                     | X           | X   |                 |             |

## SITE INFORMATION

**Code:** WV  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Waterval  
**Quaternary catchment:** B42G  
**Locality:**  
 • Latitude ("S): 24°53.4582  
 • Longitude ("E): 30°18.5922  
 • Altitude (m.a.m.s.l): 960  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill-cobble Bed

**Site name:** B4WATE-HADED  
 2430CD BUFFELSVLEI



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 25                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 13                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 1                          | 4         |                     |
| FS      | 3         | 3                      | 2                          | 4         |                     |
| SD      | 3         | 3                      | 3                          | 4         |                     |
| SS      | 2         | 3                      | 2                          | 4         |                     |

Species richness: 7

## RIPARIAN VEGETATION

Width of riparian zone: 75 m  
 Dominant vegetation: Trees/grasses  
 Substrate: Cobbles/soil  
 Channel type: Single  
 Surrounding land use: Livestock farming/citrus farming  
 Ecological importance: Medium

Dominant 5 species:

- 1 *Arundo donax*
- 2 *Melia azedarach*
- 3 *Combretum erythrophyllum*
- 4 *Sesbania punicea*
- 5 *Ficus sur*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            |         | X                  |                     | X           | X   | X               |             |
| Right | X            | X       | X                  | X                   | X           | X   |                 |             |



## SITE INFORMATION

**Code:** SP1  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Spekboom  
**Quaternary catchment:** B42D  
**Locality:**  
 • Latitude (°S): 25°01.9800  
 • Longitude (°E): 30°32.8800  
 • Altitude (m.a.m.s.l): 1420  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** B4SPEK-FINSB

2530BA LONG TOM PASS



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 3

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 2.5                        |                            |                            |                  |                   |
| FS      | 19                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 2                      | 2                          | 3         |                     |
| FS      | 4         | 3                      | 3                          | 4         |                     |
| SD      | 1         |                        |                            | 3         |                     |
| SS      | 1         |                        | 2                          | 3         |                     |

### Species richness:

## RIPARIAN VEGETATION

Width of riparian zone: 35 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/cobbles  
 Channel type: Single  
 Surrounding land use: Game farming/trout fishing  
 Ecological Importance: High

Dominant 5 species:
 

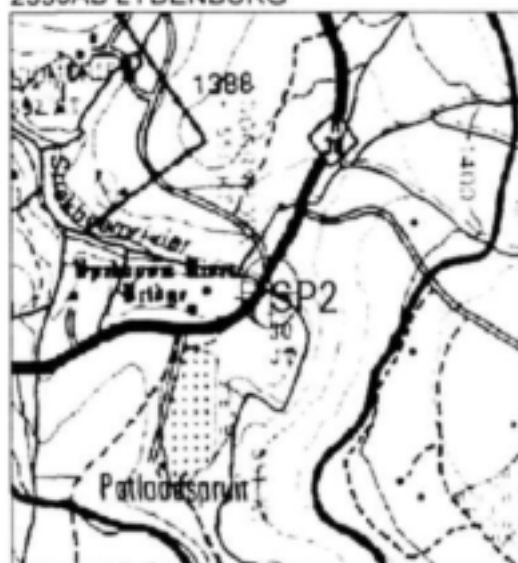
- 1 *Combretum erythrophyllum*
- 2 *Rhamnus prinoides*
- 3 *Salix mucronata*
- 4 *Acacia karoo*
- 5 *Leucosidea sericea*

### Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            | X       | X                  | X                   | X           |     |                 |             |
| Right | X            |         | X                  | X                   | X           |     |                 |             |

## SITE INFORMATION

**Code:** SP2 **Site name:** B4SPEK-LEIDE  
**Province:** Mpumalanga **2530AB LYDENBURG**  
**Sampling date:** July 1999  
**River:** Spekboom  
**Quaternary catchment:** B42D  
**Locality:**  
 • Latitude (°S): 25°00.5142  
 • Longitude (°E): 30°30.0118  
 • Altitude (m.a.m.s.l): 1320  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 14                              |                               |                               |                     |                      |
| SD      | 4                               |                               |                               |                     |                      |
| SS      | 15                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 0         |                           |                                  |           |                        |
| FS      | 2         | 3                         | 3                                | 4         |                        |
| SD      | 1         | 1                         | 1                                | 3         |                        |
| SS      | 4         | 3                         | 2                                | 4         |                        |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 13 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/bedrock/cobbles  
 Channel type: Single  
 Surrounding land use: Natural  
 Ecological Importance: High

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Salix mucronata*
- 3 *Acacia caffra*
- 4 *Euclea crispa*
- 5 *Maytenus heterophylla*

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  | X               | X       | X                        |                           | X              |     |                        |                |
| Right | X               | X       | X                        |                           | X              |     |                        |                |

## SITE INFORMATION

**Code:** SP3  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Spekboom  
**Quaternary catchment:** B42E  
**Locality:**  
 • Latitude (°S): 24°50.2200  
 • Longitude (°E): 30°23.3494  
 • Altitude (m.a.m.s.l): 880  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B4SPEK-DEBAD  
 2430CD BUFFELSVLEI



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 14                              |                               |                               |                     |                      |
| FS      | 21                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 11                              |                               |                               |                     |                      |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 3                         | 4                                | 4         |                        |
| FS      | 3         | 3                         | 4                                | 4         |                        |
| SD      | 3         | 4                         | 4                                | 4         |                        |
| SS      | 2         | 1                         | 2                                | 4         |                        |

Species richness: 11

## RIPARIAN VEGETATION

Width of riparian zone: 35 m  
 Dominant vegetation: Trees/grasses  
 Substrate: Soil/cobbles  
 Channel type: Anabranching  
 Surrounding land use: Livestock farming/game farming  
 Ecological importance: High

Dominant 5 species:
 

- 1 *Ficus sycomorus*
- 2 *Psidium guajava*
- 3 *Acacia robusta*
- 4 *Acacia nilotica*
- 5 *Maytenus heterophylla*

### Biotopes:

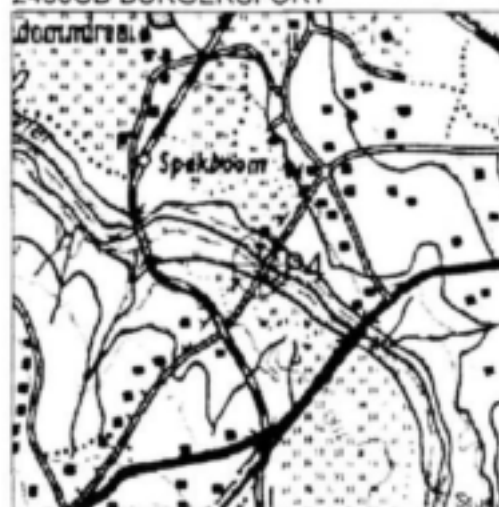
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 | X       |                          | X                         |                | X   | X                      |                |
| Right |                 | X       |                          |                           |                | X   |                        |                |

## SITE INFORMATION

**Code:** SP4  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Spekboom  
**Quaternary catchment:** B42H  
**Locality:**  
 • Latitude (°S): 24°39.4122  
 • Longitude (°E): 30°19.9724  
 • Altitude (m.a.m.s.l): 700  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill cobble bed

**Site name:** B4SPEK-BURGE

2430CB BURGERSFORT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 20                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 4                         | 1                                | 4         | 4                      |
| FS      | 1         | 4                         | 1                                | 4         | 4                      |
| SD      | 4         | 4                         | 4                                | 1         | 4                      |
| SS      | 1         | 4                         | 4                                | 1         | 4                      |

Species richness: 7

## RIPARIAN VEGETATION

Width of riparian zone: 70 m  
 Dominant vegetation: Reeds  
 Substrate: Soil/cobbles  
 Channel type: Single/anabranching  
 Surrounding land use: Livestock farming/irrigation/rural farming  
 Ecological importance: Low

Dominant 5 species:
 

- 1 *Acacia karoo*
- 2 *Syzygium cordatum*
- 3 *Nuxia oppositifolia*
- 4 *Combretum erythrophyllum*
- 5 *Ficus sycomorus*

### Biotopes:

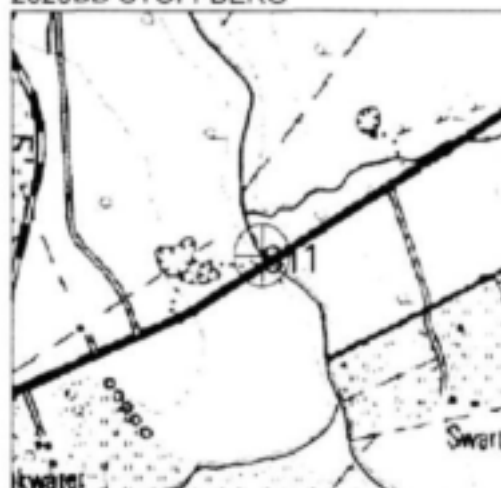
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  | X               |         |                          |                           | X              |     | X                      |                |
| Right | X               |         |                          |                           | X              |     |                        |                |



## SITE INFORMATION

**Code:** ST1  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Steelpoort  
**Quaternary catchment:** B41B  
**Locality:**  
 • Latitude (°S): 25°22.9274  
 • Longitude (°E): 29°50.2807  
 • Altitude (m.a.m.s.l): 1440  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B4STEE-STOFF  
 2529BD STOFFBERG



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       |         | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 15                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 17                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 0         |                        |                            |           |                     |
| FS      | 3         | 3                      | 1                          | 4         | 2                   |
| SD      | 0         |                        |                            |           |                     |
| SS      | 3         | 3                      | 2                          | 4         | 2                   |

Species richness: 2

## RIPARIAN VEGETATION

Width of riparian zone: 10 m  
 Dominant vegetation: Trees  
 Substrate: Soil/bedrock  
 Channel type: Single  
 Surrounding land use: Livestock farming/agriculture  
 Ecological importance: Low

Dominant 5 species:

- 1 *Acacia mearnsii*
- 2 *Salix mucronata*
- 3 *Rubus sp.*
- 4 *Diospyros lycioides*
- 5 *Pyracantha augustifolia*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    | X                   | X           |     |                 |             |
| Right |              |         |                    | X                   | X           |     |                 |             |

## SITE INFORMATION

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**Code:** ST2  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Steelpoort  
**Quaternary catchment:** B41D  
**Locality:**  
 • Latitude (°S): 25°06.0324  
 • Longitude (°E): 29°50.8085  
 • Altitude (m.a.m.s.l): 980  
**Ecoregion:** Central Highlands  
**Stream classification:** Rejuvenated foothill

**Site name:** B4STEE-TIGER

2529BB ROOSSENEKAL



## SASS4

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### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 18.5                       |                            |                            |                  |                   |
| SD      | 13.5                       |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      | 1                          | 4         |                     |
| FS      | 4         | 2                      | 1                          | 4         |                     |
| SD      | 2         | 1                      | 2                          | 4         |                     |
| SS      | 3         | 1                      | 1                          | 4         |                     |

Species richness: 7

## RIPARIAN VEGETATION

Width of riparian zone: 43 m  
 Dominant vegetation: Trees  
 Substrate: Soil/cobbles/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Morus alba*
- 2 *Combretum erythrophyllum*
- 3 *Celtis africana*
- 4 *Acacia galpinii*
- 5 *Maytenus heterophylla*

Biotopes:

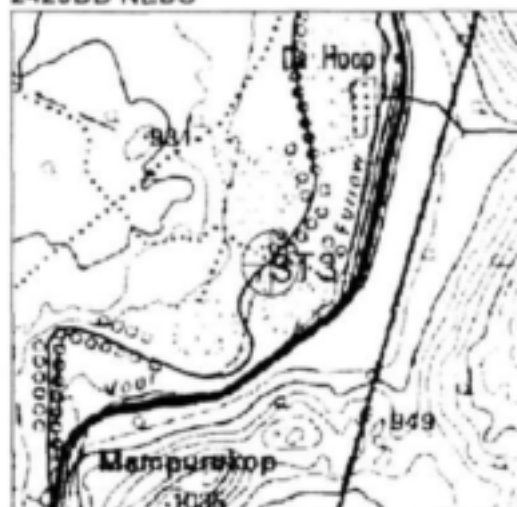
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    | X                   | X           | X   |                 |             |
| Right |              | X       |                    | X                   | X           | X   |                 |             |

## SITE INFORMATION

**Code:** ST3  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Steelpoort  
**Quaternary catchment:** B41H  
**Locality:**  
 • Latitude (°S): 24°56.9976  
 • Longitude (°E): 29°57.9461  
 • Altitude (m.a.m.s.l): 860  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B4STEE-DEHOO

2429DD NEBO



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 8.5                        |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      | 3.5                        |                            |                            |                  |                   |
| SS      | 6.5                        |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 3                      | 3                          | 3         |                     |
| FS      | 4         | 3                      | 3                          | 4         |                     |
| SD      | 1         | 3                      | 2                          | 3         |                     |
| SS      | 3         | 2                      | 2                          | 4         |                     |

Species richness: 8

## RIPARIAN VEGETATION

Width of riparian zone: 25 m  
 Dominant vegetation: Trees  
 Substrate: Soil/bedrock/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming/old lands  
 Ecological importance: High

Dominant 5 species:
 

- 1 *Acacia galpinii*
- 2 *Ziziphus mucronata*
- 3 *Gymnosporia senegalensis*
- 4 *Combretum erythrophyllum*
- 5 *Diospyros lycioides*

### Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     | X           | X   | X               |             |
| Right | X            |         | X                  | X                   | X           |     |                 |             |

## SITE INFORMATION

**Code:** ST4  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Steelpoort  
**Quaternary catchment:** B41H  
**Locality:**  
 • Latitude (°S): 24°53.6022  
 • Longitude (°E): 30°01.0237  
 • Altitude (m.a.m.s.l): 820  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B4STEE-STEEL

2430CC KENNEDY'S VALLEY



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 10.5                       |                            |                            |                  |                   |
| FS      | 11                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 15.5                       |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 3                      | 2                          | 4         | 1                   |
| FS      | 4         | 2                      | 2                          | 3         | 1                   |
| SD      | 0         |                        |                            |           |                     |
| SS      | 2         | 2                      | 2                          | 2         |                     |

Species richness: 9

## RIPARIAN VEGETATION

Width of riparian zone: 50 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming/agriculture/water abstraction  
 Ecological importance: Low

Dominant 5 species:
 

- 1 *Sesbania punicea*
- 2 *Combretum erythrophyllum*
- 3 *Acacia galpinii*
- 4 *Melia azedarach*
- 5 *Maytenus heterophylla*

### Biotopes:

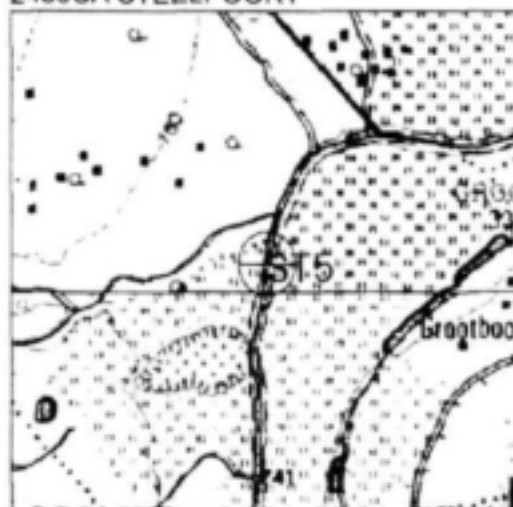
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            |         |                    | X                   | X           | X   |                 |             |
| Right | X            | X       | X                  | X                   | X           | X   |                 |             |



## SITE INFORMATION

**Code:** ST5  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Steelpoort  
**Quaternary catchment:** B41J  
**Locality:**  
 • Latitude (°S): 24°44.9400  
 • Longitude (°E): 30°09.6599  
 • Altitude (m.a.m.s.l): 740  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill gravel bed

**Site name:** B4STEE-EERST  
 2430CA STEELPOORT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information

- Time period: 1999
- Seasons sampled: Autumn
- Number of visits: 1
- Organisations: AFRIDEV

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 21                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks & root<br>wads | Substrate | Aquatic<br>macrophyte<br>s |
|---------|-----------|---------------------------|----------------------------------|-----------|----------------------------|
| FD      | 1         | 3                         | 3                                | 2         | 1                          |
| FS      | 4         | 3                         | 2                                | 3         | 1                          |
| SD      |           |                           |                                  |           |                            |
| SS      |           |                           |                                  |           |                            |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 32 m  
 Dominant vegetation: Reeds  
 Substrate: Soil  
 Channel type: Single/braided  
 Surrounding land use: Irrigation/farming  
 Ecological Importance: Low

Dominant 5 species:

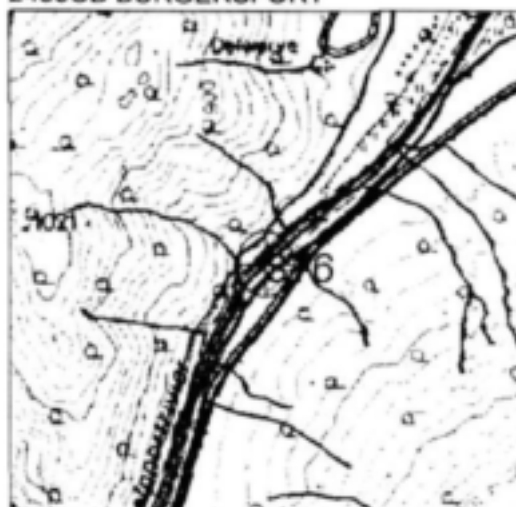
- 1 *Salix mucronata*
- 2 *Sesbania punicea*
- 3 *Sesbania sesban*
- 4 *Morus alba*
- 5 *Acacia karoo*

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  | X               |         | X                        | X                         | X              | X   | X                      |                |
| Right | X               |         | X                        | X                         | X              | X   |                        |                |

## SITE INFORMATION

Code: ST6 Site name: B4STEE-FRAAI  
Province: Mpumalanga 2430CB BURGERSFORT  
Sampling date: September 1999  
River: Steelpoort  
Quaternary catchment: B41J  
Locality:  
• Latitude (°S): 24°40.7790  
• Longitude (°E): 30°15.7667  
• Altitude (m.a.m.s.l): 700  
Ecoregion: Central Highlands  
Stream classification: Foothill gravel bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 25.5                            |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 6                               |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 0         |                           |                                  |           |                        |
| FS      | 3         | 3                         | 3                                | 4         | 1                      |
| SD      | 0         |                           |                                  |           |                        |
| SS      | 4         | 3                         | 3                                | 2         |                        |

Species richness: 8

## RIPARIAN VEGETATION

Width of riparian zone: 21 m  
 Dominant vegetation: Trees/shrubs  
 Substrate: Soil/cobbles/bedrock/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological importance: High

Dominant 5 species:
 

- 1 *Acacia galpinii*
- 2 *Combretum erythrophyllum*
- 3 *Salix mucronata*
- 4 *Sesbania punicea*
- 5 *Gymnosporia senegalensis*

Biotopes:

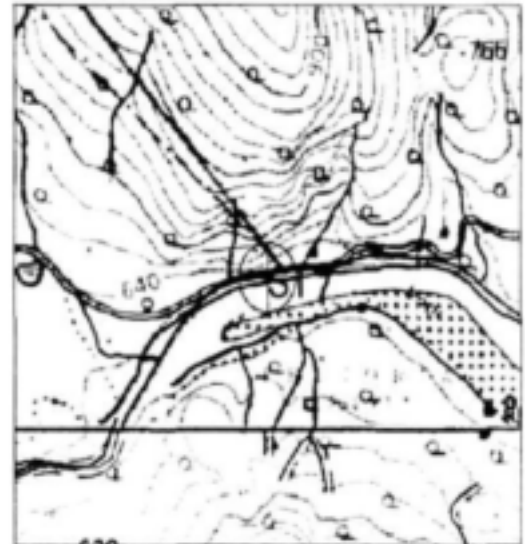
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         | X                        | X                         | X              | X   | X                      |                |
| Right | X               | X       | X                        | X                         | X              | X   |                        |                |

## SITE INFORMATION

**Code:** ST7  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Steelpoort  
**Quaternary catchment:** B41K  
**Locality:**  
 • **Latitude (°S):** 24°29.7192  
 • **Longitude (°E):** 30°24.0019  
 • **Altitude (m.a.m.s.l):** 620  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Rejuvenated foothill

**Site name:** B4STEE-PRETO

2430AD PENGGE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information

- **Time period:** 1999
- **Seasons sampled:** Autumn
- **Number of visits:** 1
- **Organisations:** AFRIDEV

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 12.5                       |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      | 4                          |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 3                      | 3                          | 4         |                     |
| FS      | 4         | 3                      | 3                          | 4         |                     |
| SD      | 1         | 3                      | 3                          | 2         |                     |
| SS      | 4         | 3                      | 3                          | 2         |                     |

Species richness: 6

## RIPARIAN VEGETATION

Width of riparian zone: 100 m  
 Dominant vegetation: Trees/shrubs/grasses  
 Substrate: Soil/sand/cobbles/bedrock  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: Medium

Dominant 5 species:
 

- 1 *Ficus sycomorus*
- 2 *Combretum erythrophyllum*
- 3 *Melia azedarach*
- 4 *Croton megalobotrys*
- 5 *Acacia galpinii*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  | X            | X       | X                  | X                   | X           | X   |                 |             |
| Right | X            | X       |                    | X                   |             | X   |                 |             |

## SITE INFORMATION

**Code:** TR  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Treur  
**Quaternary catchment:** B60C  
**Locality:**  
 • Latitude (°S): 24°42.5490  
 • Longitude (°E): 30°49.0708  
 • Altitude (m.a.m.s.l): 1080  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill cobble bed

**Site name:** B6TREU-R532B

2430DB BOURKES LUCK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 20.5                       |                            |                            |                  |                   |
| FS      | 9                          |                            |                            |                  |                   |
| SD      | 6                          |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 3                          | 4         |                     |
| FS      | 2         | 1                      | 1                          | 4         |                     |
| SD      | 4         | 4                      | 4                          | 3         |                     |
| SS      | 2         | 1                      | 2                          | 4         |                     |

Species richness: 4

## RIPARIAN VEGETATION

Width of riparian zone: 45 m  
 Dominant vegetation: Shrubs  
 Substrate: Soil/cobbles/sediment  
 Channel type: Single  
 Surrounding land use: Forestry  
 Ecological importance: Medium

Dominant 5 species:
 

- 1 *Cliffortia linearifolia*
- 2 *Leucosidea sericea*
- 3 *Rhus montana*
- 4 *Phragmites* sp.
- 5 *Acacia* sp.

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              | X       |                    | X                   | X           | X   | X               |             |
| Right |              | X       |                    | X                   | X           | X   |                 |             |



## SITE INFORMATION

**Code:** BC  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Belvedere Creek  
**Quaternary catchment:** B60D  
**Locality:**  
 • Latitude (°S): 24°39.2502  
 • Longitude (°E): 30°50.2461  
 • Altitude (m.a.m.s.l): 1000  
**Ecoregion:** Great escarpment mountains  
**Stream classification:** Rejuvenated cascades gorge

**Site name:** B6BELV-BELVE

2430DB BOURKES LUCK



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 2         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 3
- Invertebrates: 3

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 3                               |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 7                               |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 1                         | 3                                | 4         |                        |
| FS      | 3         | 1                         | 2                                | 4         |                        |
| SD      | 3         | 1                         | 2                                | 4         |                        |
| SS      | 2         | 1                         | 2                                | 4         |                        |

Species richness: 1

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

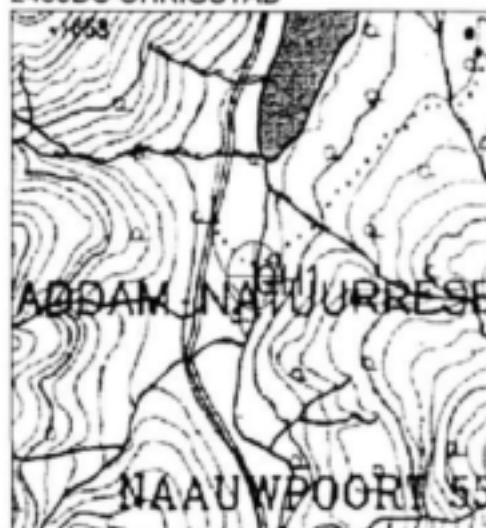
## SITE INFORMATION

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**Code:** OH1  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Ohrigstad  
**Quaternary catchment:** B60E  
**Locality:**  
 • Latitude (°S): 24°57.2400  
 • Longitude (°E): 30°37.8600  
 • Altitude (m.a.m.s.l): 1380  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** B6OHRI-OHRIG

2430DC OHRIGSTAD



## SASS4

---

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter & Spring
- Number of visits: 5
- Organisations: IWQS

### FISH (*Not sampled*)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abunce | Overhanging<br>vegetation | Undercut<br>banks & root<br>wads | Substrate | Aquatic<br>macrophytes |
|---------|--------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |        |                           |                                  |           |                        |
| FS      |        |                           |                                  |           |                        |
| SD      |        |                           |                                  |           |                        |
| SS      |        |                           |                                  |           |                        |

Species richness:

### RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** OH2  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Ohrigstad  
**Quaternary catchment:** B60F  
**Locality:**  
 • Latitude (°S): 24°53.4558  
 • Longitude (°E): 30°35.8561  
 • Altitude (m.a.m.s.l): 1260  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** B6OHRI-KRANS  
 2430DC OHRIGSTAD



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 13                         |                            |                            |                  |                   |
| FS      | 11                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 4                      | 3                          | 3         | 1                   |
| FS      | 4         | 4                      | 3                          | 3         | 1                   |
| SD      | 2         | 4                      | 3                          | 2         | 1                   |
| SS      | 2         | 4                      | 3                          | 2         | 1                   |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 55 m  
 Dominant vegetation: Reeds  
 Substrate: Soil/cobbles  
 Channel type: Braided  
 Surrounding land use: Agriculture/national road  
 Ecological Importance: Not available

Dominant 5 species:
 

- 1 *Salix mucronata*
- 2 *Combretum erythrophyllum*
- 3 *Diospyros lycioides*
- 4 Not available
- 5 Not available

### Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     | X               | X           |
| Right |              |         |                    |                     |             |     |                 | X           |

## SITE INFORMATION

**Code:** OH3  
**Province:** Mpumalanga  
**Sampling date:** September 1999  
**River:** Ohrigstad  
**Quaternary catchment:** B60H  
**Locality:**

- **Latitude (°S):** 24°32.2992
- **Longitude (°E):** 30°45.9811
- **Altitude (m.a.m.s.l)** 680

**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Rejuvenated foothill

**Site name:** B6OHRI-BLYDE  
2430BD HOEDSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

### FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness:

### RIPARIAN VEGETATION

Width of riparian zone: 13 m  
 Dominant vegetation: Trees  
 Substrate: Cobbles/sediment/soil/bedrock  
 Channel type: Single  
 Surrounding land use: Nature reserve  
 Ecological Importance: High

Dominant 5 species:

- 1 *Breonadia salicina*
- 2 *Syzygium cordatum*
- 3 *Dalbergia armata*
- 4 *Acacia nigrescens*
- 5 *Ficus sycomorus*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     | X           |     |                 |             |
| Right |              |         |                    |                     | X           |     |                 |             |



## SITE INFORMATION

|                                                                                                                                                                               |                            |                                                                                    |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------|--------------|
| <b>Code:</b>                                                                                                                                                                  | BL1                        | <b>Site name:</b>                                                                  | B6BLYD-GROOT |
| <b>Province:</b>                                                                                                                                                              | Mpumalanga                 | 2430DC OHRIGSTAD                                                                   |              |
| <b>Sampling date:</b>                                                                                                                                                         | July 1999                  |  |              |
| <b>River:</b>                                                                                                                                                                 | Blyde                      |                                                                                    |              |
| <b>Quaternary catchment:</b>                                                                                                                                                  | B60A                       |                                                                                    |              |
| <b>Locality:</b>                                                                                                                                                              |                            |                                                                                    |              |
| <ul style="list-style-type: none"> <li>• <b>Latitude (°S):</b> 24°55.9734</li> <li>• <b>Longitude (°E):</b> 30°44.8588</li> <li>• <b>Altitude (m.a.m.s.l)</b> 1300</li> </ul> |                            |                                                                                    |              |
| <b>Ecoregion:</b>                                                                                                                                                             | Great Escarpment Mountains |                                                                                    |              |
| <b>Stream classification:</b>                                                                                                                                                 | Foothill-cobble Bed        |                                                                                    |              |

## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 4

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 5
- **Organisations:** IWQS

### FISH (*Not sampled*)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness:

### RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

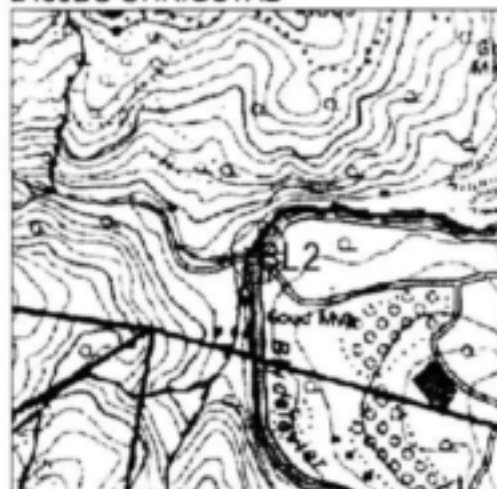
## SITE INFORMATION

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**Code:** BL2  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Blyde  
**Quaternary catchment:** B60A  
**Locality:**  
 • Latitude (°S): 24°54.6600  
 • Longitude (°E): 30°44.1000  
 • Altitude (m.a.m.s.l): 1260  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** B6BLYD-PONIE

2430DC OHRIGSTAD



## SASS4

---

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 9                          |                            |                            |                  |                   |
| FS      | 5                          |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 4                      | 3                          | 3         |                     |
| FS      | 2         | 3                      | 3                          | 4         |                     |
| SD      | 3         | 4                      | 4                          | 3         |                     |
| SS      | 2         | 4                      | 3                          | 4         |                     |

Species richness: 1

## RIPARIAN VEGETATION

Width of riparian zone: 25 m  
 Dominant vegetation: Grasses  
 Substrate: Soil/cobbles  
 Channel type: Single  
 Surrounding land use: Mining  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Acacia mearnsii*
- 2 *Diospyros lycioides*
- 3 *Rubus* sp.
- 4 *Salix mucronata*
- 5 *Combretum erythrophyllum*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              | X       |                    | X                   | X           | X   | X               |             |
| Right |              | X       |                    | X                   | X           | X   |                 |             |

## SITE INFORMATION

**Code:** BL3  
**Province:** Mpumalanga  
**Sampling date:** July 1999  
**River:** Blyde  
**Quaternary catchment:** B60B  
**Locality:**  
 • Latitude (°S): 24°44.0082  
 • Longitude (°E): 30°46.6780  
 • Altitude (m.a.m.s.l): 1140  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill gravel bed

**Site name:** B6BLYD-VAALH

2430DB BOURKES LUCK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 12.5                            |                               |                               |                     |                      |
| FS      | 10                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 2                         | 3                                | 4         |                        |
| FS      | 4         | 2                         | 3                                | 4         |                        |
| SD      | 3         | 3                         | 3                                | 3         |                        |
| SS      | 1         | 2                         | 2                                | 4         |                        |

Species richness: 3

## RIPARIAN VEGETATION

Width of riparian zone: 20 m  
 Dominant vegetation: Trees/grasses/reeds  
 Substrate: Soil/sand  
 Channel type: Single  
 Surrounding land use: Livestock farming/mining  
 Ecological Importance: Low

Dominant 5 species:
 

- 1 *Acacia sp.*
- 2 *Combretum erythrophyllum*
- 3 *Rubus sp.*
- 4 *Pyracantha augustifolia*
- 5 *Phragmites sp.*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

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|                               |                            |                                |
|-------------------------------|----------------------------|--------------------------------|
| <b>Code:</b>                  | BL4                        | <b>Site name:</b> B6BLYD-BELVE |
| <b>Province:</b>              | Mpumalanga                 | 2430DB BOURKES LUCK            |
| <b>Sampling date:</b>         | NDA                        |                                |
| <b>River:</b>                 | Blyde                      |                                |
| <b>Quaternary catchment:</b>  | B60D                       |                                |
| <b>Locality:</b>              |                            |                                |
| • <b>Latitude (°S):</b>       | 24°39.1908                 |                                |
| • <b>Longitude (°E):</b>      | 30°50.2448                 |                                |
| • <b>Altitude (m.a.m.s.l)</b> | 1000                       |                                |
| <b>Ecoregion:</b>             | Great Escarpment Mountains |                                |
| <b>Stream classification:</b> | Rejuvenated cascades gorge |                                |



## SASS4 (Not sampled)

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**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

**Ecological Importance**

- **Habitat:**
- **Invertebrates:**

**Historical information**

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 10                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 1                          | 4         |                     |
| FS      | 1         | 3                      | 1                          | 4         |                     |
| SD      | 2         | 3                      | 1                          | 4         |                     |
| SS      | 1         | 2                      | 1                          | 4         |                     |

Species richness: 2

## RIPARIAN VEGETATION

Width of riparian zone: 55 m  
 Dominant vegetation: Trees  
 Substrate: Boulders/soil/sand  
 Channel type: Single  
 Surrounding land use: Nature reserve  
 Ecological Importance: High

Dominant 5 species:

- 1 *Breonadia salicina*
- 2 *Syzygium cordatum*
- 3 *Acacia dealbata*
- 4 *Nuxia oppositifolia*
- 5 *Passerina falcifolia*

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              | X       | X                  |                     | X           | X   | X               |             |
| Right |              | X       | X                  |                     | X           | X   |                 |             |



## SITE INFORMATION

**Code:** BL5  
**Province:** Northern Province  
**Sampling date:** September 1999  
**River:** Blyde  
**Quaternary catchment:** B60J  
**Locality:**  
 • Latitude (°S): 24°24.5400  
 • Longitude (°E): 30°49.6301  
 • Altitude (m.a.m.s.l): 500  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated foothill

**Site name:** B6BLYD-MORIA

2430BD HOEDSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information

- Time period: 1999
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: AFRIDEV

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 43                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 21                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 4                      | 4                          | 4         |                     |
| FS      | 3         | 3                      | 3                          | 4         |                     |
| SD      |           |                        |                            |           |                     |
| SS      | 3         | 3                      | 3                          | 4         |                     |

Species richness: 13

## RIPARIAN VEGETATION

Width of riparian zone: 61 m  
 Dominant vegetation: Trees  
 Substrate: Cobbles/soil  
 Channel type: Single/anabranching  
 Surrounding land use: Citrus farming  
 Ecological Importance: High

Dominant 5 species:
 

- 1 **Breonadia salicina**
- 2 *Ficus sycomorus*
- 3 *Syzygium guineense*
- 4 *Bridelia micrantha*
- 5 *Diospyros mespiliformis*

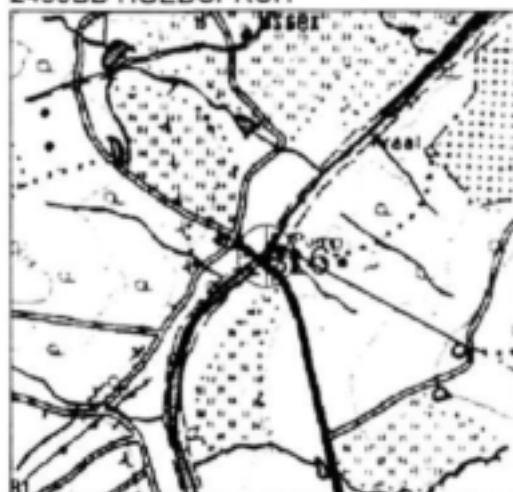
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     | X           |     |                 |             |
| Right | X            | X       |                    | X                   | X           |     |                 |             |

## SITE INFORMATION

**Code:** BL6  
**Province:** Northern Province  
**Sampling date:** September 1999  
**River:** Blyde  
**Quaternary catchment:** B60J  
**Locality:**  
 • Latitude (°S): 24°19.4898  
 • Longitude (°E): 30°49.9054  
 • Altitude (m.a.m.s.l): 460  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed

**Site name:** B6BLYD-ESSEX  
 2430BD HOEDSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT   |                               |                               |                     |                      |
|---------|------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 30                           |                               |                               |                     |                      |
| FS      | 15.5                         |                               |                               |                     |                      |
| SD      |                              |                               |                               |                     |                      |
| SS      | 2.5                          |                               |                               |                     |                      |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 4                         | 3                                | 4         |                        |
| FS      | 3         | 4                         | 3                                | 4         |                        |
| SD      | 4         | 4                         | 4                                | 2         |                        |
| SS      | 1         | 4                         | 3                                | 4         |                        |

Species richness: 14

## RIPARIAN VEGETATION

Width of riparian zone: 80 m  
 Dominant vegetation: Trees  
 Substrate: Soil/cobbles/bedrock/sand  
 Channel type: Mixed anabranching  
 Surrounding land use: Not available  
 Ecological Importance: High

Dominant 5 species:
 

- 1 *Breonadia salicina*
- 2 *Syzygium cordatum*
- 3 *Ficus sycamorus*
- 4 *Nuxia oppositifolia*
- 5 *Combretum erythrophyllum*

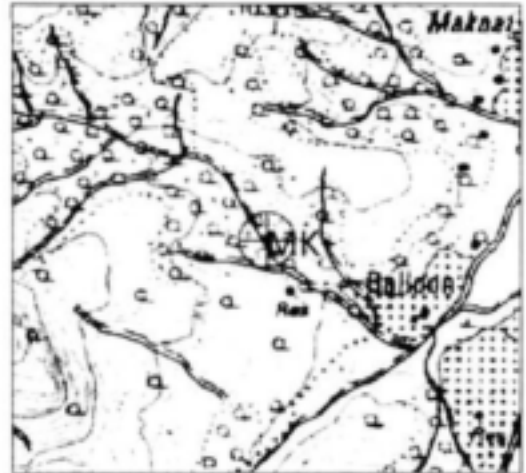
### Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  | X               | X       |                          |                           | X              |     | X                      |                |
| Right | X               | X       |                          |                           | X              |     |                        |                |

## SITE INFORMATION

**Code:** MK  
**Province:** Northern Province  
**Sampling date:** August 1999  
**River:** Makhutswi  
**Quaternary catchment:** B72A  
**Locality:**  
 • Latitude (°S): 24°11.4732  
 • Longitude (°E): 30°20.9249  
 • Altitude (m.a.m.s.l): 780  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** B7MAKH-LEKGA  
 2430AB OFCOLACO



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 20                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 2                         | 1                                | 2         |                        |
| FS      | 4         | 2                         | 1                                | 4         |                        |
| SD      | 1         | 2                         | 2                                | 2         |                        |
| SS      | 1         | 2                         | 1                                | 2         |                        |

Species richness: 4

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

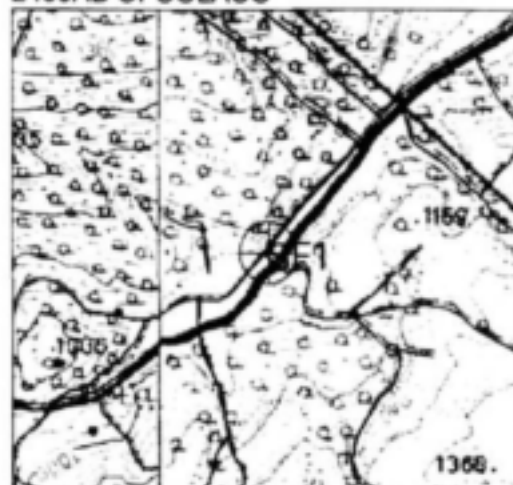
- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** SE1 **Site name:** B7GASE-MIDDL  
**Province:** Northern Province **2430AB OFCOLACO**  
**Sampling date:** August 1999  
**River:** Ga-Selati  
**Quaternary catchment:** B72F  
**Locality:**  
 • Latitude (°S): 24°09.6510  
 • Longitude (°E): 30°15.2493  
 • Altitude (m.a.m.s.l): 940  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter & Spring
- Number of visits: 4
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 5.5                        |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 2                      | 2                          | 3         |                     |
| FS      | 2         | 1                      | 1                          | 4         |                     |
| SD      | 2         | 2                      | 1                          | 2         |                     |
| SS      | 2         | 1                      | 1                          | 2         |                     |

Species richness: 2

## RIPARIAN VEGETATION

Width of riparian zone: 30 m  
 Dominant vegetation: Trees  
 Substrate: Soil/cobbles/sand  
 Channel type: Single  
 Surrounding land use: Nature reserve  
 Ecological importance: High

Dominant 5 species:

- 1 *Dalbergia armata*
- 2 *Ficus sur*
- 3 *Syzygium cordatum*
- 4 *Ochna arborea*
- 5 *Capparis tomentosa*

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

|                                                                                                                                                          |                            |                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------|
| Code:                                                                                                                                                    | SE2                        | Site name: <b>B7GASE-LEGAL</b>                                                     |
| Province:                                                                                                                                                | Northern Province          | 2430AB OFCOLACO                                                                    |
| Sampling date:                                                                                                                                           | August 1999                |  |
| River:                                                                                                                                                   | Ga-Selati                  |                                                                                    |
| Quaternary catchment:                                                                                                                                    | B72F                       |                                                                                    |
| Locality:                                                                                                                                                |                            |                                                                                    |
| <ul style="list-style-type: none"> <li>• Latitude (°S): 24°08.3538</li> <li>• Longitude (°E): 30°19.2076</li> <li>• Altitude (m.a.m.s.l): 740</li> </ul> |                            |                                                                                    |
| Ecoregion:                                                                                                                                               | Great Escarpment Mountains |                                                                                    |
| Stream classification:                                                                                                                                   | Mountain stream            |                                                                                    |

## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 10                         |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         |                        | 2                          | 4         |                     |
| FS      | 3         | 2                      | 1                          | 3         |                     |
| SD      | 1         | 2                      | 2                          | 2         |                     |
| SS      | 4         | 2                      | 1                          | 2         |                     |

Species richness: 2

## RIPARIAN VEGETATION

Width of riparian zone: 27 m  
 Dominant vegetation: Shrubs  
 Substrate: Cobbles/soil  
 Channel type: Anabranching  
 Surrounding land use: Cultivation  
 Ecological importance: High

Dominant 5 species:
 

- 1 *Rauvolfia caffra*
- 2 Not available
- 3 Not available
- 4 Not available
- 5 Not available

Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

|                                                                                                                                                                              |                     |                                                                                    |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------|--------------|
| <b>Code:</b>                                                                                                                                                                 | SE3                 | <b>Site name:</b>                                                                  | B7GASE-OCONF |
| <b>Province:</b>                                                                                                                                                             | Northern Province   | 2431AA GRIETJIE                                                                    |              |
| <b>Sampling date:</b>                                                                                                                                                        | August 1999         |  |              |
| <b>River:</b>                                                                                                                                                                | Ga-Selati           |                                                                                    |              |
| <b>Quaternary catchment:</b>                                                                                                                                                 | B72K                |                                                                                    |              |
| <b>Locality:</b>                                                                                                                                                             |                     |                                                                                    |              |
| <ul style="list-style-type: none"> <li>• <b>Latitude (°S):</b> 24°02.2416</li> <li>• <b>Longitude (°E):</b> 31°08.0629</li> <li>• <b>Altitude (m.a.m.s.l)</b> 340</li> </ul> |                     |                                                                                    |              |
| <b>Ecoregion:</b>                                                                                                                                                            | Lowveld             |                                                                                    |              |
| <b>Stream classification:</b>                                                                                                                                                | Foothill gravel bed |                                                                                    |              |

## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 2

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 12                         |                            |                            |                  |                   |
| FS      | 5                          |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 1                      | 2                          | 3         |                     |
| FS      | 4         | 1                      |                            | 3         |                     |
| SD      | 1         | 2                      | 2                          | 1         |                     |
| SS      | 1         | 1                      |                            | 1         |                     |

Species richness: 12

## RIPARIAN VEGETATION

Width of riparian zone: 18 m  
 Dominant vegetation: Shrubs  
 Substrate: Soil/cobbles  
 Channel type: Single  
 Surrounding land use: Livestock farming  
 Ecological Importance: Medium

Dominant 5 species:

- 1 *Combretum erythrophyllum*
- 2 *Nuxia oppositifolia*
- 3 *Salix mucronata*
- 4 *Euclea crispa*
- 5 *Asclepias fruticosa*

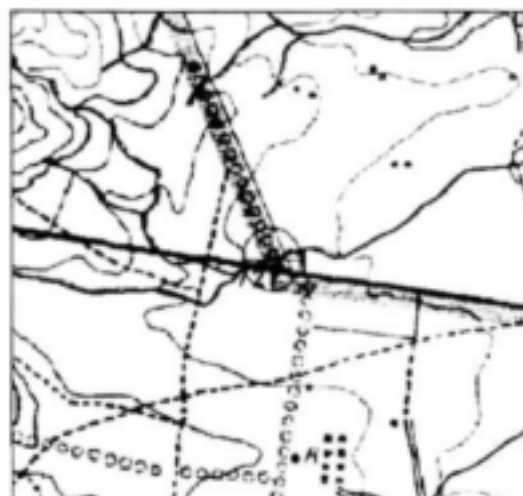
Biotopes: (Not available)

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** K1  
**Province:** Mpumalanga  
**Sampling date:** August 1999  
**River:** Klaserie  
**Quaternary catchment:** B73A  
**Locality:**  
 • Latitude (°S): 24°34.7400  
 • Longitude (°E): 30°56.4600  
 • Altitude (m.a.m.s.l): 720  
**Ecoregion:** Lowveld  
**Stream classification:** Mountain stream

**Site name:** B7KLAS-EDEN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 18                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         |                           | 2                                | 3         |                        |
| FS      | 4         |                           | 1                                | 2         |                        |
| SD      | 1         |                           | 1                                | 1         |                        |
| SS      | 3         |                           | 1                                | 1         |                        |

Species richness: 2

## RIPARIAN VEGETATION

Width of riparian zone: 25 m  
 Dominant vegetation: Trees  
 Substrate: Cobbles/soil/sand  
 Channel type: Single  
 Surrounding land use: Forestry/livestock farming  
 Ecological importance: Medium

Dominant 5 species:
 

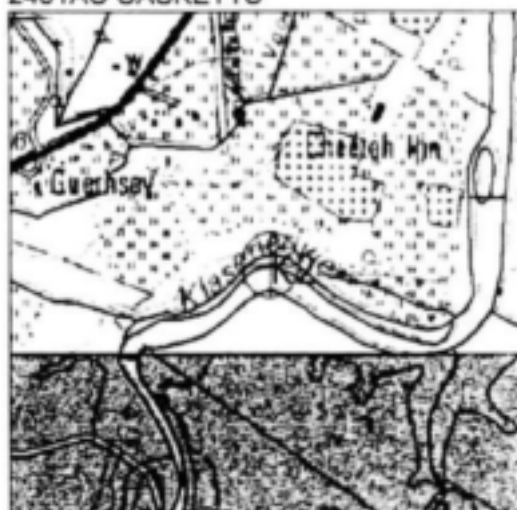
- 1 *Breonadia salicina*
- 2 *Syzygium cordatum*
- 3 *Bridelia micrantha*
- 4 *Erythrina lysistemon*
- 5 *Celtis africana*

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** K2 **Site name:** B7KLAS-GUERN  
**Province:** Northern Province **2431AC CASKETTS**  
**Sampling date:** August 1999  
**River:** Klaserie  
**Quaternary catchment:** B73B  
**Locality:**  
 • **Latitude (°S):** 24°29.8200  
 • **Longitude (°E):** 31°05.2799  
 • **Altitude (m.a.m.s.l):** 520  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill gravel bed



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- **Habitat:** 2
- **Invertebrates:** 3

**Historical information** (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 18                              |                               |                               |                     |                      |
| SD      |                                 |                               | 1                             |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 2                         | 3                                | 2         |                        |
| FS      | 3         | 3                         | 2                                | 2         |                        |
| SD      | 2         | 3                         | 3                                | 2         |                        |
| SS      | 2         | 1                         | 1                                | 1         |                        |

Species richness: 18

## RIPARIAN VEGETATION

Width of riparian zone: 75 m  
 Dominant vegetation: Grasses/trees  
 Substrate: Sand/soil/bedrock  
 Channel type: Braided  
 Surrounding land use: Citrus farming/game farming  
 Ecological importance: Medium

Dominant 5 species:
 

- 1 **Combretum erythrophyllum**
- 2 *Salix mucronata*
- 3 *Dombeya rotundifolia*
- 4 *Maytenus heterophylla*
- 5 Not available

Biotopes: (Not available)

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |





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## Sabie River Catchment

### Introduction

Fifty nine sites were sampled on the Sabie River and its tributaries (Figure 4), the Mac Mac, Phasa Phasa, Maritsana, Marite, Mohlomobe, Mutlumuvi, Klein Sand, Waterhoutboom, Sabaan, Mlondozi, and Ngwaritsana Rivers. These were all sampled from August to October 1997.

### Description of the Study Area

#### Locality

The Sabie River rises on the eastern slopes of the Mauch Berg in the Drakensberg, Mpumalanga Province, and flows eastwards until its confluence with the Incomati River in Mozambique. The catchment area is approximately 7 100 km<sup>2</sup> in size. In the Lowveld region (downstream of Hazyview), the major tributaries are the Marite and Sand rivers. A large portion of the Sabie River catchment drains the rural former homeland areas of Gazankulu, Lebowa and Kangwane, now part of Mpumalanga Province. The river forms the boundary between the Kruger National Park and rural areas in Mpumalanga, before cutting across the Kruger National Park to the Mozambique border (Heritage *et al.*, 1997).

#### Topography

The Sabie River has its source at 2 130 m on the eastern Escarpment. Dropping precipitously, it reaches its confluence with the Sand River, some 125 km to the east, inside the western boundary of the Kruger National Park (KNP). It then reaches the Mozambique border at an altitude of 120 m.a.m.s.l, some 175 km from source, after passing through the south-central sector of the KNP (Weeks, *et al.*, 1996). The distinct topographical features of the Sabie River catchment divide the catchment into two regions (Chunnet, *et al.*, 1987):

- (1) The Middleveld characterised by undulating topography.
- (2) The Lowveld, characterised by flat to gently undulating topography.

#### Rainfall

The rainfall pattern in the Sabie River system is related to the topography and varies from 600 mm on average in the Lowveld region to 2 000 mm towards the Drakensberg mountains.

#### Geology

The catchment is underlain by three major lithostratigraphic units (Chunnet *et al.*, 1987):

- The Basement Complex
- The Transvaal Sequence, and

- 
- The Karoo Sequence.

### **Soils**

The soils of the catchment are resistant to erosion, when compared with other regions of southern Africa, with sediment yields varying from 400 to 600 t.km<sup>-2</sup>.yr<sup>-1</sup> (Weeks, 1996).

### **Natural vegetation**

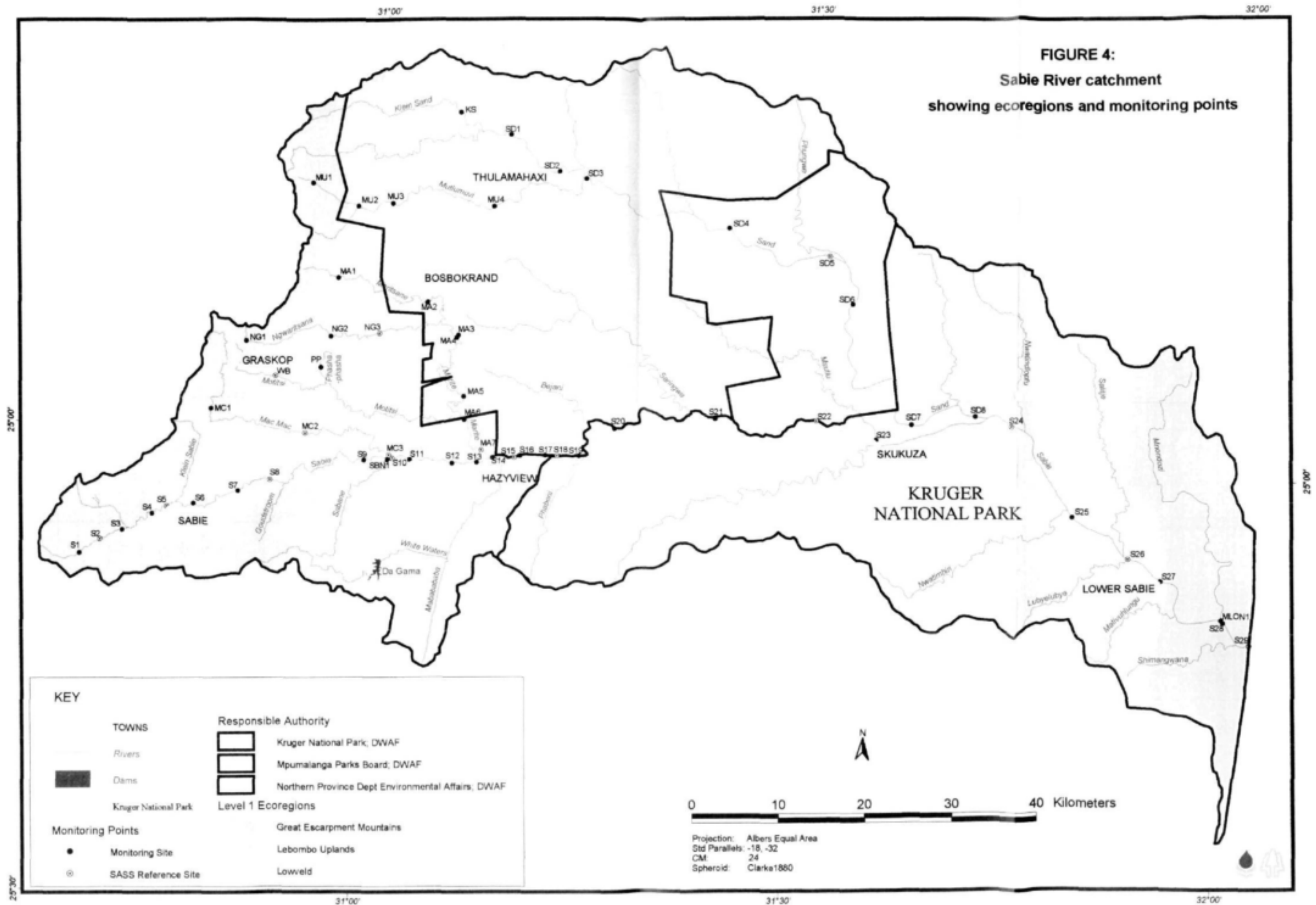
The natural vegetation types (after Acocks, 1988) of the catchment, include:

- Tropical bush and savanna types (Lowveld; Arid Lowveld)
- Inland tropical forest types (Lowveld Sour Bushveld; North-eastern Mountain Sourveld)

### **Land use**

The main forms of land use that occur are as follow (Chunnet, 1987):

- Irrigation: The predominant irrigated crops are bananas, avocados, citrus and tobacco in the RSA and maize and vegetables in the National States.
- Dry land farming: Most of the dryland farming occurs in the formal homelands and the main crop is maize.
- Forestry: The upper catchment has already been exploited as far as possible for forestry and the rivers flow through approximately 74 000 ha of commercial forestry plantations (pine trees and eucalyptus).
- Mining: Within the catchment, mining activity is very limited consisting of a few relatively insignificant gold mines in the vicinity of the towns of Sabie and Graskop.
- Industry: A few wood processing factories, mills spread throughout the afforested areas and a number of relatively small service industries, comprise the industrial development within the catchment.





## SITE INFORMATION

**Code:** S1 **Site name:** X3SABI-LTPASS  
**Province:** Mpumalanga 2530BA  
**Sampling date:** October 1997  
**River:** Sabie  
**Quaternary catchment:** X31A  
**Locality:**  
 • Latitude (°S): 25°08.8404  
 • Longitude (°E): 30°40.0981  
 • Altitude (m.a.m.s.l): 1240  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain Stream



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort: *(Not recorded)*

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 4         | 3                      | 2                          | 4         |                     |
| SD      |           |                        |                            |           |                     |
| SS      | 2         | 3                      | 2                          | 4         | 3                   |

Species richness:

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

1  
2  
3  
4  
5

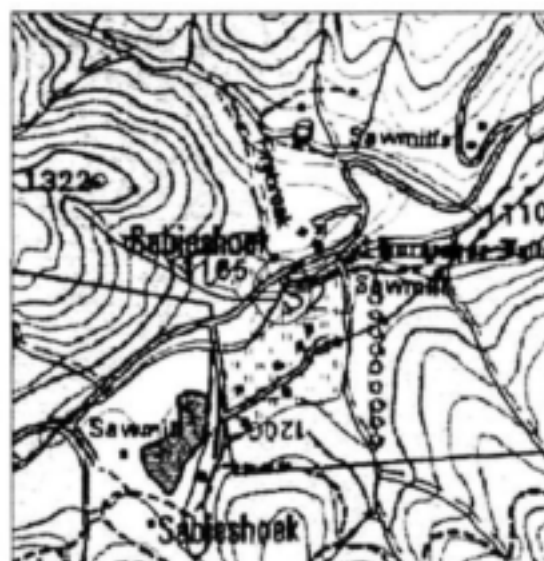
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

|                               |                            |
|-------------------------------|----------------------------|
| <b>Code:</b>                  | S2                         |
| <b>Province:</b>              | Mpumalanga                 |
| <b>Sampling date:</b>         | October 1997               |
| <b>River:</b>                 | Sabie                      |
| <b>Quaternary catchment:</b>  | X31A                       |
| <b>Locality:</b>              |                            |
| • <b>Latitude (°S):</b>       | 25°07.8960                 |
| • <b>Longitude (°E):</b>      | 30°41.4750                 |
| • <b>Altitude (m.a.m.s.l)</b> | 1160                       |
| <b>Ecoregion:</b>             | Great Escarpment Mountains |
| <b>Stream classification:</b> | Mountain stream            |

Site name: X3SABI-HSFALL

**SASS4**

**Biotoxes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information

- **Time period:** 1993 – 1995
- **Seasons sampled:** Winter / Spring
- **Number of visits:** 6
- **Organisations:** IWQS



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 23                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      | 8                               |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 3         | 2                         | 2                                | 4         |                        |
| SD      | 1         | 2                         | 1                                | 2         | 2                      |
| SS      | 2         | 1                         | 1                                | 3         |                        |

Species richness:

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

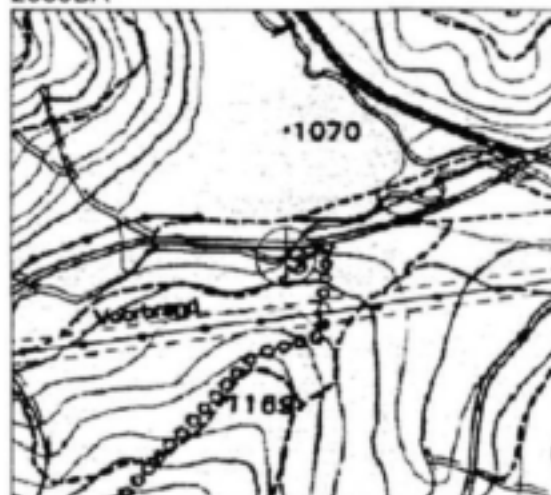
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S3  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31A  
**Locality:**  
 • Latitude (°S): 25°07.2516  
 • Longitude (°E): 30°43.0134  
 • Altitude (m.a.m.s.l): 1080  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-OLIFA

2530BA



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 5         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

**Ecological Importance**

- Habitat: 3
- Invertebrates: 4

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 25                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 4                      | 3                          | 4         |                     |
| FS      | 4         | 4                      | 3                          | 4         |                     |
| SD      | 0         |                        |                            |           |                     |
| SS      | 1         | 4                      | 3                          | 4         |                     |

Species richness: 1

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

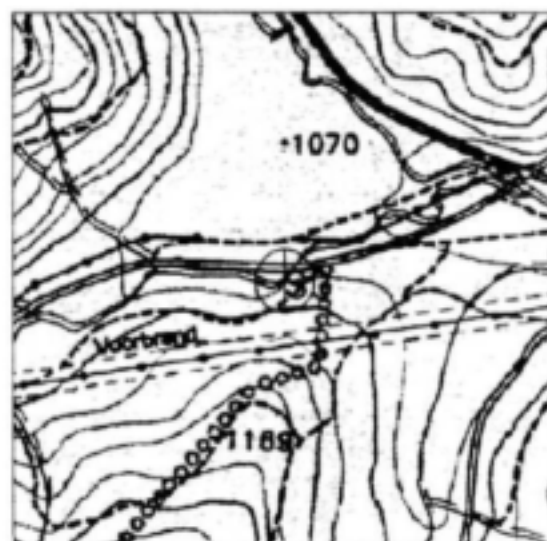
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S4  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31A  
**Locality:**  
 • Latitude (°S): 25°06.0954  
 • Longitude (°E): 30°45.0834  
 • Altitude (m.a.m.s.l): 1020  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-CEYLO



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information

- Time period: 1993 – 1994
- Seasons sampled: Winter / Spring
- Number of visits: 5
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 29                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 4                      | 4                          | 3         |                     |
| FS      | 1         | 4                      | 4                          | 3         |                     |
| SD      | 3         | 4                      | 4                          | 2         |                     |
| SS      | 2         | 3                      | 4                          | 2         |                     |

Species richness: 4

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

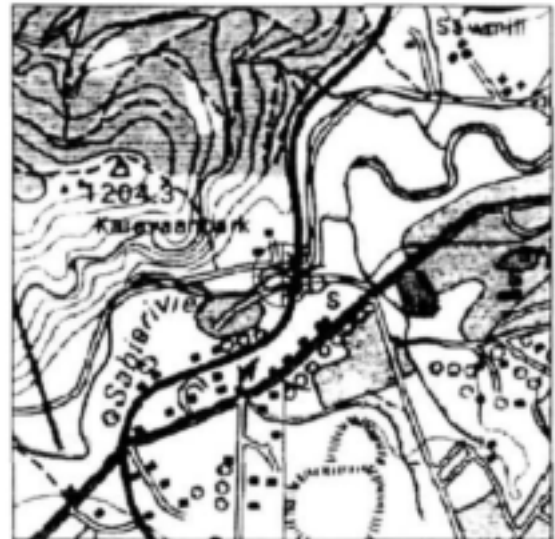
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S5  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31A  
**Locality:**  
 • Latitude (°S): 25°05.5782  
 • Longitude (°E): 30°46.1073  
 • Altitude (m.a.m.s.l): 1000  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-CASTL



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 4         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 4
- Invertebrates: 4

### Historical information (Not available)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 39                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 2                         | 2                                | 3         |                        |
| FS      | 4         | 2                         | 2                                | 3         |                        |
| SD      | 1         | 3                         | 2                                | 3         |                        |
| SS      | 2         | 3                         | 2                                | 3         |                        |

Species richness: 4

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

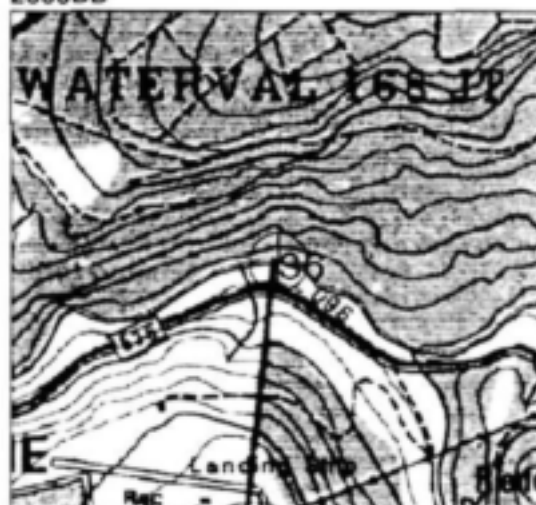
- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

Code: S6 Site name: X3SABI-RIOOL  
Province: Mpumalanga 2530BB  
Sampling date: September 1997  
River: Sabie  
Quaternary catchment: X31B  
Locality:  
• Latitude (°S): 25°05.3292  
• Longitude (°E): 30°47.9980  
• Altitude (m.a.m.s.l): 960  
Ecoregion: Lowveld  
Stream classification: Foothill-cobble Bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information (Not available)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 23                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 2                      | 4                          | 3         |                     |
| FS      | 2         | 2                      | 4                          | 3         |                     |
| SD      | 1         | 3                      | 3                          | 2         |                     |
| SS      | 1         | 3                      | 3                          | 2         |                     |

Species richness: 3

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S7  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31B  
**Locality:**  
 • Latitude (°S): 25°04.3860  
 • Longitude (°E): 30°51.0873  
 • Altitude (m.a.m.s.l): 900  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated  
 Cascades-gorge

**Site name:** X3SABI-RIETF



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 4         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information

- Time period: 1993 – 1995
- Seasons sampled: Winter / Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 29                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 3                          | 4         |                     |
| FS      | 2         | 3                      | 3                          | 4         |                     |
| SD      | 3         | 3                      | 4                          | 2         |                     |
| SS      | 1         | 3                      | 4                          | 2         |                     |

Species richness: 2

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S8  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31B  
**Locality:**  
 • Latitude (°S): 25°03.5748  
 • Longitude (°E): 30°53.2819  
 • Altitude (m.a.m.s.l): 800  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-FRANK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 2

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 39                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 4                      | 4                          | 4         |                     |
| FS      | 3         | 4                      | 4                          | 4         |                     |
| SD      | 1         | 4                      | 4                          | 4         |                     |
| SS      | 1         | 4                      | 4                          | 4         |                     |

Species richness: 8

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

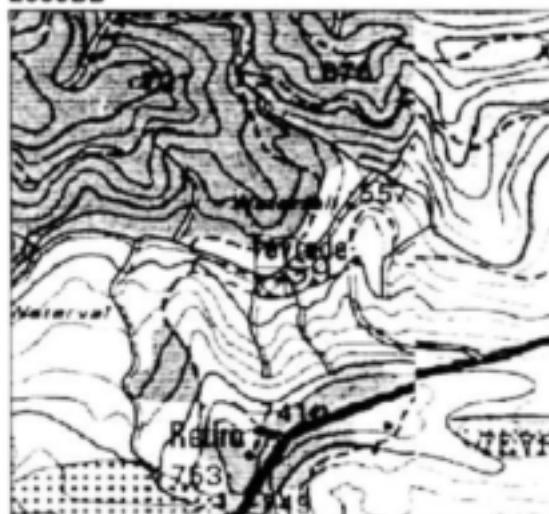
- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

|                               |                               |                                |
|-------------------------------|-------------------------------|--------------------------------|
| <b>Code:</b>                  | S9                            | <b>Site name:</b> X3SABI-TEVRE |
| <b>Province:</b>              | Mpumalanga                    | 2530BB                         |
| <b>Sampling date:</b>         | September 1997                |                                |
| <b>River:</b>                 | Sabie                         |                                |
| <b>Quaternary catchment:</b>  | X31D                          |                                |
| <b>Locality:</b>              |                               |                                |
| • <b>Latitude (°S):</b>       | 25°02.0226                    |                                |
| • <b>Longitude (°E):</b>      | 30°59.7421                    |                                |
| • <b>Altitude (m.a.m.s.l)</b> | 580                           |                                |
| <b>Ecoregion:</b>             | Lowveld                       |                                |
| <b>Stream classification:</b> | Rejuvenated<br>Cascades-gorge |                                |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 4         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 1

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 35.5                            |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 | 1                             |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 3                                | 4         |                        |
| FS      | 1         | 3                         | 3                                | 4         |                        |
| SD      | 2         | 3                         | 3                                | 3         |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 6

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S10 **Site name:** X3SABI-BRAND  
**Province:** Mpumalanga 2531AA  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X31D  
**Locality:**  
 • Latitude (°S): 25°01.8042  
 • Longitude (°E): 31°01.6291  
 • Altitude (m.a.m.s.l): 518  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 46                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 29                   |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks & root<br>wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 2                         | 2                                | 4         |                        |
| FS      | 2         | 2                         | 2                                | 4         |                        |
| SD      | 3         | 2                         | 3                                | 2         |                        |
| SS      | 1         | 3                         | 1                                | 1         |                        |

Species richness: 8

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

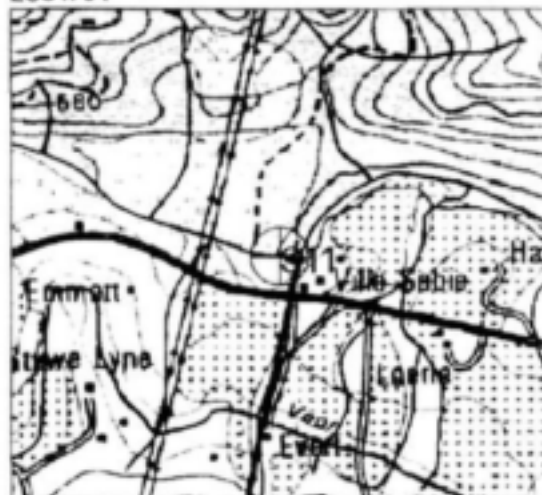
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

|                               |                     |
|-------------------------------|---------------------|
| <b>Code:</b>                  | S11                 |
| <b>Province:</b>              | Mpumalanga          |
| <b>Sampling date:</b>         | September 1997      |
| <b>River:</b>                 | Sabie               |
| <b>Quaternary catchment:</b>  | X31D                |
| <b>Locality:</b>              |                     |
| • Latitude (°S):              | 25°01.8516          |
| • Longitude (°E):             | 31°02.9400          |
| • Altitude (m.a.m.s.l)        | 503                 |
| <b>Ecoregion:</b>             | Lowveld             |
| <b>Stream classification:</b> | Foothill-cobble Bed |

Site name: X3SABI-AANDE

2531AA



**SASS4**

**Biotoxes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

Historical information (Not available)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 43                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 11                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 3                          | 4         |                     |
| FS      | 3         | 3                      | 3                          | 4         |                     |
| SD      | 3         | 3                      | 3                          | 3         |                     |
| SS      | 2         | 3                      | 2                          | 1         |                     |

Species richness: 8

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S12  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31D  
**Locality:**  
 • Latitude (°S): 25°01.9560  
 • Longitude (°E): 31°05.9160  
 • Altitude (m.a.m.s.l): 488  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-ONSPL

2531AA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 36                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 11                   |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 3                         | 3                                | 4         |                        |
| FS      | 4         | 3                         | 3                                | 4         |                        |
| SD      | 2         | 3                         | 3                                | 3         |                        |
| SS      | 2         | 3                         | 3                                | 3         |                        |

Species richness: 11

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S13  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31G  
**Locality:**  
 • Latitude (°S): 25°01.8192  
 • Longitude (°E): 31°07.6142  
 • Altitude (m.a.m.s.l): 472  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-PERRY



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- **Habitat:** 2
- **Invertebrates:** 3

**Historical information**

- **Time period:** 1993 – 1995
- **Seasons sampled:** Winter / Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 14                         |                            |                            |                  | 17                |
| FS      | 13                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 6                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 1                      |                            | 2         |                     |
| FS      | 3         | 3                      | 2                          | 3         |                     |
| SD      | 1         | 3                      | 3                          | 1         |                     |
| SS      | 2         | 3                      | 3                          | 2         |                     |

Species richness: 14

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S14 **Site name:** X3SABI-HAZYV  
**Province:** Mpumalanga **2531AA**  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**  
 • Latitude (°S): 25°01.4598  
 • Longitude (°E): 31°08.6701  
 • Altitude (m.a.m.s.l): 442  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 21                         |                            |                            |                  | 20                |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 3                          | 0         |                     |
| FS      | 2         | 3                      | 3                          | 2         |                     |
| SD      | 2         | 3                      | 3                          | 1         |                     |
| SS      | 3         | 4                      | 4                          | 1         |                     |

Species richness: 4

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

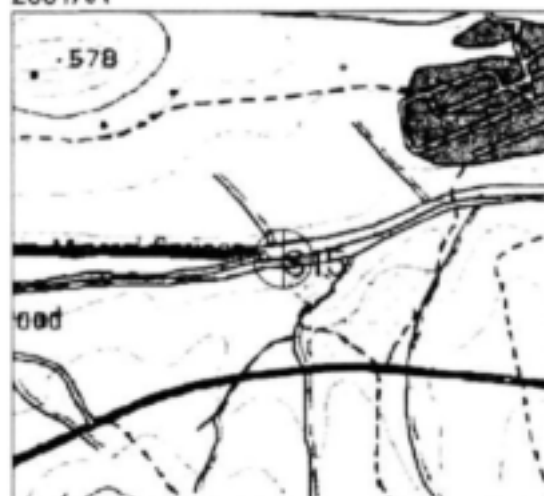
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S15  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**  
 • Latitude (°S): 25°01.3914  
 • Longitude (°E): 31°10.1424  
 • Altitude (m.a.m.s.l): 442  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-SANBO

2531AA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 52                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      | 27.5                       |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 4                          | 2         |                     |
| FS      | 3         | 3                      | 4                          | 4         |                     |
| SD      | 1         | 3                      | 4                          | 2         |                     |
| SS      | 2         | 2                      | 2                          | 3         |                     |

Species richness: 13

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

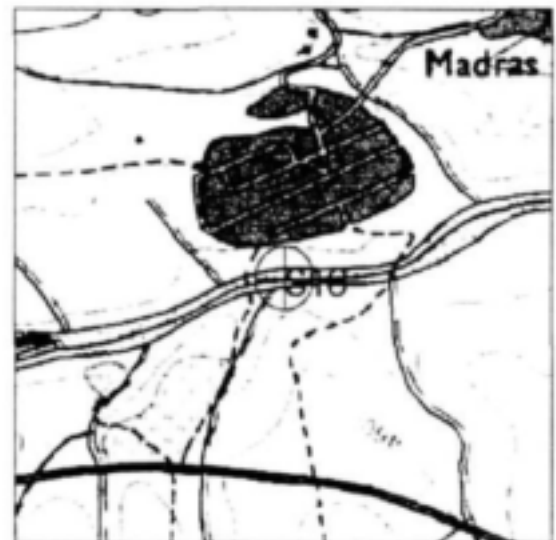
## SITE INFORMATION

**Code:** S16  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**

- Latitude (°S): 25°01.2600
- Longitude (°E): 31°10.5600
- Altitude (m.a.m.s.l): 427

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-SKEUR



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 27                              |                               |                               |                     |                      |
| FS      | 9                               |                               |                               |                     |                      |
| SD      |                                 | 1                             |                               |                     | 26                   |
| SS      | 16                              |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 2                                | 4         |                        |
| FS      | 3         | 1                         | 2                                | 3         |                        |
| SD      | 1         | 1                         | 2                                | 2         |                        |
| SS      | 1         | 2                         | 2                                | 3         |                        |

Species richness: 9

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S17  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**  
 • Latitude (°S): 25°01.1400  
 • Longitude (°E): 31°12.3000  
 • Altitude (m.a.m.s.l): 411  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-CAL03



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 23                         |                            |                            |                  | 47                |
| FS      |                            |                            |                            |                  |                   |
| SD      | 7.5                        |                            |                            |                  |                   |
| SS      | 6                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 2                          | 3         |                     |
| FS      | 3         | 2                      | 2                          | 4         |                     |
| SD      | 3         | 3                      | 3                          | 2         |                     |
| SS      | 2         | 3                      | 2                          | 3         |                     |

Species richness: 13

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S18  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**  
 • Latitude (°S): 25°01.1412  
 • Longitude (°E): 31°13.1008  
 • Altitude (m.a.m.s.l): 411  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-HOXAN



## SASS4

**Biotores:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- Habitat: 3
- Invertebrates: 3

**Historical information**

- Time period: 1993
- Seasons sampled: Winter / Spring
- Number of visits: 3
- Organisations: IWQS



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 10                         |                            |                            |                  |                   |
| FS      | 41                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 47                |
| SS      | 3                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 1                          | 4         |                     |
| FS      | 4         | 3                      | 3                          | 3         |                     |
| SD      | 3         | 2                      | 3                          | 2         |                     |
| SS      | 2         | 2                      | 3                          | 2         |                     |

Species richness: 12

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S19  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**

- **Latitude (°S):** 25°01.0800
- **Longitude (°E):** 31°14.6399
- **Altitude (m.a.m.s.l)** 411

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-CAL01

2431CC BOSBOKRAND



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 49                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 31                |
| SS      | 8                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 3                      | 3                          | 3         |                     |
| FS      | 4         | 1                      | 1                          |           |                     |
| SD      | 1         | 3                      | 3                          |           |                     |
| SS      | 2         | 2                      | 2                          | 2         |                     |

Species richness: 15

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S20 **Site name:** X3SABI-SEKUR  
**Province:** Northern Province **2431CS NEWINGTON**  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X31K  
**Locality:**  
 • Latitude (°S): 24°59.2140  
 • Longitude (°E): 31°17.0400  
 • Altitude (m.a.m.s.l): 381  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 26                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 46                   |
| SS      |                                 | 1                             |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 1                         | 4                                | 2         |                        |
| FS      | 4         | 1                         | 4                                | 2         |                        |
| SD      | 1         | 1                         | 4                                | 1         |                        |
| SS      | 1         | 1                         | 4                                | 1         |                        |

Species richness: 12

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S21  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X31M  
**Locality:**  
 • Latitude (°S): 24°58.2600  
 • Longitude (°E): 31°24.0000  
 • Altitude (m.a.m.s.l): 320  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-NWATI

2431CD NEWINGTON



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

**Ecological Importance**

- Habitat: 2
- Invertebrates: 4

**Historical information** (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 43                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      | 59                              |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 1                         | 1                                | 2         |                        |
| FS      | 1         | 1                         | 1                                | 2         |                        |
| SD      | 3         | 3                         | 3                                | 2         |                        |
| SS      | 2         | 3                         | 3                                | 2         |                        |

Species richness: 16

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S22  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X31M  
**Locality:**  
• **Latitude (°S):** 24°58.0800  
• **Longitude (°E):** 31°31.0200  
• **Altitude (m.a.m.s.l)** 280  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-MEETW

2431DC SKUKUZA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 4

### Historical information

- **Time period:** 1993 – 1995
- **Seasons sampled:** Winter / Spring
- **Number of visits:** 6
- **Organisations:** IWQS



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 16                              |                               |                               |                     |                      |
| FS      | 16                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 2                         | 1                                | 2         |                        |
| FS      | 2         | 2                         | 2                                | 3         |                        |
| SD      | 4         | 3                         | 4                                | 2         |                        |
| SS      | 2         | 4                         | 4                                | 3         |                        |

Species richness: 16

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S23  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X31M  
**Locality:**

- Latitude (°S): 24°59.1156
- Longitude (°E): 31°35.2362
- Altitude (m.a.m.s.l): 280

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-SKUKU

2431DC SKUKUZA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 11                         |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      |                            |                            | 3                          |                  |                   |
| SS      | 3                          |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 3                      | 3                          | 2         |                     |
| FS      | 2         | 4                      | 3                          | 3         |                     |
| SD      | 4         | 4                      | 4                          | 3         |                     |
| SS      | 2         | 4                      | 4                          | 3         |                     |

Species richness: 18

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

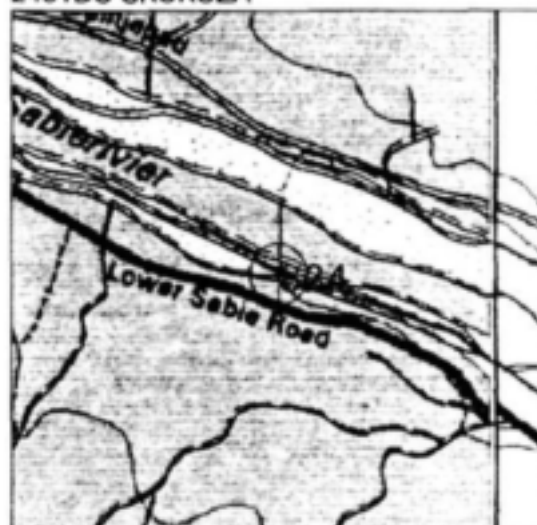
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S24  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X33A  
**Locality:**  
 • Latitude (°S): 24°57.8082  
 • Longitude (°E): 31°44.5674  
 • Altitude (m.a.m.s.l): 220  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-LEOPA

2431DC SKUKUZA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 52                         |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 4                      | 4                          | 4         |                     |
| FS      | 3         | 4                      | 4                          | 4         |                     |
| SD      | 1         | 4                      | 4                          | 4         |                     |
| SS      | 3         | 4                      | 4                          | 4         |                     |

Species richness: 17

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

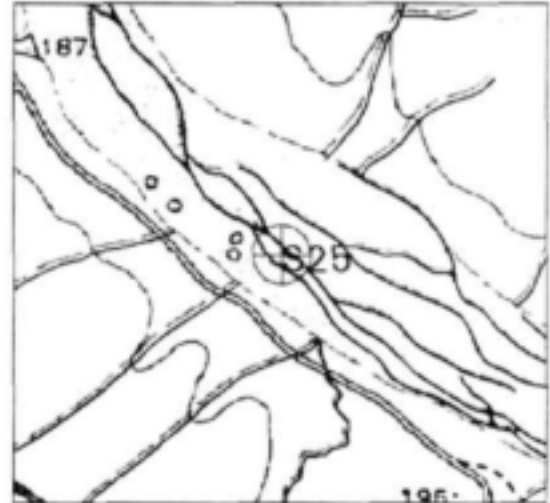
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

Code: S25  
Province: Mpumalanga  
Sampling date: August 1997  
River: Sabie  
Quaternary catchment: X33B  
Locality:  
• Latitude (°S): 25°03.4200  
• Longitude (°E): 31°49.1400  
• Altitude (m.a.m.s.l): 198  
Ecoregion: Lowveld  
Stream classification: Foothill-gravel Bed

Site name: X3SABI-IFR05

2531BB + 2532AA ONDER SABIE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 17                              |                               |                               |                     |                      |
| FS      | 16                              |                               |                               |                     |                      |
| SD      |                                 | 1                             |                               |                     | 37                   |
| SS      | 15                              | 6                             |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 3                         | 3                                | 2         |                        |
| FS      | 1         | 3                         | 3                                | 2         |                        |
| SD      | 3         | 4                         | 4                                | 2         |                        |
| SS      | 4         | 4                         | 4                                | 3         |                        |

Species richness: 16

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotores:

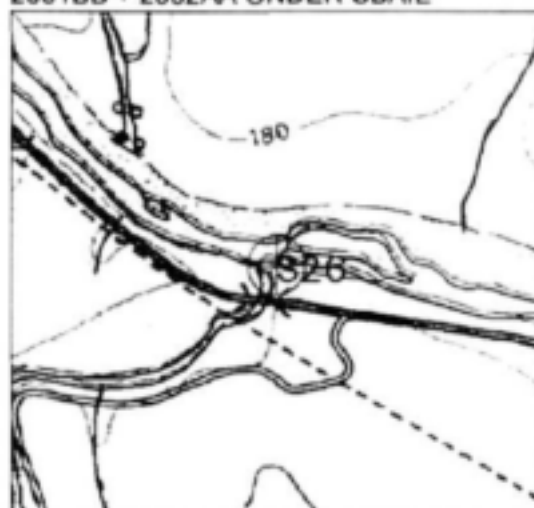
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** S26  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X33B  
**Locality:**  
 • Latitude (°S): 25°05.9400  
 • Longitude (°E): 31°53.1600  
 • Altitude (m.a.m.s.l): 168  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SABI-LUBEY

2531BB + 2532AA ONDER SBAIE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 5                          |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 23                |
| SS      | 22                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 2                          | 2         |                     |
| FS      | 1         | 2                      | 2                          | 3         |                     |
| SD      | 4         | 4                      | 3                          | 1         |                     |
| SS      | 2         | 1                      | 1                          | 3         |                     |

Species richness: 13

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S27  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X33B  
**Locality:**  
 • Latitude (°S): 25°07.2378  
 • Longitude (°E): 31°55.5124  
 • Altitude (m.a.m.s.l): 168  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3MLON-OSABIE

2531BB + 2532AA



## SASS4 (Not sampled)

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

**Ecological Importance**

- Habitat:
- Invertebrates:

**Historical information**

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 32                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 45                |
| SS      |                            |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 1                          | 4         |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 3         | 3                      | 2                          | 3         |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 9

## RIPARIAN VEGETATION (*Not available*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** S28  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X33D  
**Locality:**  
 • Latitude (°S): 25°09.6282  
 • Longitude (°E): 31°59.9953  
 • Altitude (m.a.m.s.l): 137  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated foothill

**Site name:** X3SABI-MLON

2531BB + 2532AA ONDER SABIE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 30                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 | 1                             |                               |                     | 45                   |
| SS      | 31                              | 2                             |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 3                                | 2         |                        |
| FS      | 2         | 3                         | 3                                | 2         |                        |
| SD      | 3         | 4                         | 3                                | 4         |                        |
| SS      | 3         | 4                         | 4                                | 3         |                        |

Species richness: 12

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

|                               |                     |                                |
|-------------------------------|---------------------|--------------------------------|
| <b>Code:</b>                  | S29                 | <b>Site name:</b> X3SABI-SPOOR |
| <b>Province:</b>              | Mpumalanga          | 2531BB + 2532AA ONDER SABIE    |
| <b>Sampling date:</b>         | August 1997         |                                |
| <b>River:</b>                 | Sabie               |                                |
| <b>Quaternary catchment:</b>  | X33D                |                                |
| <b>Locality:</b>              |                     |                                |
| • Latitude (°S):              | 25°11.0826          |                                |
| • Longitude (°E):             | 32°01.8422          |                                |
| • Altitude (m.a.m.s.l)        | 122                 |                                |
| <b>Ecoregion:</b>             | Lebombo Uplands     |                                |
| <b>Stream classification:</b> | Foothill-gravel Bed |                                |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 3

### Historical information: *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 40                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 33                |
| SS      |                            |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 4                      | 4                          | 2         |                     |
| FS      | 2         | 4                      | 4                          | 2         |                     |
| SD      | 1         | 4                      | 4                          | 3         |                     |
| SS      | 2         | 3                      | 3                          | 2         |                     |

Species richness: 7

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1

2

3

4

5

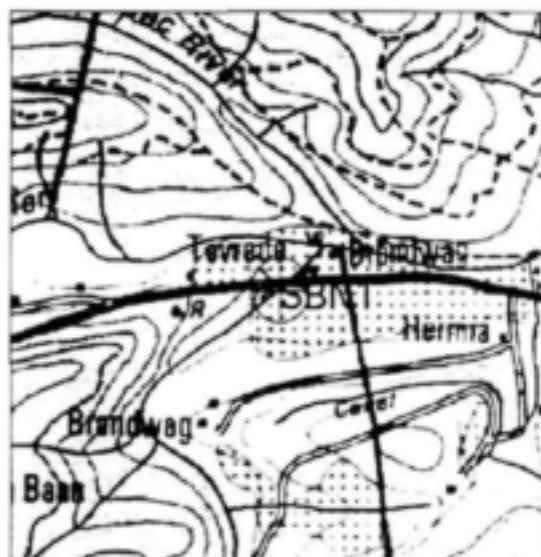
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** SBN1  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sabie  
**Quaternary catchment:** X31D  
**Locality:**  
 • Latitude (°S): 25°01.7160  
 • Longitude (°E): 31°01.5900  
 • Altitude (m.a.m.s.l): 518  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SABI-BRAND



## SASS4 (Not Sampled)

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat:
- Invertebrates:

### Historical information

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 | 1                              |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      | 4         | 3                         | 3                                | 3         |                        |

Species richness: 4

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1

2

3

4

5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MC1  
**Province:** Mpumalanga  
**Sampling date:** October 1997  
**River:** Mac-Mac  
**Quaternary catchment:** X31C  
**Locality:**  
 • Latitude (°S): 24°59.1582  
 • Longitude (°E): 30°48.9176  
 • Altitude (m.a.m.s.l): 1220  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble bed

**Site name:** X3MACM-FALLS

2630DD



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 4

### Historical information

- **Time period:** 1993 – 1995
- **Seasons sampled:** Winter / Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 65                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 3         | 2                      | 2                          | 3         |                     |
| SD      | 1         | 2                      | 2                          | 2         |                     |
| SS      | 3         | 2                      | 2                          | 3         |                     |

Species richness: 2

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

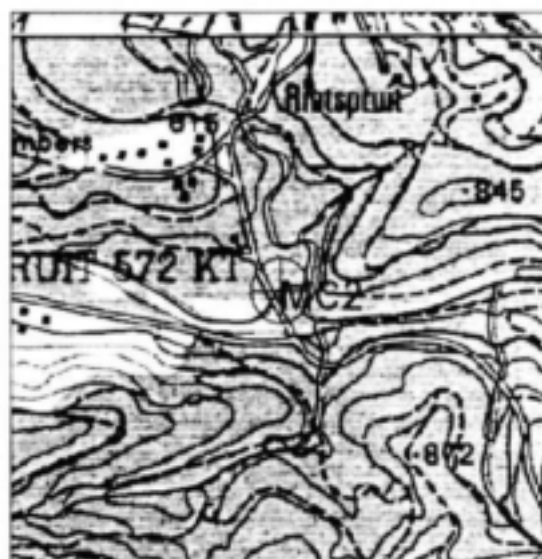
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** MC2  
**Province:** Mpumalanga  
**Sampling date:** October 1997  
**River:** Mac-Mac  
**Quaternary catchment:** X31C  
**Locality:**  
 • Latitude (°S): 25°00.4680  
 • Longitude (°E): 30°55.5429  
 • Altitude (m.a.m.s.l): 800  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble bed

**Site name:** X3MACM-VENUS



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 4
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      | 42                              |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 0         |                           |                                  |           |                        |
| FS      | 3         | 3                         | 1                                | 4         |                        |
| SD      | 1         | 3                         | 1                                | 1         |                        |
| SS      | 3         | 3                         | 1                                | 2         |                        |

Species richness: 6

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

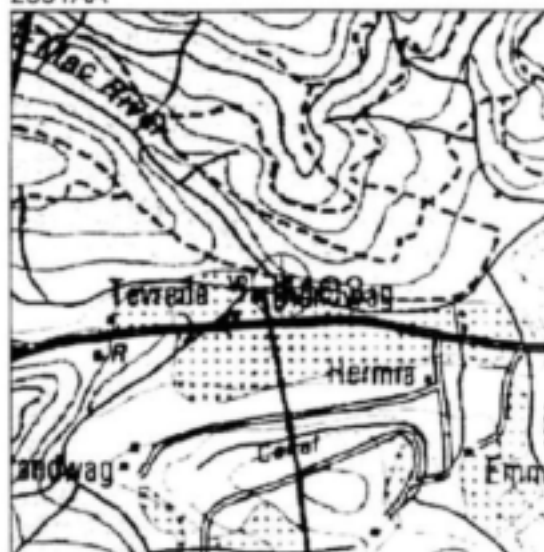
Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MC3 **Site name:** X3MACM-BRAND  
**Province:** Mpumalanga 2531AA  
**Sampling date:** August 1997  
**River:** Mac-Mac  
**Quaternary catchment:** X31D  
**Locality:**  
     • Latitude (°S): 25°01.7796  
     • Longitude (°E): 31°01.5844  
     • Altitude (m.a.m.s.l): 518  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated  
                                     Cascades-gorge



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 43                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 3                                | 4         |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 1

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** NG1  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Nwaritsana  
**Quaternary catchment:** X31E  
**Locality:**  
 • Latitude (°S): 24°54.7104  
 • Longitude (°E): 30°51.1780  
 • Altitude (m.a.m.s.l): 1280  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** X3NWAR-GODSW



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      | 8                               |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      | 4         | 3                         | 2                                | 2         |                        |
| SS      | 4         | 3                         | 2                                | 3         |                        |

Species richness:

## RIPARIAN VEGETATION (*Not available*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** NG2  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Nwaritsana  
**Quaternary catchment:** X31E  
**Locality:**

- Latitude (°S): 24°54.1734
- Longitude (°E): 30°57.0196
- Altitude (m.a.m.s.l): 820

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3NWAR-VERSA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 31                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 4                      | 3                          | 3         |                     |
| FS      | 3         | 4                      | 3                          | 3         |                     |
| SD      | 3         | 4                      | 3                          | 3         |                     |
| SS      | 2         | 4                      | 3                          | 3         |                     |

Species richness: 3

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

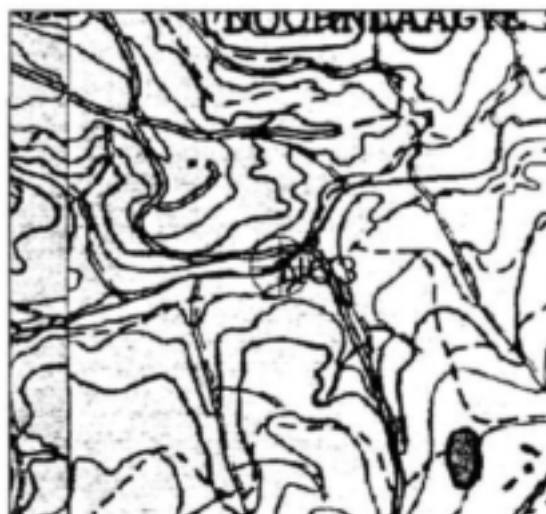
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** NG3  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Nwaritsana  
**Quaternary catchment:** X31E  
**Locality:**  
 • **Latitude (°S):** 24°53.8320  
 • **Longitude (°E):** 31°00.4298  
 • **Altitude (m.a.m.s.l)** 762  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3NAR-DORIN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      | 32                              |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 4                         | 4                                | 3         |                        |
| FS      | 4         | 4                         | 4                                | 3         |                        |
| SD      | 2         | 4                         | 4                                | 3         |                        |
| SS      | 1         | 4                         | 4                                | 3         |                        |

Species richness: 4

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1

2

3

4

5

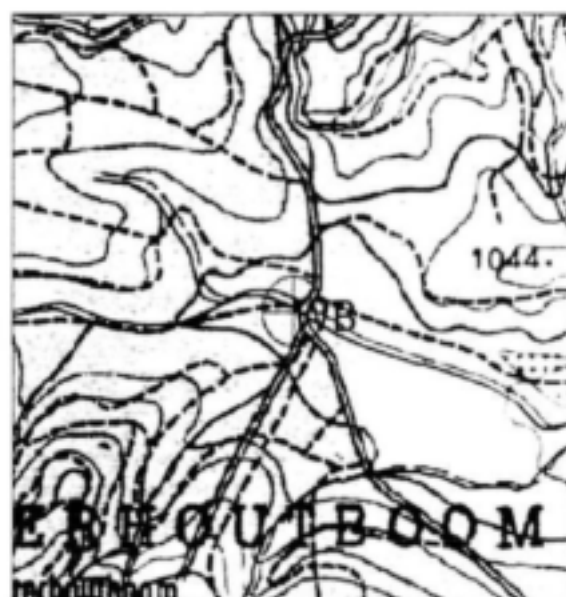
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** WB  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Waterhoutboom  
**Quaternary catchment:** X31F  
**Locality:**  
 • Latitude (°S): 24°56.8656  
 • Longitude (°E): 30°53.3076  
 • Altitude (m.a.m.s.l): 1000  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain Stream

**Site name:** X3WATE-WATER



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 28                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 1         | 3                         | 3                                | 4         |                        |
| FS      | 4         | 3                         | 3                                | 4         |                        |
| SD      | 1         | 4                         | 3                                | 4         |                        |
| SS      | 3         | 4                         | 3                                | 4         |                        |

Species richness: 3

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

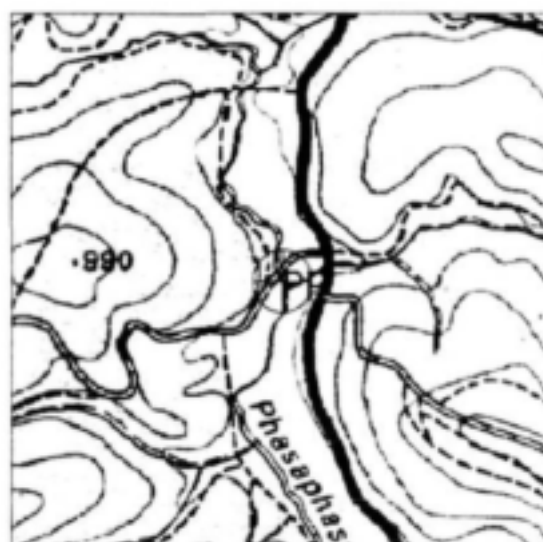
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** PP  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Phashaphasha  
**Quaternary catchment:** X31F  
**Locality:**  
 • Latitude (°S): 24°56.2038  
 • Longitude (°E): 30°56.4384  
 • Altitude (m.a.m.s.l): 920  
**Ecoregion:** Lowveld  
**Stream classification:** Mountain Stream

**Site name:** X3PHAS-WILGE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 1
- **Invertebrates:** 1

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      | 22                              |                                |                               |                     |                      |
| SD      |                                 | 2                              |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 1         | 3                         | 3                                | 3         |                        |
| FS      | 3         | 3                         | 3                                | 1         |                        |
| SD      | 4         | 4                         | 3                                | 1         |                        |
| SS      | 3         | 3                         | 3                                | 1         |                        |

Species richness: 3

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

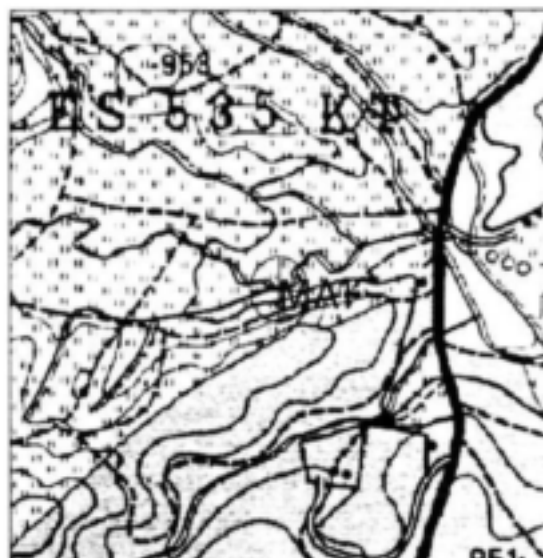
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MA1  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Maritsane  
**Quaternary catchment:** X31E  
**Locality:**  
 • Latitude (°S): 24°50.3850  
 • Longitude (°E): 30°57.3658  
 • Altitude (m.a.m.s.l): 900  
**Ecoregion:** Lowveld  
**Stream classification:** Mountain Stream

**Site name:** X3MARI-VERSA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      | 38                              |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 1         | 3                         | 3                                | 4         |                        |
| FS      | 4         | 4                         | 3                                | 4         |                        |
| SD      | 1         | 3                         | 3                                | 2         |                        |
| SS      | 3         | 3                         | 3                                | 2         |                        |

Species richness: 4

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

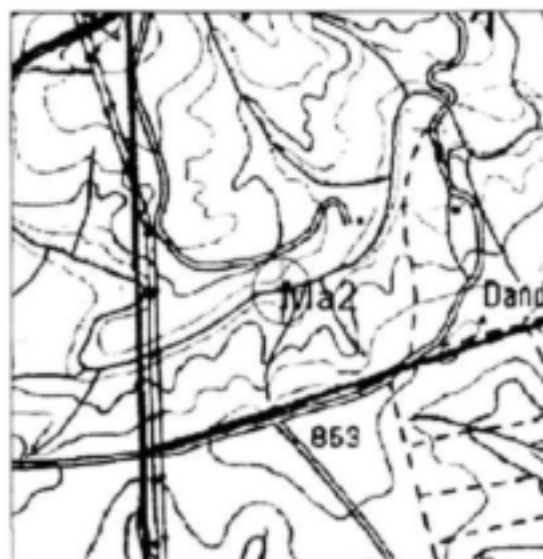
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MA2  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Maritsane  
**Quaternary catchment:** X31E  
**Locality:**  
 • Latitude (°S): 24°51.6846  
 • Longitude (°E): 31°03.6639  
 • Altitude (m.a.m.s.l): 762  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3MARIT-WALES



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                             |                            |                  |                   |
| FS      | 27                         |                             |                            |                  |                   |
| SD      |                            | 2                           |                            |                  |                   |
| SS      |                            |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 3                          | 4         |                     |
| FS      | 3         | 3                      | 3                          | 4         |                     |
| SD      | 2         | 3                      | 3                          | 3         |                     |
| SS      | 1         | 2                      | 2                          | 2         |                     |

Species richness: 7

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

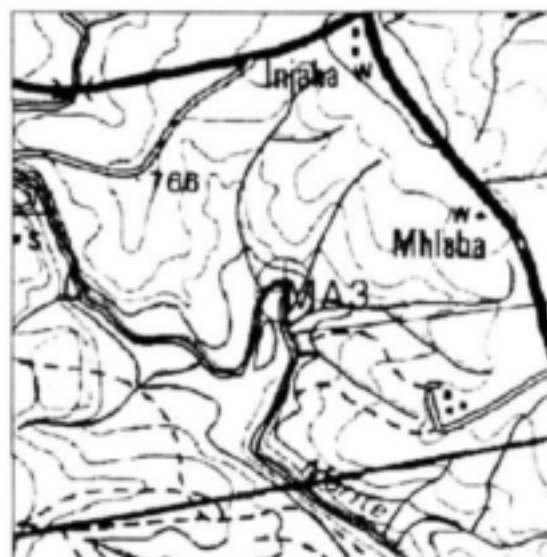
Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** MA3  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Marite  
**Quaternary catchment:** X31G  
**Locality:**  
 • Latitude (°S): 24°53.7018  
 • Longitude (°E): 31°05.9009  
 • Altitude (m.a.m.s.l): 716  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3MARI-R533B



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 52                         |                             |                            |                  | 12                |
| FS      |                            |                             |                            |                  |                   |
| SD      |                            |                             |                            |                  |                   |
| SS      |                            |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 2                          | 4         |                     |
| FS      | 2         | 2                      | 2                          | 4         |                     |
| SD      | 2         | 4                      | 3                          | 1         |                     |
| SS      | 3         | 3                      | 2                          | 1         |                     |

Species richness: 8

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** MA4  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Marite  
**Quaternary catchment:** X31G  
**Locality:**  
 • Latitude (°S): 24°53.8578  
 • Longitude (°E): 31°05.8004  
 • Altitude (m.a.m.s.l): 686  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated  
 Cascades-gorge

**Site name:** X3MARI-INJAK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 29                              |                                |                               |                     |                      |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 2                         | 2                                | 3         |                        |
| FS      | 2         | 1                         | 2                                | 2         |                        |
| SD      | 2         | 2                         | 2                                | 2         |                        |
| SS      | 2         | 2                         | 2                                | 2         |                        |

Species richness: 6

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MA5 **Site name:** X3MARI-MARIT  
**Province:** Northern Province **2431CC BOSBOKRAND**  
**Sampling date:** September 1997  
**River:** Marite  
**Quaternary catchment:** X31G  
**Locality:**  
 • Latitude (°S): 24°57.6420  
 • Longitude (°E): 31°06.4921  
 • Altitude (m.a.m.s.l): 564  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 2
- Invertebrates: 1

### Historical information

- Time period: 1993 – 1995
- Seasons sampled: Winter / Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 34                              |                                |                               |                     |                      |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 | 1                              |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 2                         | 2                                | 3         |                        |
| FS      | 2         | 2                         | 2                                | 3         |                        |
| SD      | 3         | 3                         | 3                                | 1         |                        |
| SS      | 3         | 1                         | 2                                | 1         |                        |

Species richness: 8

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

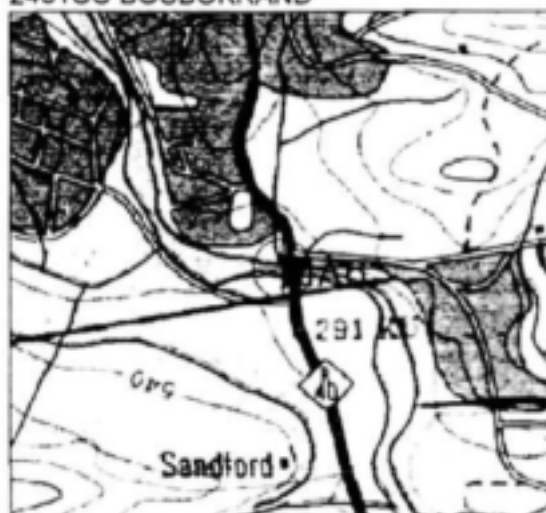
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MA6  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Marite  
**Quaternary catchment:** X31G  
**Locality:**  
 • Latitude (°S): 24°59.1180  
 • Longitude (°E): 31°06.5880  
 • Altitude (m.a.m.s.l): 518  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3MARI-BOSBO

2431CC BOSBOKRAND



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 21                              |                                |                               |                     | 10                   |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 2                         | 2                                | 4         |                        |
| FS      | 2         | 2                         | 1                                | 3         |                        |
| SD      | 3         | 3                         | 2                                | 2         |                        |
| SS      | 2         | 3                         | 2                                | 2         |                        |

Species richness: 6

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1

2

3

4

5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MA7  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Marite  
**Quaternary catchment:** X31G  
**Locality:**  
 • Latitude (\*S): 25°01.0140  
 • Longitude (\*E): 31°07.8600  
 • Altitude (m.a.m.s.l): 257  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble bed

**Site name:** X3MARI-SANDF



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 54                              |                                |                               |                     | 15                   |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      | 20                              |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 4                         | 3                                | 4         |                        |
| FS      | 2         | 4                         | 3                                | 4         |                        |
| SD      | 2         | 4                         | 3                                | 3         |                        |
| SS      | 3         | 4                         | 3                                | 3         |                        |

Species richness: 14

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** KS1  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Klein Sand  
**Quaternary catchment:** X32C  
**Locality:**  
 • Latitude (°S): 24°39.4428  
 • Longitude (°E): 31°05.2930  
 • Altitude (m.a.m.s.l): 560  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3KSAN-ROOIB

2431CA ACORNHOEK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 1
- **Invertebrates:** 1

### Historical information

- **Time period:** 1993 – 1995
- **Seasons sampled:** Winter / Spring
- **Number of visits:** 6
- **Organisations:** IWQS



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 25                              |                                |                               |                     |                      |
| FS      |                                 |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      | 8                               |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 3                         | 3                                | 3         |                        |
| FS      | 1         | 2                         | 1                                | 2         |                        |
| SD      | 3         | 2                         | 2                                | 2         |                        |
| SS      | 2         | 2                         | 1                                | 3         |                        |

Species richness: 12

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MU1  
**Province:** Mpumalanga  
**Sampling date:** September 1997  
**River:** Mholomobe  
**Quaternary catchment:** X32D  
**Locality:**  
 • Latitude (°S): 24°44.4030  
 • Longitude (°E): 30°55.2736  
 • Altitude (m.a.m.s.l): 800  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream

**Site name:** X3MOHL-WELGE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                                |                               |                     |                      |
| FS      | 31                              |                                |                               |                     |                      |
| SD      |                                 |                                |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 4                         | 2                                | 4         |                        |
| FS      | 4         | 4                         | 2                                | 4         |                        |
| SD      | 2         | 4                         | 3                                | 2         |                        |
| SS      | 2         | 4                         | 2                                | 3         |                        |

Species richness: 2

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** MU2  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Mohlomobe  
**Quaternary catchment:** X32D  
**Locality:**  
 • Latitude (°S): 24°45.7566  
 • Longitude (°E): 30°58.5157  
 • Altitude (m.a.m.s.l): 720  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble bed

**Site name:** X3MOHL-ZOEKN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information

- **Time period:** 1993 - 1995
- **Seasons sampled:** Winter / Spring / Summer
- **Number of visits:** 8
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of pulls) | Large seine (no. of pulls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 41                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 3                          | 1         |                     |
| FS      | 4         | 2                      | 3                          | 3         |                     |
| SD      | 1         | 2                      | 3                          | 1         |                     |
| SS      | 2         | 2                      | 3                          | 1         |                     |

Species richness: 5

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1

2

3

4

5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** MU3  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Mutlumuvi  
**Quaternary catchment:** X32D  
**Locality:**  
 • Latitude (°S): 24°45.4800  
 • Longitude (°E): 31°00.8999  
 • Altitude (m.a.m.s.l): 640  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble bed

**Site name:** X3MUTL-VIOLE

2431CC BOSBOKRAND



## SASS4

### Biotores:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information

- Time period: 1993 - 1995
- Seasons sampled: Winter / Spring / Summer
- Number of visits: 8
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 33                         |                            |                            |                  |                   |
| FS      | 8                          |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 2                          | 3         |                     |
| FS      | 3         | 3                      | 2                          | 3         |                     |
| SD      | 1         | 3                      | 2                          | 1         |                     |
| SS      | 1         | 3                      | 2                          | 2         |                     |

Species richness: 8

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** MU4  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Mutlumuvi  
**Quaternary catchment:** X32F  
**Locality:**  
 • Latitude (°S): 24°45.3426  
 • Longitude (°E): 31°07.8965  
 • Altitude (m.a.m.s.l): 503  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3MUTL-NEWFO

2431CC BOSBOKRAND



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information

- Time period: 1993
- Seasons sampled: Summer
- Number of visits: 1
- Organisations: IWQS



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 24                         |                             |                            |                  |                   |
| FS      | 13                         |                             |                            |                  |                   |
| SD      | 13                         |                             |                            |                  |                   |
| SS      |                            |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 2                          | 2         |                     |
| FS      | 2         | 2                      | 2                          | 2         |                     |
| SD      | 3         | 2                      | 1                          | 1         |                     |
| SS      | 2         | 1                      | 1                          | 1         |                     |

Species richness: 14

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotores:

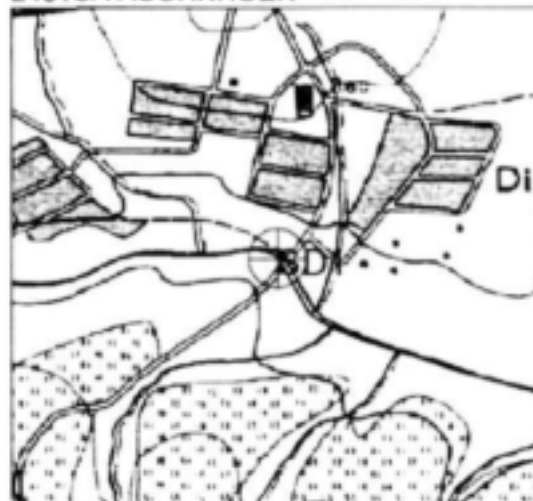
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** SD1  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Sand  
**Quaternary catchment:** X32C  
**Locality:**  
 • Latitude (°S): 24°40.7184  
 • Longitude (°E): 31°08.7926  
 • Altitude (m.a.m.s.l): 500  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble Bed

**Site name:** X3SAND-DINGL

2431CA ACORNHOEK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 22                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  |                   |
| SS      | 12                         |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 1                      | 2                          | 3         |                     |
| FS      | 2         | 1                      | 2                          | 3         |                     |
| SD      | 2         | 2                      | 1                          | 2         |                     |
| SS      | 3         | 2                      | 1                          | 2         |                     |

Species richness: 13

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** SD2  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Sand  
**Quaternary catchment:** X32C  
**Locality:**  
 • Latitude (°S): 24°42.8880  
 • Longitude (°E): 31°12.3124  
 • Altitude (m.a.m.s.l): 460  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SAND-THULA

2431CA ACORNHOEK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 29                         |                             |                            |                  |                   |
| FS      |                            |                             |                            |                  |                   |
| SD      |                            | 2                           |                            |                  |                   |
| SS      | 16                         |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 1                      | 3                          | 1         |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 2         | 3                      | 3                          | 1         |                     |
| SS      | 1         | 3                      | 3                          | 1         |                     |

Species richness: 2

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** SD3  
**Province:** Northern Province  
**Sampling date:** September 1997  
**River:** Sand  
**Quaternary catchment:** X32G  
**Locality:**  
 • Latitude (°S): 24°43.2708  
 • Longitude (°E): 31°14.1886  
 • Altitude (m.a.m.s.l): 440  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SAND-ROLLE

2431CA ACORNHOEK



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1993 – 1995
- Seasons sampled: Winter / Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 41                              |                                |                               |                     |                      |
| FS      |                                 |                                |                               |                     |                      |
| SD      | 8                               | 1                              |                               |                     |                      |
| SS      |                                 |                                |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 2                         | 2                                | 2         |                        |
| FS      | 2         | 2                         | 2                                | 2         |                        |
| SD      | 4         | 3                         | 3                                | 1         |                        |
| SS      | 3         | 3                         | 3                                | 1         |                        |

Species richness: 10

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

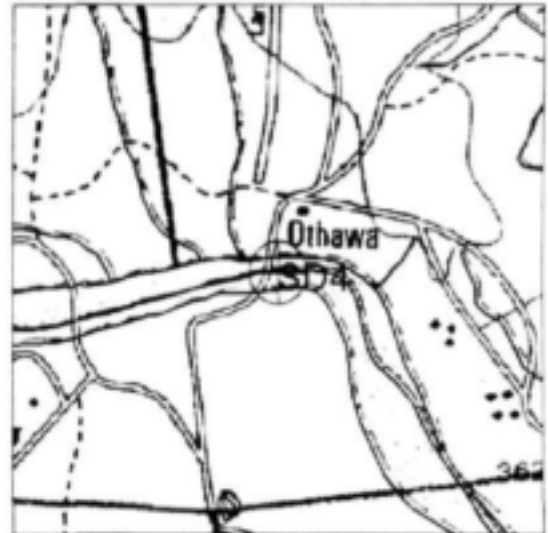
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** SD4  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sand  
**Quaternary catchment:** X32H  
**Locality:**  
 • Latitude (°S): 24°45.9918  
 • Longitude (°E): 31°24.3423  
 • Altitude (m.a.m.s.l): 366  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SAND-OTHAW

2431CD NEWINGTON



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 79                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      | 4                          |                            | 3                          |                  | 18                |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 1                      | 2                          | 2         |                     |
| FS      | 3         | 1                      | 2                          | 2         |                     |
| SD      | 2         | 3                      | 3                          | 2         |                     |
| SS      | 2         | 3                      | 3                          | 2         |                     |

Species richness: 2

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** SD5  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sand  
**Quaternary catchment:** X32H  
**Locality:**  
 • **Latitude (°S):** 24°47.4828  
 • **Longitude (°E):** 31°31.3878  
 • **Altitude (m.a.m.s.l):** 320  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SAND-LONDO

2431DC SKUKUZA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information

- **Time period:** 1993
- **Seasons sampled:** Winter / Spring / Summer
- **Number of visits:** 2
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                             |                            |                  |                   |
| FS      | 27                         |                             |                            |                  |                   |
| SD      |                            | 2                           |                            |                  | 36                |
| SS      |                            |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 1                      |                            | 2         |                     |
| FS      | 2         | 2                      | 1                          | 3         |                     |
| SD      | 2         | 2                      | 1                          | 3         |                     |
| SS      | 3         | 1                      | 2                          | 2         |                     |

Species richness: 19

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** SD6  
**Province:** Mpumalanga  
**Sampling date:** August 1997  
**River:** Sand  
**Quaternary catchment:** X32J  
**Locality:**  
 • Latitude (°S): 24°50.4600  
 • Longitude (°E): 31°33.1799  
 • Altitude (m.a.m.s.l): 300  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel Bed

**Site name:** X3SAND-FLOCK

2431DC SKUKUZA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 28                         |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 1         | 2                      | 2                          |           |                     |
| FS      | 4         | 2                      | 2                          | 1         |                     |
| SD      |           |                        |                            |           |                     |
| SS      | 1         | 2                      | 2                          |           |                     |

Species richness: 14

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

Code: SD7

Province: Mpumalanga

Sampling date: August 1997

River: Sand

Quaternary catchment: X32J

Locality:

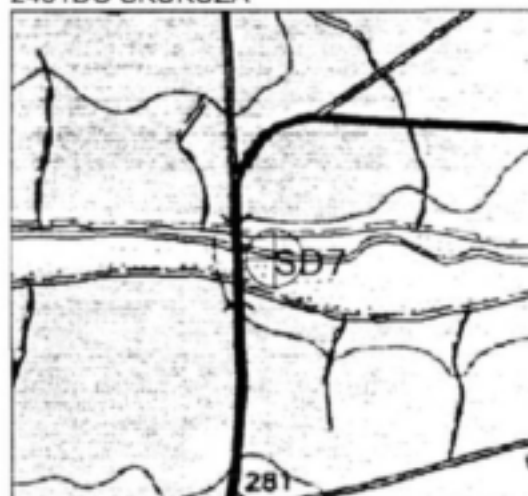
- Latitude (°S): 24°58.0320
- Longitude (°E): 31°37.6200
- Altitude (m.a.m.s.l): 260

Ecoregion: Lowveld

Stream classification: Foothill-gravel Bed

Site name: X3SAND-SKUKU

2431DC SKUKUZA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information

- Time period: 1993 – 1995
- Seasons sampled: Winter / Spring / Summer
- Number of visits: 5
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                                |                               |                     |                      |
|---------|---------------------------------|--------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls-) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 | 1                              |                               |                     |                      |
| FS      | 37                              |                                |                               |                     |                      |
| SD      |                                 | 1                              |                               |                     | 1                    |
| SS      |                                 | 1                              |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 1         | 1                         | 1                                | 2         |                        |
| FS      | 4         | 3                         | 2                                | 2         |                        |
| SD      | 1         | 3                         | 3                                | 1         |                        |
| SS      | 2         | 3                         | 3                                | 2         |                        |

Species richness: 2

## RIPARIAN VEGETATION (*Not available*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | - Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|-----------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |           |                          |                           |                |     |                        |                |
| Right |                 |           |                          |                           |                |     |                        |                |

## SITE INFORMATION

Code: SD8

Province: Mpumalanga

Sampling date: August 1997

River: Sand (close to Sabie confluence)

Quaternary catchment: X32J

Locality:

- Latitude (°S): 24,955
- Longitude (°E): 31,7
- Altitude (m.a.m.s.l): 230

Ecoregion: Lowveld

Stream classification:

Site name: X32SAND-CONFLU



## SASS4 (Not sampled)

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat:
- Invertebrates:

### Historical information

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:



## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                             |                            |                  |                   |
| FS      |                            |                             |                            |                  |                   |
| SD      |                            |                             |                            |                  |                   |
| SS      | 18                         |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      | 2         | 1                      | 1                          | 2         |                     |

Species richness: 6

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** MLON1 **Site name:** X3MLON-POORT

**Province:** Mpumalanga

**Sampling date:** August 1997

**River:** Mlondozi

**Quaternary catchment:** X33D

**Locality:**

- **Latitude (°S):** 25°09.5400
- **Longitude (°E):** 31°59.8800
- **Altitude (m.a.m.s.l)** 137

**Ecoregion:** Lebombo Uplands

**Stream classification:** Foothill-gravel Bed



## SASS4 (Not sampled)

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- **Habitat:**
- **Invertebrates:**

### Historical information

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                             |                            |                  |                   |
|---------|----------------------------|-----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls-) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                             |                            |                  |                   |
| FS      |                            |                             |                            |                  |                   |
| SD      |                            |                             | 1                          |                  |                   |
| SS      |                            |                             |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 2         | 3                      | 3                          | 2         |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 11

## RIPARIAN VEGETATION *(Not available)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



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## **Crocodile River Catchment**

### **Introduction**

The Crocodile River is the largest tributary of the Komati River and approximately 20% of the catchment lies within the southern sector of the Kruger National Park. Nelspruit, which forms the business and industrial center of the Crocodile catchment, is the largest town in the catchment (DWAF 1995). Forty seven sites on the Crocodile River and tributaries of the Crocodile River system were sampled (Figure 5). These include the Kareekraalspruit, Elandskloofspruit, Hartbeesspruit, Tautesloop, Leeuspruit, Blaauwboschkraalspruit, and the Lunsklip and Elands Rivers.

### **Description of the study area**

#### **Locality**

The Crocodile River drains an area of approximately 10 400 km<sup>2</sup> and is located roughly 300 km east of Johannesburg in Mpumalanga. The total length of the river is 320 km. It is situated at an altitude of 2150 m. The river originates near Dullstroom and drains the northern parts of the Eastern Highveld from where it flows east through the Eastern Escarpment and mountainous plateau near Nelspruit. It enters the southern Lowveld between the Escarpment and the Lebombo mountains at Komatipoort. (DWAF, 1995; Kleynhans, 1997).

#### **Topography**

The Highveld Plateau within the Crocodile River catchment ranges from 1400 m to over 2000 m. The Crocodile River catchment can be divided into four broad topographic zones namely:

- The Eastern Highveld Plateau with its eastern outliers (1400 to >2000 m).
- The Middleveld valleys incised into the Highveld (800 to 1400 m).
- The Great Escarpment of the Mpumalanga Drakensberg Range situated along the Eastern Highveld and the Middleveld.
- The Lowveld situated below 800 m (DWAF 1995; Kleynhans 1997).

#### **Climate**

In the catchment rainfall patterns are related to the topography. Mean annual precipitation (MAP) varies from 500 mm in the eastern reaches of the catchment to above 1600 mm in the northern and central mountainous areas (DWAF 1995). Mean annual evaporation rates vary from 1600 mm in the eastern Lowveld to 1400 mm in the western Highveld (Kleynhans, 1997). Mean annual temperatures vary between 23 °C in the eastern Lowveld and 15 °C in the western Highveld.

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## **Geology**

Five major Lithological units, which each contribute in a different way to the form and hydraulics of the river channel as well as the water quality characteristics of the catchment, can be identified within the Crocodile River catchment (DWAF, 1995). These are from east to west the Swaziland supergroup, the Basement complex, Dolomite, the Transvaal sequence and the Karoo sequence (Kleynhans, 1997).

## **Soils**

Shallow to deep sandy-loam to sandy-clay soils predominate in the Highveld plateau, while lithosols are dominant in the higher altitudes. The Lowveld, east of the Great Escarpment, is characterised by stony, sandy-loam soils, with few areas of deep sandy soils (DWAF, 1995).

## **Natural vegetation**

The Crocodile River catchment falls largely within the savanna biotope with grasslands dominating the western parts above the escarpment. Dramatic alterations to natural vegetation cover have increased erosion potential with deleterious effects on water resources (DWAF, 1995; Kleynhans, 1997).

## **Land use**

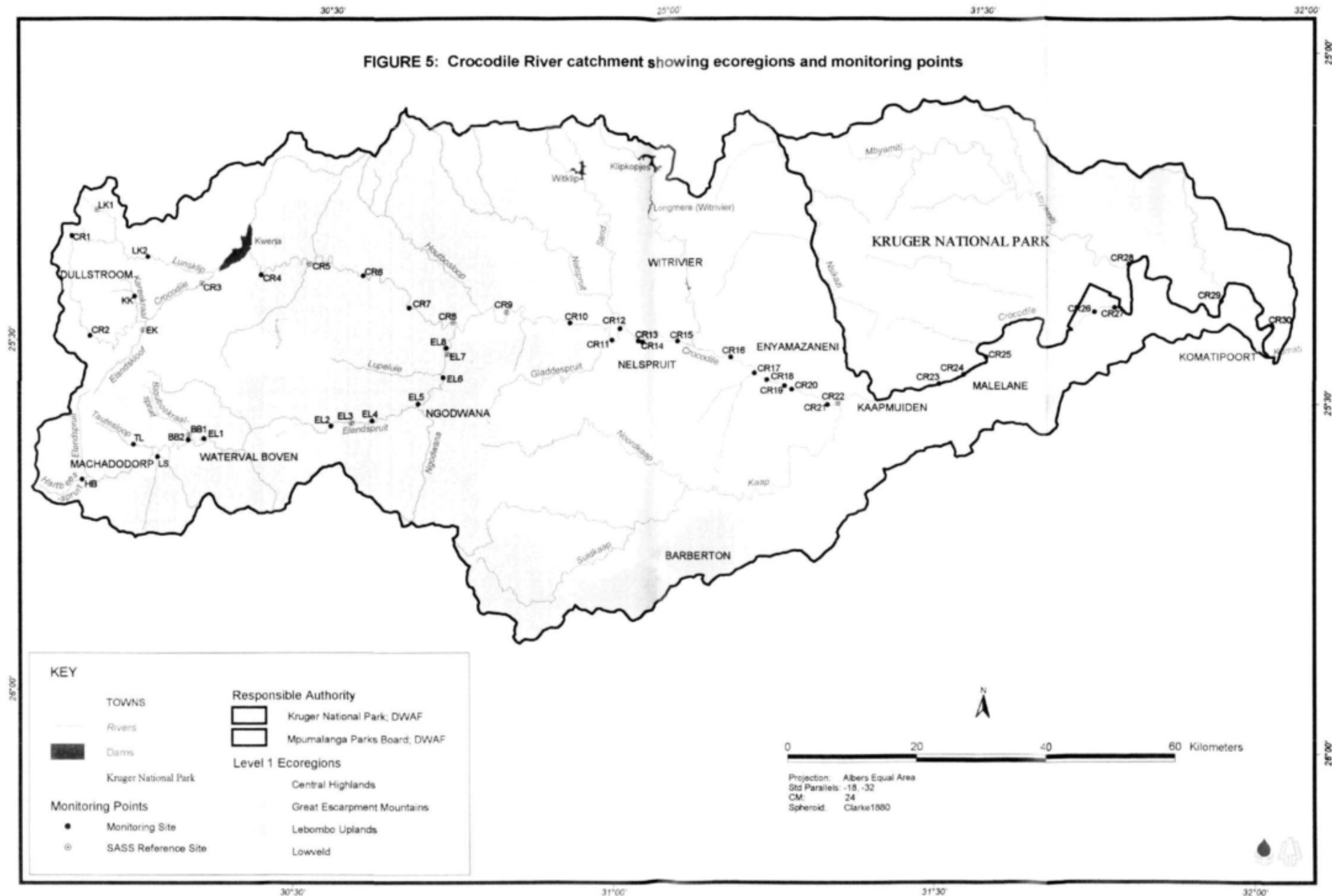
Land use in the Crocodile River catchment is concentrated mainly in the forestry and agricultural sectors namely:

- Commercial forestry: Covers 16.5% of the catchment and is concentrated in the western half.
- Game farming, cattle ranching and aquaculture: The former two sectors are concentrated in the drier eastern parts of the catchment while the latter is located in the upper reaches of the western portion of the catchment.
- Dry land agriculture: A wide variety of crops are cultivated mainly in the central parts of the catchment, including: maize, sub-tropical fruits, nuts, citrus, coffee and vegetables.
- Irrigation agriculture: The largest areas of irrigation are situated in the central and eastern regions of the catchment where approximately 91 000 ha of crops that mainly include maize, tobacco, sub-tropical fruits, citrus (20 000 ha) and sugar cane (21 000 ha) are irrigated (the latter two are most important).

Other types of land use include (DWAF, 1995) :

- Nature conservation: The southern portion of the Kruger National Park forms the main area of conservation activity in the catchment. Other areas include: Kangwane Parks Corporation, Forestry Conservation Areas, Natural Heritage Sites and Private Nature Reserves.
- Mining and quarrying: Mining activity is mainly concentrated around the Kaap River and the lower Crocodile sub-catchments.
- Households and industry: The larger urban centers such as Nelspruit and White River form the focus of the domestic and industrial land use sectors.

FIGURE 5: Crocodile River catchment showing ecoregions and monitoring points







## SITE INFORMATION

**Code:** CR1  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**Quaternary catchment:** X21A  
**River:** Crocodile  
**Locality:**  
 • Latitude (°S): 25°20.9244  
 • Longitude (°E): 30°06.6159  
 • Altitude (m.a.m.s.l): 2100  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream

**Site name:** X2CROC-VELOR

2530AC DULLSTROOM



## SASS4

### Biotores:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                       |                       |                  |                   |
|---------|----------------------------|-----------------------|-----------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of ) | Large seine (no. of ) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                       |                       |                  |                   |
| FS      |                            |                       |                       |                  |                   |
| SD      |                            |                       |                       |                  |                   |
| SS      |                            | 7                     |                       |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      | 1         | 4                      | 3                          | 3         | 1                   |

Species richness: 1

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

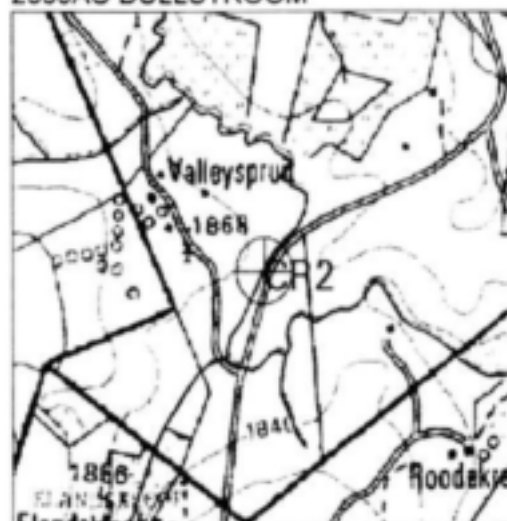
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** CR2  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X21A  
**Locality:**  
 • Latitude (°S): 25°29.4144  
 • Longitude (°E): 30°08.6967  
 • Altitude (m.a.m.s.l): 1840  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill-cobble bed

**Site name:** X2CROC-ELAN

2530AC DULLSTROOM



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            | 4                          |                            |                  |                   |
| FS      | 7                          |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 4                      | 4                          | 3         | 1                   |
| FS      | 3         | 3                      | 3                          | 4         | 1                   |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 1

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** CR3  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X21B  
**Locality:**  
     • **Latitude (°S):** 25°24.5316  
     • **Longitude (°E):** 30°18.9705  
     • **Altitude (m.a.m.s.l)** 1219  
**Ecoregion:** Central Highlands  
**Stream classification:** Foothill-cobble bed

**Site name:** X2CROC-GOEDE

2530AD BADFONTEIN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- **Habitat:** 4
- **Invertebrates:** 3

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 23                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 2                         | 3                                | 4         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 4

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

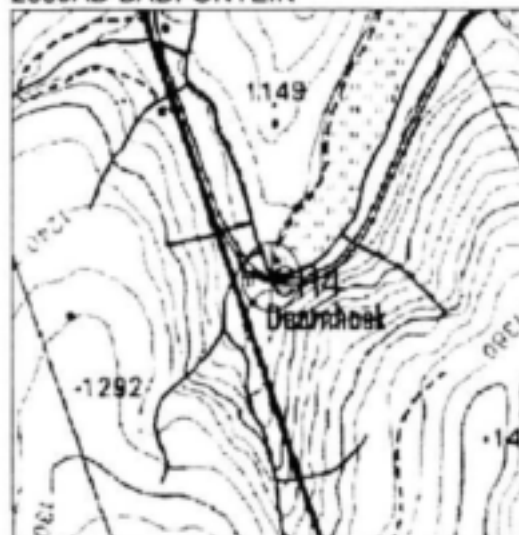
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR4  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X21D  
**Locality:**  
 • Latitude (°S): 25°23.5470  
 • Longitude (°E): 30°24.4902  
 • Altitude (m.a.m.s.l): 1128  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble bed

**Site name:** X2CROC-DOORN

2530AD BADFONTEIN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 1

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 18                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 2                         | 4                                | 4         |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 2

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |



## SITE INFORMATION

**Code:** CR5

**Province:** Mpumalanga

**Sampling date:** October 1996

**River:** Crocodile

**Quaternary catchment:** X21E

**Locality:**

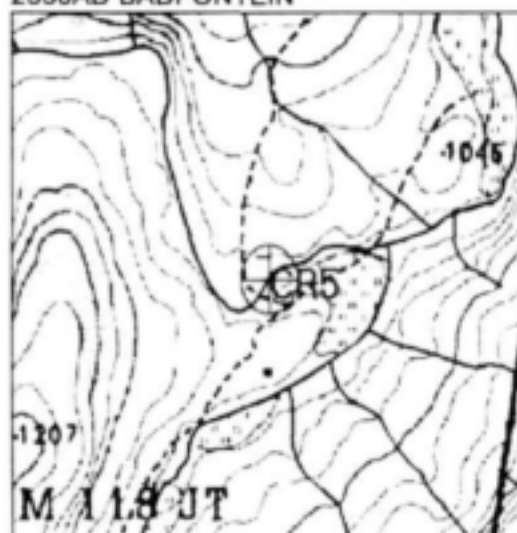
- **Latitude (°S):** 25°22.4502
- **Longitude (°E):** 30°28.8765
- **Altitude (m.a.m.s.l)** 1021

**Ecoregion:** Great Escarpment Mountains

**Stream classification:** Foothill-cobble bed

**Site name:** X2CROC-STERK

2530AD BADFONTEIN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 17                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 3                      | 2                          | 4         |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 6

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

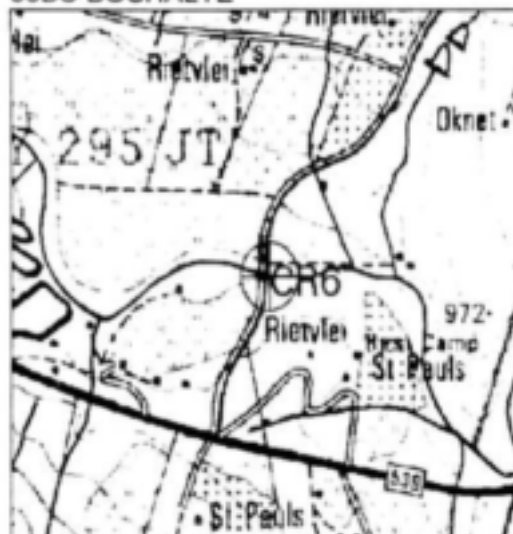
| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** CR6  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X21E  
**Locality:**  
 • Latitude (°S): 25°23.2428  
 • Longitude (°E): 30°33.9810  
 • Altitude (m.a.m.s.l): 930  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble

**Site name:** X2CROC-RIETV

35BC BOSHALTE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 22                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 2                      | 2                          | 4         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 6

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

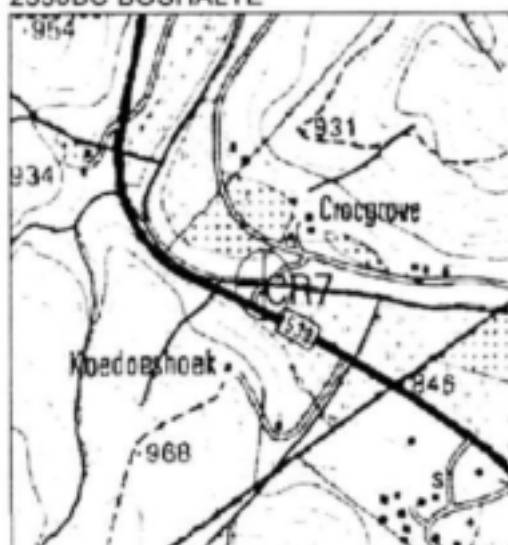
1  
2  
3  
4  
5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** CR7 **Site name:** X2CROC-INDEM  
**Province:** Mpumalanga **2530BC BOSHALTE**  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X21E  
**Locality:**  
     • **Latitude (°S):** 25°25.7940  
     • **Longitude (°E):** 30°38.4020  
     • **Altitude (m.a.m.s.l):** 853  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 4

### Historical information *(Not available)*

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 17                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 3                                | 4         | 2                      |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 5

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

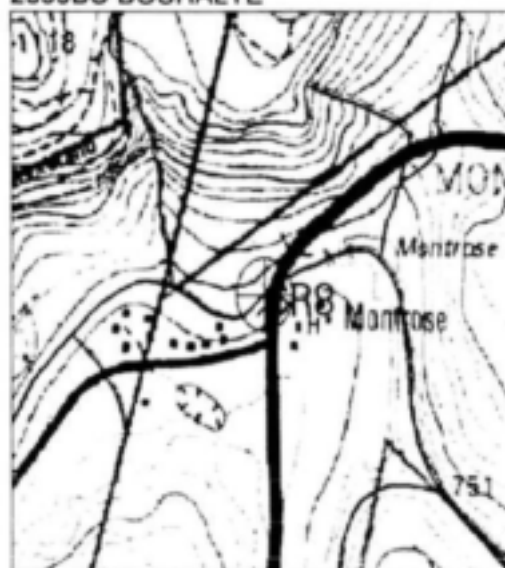
Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

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|                               |                            |                                |
|-------------------------------|----------------------------|--------------------------------|
| <b>Code:</b>                  | CR8                        | <b>Site name:</b> X2CROC-MONTR |
| <b>Province:</b>              | Mpumalanga                 | 2530BC BOSHALTE                |
| <b>Sampling date:</b>         | October 1996               |                                |
| <b>River:</b>                 | Crocodile                  |                                |
| <b>Quaternary catchment:</b>  | X21E                       |                                |
| <b>Locality:</b>              |                            |                                |
| • Latitude (°S):              | 25°26.9148                 |                                |
| • Longitude (°E):             | 30°42.5748                 |                                |
| • Altitude (m.a.m.s.l)        | 792                        |                                |
| <b>Ecoregion:</b>             | Great escarpment mountains |                                |
| <b>Stream classification:</b> | Rejuvenated cascades gorge |                                |



## SASS4

---

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              |         |         | 2         |
| MVEG              | X       | X       | 4         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter & Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 17                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 24                   |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 1                         | 1                                | 4         |                        |
| FS      |           |                           |                                  |           |                        |
| SD      | 3         | 2                         | 3                                | 1         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 6

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

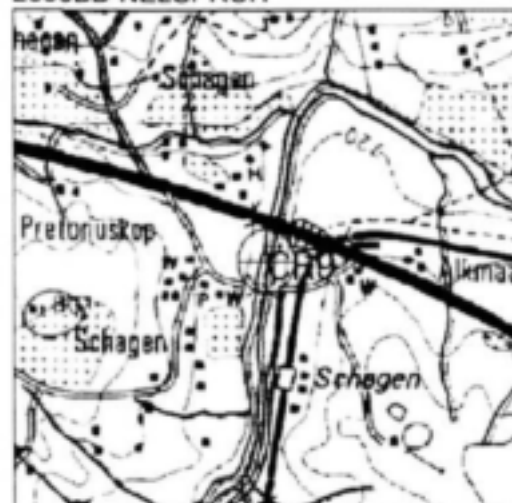


## SITE INFORMATION

**Code:** CR9  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X22B  
**Locality:**  
 • Latitude (°S): 25°25.8150  
 • Longitude (°E): 30°47.4222  
 • Altitude (m.a.m.s.l): 716  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-SCHAG

2530BD NELSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 4         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 26                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 15                   |
| SS      | 7                               |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 2                                | 4         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 3         | 2                         | 1                                | 1         | 1                      |
| SS      | 3         | 3                         | 2                                | 1         | 2                      |

Species richness: 5

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

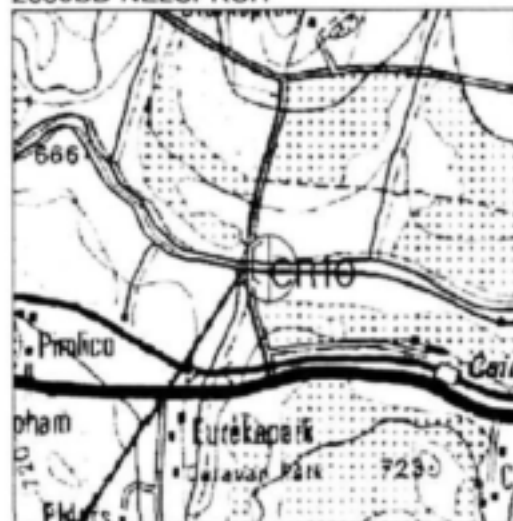
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR10  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X22C  
**Locality:**  
     • **Latitude (°S):** 25°26.4480  
     • **Longitude (°E):** 30°53.3379  
     • **Altitude (m.a.m.s.l)** 671  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-STER1

2530BD NELSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 34                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 12                   |
| SS      |                                 |                               |                               |                     |                      |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 2                                | 2         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 1         | 3                         | 2                                | 2         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 6

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR11  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X22J  
**Locality:**

- Latitude (°S): 25°27.7344
- Longitude (°E): 30°57.3154
- Altitude (m.a.m.s.l): 640

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-BOSC2

2530BD NELSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 46                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 3                          |                            |                  | 4                 |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 2                      | 3                          | 1         | 2                   |
| FS      |           |                        |                            |           |                     |
| SD      | 3         | 2                      | 2                          | 1         | 2                   |
| SS      |           |                        |                            |           |                     |

Species richness: 8

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

1  
2  
3  
4  
5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** CR12  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X22C  
**Locality:**  
 • Latitude (°S): 25°26.7024  
 • Longitude (°E): 30°58.0103  
 • Altitude (m.a.m.s.l): 610  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-cobble bed

**Site name:** X2CROC-BOSC1

2530BD NELSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

### FISH (Not sampled)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness:

### RIPARIAN VEGETATION (Not sampled)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |



## SITE INFORMATION

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**Code:** CR13  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X22J  
**Locality:**  
 • **Latitude (°S):** 25°27.6918  
 • **Longitude (°E):** 30°59.7772  
 • **Altitude (m.a.m.s.l)** 579  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-FRIED

2530BD NELSPRUIT



## SASS4

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### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              |         |         | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 1

### Historical information

- **Time period:** 1996
- **Seasons sampled:** Spring
- **Number of visits:** 1
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 16                              |                               |                               |                     |                      |
| SD      |                                 |                               | 4                             | 14.5                |                      |
| SS      | 7                               |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 1                         | 1                                | 1         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 4         | 2                         | 3                                | 1         | 2                      |
| SS      | 3         | 3                         | 3                                | 2         | 2                      |

Species richness: 9

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

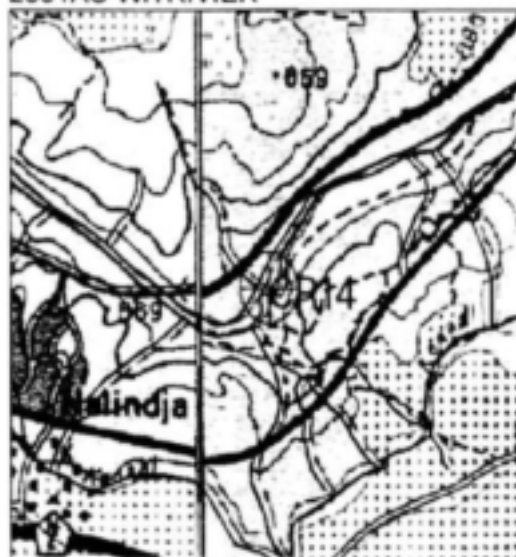
| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR14  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X22J  
**Locality:**  
 • Latitude (°S): 25°27.7734  
 • Longitude (°E): 31°00.1627  
 • Altitude (m.a.m.s.l): 564  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-LIONS

2531AC WITRIVIER



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 1
- **Invertebrates:** 1

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 6
- **Organisations:** IWQS

### FISH (*Not sampled*)

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness:

### RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

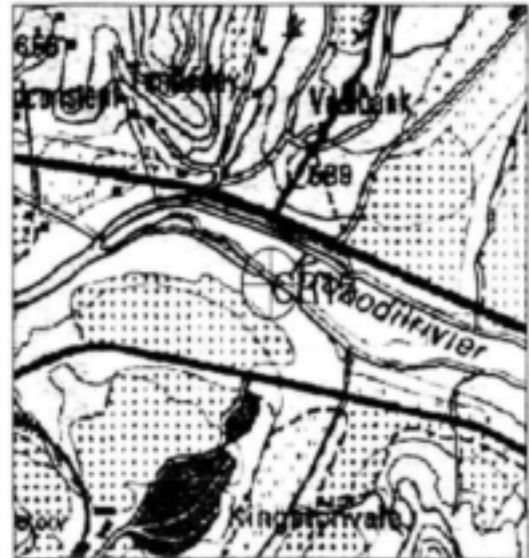
**Code:** CR15  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X22J  
**Locality:**

- **Latitude (°S):** 25°27.5190
- **Longitude (°E):** 31°03.4761
- **Altitude (m.a.m.s.l):** 533

**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated foothill

**Site name:** X2CROC-KINGS

2531AC WITRIVIER



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 1
- **Invertebrates:** 1

### Historical information

- **Time period:** 1996
- **Seasons sampled:** Spring
- **Number of visits:** 1
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 51                              |                               |                               |                     | 22                   |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 2                                | 2         | 2                      |
| FS      |           |                           |                                  |           |                        |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 7

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

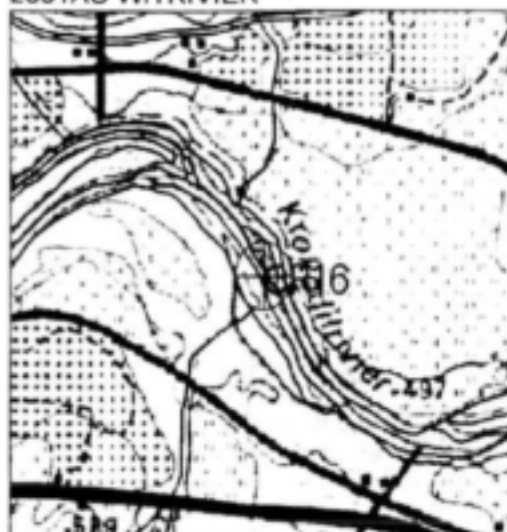
- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR16 **Site name:** X2CROC-BROED  
**Province:** Mpumalanga **2531AC WITRIVIER**  
**Sampling date:** October 1996  
**River:** Crocodile  
**Quaternary catchment:** X22K  
**Locality:**  
 • **Latitude (°S):** 25°28.6800  
 • **Longitude (°E):** 31°08.4599  
 • **Altitude (m.a.m.s.l):** 503  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated foothill



## SASS4 (Not sampled)

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- **Habitat:** 1
- **Invertebrates:** 3

### Historical information

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 26                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 6                    |
| SS      |                                 | 1                             |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 3                         | 2                                | 2         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 3         | 3                         | 2                                | 1         | 1                      |
| SS      | 1         | 0                         | 0                                | 2         | 1                      |

Species richness: 8

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

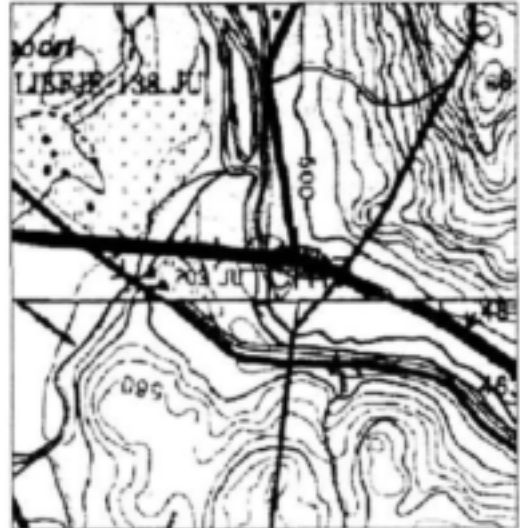


## SITE INFORMATION

**Code:** CR17  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X22K  
**Locality:**  
 • Latitude (°S): 25°29.9400  
 • Longitude (°E): 31°10.7400  
 • Altitude (m.a.m.s.l): 472  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated foothill

**Site name:** X2CROC-N4ROA

2531AC WITRIVIER



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter & Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 28                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 31                   |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 2                         | 2                                | 4         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 3         | 2                         | 2                                | 1         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 10

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR18  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X22K  
**Locality:**  
 • Latitude (°S): 25°30.4800  
 • Longitude (°E): 31°11.9399  
 • Altitude (m.a.m.s.l): 460  
**Ecoregion:** Lowveld  
**Stream classification:** Rejuvenated foothill

**Site name:** X2CROC-KATSE

2531CA SHEBA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 1

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 21                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 34                   |
| SS      |                                 |                               |                               |                     |                      |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 3         | 3                         | 3                                | 4         | 1                      |
| SD      | 2         | 3                         | 3                                | 3         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 8

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

|                               |                               |                                |
|-------------------------------|-------------------------------|--------------------------------|
| <b>Code:</b>                  | CR19                          | <b>Site name:</b> X2CROC-WELTE |
| <b>Province:</b>              | Mpumalanga                    | 2531CA SHEBA                   |
| <b>Sampling date:</b>         | September 1996                |                                |
| <b>River:</b>                 | Crocodile                     |                                |
| <b>Quaternary catchment:</b>  | X22K                          |                                |
| <b>Locality:</b>              |                               |                                |
| • Latitude (°S):              | 25°30.9000                    |                                |
| • Longitude (°E):             | 31°13.6338                    |                                |
| • Altitude (m.a.m.s.l)        | 460                           |                                |
| <b>Ecoregion:</b>             | Lowveld                       |                                |
| <b>Stream classification:</b> | Rejuvenated<br>cascades gorge |                                |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 1
- Invertebrates: 2

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 9                          |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 0                      | 1                          | 3         | 0                   |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 5

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

|                               |                               |                                |
|-------------------------------|-------------------------------|--------------------------------|
| <b>Code:</b>                  | CR20                          | <b>Site name:</b> X2CROC-WELT1 |
| <b>Province:</b>              | Mpumalanga                    | 2531CA SHEBA                   |
| <b>Sampling date:</b>         | September 1996                |                                |
| <b>River:</b>                 | Crocodile                     |                                |
| <b>Quaternary catchment:</b>  | X22K                          |                                |
| <b>Locality:</b>              |                               |                                |
| • <b>Latitude (°S):</b>       | 25°31.1610                    |                                |
| • <b>Longitude (°E):</b>      | 31°14.3417                    |                                |
| • <b>Altitude (m.a.m.s.l)</b> | 400                           |                                |
| <b>Ecoregion:</b>             | Lowveld                       |                                |
| <b>Stream classification:</b> | Rejuvenated<br>cascades gorge |                                |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              | X       | X       | 1         |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 1
- **Invertebrates:** 1

### Historical information

- **Time period:** 1996
- **Seasons sampled:** Spring
- **Number of visits:** 1
- **Organisations:** IWQS

## FISH

### Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 67                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

### Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 1                          | 4         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 9

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

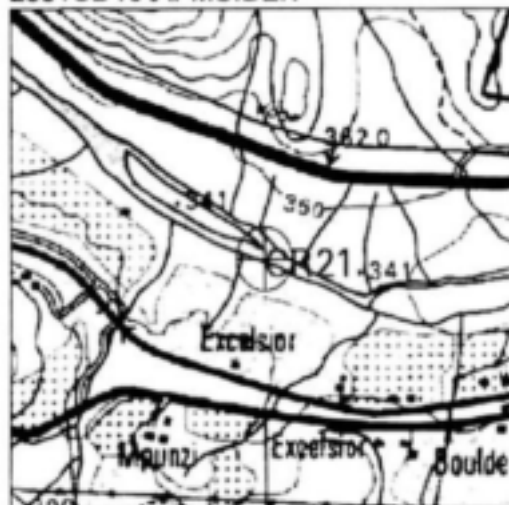
**Code:** CR21  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X22K  
**Locality:**

- Latitude (°S): 25°32.3400
- Longitude (°E): 31°17.7600
- Altitude (m.a.m.s.l): 351

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-EXCEL

2531CB KAAPMUIDEN



## SASS4 (Not sampled)

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

### Ecological Importance

- Habitat:
- Invertebrates:

### Historical information

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 19                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 2         | 1                      | 1                          | 4         | 0                   |
| FS      |           |                        |                            |           |                     |
| SD      |           |                        |                            |           |                     |
| SS      |           |                        |                            |           |                     |

Species richness: 9

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** CR22  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X24C  
**Locality:**  
 • Latitude (°S): 25°32.1798  
 • Longitude (°E): 31°18.7023  
 • Altitude (m.a.m.s.l): 335  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-KAAPM

2531CB KAAPMUIDEN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 3

### Historical information

- **Time period:** 1993-1995
- **Seasons sampled:** Winter & Spring
- **Number of visits:** 6
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 39                              |                               |                               |                     |                      |
| FS      | 18                              |                               |                               |                     |                      |
| SD      | 9                               |                               |                               |                     |                      |
| SS      |                                 | 5                             |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 1                         | 1                                | 4         | 1                      |
| FS      | 2         | 1                         | 2                                | 3         | 1                      |
| SD      | 4         | 4                         | 2                                | 1         | 2                      |
| SS      | 1         | 3                         | 2                                | 2         | 1                      |

Species richness: 21

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

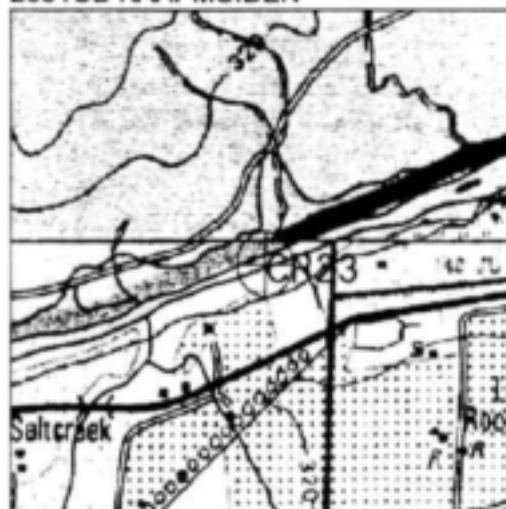
## SITE INFORMATION

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**Code:** CR23  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X24D  
**Locality:**  
 • Latitude (°S): 25°30.0468  
 • Longitude (°E): 31°27.9556  
 • Altitude (m.a.m.s.l): 290  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-MVOVO

2531CB KAAPMUIDEN



## SASS4

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### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            | X       | X       | 1         |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 2
- Invertebrates: 2

### Historical information

- Time period: 1996
- Seasons sampled: Spring
- Number of visits: 1
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 29                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     | 47                   |
| SS      |                                 | 2                             |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 3         | 1                         | 1                                | 2         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 2         | 1                         | 2                                | 1         | 1                      |
| SS      | 1         | 3                         | 2                                | 1         | 1                      |

Species richness: 13

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR24  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X24D  
**Locality:**

- **Latitude (°S):** 25°29.1600
- **Longitude (°E):** 31°30.1200
- **Altitude (m.a.m.s.l):** 290

**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-MALET

2531BC HECTORSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- **Habitat:** 3
- **Invertebrates:** 3

### Historical information

- **Time period:** 1996
- **Seasons sampled:** Spring
- **Number of visits:** 1
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 37                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 | 6                             |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 2         | 1                         | 1                                | 3         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 3         | 2                         | 2                                | 1         | 2                      |
| SS      | 3         | 4                         | 1                                | 1         | 2                      |

Species richness: 17

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |



## SITE INFORMATION

**Code:** CR25  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X24E  
**Locality:**  
     • **Latitude (°S):** 25°27.5628  
     • **Longitude (°E):** 31°32.1207  
     • **Altitude (m.a.m.s.l):** 290  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-MALEL

2531BC HECTORSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information

- **Time period:** 1996
- **Seasons sampled:** Spring
- **Number of visits:** 1
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 29                              |                               |                               |                     |                      |
| SD      |                                 | 1                             | 4                             |                     | 23                   |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 2         | 1                         | 1                                | 4         | 1                      |
| SD      | 4         | 2                         | 2                                | 2         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 19

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** CR26  
**Province:** Mpumalanga  
**Sampling date:** September 1996  
**River:** Crocodile  
**Quaternary catchment:** X24F  
**Locality:**  
 • **Latitude (°S):** 25°23.1354  
 • **Longitude (°E):** 31°41.9955  
 • **Altitude (m.a.m.s.l):** 229  
**Ecoregion:** Lowveld  
**Stream classification:** Foothill-gravel bed

**Site name:** X2CROC-LWAKA

2531 BC HECTORSPRUIT



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 2         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information

- **Time period:** 1996
- **Seasons sampled:** Spring
- **Number of visits:** 1
- **Organisations:** IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 22                         |                            |                            |                  |                   |
| SD      |                            | 2                          | 3                          |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 2         | 1                      | 1                          | 2         | 1                   |
| SD      | 3         | 4                      | 2                          | 1         | 2                   |
| SS      |           |                        |                            |           |                     |

Species richness: 16

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

---

**Code:** TL  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Tautesloop  
**Quaternary catchment:** X21F  
**Locality:**  
     • Latitude (°S): 25°38.5986  
     • Longitude (°E): 30°13.2187  
     • Altitude (m.a.m.s.l): 1567  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream

**Site name:** X2TAUT-WINNA

2530CA BELFAST



## SASS4

---

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 4         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 9                               |                               |                               |                     |                      |
| SD      |                                 | 1                             |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 3         | 3                         | 3                                | 3         | 1                      |
| SD      | 4         | 2                         | 2                                | 2         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 3

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** LS **Site name:** X2LEEU-GELUK  
**Province:** Mpumalanga **2530CB WATERVALBOVEN**  
**Sampling date:** October 1996  
**River:** Leeuspruit  
**Quaternary catchment:** X21F  
**Locality:**  
• **Latitude (°S):** 25°39.5790  
• **Longitude (°E):** 30°15.5645  
• **Altitude (m.a.m.s.l)** 1524  
**Ecoregion:** Central Highlands  
**Stream classification:** Mountain stream



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 2         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 31                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 3         | 3                         | 1                                | 4         | 1                      |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 1

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

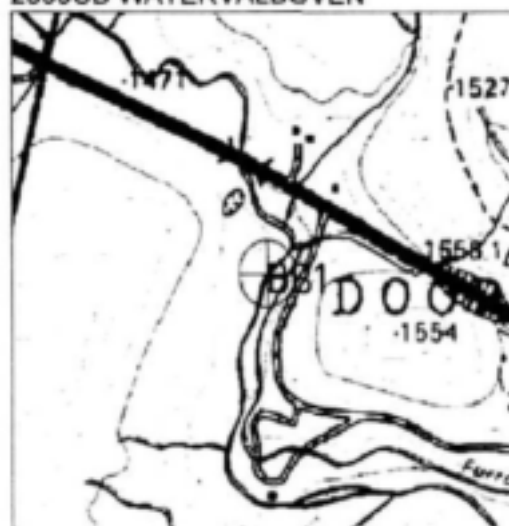


## SITE INFORMATION

Code: BB1  
Province: Mpumalanga  
Sampling date: October 1996  
River: Blouboskraalspruit  
Quaternary catchment: X21G  
Locality:  
• Latitude (°S): 25°37.5600  
• Longitude (°E): 30°18.4199  
• Altitude (m.a.m.s.l): 1448  
Ecoregion: Great Escarpment Mountains  
Stream classification: Mountain stream

Site name: X2BLOU-DOORN

2530CB WATERVALBOVEN



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 16                              |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 3         | 1                         | 2                                | 4         | 1                      |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Species richness: 2

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

1  
2  
3  
4  
5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** BB2

**Province:** Mpumalanga

**Sampling date:** October 1996

**River:** Blouboskraalspruit

**Quaternary catchment:** X21G

**Locality:**

- **Latitude (°S):** 25°38.0016
- **Longitude (°E):** 30°18.3769
- **Altitude (m.a.m.s.l)** 1433

**Ecoregion:** Great Escarpment Mountains

**Stream classification:** Mountain stream

**Site name:** X2BLOU-DOOR2

2530CB WATERVALBOVEN



## SASS4 (Not sampled)

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

**Ecological Importance**

- **Habitat:**
- **Invertebrates:**

**Historical information**

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      |                                 |                               |                               |                     |                      |
| FS      | 9                               |                               |                               |                     |                      |
| SD      |                                 |                               |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      |           |                           |                                  |           |                        |
| FS      | 3         | 1                         | 2                                | 3         | 1                      |
| SD      |           |                           |                                  |           |                        |
| SS      |           |                           |                                  |           |                        |

Ecological Importance

Species richness: 1

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

## SITE INFORMATION

**Code:** EL1 **Site name:** X2ELAN-WATER  
**Province:** Mpumalanga **2530CB WATERVALBOVEN**  
**Sampling date:** October 1996  
**River:** Elands  
**Quaternary catchment:** X21G  
**Locality:**  
• **Latitude (°S):** 25°37.8270  
• **Longitude (°E):** 30°19.8396  
• **Altitude (m.a.m.s.l)** 1372  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Mountain stream



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 1         |
| SOOC              |         |         |           |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- **Habitat:** 2
- **Invertebrates:** 2

### Historical information (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 22                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 2                          | 3         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      | 4         | 2                      | 2                          | 2         | 0                   |
| SS      |           |                        |                            |           |                     |

Species richness: 3

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** EL2  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Elands  
**Quaternary catchment:** X21J  
**Locality:**  
 • Latitude (°S): 25°36.2790  
 • Longitude (°E): 30°31.6653  
 • Altitude (m.a.m.s.l): 1020  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble bed

**Site name:** X2ELAN-WELTE

2530DA NGODWANA



## SASS4

**Biotopes:**

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 1         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

**Ecological Importance**

- **Habitat:** 3
- **Invertebrates:** 3

**Historical information** (*Not available*)

- **Time period:**
- **Seasons sampled:**
- **Number of visits:**
- **Organisations:**

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT      |                               |                               |                     |                      |
|---------|---------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|
|         | Electro<br>shocker<br>(minutes) | Small seine<br>(no. of hauls) | Large seine<br>(no. of hauls) | Gill net<br>(hours) | Cast net<br>(throws) |
| FD      | 18                              |                               |                               |                     |                      |
| FS      |                                 |                               |                               |                     |                      |
| SD      |                                 | 1                             |                               |                     |                      |
| SS      |                                 |                               |                               |                     |                      |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging<br>vegetation | Undercut<br>banks &<br>root wads | Substrate | Aquatic<br>macrophytes |
|---------|-----------|---------------------------|----------------------------------|-----------|------------------------|
| FD      | 4         | 3                         | 3                                | 4         | 1                      |
| FS      |           |                           |                                  |           |                        |
| SD      | 4         | 3                         | 3                                | 2         | 1                      |
| SS      |           |                           |                                  |           |                        |

Species richness: 6

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High<br>terrace | Terrace | Macro<br>channel<br>bank | Active<br>channel<br>bank | Flood<br>bench | Bar | Mid-<br>channel<br>bar | Flood<br>plain |
|-------|-----------------|---------|--------------------------|---------------------------|----------------|-----|------------------------|----------------|
| Left  |                 |         |                          |                           |                |     |                        |                |
| Right |                 |         |                          |                           |                |     |                        |                |

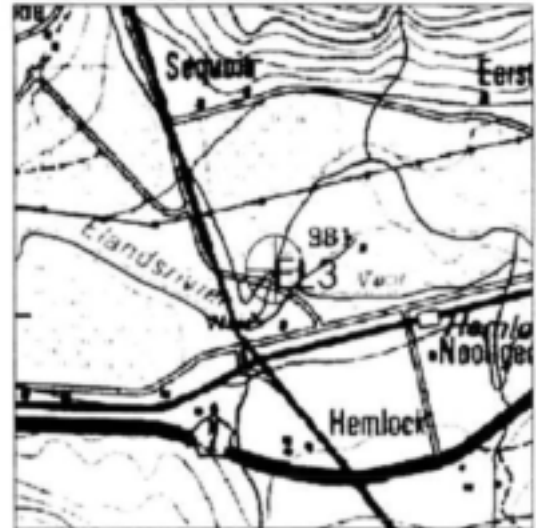


## SITE INFORMATION

**Code:** EL3  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Elands  
**Quaternary catchment:** X21J  
**Locality:**  
 • Latitude (°S): 25°35.9400  
 • Longitude (°E): 30°33.5999  
 • Altitude (m.a.m.s.l): 1000  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble bed

**Site name:** X2ELAN-HEMLO

2530DA NGODWANA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       | X       | 2         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 2         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter & Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      | 19                         |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      | 3         | 4                      | 2                          | 4         | 1                   |
| SD      | 2         | 1                      | 1                          | 3         | 0                   |
| SS      |           |                        |                            |           |                     |

Species richness: 5

## RIPARIAN VEGETATION *(Not sampled)*

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

**Code:** EL4  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Elands  
**Quaternary catchment:** X21J  
**Locality:**  
 • Latitude (°S): 25°35.6754  
 • Longitude (°E): 30°35.5199  
 • Altitude (m.a.m.s.l): 960  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble bed

**Site name:** X2ELAN-RYTON

2530DA NGODWANA



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 19                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 2                          | 4         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      | 3         | 3                      | 3                          | 2         | 2                   |
| SS      |           |                        |                            |           |                     |

Species richness: 6

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

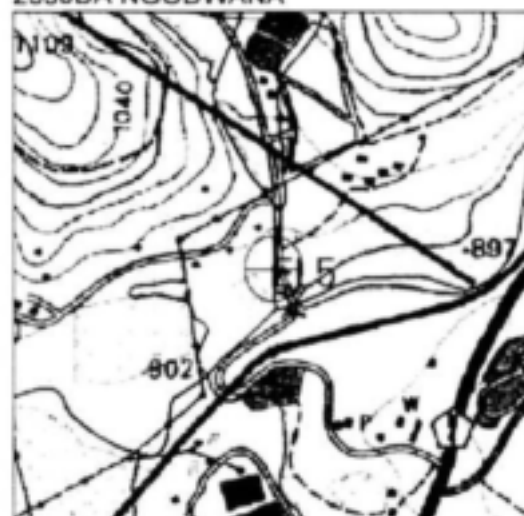
## SITE INFORMATION

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**Code:** EL5  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Elands  
**Quaternary catchment:** X21J  
**Locality:**  
 • Latitude (°S): 25°34.0200  
 • Longitude (°E): 30°39.7075  
 • Altitude (m.a.m.s.l): 900  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-cobble bed

**Site name:** X2ELAN-ROODE

2530DA NGODWANA



## SASS4

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### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 1         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 4

### Historical information *(Not available)*

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 13                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 2                          | 4         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      | 3         | 1                      | 2                          | 3         | 1                   |
| SS      |           |                        |                            |           |                     |

Species richness: 7

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species:

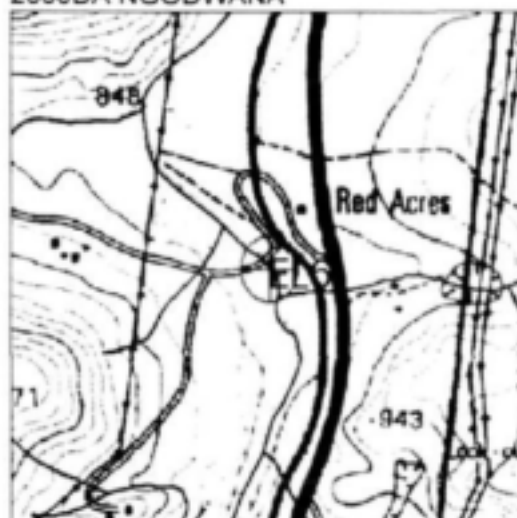
- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

## SITE INFORMATION

|                        |                            |                         |
|------------------------|----------------------------|-------------------------|
| Code:                  | EL6                        | Site name: X2ELAN-GOEDG |
| Province:              | Mpumalanga                 | 2530DA NGODWANA         |
| Sampling date:         | October 1996               |                         |
| River:                 | Elands                     |                         |
| Quaternary catchment:  | X21K                       |                         |
| Locality:              |                            |                         |
| • Latitude (°S):       | 25°31.6656                 |                         |
| • Longitude (°E):      | 30°41.8966                 |                         |
| • Altitude (m.a.m.s.l) | 860                        |                         |
| Ecoregion:             | Great Escarpment Mountains |                         |
| Stream classification: | Foothill-gravel bed        |                         |



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 3         |
| SOOC              | X       | X       | 3         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 3         |

### Ecological Importance

- Habitat: 3
- Invertebrates: 3

### Historical information (*Not available*)

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 21                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 9                 |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 3         | 3                      | 2                          | 4         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      | 4         | 3                      | 3                          | 3         | 1                   |
| SS      |           |                        |                            |           |                     |

Species richness: 4

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological importance:

Dominant 5 species:

- 1
- 2
- 3
- 4
- 5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



## SITE INFORMATION

**Code:** EL7  
**Province:** Mpumalanga  
**Sampling date:** October 1996  
**River:** Elands  
**Quaternary catchment:** X21K  
**Locality:**  
 • Latitude (°S): 25°29.6304  
 • Longitude (°E): 30°42.1617  
 • Altitude (m.a.m.s.l): 838  
**Ecoregion:** Great Escarpment Mountains  
**Stream classification:** Foothill-gravel bed

**Site name:** X2ELAN-LINDE

2530BC BOSHALTE



## SASS4

### Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               | X       | X       | 4         |
| SOOC              | X       | X       | 4         |
| MVEG              | X       | X       | 3         |
| AQ VEG            |         |         |           |
| Sand, mud, gravel | X       | X       | 1         |

### Ecological Importance

- Habitat: 4
- Invertebrates: 4

### Historical information

- Time period: 1993-1995
- Seasons sampled: Winter & Spring
- Number of visits: 6
- Organisations: IWQS

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      |                            |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            | 1                          |                            |                  |                   |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      |           |                        |                            |           |                     |
| FS      |           |                        |                            |           |                     |
| SD      | 4         | 4                      | 3                          | 3         | 2                   |
| SS      |           |                        |                            |           |                     |

Species richness: 3

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1

2

3

4

5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |

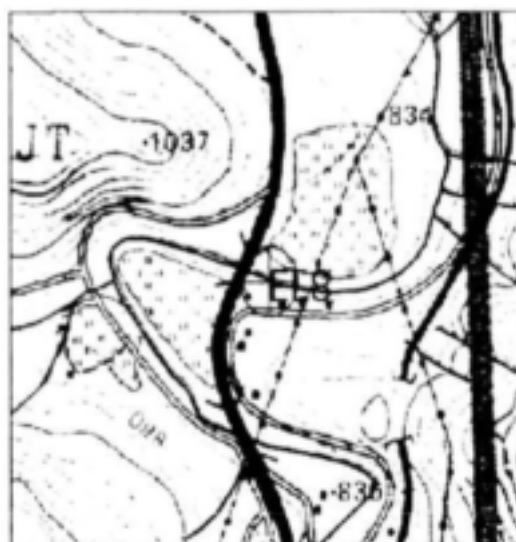
## SITE INFORMATION

Code: EL8  
Province: Mpumalanga  
Sampling date: October 1996  
River: Elands  
Quaternary catchment: X21K  
Locality:

- Latitude (°S): 25°29.1186
- Longitude (°E): 30°42.0516
- Altitude (m.a.m.s.l): 823

Ecoregion: Great Escarpment Mountains  
Stream classification: Foothill-gravel bed

Site name: X2ELAN-LINDE



## SASS4 (Not sampled)

Biotopes:

|                   | Present | Sampled | Condition |
|-------------------|---------|---------|-----------|
| SIC               |         |         |           |
| SOOC              |         |         |           |
| MVEG              |         |         |           |
| AQ VEG            |         |         |           |
| Sand, mud, gravel |         |         |           |

## Ecological Importance

- Habitat:
- Invertebrates:

## Historical information

- Time period:
- Seasons sampled:
- Number of visits:
- Organisations:

## FISH

Fish habitat and sampling effort:

| Habitat | SAMPLING METHOD AND EFFORT |                            |                            |                  |                   |
|---------|----------------------------|----------------------------|----------------------------|------------------|-------------------|
|         | Electro shocker (minutes)  | Small seine (no. of hauls) | Large seine (no. of hauls) | Gill net (hours) | Cast net (throws) |
| FD      | 39                         |                            |                            |                  |                   |
| FS      |                            |                            |                            |                  |                   |
| SD      |                            |                            |                            |                  | 8                 |
| SS      |                            |                            |                            |                  |                   |

Fish habitat and cover ratings:

| Habitat | Abundance | Overhanging vegetation | Undercut banks & root wads | Substrate | Aquatic macrophytes |
|---------|-----------|------------------------|----------------------------|-----------|---------------------|
| FD      | 4         | 2                      | 1                          | 4         | 1                   |
| FS      |           |                        |                            |           |                     |
| SD      | 3         | 3                      | 2                          | 3         | 2                   |
| SS      |           |                        |                            |           |                     |

Species richness: 6

## RIPARIAN VEGETATION (*Not sampled*)

Width of riparian zone:

Dominant vegetation:

Substrate:

Channel type:

Surrounding land use:

Ecological Importance:

Dominant 5 species: 1  
2  
3  
4  
5

Biotopes:

| Bank  | High terrace | Terrace | Macro channel bank | Active channel bank | Flood bench | Bar | Mid-channel bar | Flood plain |
|-------|--------------|---------|--------------------|---------------------|-------------|-----|-----------------|-------------|
| Left  |              |         |                    |                     |             |     |                 |             |
| Right |              |         |                    |                     |             |     |                 |             |



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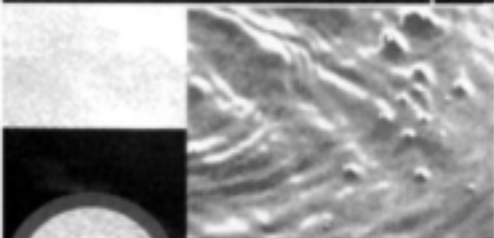
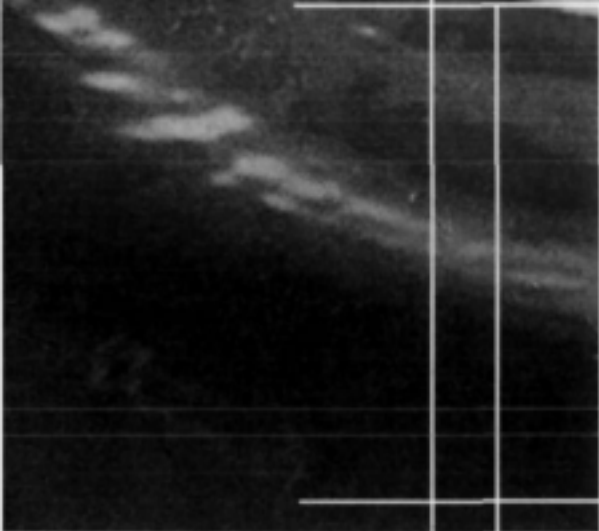
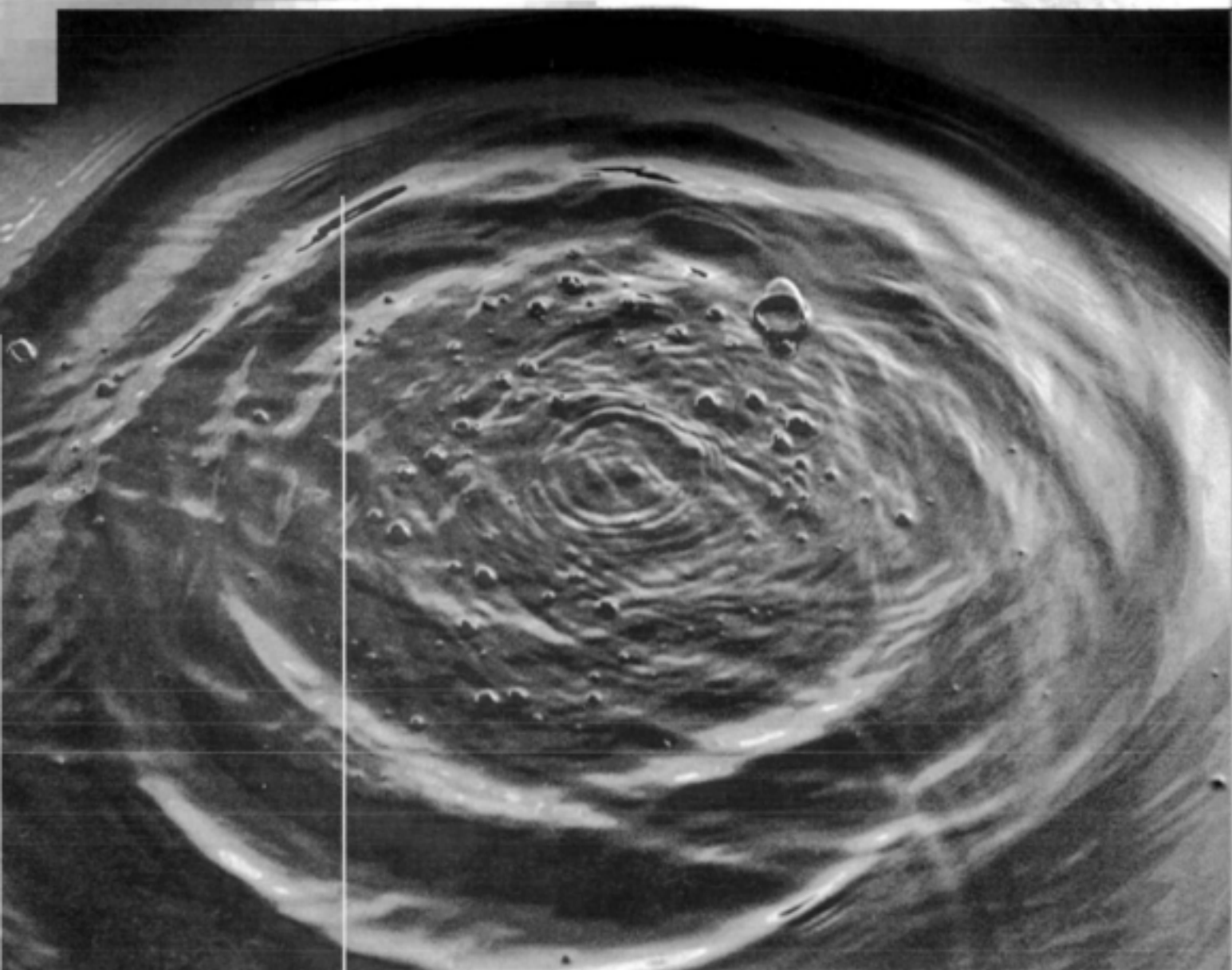
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