Olifants-Doorn – A class act

Lani van Vuuren

The decision process on possible future usage of significant water resources in the Olifants/Doorn Water Management Area is drawing to a close. Article by Petro Kotzé.

The Olifants/Doorn Water Management Area (WMA), comprising the Olifants, Doring, Sandveld, Kouebokkeveld and Knersvlake sub-areas, is special both because of its unique ecology and the range of industry and communities dependent on it. The area also serves as the first WMA that will be able to pick the proverbial fruit of the current Water Resource Classification process, a long-outstanding imperative of the National Water Act of 1998.

When the process is completed, a management framework describing the extent to which every wetland, river, lake and aquifer in the area can be used, as well as the level of protection it will be afforded, will be in place. Referred to as the resource's 'management class' it has considerable economic, social and ecological implications, as it clearly prescribes what the resource's ideal condition is, and the amount of water that industry, agriculture or any other user will be legally allowed to withdraw from it.

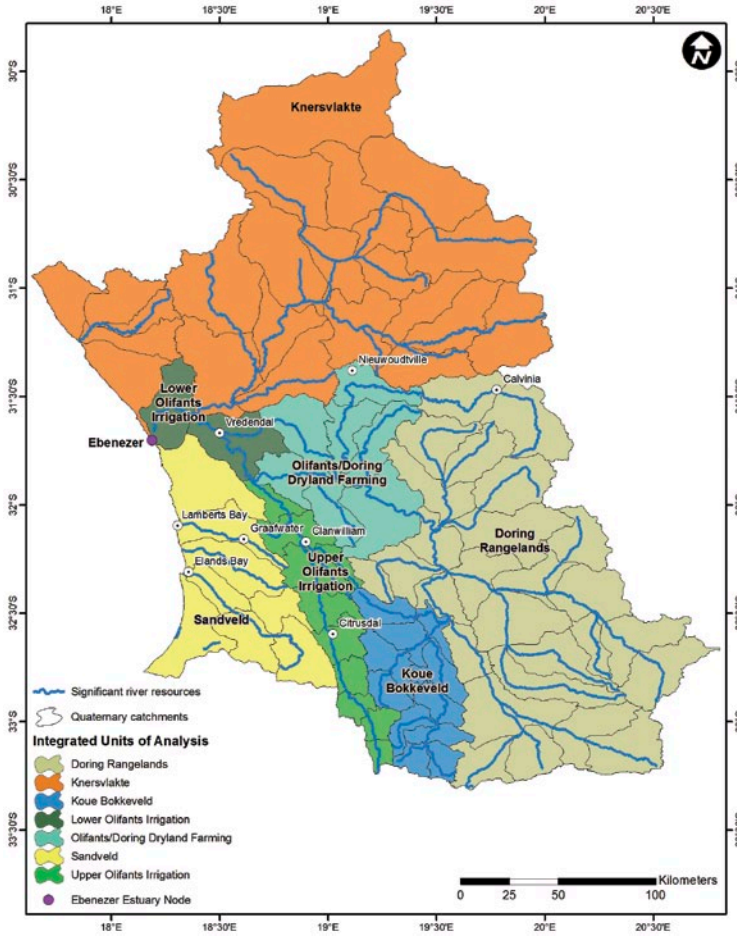
The purpose of classification is to ensure long-term sustainable use of water resources by balancing the need for protection against the need for use, says Department of Water Affairs (DWA) Director of Water Resource Classification, Shane Naidoo. "The determination

of a class brings regulatory certainty and facilitates decision-making by providing a framework in which goals (commonly referred to as Resource Quality Objectives) can be set to measure regulatory performance and compliance of water quality, quantity, habitat and biota requirements of a water resource," she adds. Management classes will be determined for each sub-catchment or, integrated unit of analysis (IUA), within the specific WMA. IUAs are defined in terms of use, and contain a number of aquatic ecosystems. According to Naidoo, "in addition to achieving ecological sustainability of the water resources, the classification process allows for due consideration of social and economic needs of competing interests by all who rely on the water resources."

Due to the accelerated rate of development and demand in South Africa, coupled with changing weather patterns, the management class for every significant water resource in the country will eventually be set. The Olifants/Doorn process will, however, be the first to be completed, as soon as April 2012, and will serve as an example of how the procedure can be applied to other catchments. Indeed, the classification process in this part of the country is seen as a priority. "Even though it is not highly industrialised in comparison to catchments like the Vaal or Olifants," says Naidoo, "the DWA wants to proactively prevent any further degradation of the system."

Right: *Integrated Units of Analysis of the Olifants/Doorn water management area.*

Below: *The Olifants River estuary is one of only three permanently open estuaries on the west coast and is a critical habitat to many estuarine-associated fish species.*



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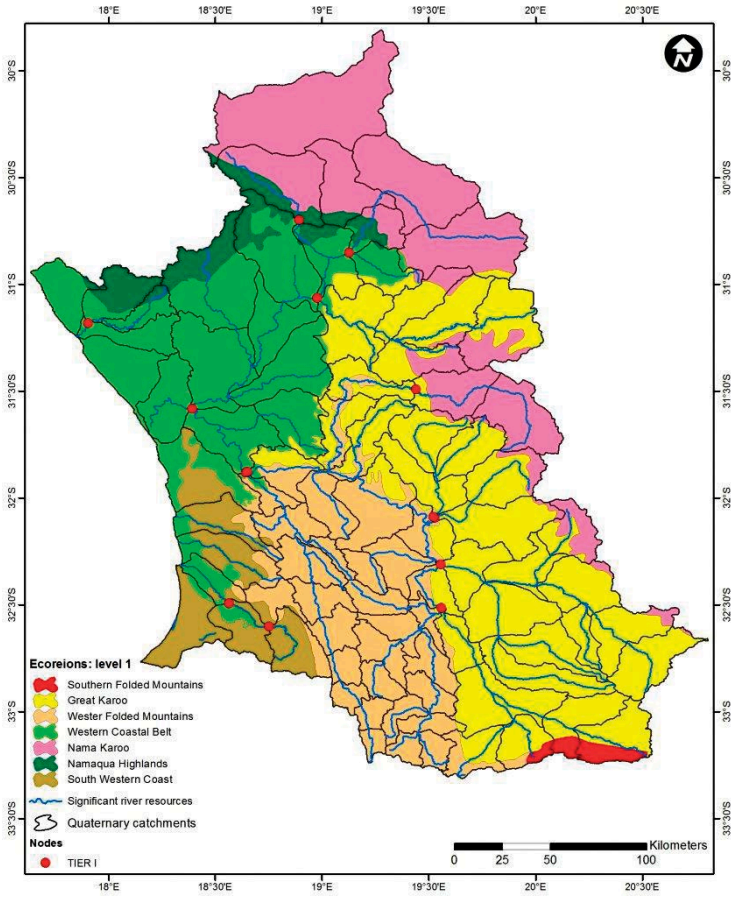

Left: *Ecoregions and quaternary catchments in the Olifants/Doorn WMA.*

Below: *Vanrhynsdorp is one of the small towns dotted across the Olifants/Doorn water management area.*

THE SEVEN STEP CLASSIFICATION

In order to determine a suitable management class for the relevant water resources the following seven steps are followed:

- Delineate the units of analysis and describe status quo of the water resource
- Link the value and condition of the resource
- Quantify ecological water requirements and changes in non-water quality ecosystem goods, services and attributes
- Determine an ecologically sustainable base configuration scenario and establish starter configuration scenarios.
- Evaluate scenarios within the integrated water resource management process.
- Evaluate the scenarios with stakeholders
- Gazette the class configuration

A CLOSER LOOK AT THE OLIFANTS/DOORN WMA

Stretched along the west-coast of South Africa, the main river in this WMA is the Olifants River that, together with one of the major tributaries, the Doring, flow strongly during the winter months. The Doring is especially unique, as it is one of the country's remaining 62 free-flowing rivers, meaning, undammed rivers that flow undisturbed from their source to their confluence with another river or the sea. Of these, it is one of the 19 flagship-rivers prioritised for conservation. The other major tributary in the catchment, the Sout River, only flows very occasionally.

There are a number of unique biological features scattered throughout the catchment. Numerous indigenous fish species occur only in the Olifants River catchment, particularly the Doring River, and nowhere else.

The Olifants estuary is also one of only three permanently open estuaries on the west coast and is a critical habitat to many estuarine-associated fish species. Furthermore, the RAMSAR site, Verlorenvlei, is situated here, together with the vulnerable coastal wetlands of the Sandveld. Here, the Langvlei and Jakkals Rivers flow westwards towards the Atlantic.

Land use in the eastern and northern parts of the catchment consists mainly of livestock farming, but small areas are also being used for dryland farming. Citrus, grapes, deciduous fruit and potato farming is intensive in the south-west. In general, urban and rural development in this part of the country is small, and includes towns like Citrusdal, Clanwilliam, Vredendal, Vanrhynsdorp, Nieuwoudtville, Calvinia and Lamberts Bay.

Project Manager Tovhowani Nyamande explains that while the Olifants River still boasts good quality water and flow upstream from Citrusdal, the lower Olifants is stressed in terms of both water flow and quality. This is mostly due to agricultural run-off, she says, as there are many irrigated farmlands along its banks. Indeed, water abstraction from the surface and groundwater throughout the WMA has modified flow and is predominantly problematic during the dry, summer months. The Doring River tributaries and Sandveld Rivers

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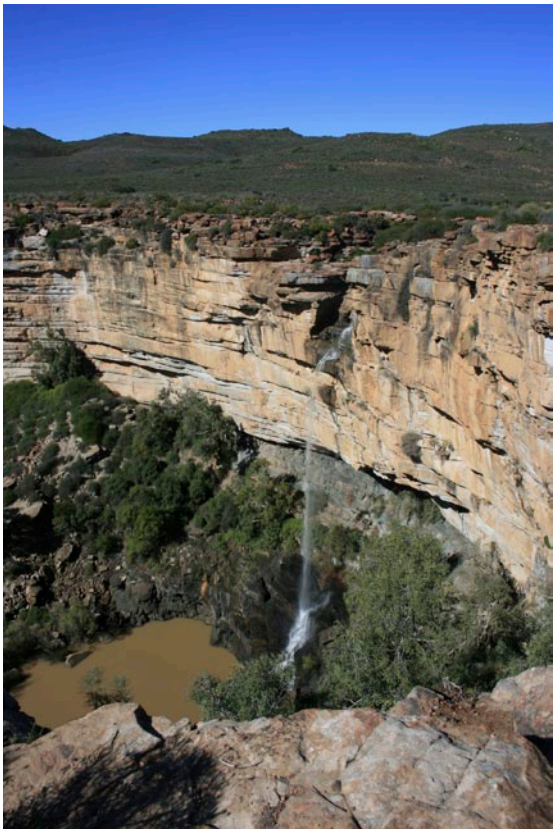

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The Nieuwoudtville Waterfall in the Doring River is about 5 km outside the town on the way to Loeriesfontein.

are particularly affected. Notably, modified flows have reduced habitat integrity and as a result, the ecological goods and services provided by these rivers.

In 2010, the Water Resource Classification Process (WRCP) for the WMA got underway, and Blue Science Consulting was appointed to assist DWA to complete the process. By this stage, many of the environmental water requirements of water resources in the specific catchment were already determined.

The classification process is both a consultative and a scenario-based approach. Water use within the WMA is incorporated at a number of stages during the assessment. For example, the socio-economic benefits of a water resource are taken into consideration when determining the IUA class. Operational constraints and catchment requirements, again, are incorporated into yield scenario modelling while the impact of the water use on the ecology is considered when determining management class.

Furthermore, the final classification incorporates results from other biodiversity studies and initiatives, most notably, National Freshwater Ecosystem Priority Areas (NFEPAS). In a nutshell, this programme identifies freshwater ecosystems that should be priority conservation areas.

An IUA will eventually be classified as one of three management classes. Class I, 'minimally used', implies that the water resources must be altered only minimally from its pre-development condition. Class II, 'moderately used,' results in an overall water resource condition that is moderately altered from its pre-developed condition. Class III, 'heavily used,' allows for the resource to be significantly altered from its pre-development condition. If a resource is, for example, Class I, the extent of water use will be minimal compared to a class III resource, says Naidoo.

Nyamande explains that decisions regarding trade-offs between users is guided by the principles of sustainability, which rests on a balance between social, economic and ecological needs. When deciding on a class, the socio-economic impact on the catchment needs to be established. The trade-offs are largely influenced by a robust stakeholder engagement process in the area where classification is taking place.

The classification process initially generates different scenarios for each quaternary catchment within an IUA and the anticipated social, ecological and economic consequences should a proposed MC be afforded. This approach enables the DWA to make management decisions based on the different development alternatives and the anticipated consequences.

PRACTICAL IMPLICATIONS

In the Olifants/Doorn WMA, five different scenarios were tested to ascertain if it will allow the various Environmental Water Requirements (EWRs) to be met. The scenarios would, for example, take the effect of a Class III classification upstream in the WMA on the downstream quaternary catchments into consideration. The Project Team found that if they would allow for maximum overall water use, there would be a water deficit in future (shortages to comply with the ecological Reserve). Another recommended scenario took the present Ecological status (PES, as recently updated in 2011) as an indication of maximum protection. The assessment of this scenario indicated a deficit created by the insufficient supply from the upstream catchments. However, the answer seems to lie in balancing the protection requirements against that of use by combing conservation targets (as defined by the NFEPAs) with use requirements.

For example, in order to evaluate the ecological implications of the

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recommended scenarios, the flow in all of the IUAs tributaries could be afforded a Class I status, while the flow in the main stems are afforded Class III status. In this way, if the tributaries are kept healthy they can replenish the main stems. In theory, classes afforded to quaternary catchments should thus contribute to the overall management class of the IUA.

The process is not without its difficulties. In order to capacitate community members and other stakeholders, they are brought in from step one, says Naidoo. She explains that the idea is that they need to be in a position to understand the implications of the management class, and comment when the proposed classes are published in the Government Gazette. This can be challenging. "We have to ensure that we convey the technical information in a clear and logical manner at every public meeting." Nyamande adds that people have raised many concerns, for example, if they will have assurance of supply after the classification. A large group of people were also concerned about the possible implications the process would have on the raising of the Clanwilliam Dam, which they see as addressing many of the flow-related issues in the area. In this instance, the raising of the Clanwilliam Dam will proceed as intended by the DWA with the ecological water requirements and management imperatives as determined by the preliminary Comprehensive Reserve of 2008. The classification process incorporated these requirements during the socio-economic and ecological assessment undertaken for the WMA.

Another concern is data variability. "Some IUAs are data rich, while others aren't," says Naidoo. "You have to ensure that the process is based on data that is readily acceptable and can be defended should there be a query." Lastly, the relevant parties need to ensure that the class is implemented once it has been published in the Gazette. Naidoo adds that the management class needs to fit into regulatory mechanisms in order for the DWA to give effect to it through the issuing of water licences. "We also have to ensure that discharge standards and limits speak to Resource Quality Objectives", she adds. Furthermore, they need to ensure that monitoring systems are in place to ensure that these objectives are being achieved.

Regardless of the hurdles that the team have to overcome, the project is more than well on its way to completion. The recommended scenario report was already presented at a "lively" stakeholder meeting at the beginning of October, setting the trend for more efficient water resources management throughout the whole country. ❑

The dry bed of the Oorlogskloof River showcases the area. The river originates from the Roggeveld Mountains near Calvinia.

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REGULATORY ENVIRONMENT OF MANAGEMENT CLASSES

Chapter 3 of the National Water Act provides for the protection of water resources through the implementation of resource directed measures which includes the classification of water resources, setting the Reserve and Resource Quality Objectives. These elements together are intended to ensure comprehensive protection of all water resources.

The classification of water resources in terms of the Water Resource Classification system (WRCS), published in September 2010 is the responsibility of the DWA's Chief Directorate: Resource Directed Measures. The purpose is to ensure that a balance is sought between the need to protect and sustain water resources on one hand and the need to develop and use them on the other.

The WRCS is a set of guidelines and procedures for determining the desired characteristics of a water resource, and is represented by a management class. The management class outlines those attributes that the DWA and society require of different water resources.

The classification process that forms part of the WRCS is consultative development process to classify water resources in such a way that it will facilitate a balance between protection and use of the nation's water resources. In particular, the classification process and the catchment management strategy (CMS) are interactive, as the proposed management class will have significant implications for the allocation schedule. The WRCS is thus an integral component of the integrated water resource management environment. The outcome of the classification process will be the minister's approval of the management class for every significant water resource, and it will be binding on all authorities or institutions when exercising any power, or performing any duty under the National Water Act.