CLASSIFICATION OF SIGNIFICANT WATER RESOURCES IN THE OLIFANTS WATER MANAGEMENT AREA (WMA 4)

VISIONING

(TOWARDS UNDERSTANDING THE DESIRED STATE OF WATER RESOURCES IN THE WMA)

Purpose of visioning

"It is widely acknowledged that a fundamental objective of integrated water resource management (IWRM) is to ensure that resource-based costs and benefits are appropriately distributed in society (Van Wyk *et al*., 2006a)."

Visioning is a future-building process

Visioning is a process of articulating society's aspirations for the future – in this case, the 'basket' of benefits to be derived from aquatic ecosystem services and the costs associated with their use."

Why is visioning important?

The visioning process generates a dialogue that promotes ongoing shared awareness and understanding amongst resource users and encourage people to adjust their individual demands on the resource in the broader interests of sustainability and co-operative management. This promotes equity and shared understanding of the costs and benefits of different resource use options.

Vision promotes accountable decision-making by all resource users

Benefits for the water user

This visioning exercise will help to translate your issues and concerns into a vision for the area in which you live, work or have interests. The vision will ultimately be translated into management objectives that will drive operational management. In other words, it will help link management actions to the vision and ensure that societal values and management objectives are linked and realised.

What are we developing a vision for?

We will develop a vision **<u>for the water resources</u>** in the Olifants Water Management Area.

"In setting a vision it is important to understand how the law expects us to interpret 'the water resource', for which a vision is developed. The 'water resource' is defined to include a watercourse, surface water, estuary or aquifer, on the understanding that a watercourse includes rivers and springs, the channels in which water flows regularly or intermittently, wetlands, lakes and dams into or from which water flows, and where relevant the bed and banks of the system."

The resource is more than water

The quality of the resource (the 'resource' being the ecosystem providing services beneficial to people) is defined broadly to include fluxes in flow; physical, chemical and biological characteristics of the water; the character and condition of the in-stream and riparian habitat; and composition, condition and distribution of the aquatic biota.

The importance of context: a vision for different areas

A vision is always situation- or context-specific. This means that we need to have a shared understanding of the condition of the water resources and of society within a chosen area.

The Olifants WMA is a very large and diverse area in terms of its ecology, and the economic and social activities that characterize it. Therefore we will use smaller areas that have been identified based on their similar socio-ecological characteristics. These areas are called the

units of integrated analysis (IUA) and a map of these 12 IUAs is below (Figure 1). "Use and user needs, plus the state of the resource, are dynamic over space and time." It has therefore been divided into 12 IUAs based on socio-economic, ecological and water infrastructural characteristics. These IUAs are briefly described in this document. We'd like you to identify in which IUA you live in, work in or have an interest in.

You will then have an opportunity, in the questionnaire below, to comment on whether there are features related to water resources that we have missed out on, or are not relevant. You can also describe the ways in which you benefit from water resources in your IUA and what the major water resource issues are and what sort of management focal options you'd like to see focused on in your IUA.

Steps to be taken in this exercise towards developing the vision

There are several steps that need to be taken to develop a vision (DWAF 2006).

In this exercise, we firstly have **defined the geographical area** for which we want to develop a vision *i.e.* the 12 units of integrated analysis (IUA) are described in Appendix A.

Each IUA has been described in terms of the general characteristics related to the water resource. You need to tell us whether we have captured all the important characteristics of each area so that we can agree on a **collective context for each IUA**. This should describe any major issues related to water resources in the IUA. It is helpful for you to be specific about place names in your descriptions or comments.

With this context in mind for each IUA, please fill in the short, 6-question questionnaire at the end of this document.

Please hand in the completed questionnaire to the study team before the conclusion of the Project Steering Committee (PSC) meeting. We are going to use this to **distill the guiding principles or key elements of the vision** that are important in each IUA.

The guiding principles that are distilled from the above process will be used to **develop a vision** for each IUA that you will be able to review in due course.

Your contributions are valuable to the process.

We thank you for your participation.

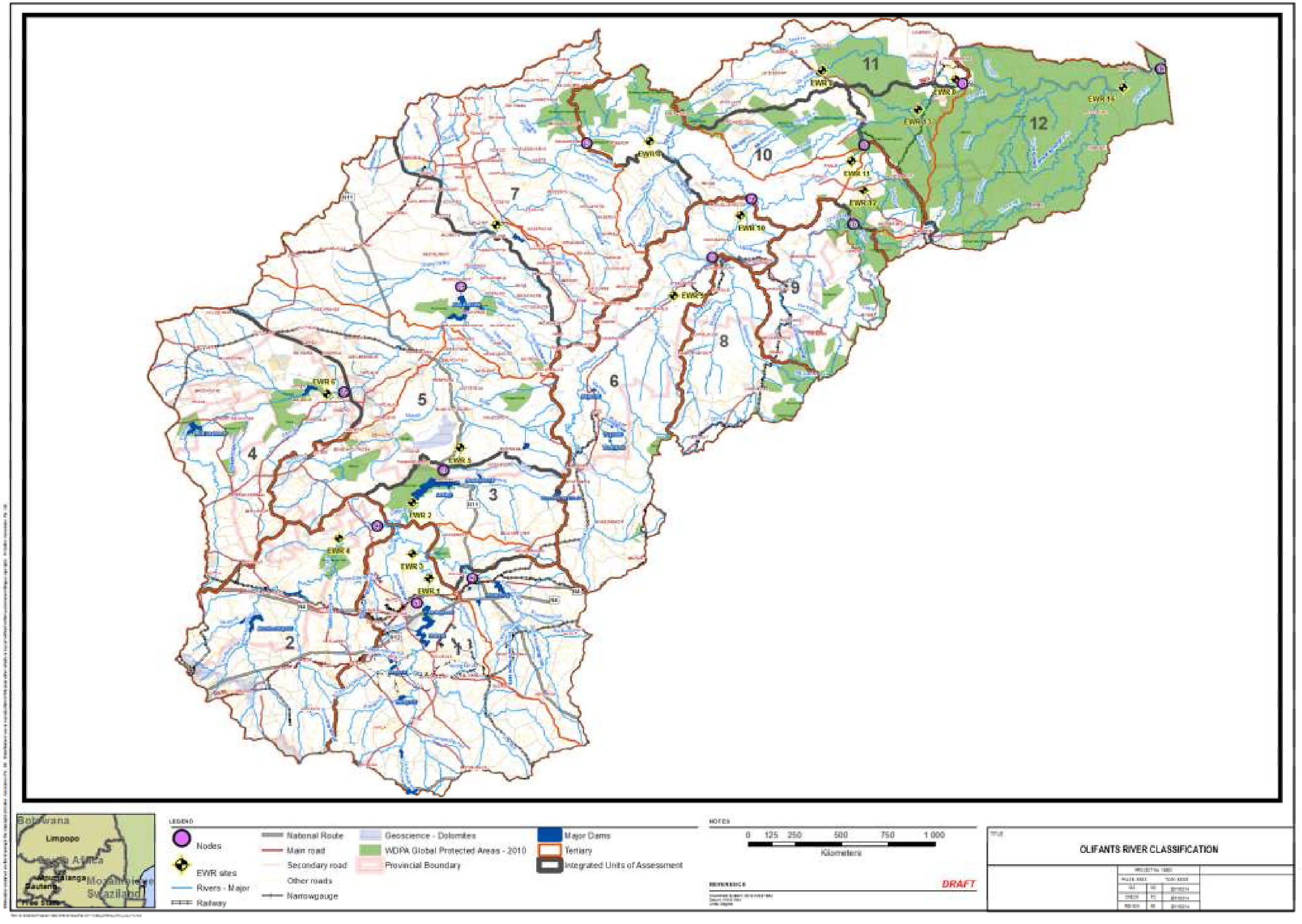


Figure 1: The twelve selected Integrated Units of Analysis (IUA) found in the Olifants Water Management Area

References

Department of Water Affairs and Forestry (DWAF), 2006. Resource Directed Management of Water Quality: Volume 4.1: Guideline for Catchment Visioning for the Resource Directed Management of Water Quality. Edition 2. Water Resource Planning Systems Series, Sub-Series No. WQP 1.7.1. ISBN No. 0-621-36792-3. Department of Water Affairs and Forestry, Pretoria, South Africa.

Questionnaire for an IUA

If your interests or concerns extend over more than one IUA, please fill in another of these forms for that IUA.

1. **For which IUA are you filling in this questionnaire?**

☐ **IUA 1**	☐ **IUA 4**	☐ **IUA 7**	☐ **IUA 10**
☐ **IUA 2**	☐ **IUA 5**	☐ **IUA 8**	☐ **IUA 11**
☐ **IUA 3**	☐ **IUA 6**	☐ **IUA 9**	☐ **IUA 12**

2. **Are there any other important water resource related issues, features or uses that you feel have been left out of the description of this IUA (as detailed in Appendix A)?**

3. **How do you use the river, wetland or groundwater in this IUA area and what sorts of benefits do you get from using them:**

River?

Wetlands?

Groundwater?

4. What are your water resource issues in this IUA?

These can relate to issues of:

- *policy and legislation (e.g. lack of clarity, concern about pricing strategies etc);*
- *resources (e.g. scarcity, threats to or increasing demands on water resources etc);*
- *administration (e.g. delays, roles and responsibilities etc);*
- *capacity/empowerment (e.g. inadequate extension services, education, sense of ownership); or*
- *technological (e.g. water saving, best practices etc). Please indicate if there is an improvement or deterioration in any of the issues that you mention.*

Any other issues?

5. **How strongly do you feel about the following focal options for management in this IUA (mark with an X in the table below)?** *Please add in other focal options in the spaces provided if you so wish.*

Focal options	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Comment
Economic and social objectives						
Economic empowerment of the poor						
Maximise job creation i.*e*. labour intensive activities in order to provide for the most people						
Maximise capital growth and in this way contribute to development						
Social upliftment of the poor including provision of water services						
Maximise economic development through first world activities ranging from agriculture to industry						
Aim for water conservative uses						
Promote and develop recreation and tourism						
Conservation of biodiversity						

Focal options	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Comment
Promote the following sectors to achieve some of the above						
Commercial agriculture						
Eco tourism						
Subsistence farming						
Ecological Water Requirement of the water resource						
Maintain overall present ecological status of the catchment or IUA						
Improve overall present ecological status of the entire catchment or IUA						
Allow deterioration of present ecological status of the entire catchment or IUA for purposes of development						
Protect certain areas the ecological status of which need to be maintained or improved.						
Allow deterioration of the present ecological status of certain areas for the purpose of development						

6. **From the IUA characteristics provided and your knowledge of the IUA, could you please indicate what management class the resources should be managed for?** Reasons or qualifications for your answers would be greatly helpful. The overall present ecological category (present ecological state) for each IUA is given in the table below, with A being unmodified from its natural (pre-development) state and E being critically modified.

   Management Classes
   Class I - minimally used, minimally altered aquatic ecosystems; **Class II -** moderately used, moderately altered aquatic ecosystems; **Class III -** heavily used, significantly altered aquatic ecosystems.

IUA	Present ecological State	Future Management Class	Comments
1	C		
2	B		
3	A		
4	C		
5	C		
6	D		
7	D/E		
8	B/C		
9	B		
10	C		
11	D		
12	B		

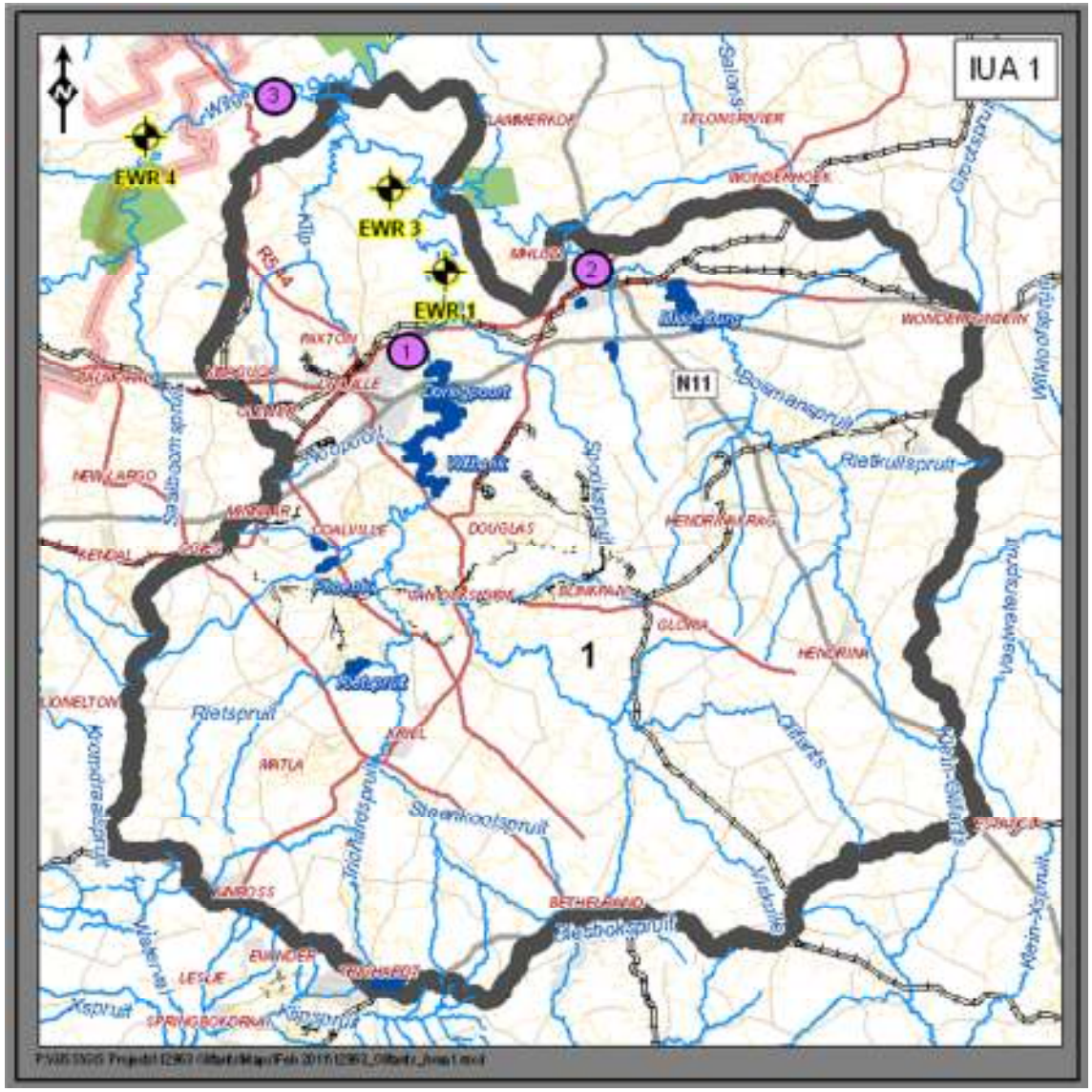
APPENDIX A

OLIFANTS WMA: IUA DESCRIPTIONS

IUA descriptions

Have a look at the short descriptions for each of the Integrated Units of Analysis and identify which one you live in, work in or have an interest in. Please provide us with any additional information regarding the IUAs where applicable.

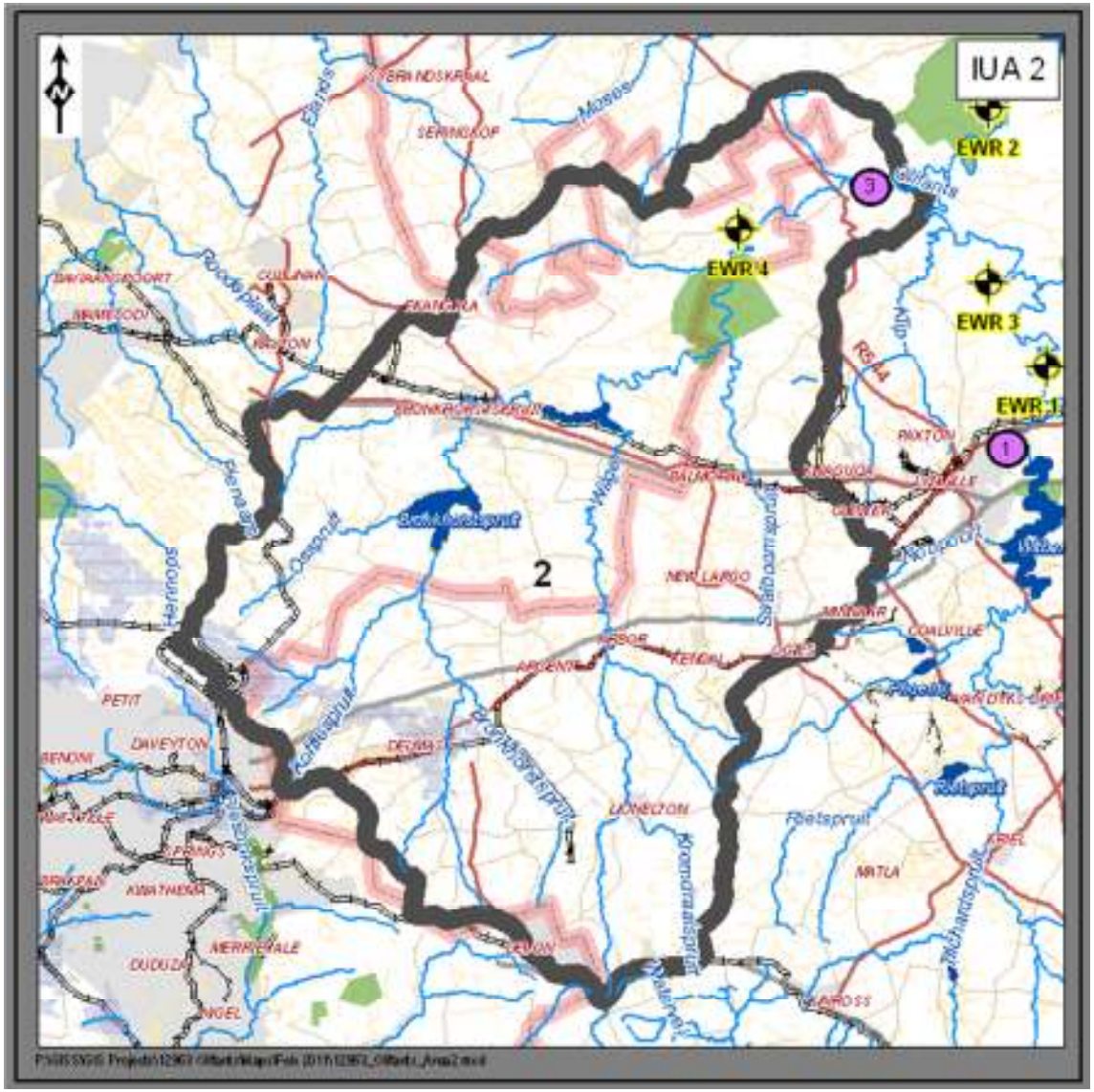
IUA 1:



IUA 1 principally includes the local economy of eMalahleni (Witbank) and the areas of Douglas, Kriel and Kinross. The southern border of the IUA is located just north of Evander, Secunda and Bethal. The IUA includes the upper Olifants River and the Klein Olifants, Witbank Dam and the Klip River. The IUA is characterized by intensive coal mining and associated energy and manufacturing economy. The IUA is highly used and impacted. It includes a large number of coalmines, steel industry, urban areas and return flows. Secondary economic activities include dryland agriculture and a wide variety of industrial and commercial sectors.

The ecological condition of the Olifants, Steenkoolspruit and Upper Klein Olifants rivers are degraded and mainly in an E category presently due to the coal mining activities, large dams and urbanisation. Their ecological importance is low except around the Witbank Dam area. This area still has some local, undeveloped areas. A number of wetlands are present in the upper reaches of the catchment. One Ecological Water Requirement (EWR) site is present on Olifants below Witbank Dam.

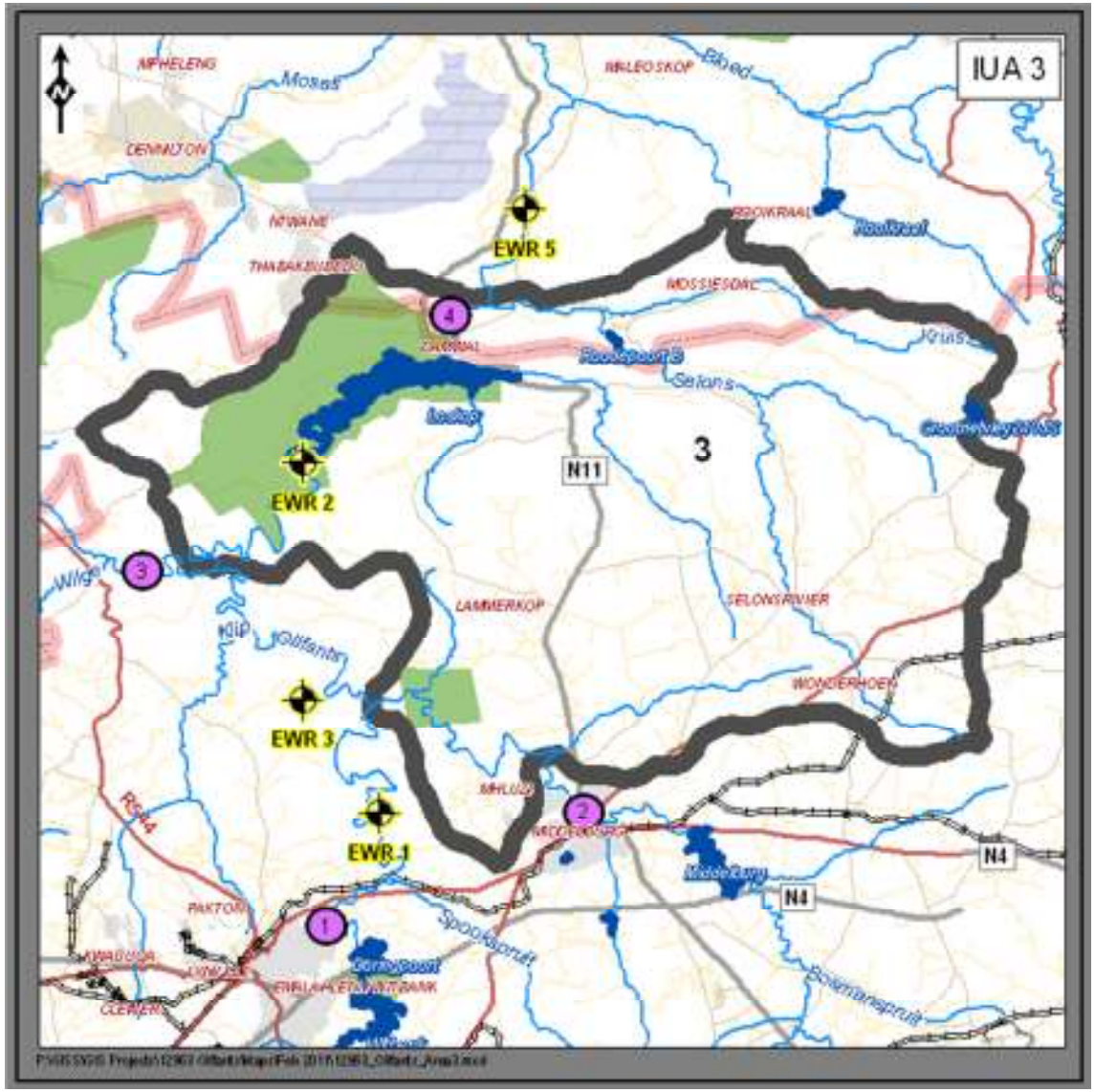
IUA 2:



This IUA principally includes the towns of Bronkhorstspruit and Delmas as well as the Ezemvelo Game Reserve to the north. The town of Ogies is located on the border of the IUA 1 and IUA 2. The town of Cullinan is located on the border of the IUA 2 and IUA 4. The IUA includes the Wilge River and tributaries. The economy of IUA 2 is dominated by mixed coal mining and dryland agricultural activities, supported by local economies around the key towns.

The Bronkhorstspruit, Saalboomspruit and Upper Wilge rivers are in a moderately modified state (category C) with less developed areas in the catchment. Impacts from agriculture, dams and some mining. The importance of these water resources is moderate, especially in terms of good water quality. An EWR site is situated on the lower Wilge, just below Emvelo game park.

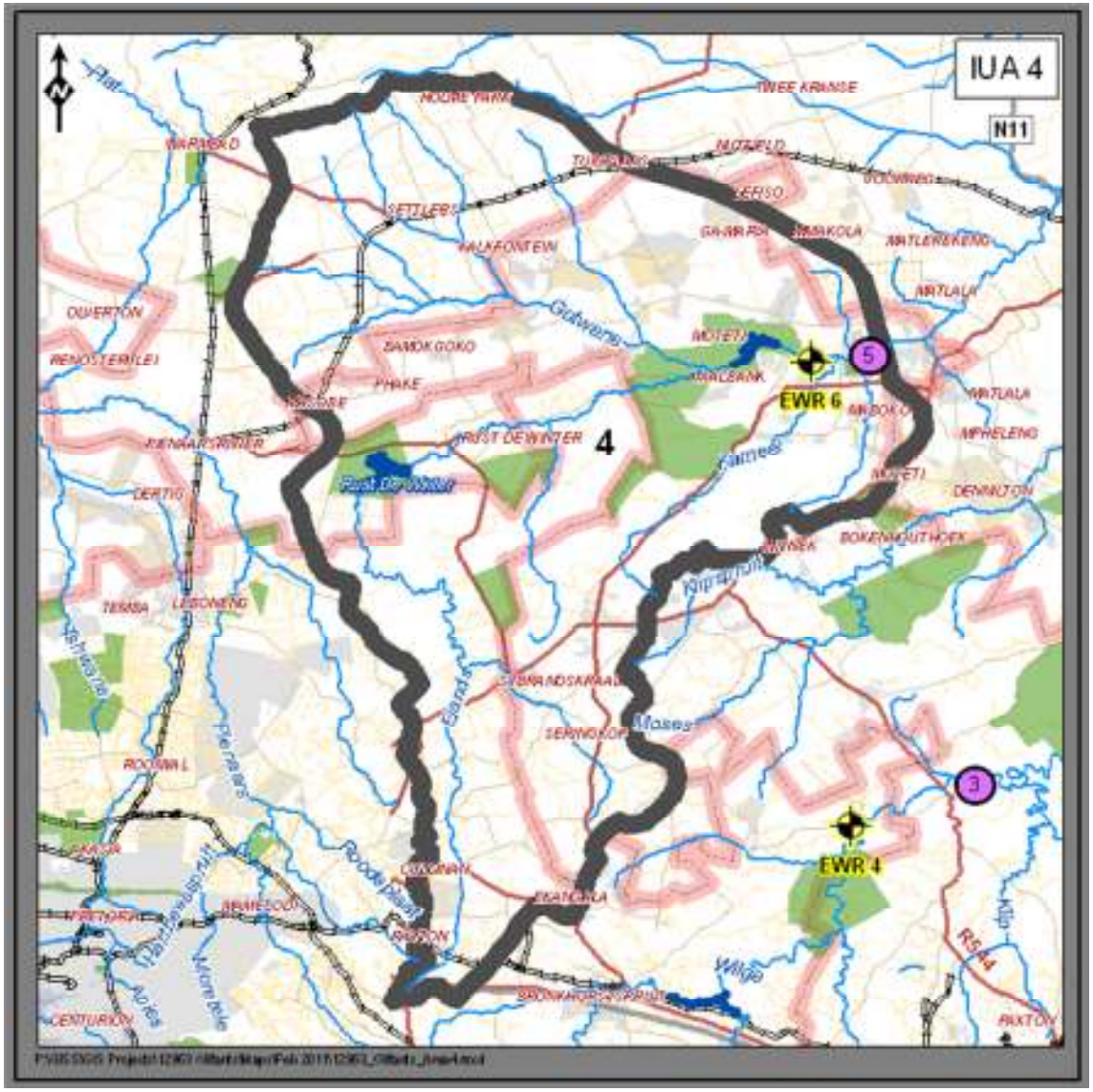
IUA 3:



IUA 3 includes the Loskop Dam and its surrounding protected area. The IUA starts at the confluence of the Klein Olifants and the Wilge Rivers and also includes the Selons River and the Kruis River. The IUA includes a section of the Klein Olifants between Mhluzi and the Doornkop protected area. The IUA has a largely natural and rural character.

The ecological state of Lower Klein Olifants, Selons, and Loskop Dam water resources have been degraded (C to B category), mainly due to the upstream impacts from the Olifants and Klein Olifants. However, the presence of unproclaimed wilderness areas and nature reserves provides habitats for the various biota in the system that gives it a high ecological importance. Two EWR sites are present in the IUA – one in Doornkop nature reserve on the Klein Olifants and one on the Olifants just upstream of Loskop Dam.

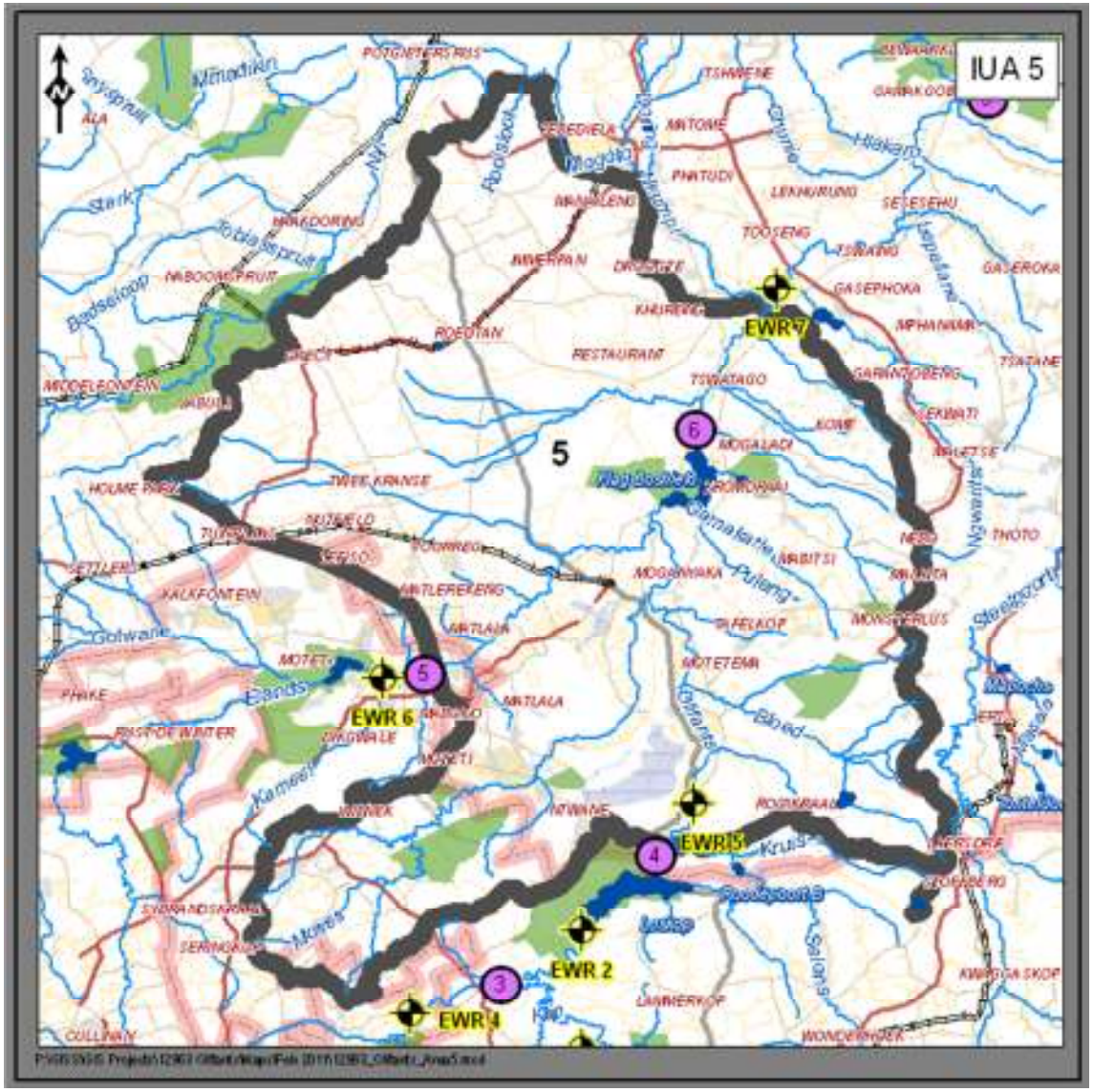
IUA 4:



IUA 4 includes the town of Cullinan, Kwamahlanga, the Rust De Winter Dam, and the rural settlements around the Mkhombo Dam. Bela Bela (Warmbaths falls outside of the IUA on the western boundary). The IUA includes the Elands, Kameel and Mkhombo Rivers and the Dinokeng protected area and Mdala Nature Reserve. The economy has a rural characteristic with a large amount of smallholdings upon which a variety of economic activities take place (agriculture, grazing, light manufacturing, associated commercial activities and some tourism).

The Elands River is mainly rural in the upper reaches with impacts from agriculture, dams and settlements in the lower reaches of the catchment. The upper reaches are still in a very good ecological state (B category), but degraded along the river to a D category below the dams. Moderate important system as it provides good habitats for the biota present. Some conservation areas are present in this IUA. An EWR site on the Elands is situated below Mkhombo Dam.

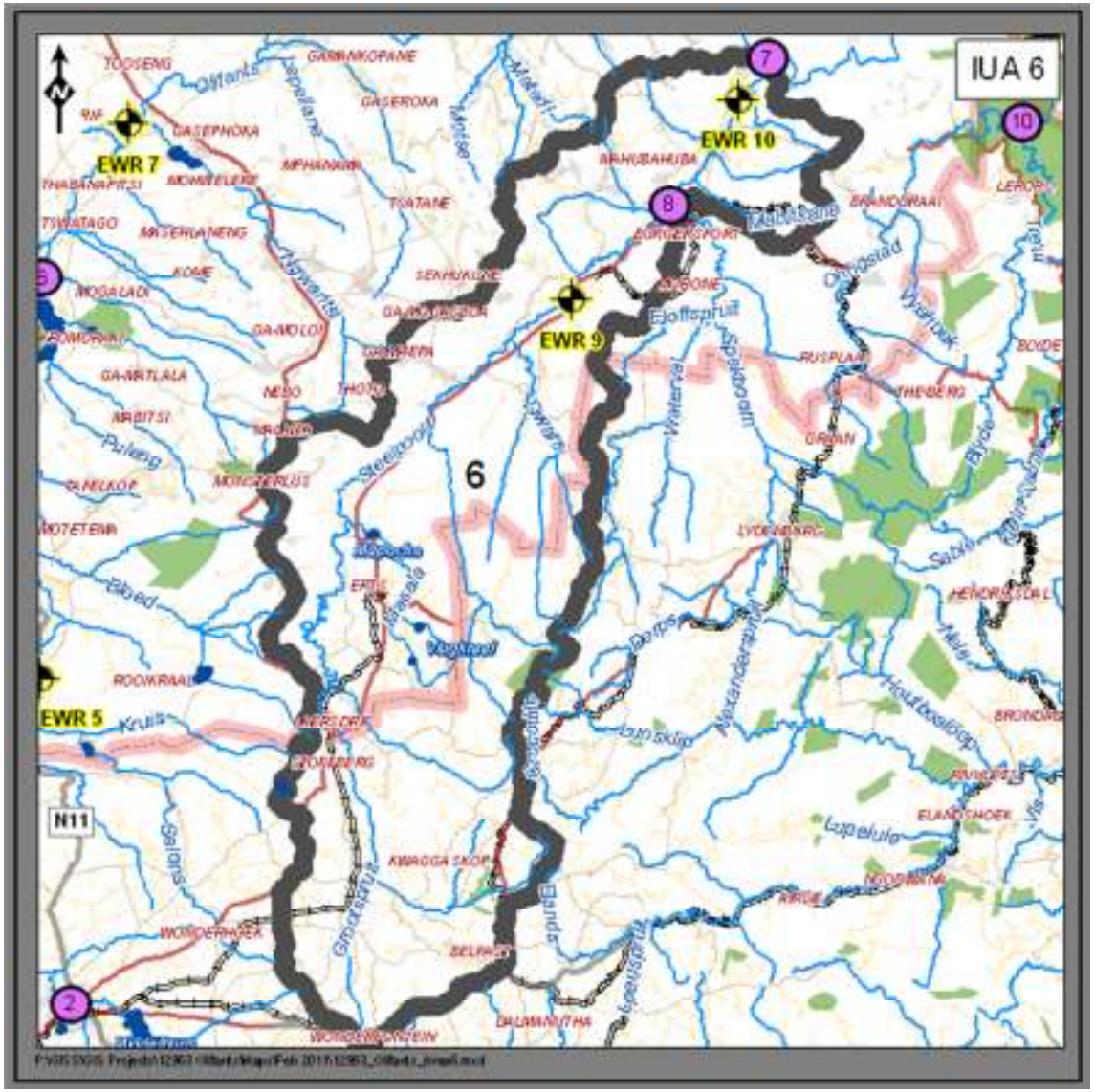
IUA 5:



IUA 5 includes the towns of Marble Hall, Groblersdal and Roedtan. The IUA contains the Flag Boshielo Dam and the Bloed, Klipspruit and Grass Valley Rivers. Several protected areas occur within the IUA and include, Mbusa, Moutse, Kwaggavoetpad and Schuinsdraai Nature Reserves. The economy of the IUA is characterized by some intensive irrigation agriculture (specifically around Marble Hall and Groblersdal), commercial dryland agriculture (in the Springbok Flats region) and some subsistence agriculture.

The Olifants River below Loskop Dam, Lower Elands and the Moses River are ecologically mainly in a C category as the upstream impacts (mainly water quality related) are somewhat mitigated by Loskop Dam. The ecological importance is moderate with a few conservation areas present. The EWR site is situated below Loskop Dam on the Olifants.

IUA 6:

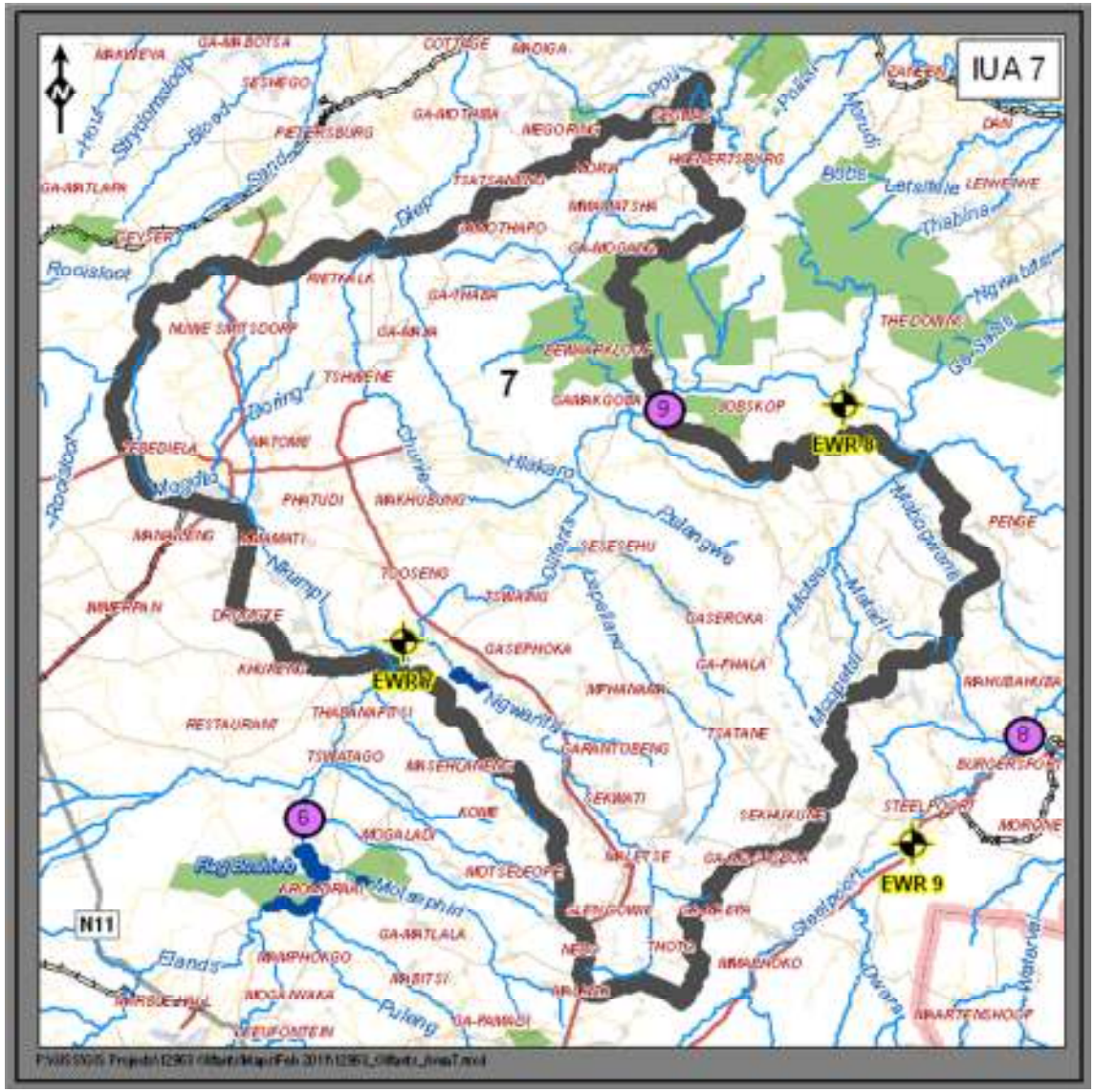


IUA 6 follows the Steelpoort River valley, starting from the Grootspruit River in the south up to its confluence in the north with the Olifants River main stem. It includes the towns of Belfast in the south and Steelpoort in the north. The IUA includes a section of the Verloren Vallei Nature Reserve near Dullstroom. The economy of the IUA is characterized by extensive mining, some irrigation for agriculture and tourism.

The ecological condition of the Steelpoort, Klip and Dwars Rivers can be described as follows:

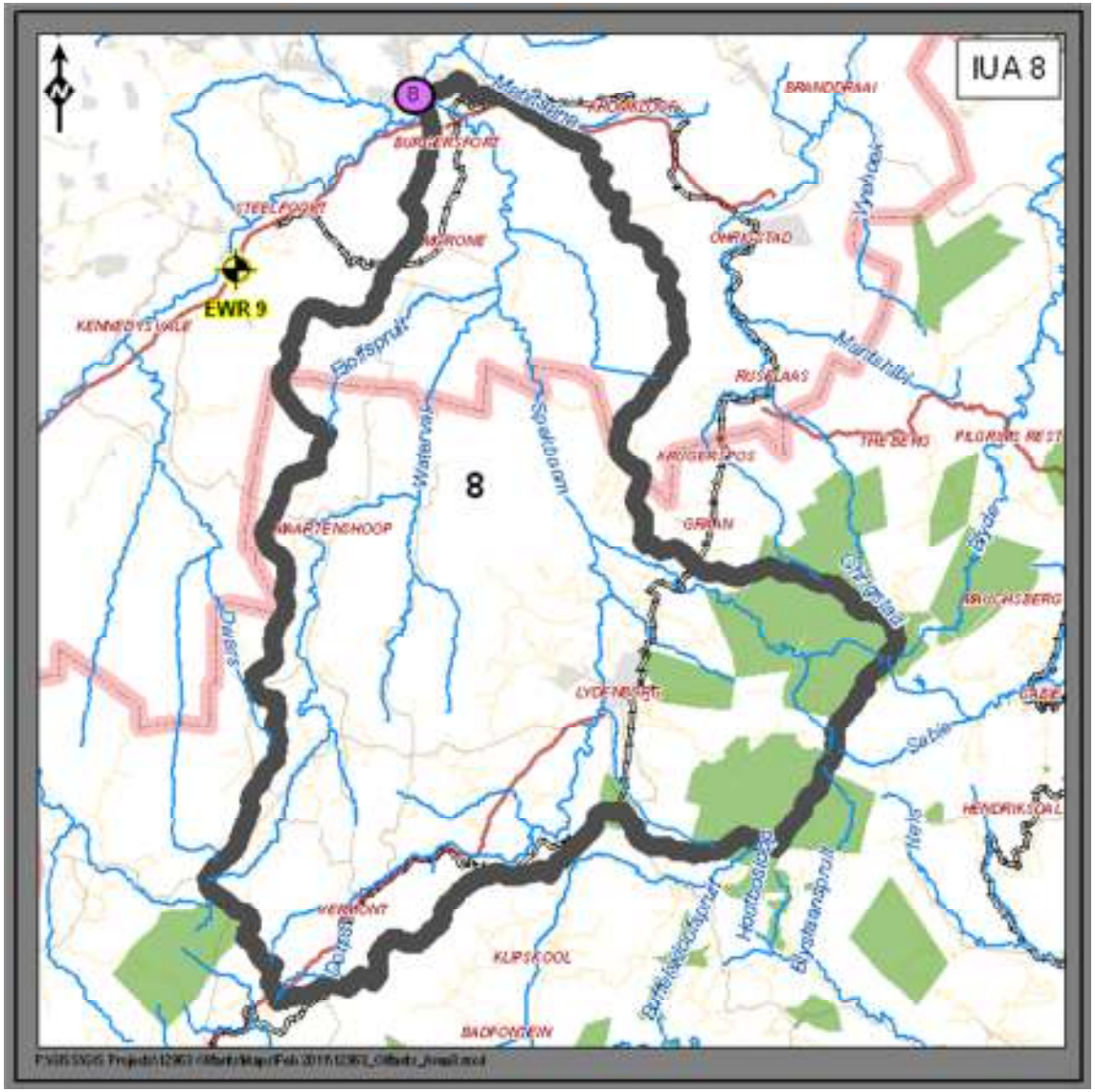
The present state of the Steelpoort has been modified from the natural (D category) due to impacts from agriculture and settlements. The Klip and Dwars are still in a good present state. However, the impacts from mining on the Dwars resulted in a moderately modified state (B/C category). The main stem Steelpoort is of moderate ecological importance. However, the Klip and Dwars have a high importance and sensitivity (Velorenvallei nature reserve, the transition from mountain to bushveld and unique geology). Three EWR sites are present in the IUA, namely two on Steelpoort (below De Hoop Dam and just before confluence with the Olifants) and one on the Dwars just before the confluence with the Steelpoort.

IUA 7:



The IUA consists primarily of dryland agriculture and rural subsistence farmers. It encompasses the Local Municipalities of Polokwane, Lepele-Nkumpi, Fetakgomo and Makhuduthamaga. The ecological importance of the main stem Olifants and smaller tributary systems is this IUA is low to moderate, especially for some of the tributaries. The present state of the main stem is in an E category that is mainly due to agricultural impacts. One EWR site below Flag Boshielo Dam is situated in this IUA.

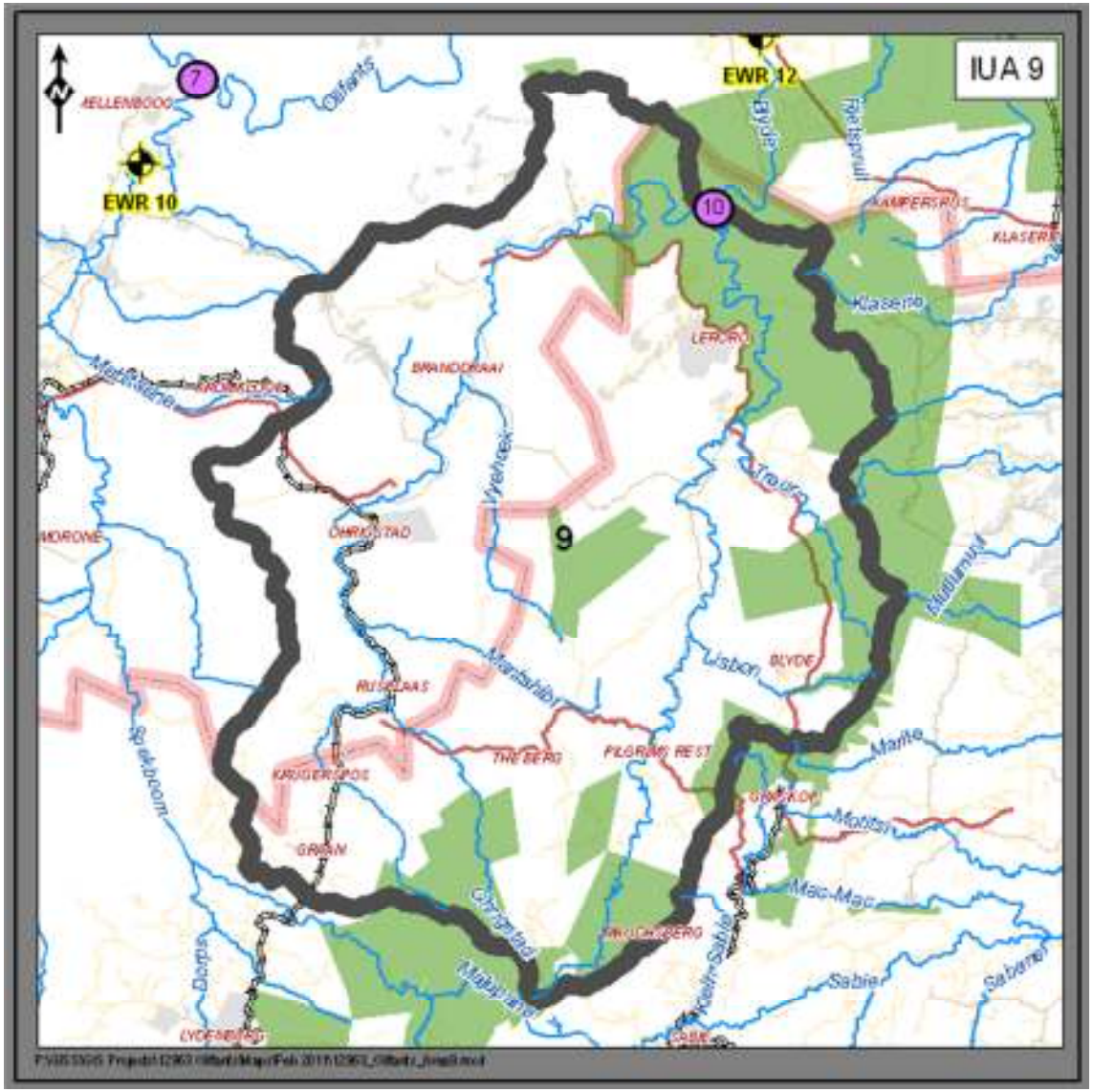
IUA 8:



IUA 6 is situated within the Spekboom catchment. The IUA includes the town of Mashishing (Lydenburg) in the south and Burgersfort in the north. Several protected areas occur within the IUA and include the Sterkspruit and Gustav Klingbiel Nature Reserves. The economy of the IUA is characterized by some mining, tourism, dryland and irrigated agriculture.

The present state of the Spekboom, Dorps and Waterfalls rivers range from almost natural (Waterfalls source) to degraded (Dorps). The ecological importance of the Spekboom and Waterfalls is high and moderate for the Dorps. A number of protected areas have been identified in the upper reaches of this IUA. The impacts are mainly from urbanisation and some agriculture in the catchment. No EWR site is situated in this IUA.

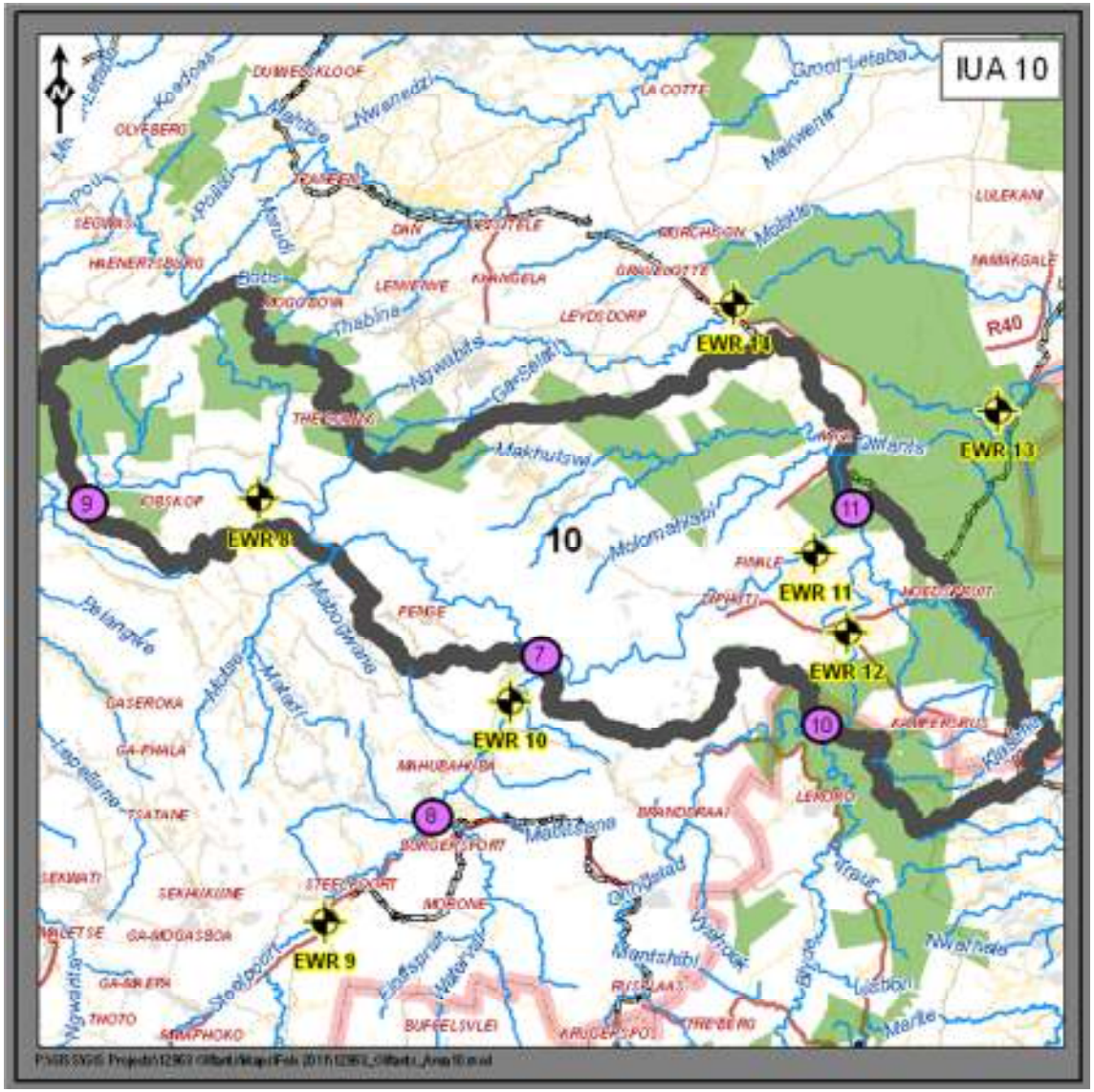
IUA 9:



IUA 9 contains the towns of Ohrigstad and Pilgrims Rest. This IUA has a high conservation status, as it is contains part of the Blyde River Catchment area. The catchment is important because it forms an integral part of the proposed Kruger to Canyons biosphere reserve. Important water resources include the Blyde River upstream from the Blyderivierspoort Dam. The economy of the IUA is characterized by irrigated and dryland agriculture, ecotourism and subsistence agriculture.

The ecological importance of the Treur, Orighstad and upper Blyde water resources in this IUA is high with the present state of the Treur and upper Blyde almost natural. The Orighstad River has been impacted by agriculture and is presently in a C category. A number of protected and conservation areas are present in this IUA. One EWR site is situated on the Treur River.

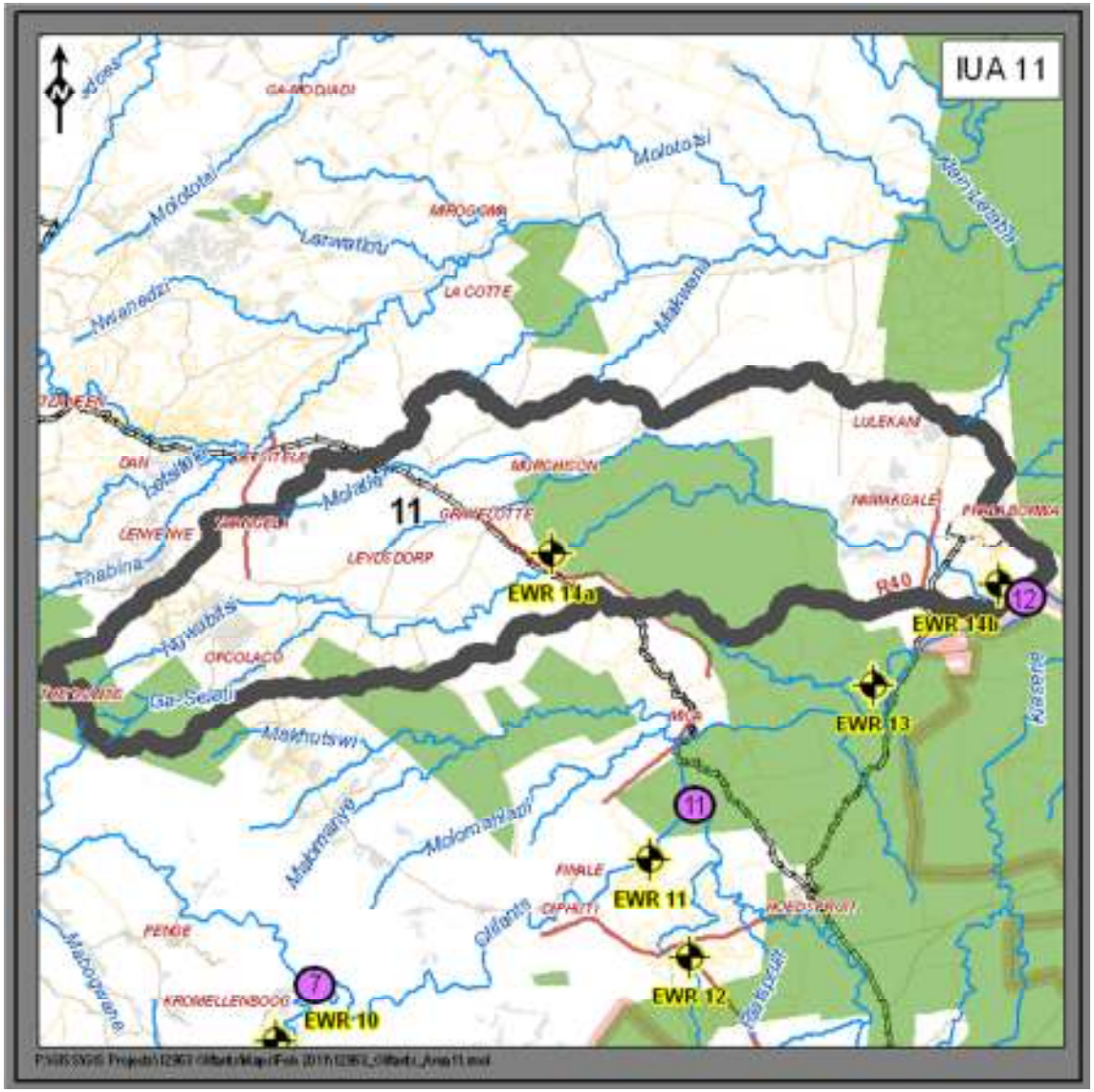
IUA 10:



IUA 10 contains the town of Hoedspruit. The IUA also contains the semi-urban areas of Hlohlokwe, Sofaya and Mahlomelong. The IUA contains several conservation areas, which include the Bewaarkloof Nature Reserve, the Wolkberg Wilderness area and a portion of the Blyde River Canyon catchment area. Important water resources include the Olifants River. The economy of the IUA is characterized by intensive agriculture (especially near Hoedspruit), rural subsistence, ecotourism and light commercial activities.

The ecological state of the main stem Olifants, Lower Blyde and smaller tributaries in the IUA can be described as follows: The main stem Olifants is presently in a D category with the lower Blyde and Mohlapitse in a B. The impacts on the Olifants are from irrigation along the river and the Flag Boshielo Dam. The ecological importance is high for the lower Blyde (links Olifants to the Highveld) and Mohlapitse (Wolkberg area a declared wilderness area, Tufa's Waterfalls, caves). Three EWR sites are situated in this IUA, namely two on the main stem Olifants and one on the lower Blyde.

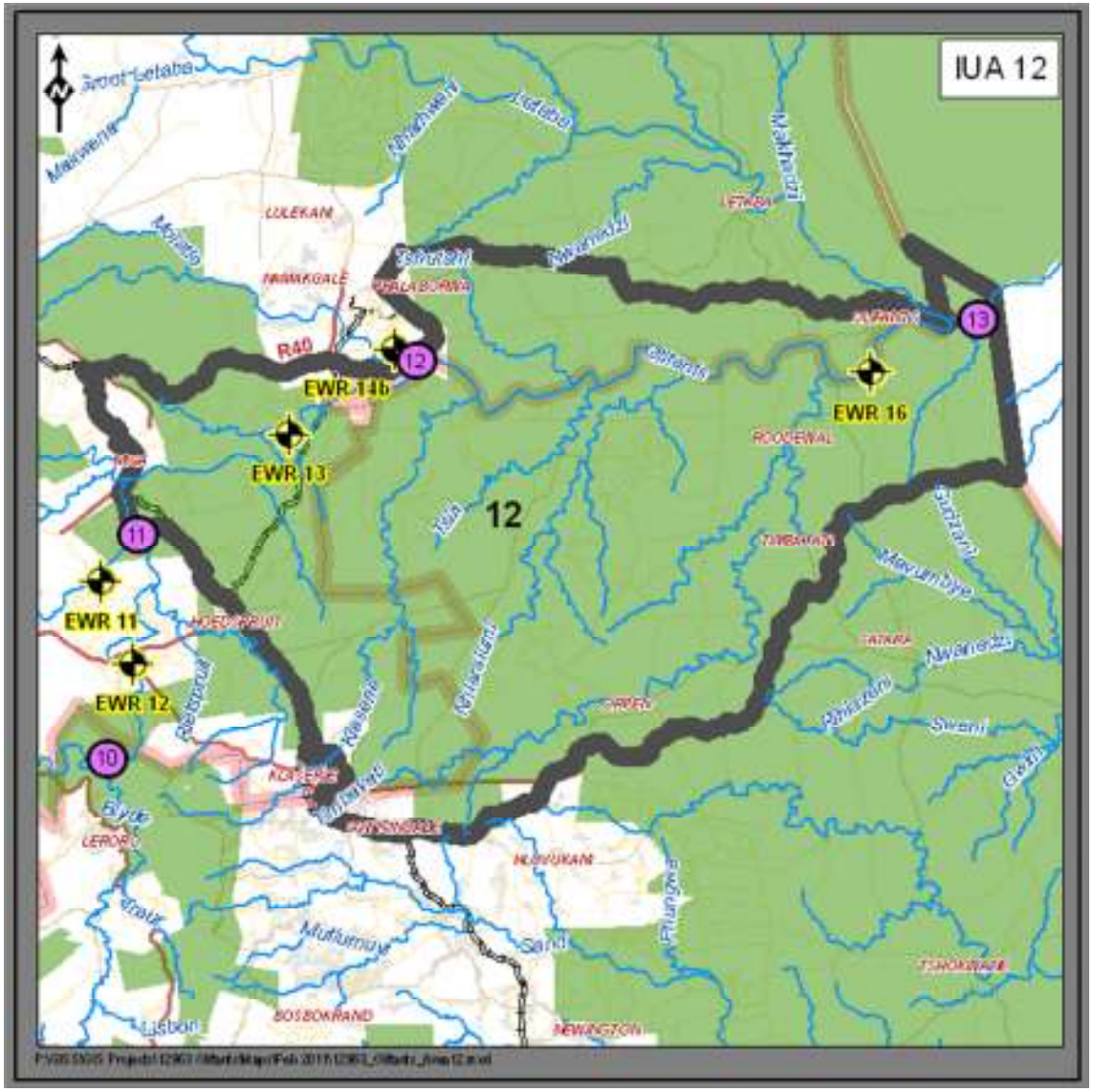
IUA 11:



IUA 11 contains the towns of Phalaborwa, Gravelotte and Mica. The IUA is bordered by the Kruger National Park to the west and other conservation areas to the east. The IUA also contains the semi-urban areas of Ga-Mashishimale and Namakgale. Important water resources include the Ga-Selati River. The economy of the IUA is characterized by intensive mining (including the Rio Tinto copper mine near Phalaborwa), ecotourism and agriculture.

The present ecological state of the Ga-Selati ranges from a C (upper reaches) to an E category just before the confluence with the Olifants. This is mainly due to the impacts from mining and town development in the lower reaches. The ecological importance of the system is high for the upper part (foothills zone) to low. The middle reaches of the IUA forms part of a protected area. Two EWR site are situated in this IUA.

IUA 12:



IUA 12 includes the lower Olifants River catchment area. This IUA is largely a protected area with high conservation status. It includes the world renowned Kruger National Park. The main economic activity is eco-tourism. The IUA includes the Olifants main stem and tributaries.

The water resources of this IUA falls almost entirely within the Kruger National Park and surrounding protected areas. The ecological importance is thus very high. However, the present state is in a C category that is mainly due to the impacts of the upstream developments on the Olifants River. Two EWR sites are situated in this IUA.