DEPARTMENT: WATER AND SANITATION

CHIEF DIRECTORATE WATER ECOSYSTEMS

DIRECTORATE RESERVE DETERMINATION

DETERMINATION, REVIEW AND IMPLEMENTATION OF THE RESERVE IN THE OLIFANTS/LETABA SYSTEM

INFORMATION AND DATA GAP ANALYSIS REPORT

Final

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DETERMINATION, REVIEW AND IMPLEMENTATION OF THE RESERVE IN THE OLIFANTS/LETABA SYSTEM

WP10940

INFORMATION AND DATA GAP ANALYSIS REPORT

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Prepared by:

Golder Associates Africa, Wetland Consulting Services, JMM Stassen and WRP Consulting Engineers

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Authors:	*Priya Moodley, Trevor Coleman, Retha Stassen, Eddie van Wyk and Gary Marneweck*
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Approved for the PSP by:

.....

Trevor Coleman

Study Leader

DEPARTMENT OF WATER AND SANITATION

Chief Directorate: Water Ecosystems

Approved for DWS by:

.....

Yakeen Atwaru

Director: Reseerve Determination

.....

Ndileka Mohapi

Chief Director: Water Ecosystems

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Reports as part of this project:

Bold type indicates this report.

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LIST OF ABBREVIATIONS

BHN	Basic Human Needs
CD: WE	Chief Directorate: Water Ecosystems
DRM	Desktop Reserve Model
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
DWAF	Department of Water Affairs and Forestry
EMC	Ecological Management Class
EIS	Ecological importance and sensitivity
ES	Ecological Sensitivity
EWR	Ecological Water Requirements
FEPA	Freshwater Ecosystem Priority Areas
FIFHA	Flow, Invertebrate, Fish, Habitat Assessment
FRAI	Fish Response Assessment Index
GRA2	Groundwater Resource Assessment Phase II
GRDM	Groundwater Resource Directed Measures
IEI	Integrated Ecological Index
MIRAI	Macro-invertebrate Response Assessment Index
MC	Management Class
NCMP	National Chemical Monitoring Programme
NWA	National Water Act
PES	Presentation Ecological State
RDM	Resource Directed Measures
REC	Recommended Ecological Category
RHP	River Health Programme
RQOs	Resource Quality Objectives
RQS	Resource Quality Services
WARMS	Water Use Authorisation and Registration Management System
WE	Water Ecosystems
WMA	Water Management Area
WMS	Water Management System
WRCS	Water Resource Classification System
WRPM	Water Resources Planning Model
WRUI	Water Resource Use Index
WRYM	Water Resources Yield Model

EXECUTIVE SUMMARY

The Chief Directorate: Water Ecosystems has recently commissioned the study 'Determination, Review and Implementation of the Reserve in the Olifants/Letaba System'. With water resources in the Olifants Water Management Area (WMA 2) having been classified and Resource Quality Objectives determined (2011-2014), the preliminary Reserve determined in 2001 for the Olifants System and in 2006 for the Letaba System, is now required to be superseded by the Reserve. With the preliminary Reserve having been determined nine years prior to the water resource classification, a review and update is required to ensure that the Reserve is in accordance with the water resource classes and is applicable to the current system needs and demands.

The purpose of this study is thus to determine, review and implement the Reserve in the Olifants\Letaba System; with the aim of specifically addressing ecological gaps and reviewing and updating the preliminary Reserves that have been determined.

The information analysis task was designed, as part of the study, to provide a high level analysis of the available water resource related data and information for the Olifants/Letaba System. As this study is largely reliant on previous studies for its information requirements, it is critical to determine if the data requirements of the Reserve determination process are met, and if not, what are the gaps that exist.

An information review and gap analysis has been undertaken and the outcomes of this are captured in this report. Relevant and applicable previous studies undertaken, data sources and related projects for the Olifants/Letaba system have been sourced and reviewed. This task has also included an assessment of the models that are to be used for the scenario analysis and consequences evaluation.

At this stage the information analysis is not considered to be exhaustive and the review will continue as new information and data come to light.

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1. INTRODUCTION

1.1 BACKGROUND

Resource Directed Measures (RDM) is enabled through Chapter 3 of the National Water Act (Act No. 36 of 1998) (NWA) which provides for the protection of water resources through the Classification of water resources, determination of Resource Quality Objectives (RQOs) and determination of the Reserve. These measures collectively aim to ensure that a balance is reached between the need to protect and sustain water resources on one hand and the need to develop and use them on the other. The Reserve (quantity and quality) which has priority over other water uses provides for two components; (1) basic human needs, ensuring that the essential needs of individuals served by the water resource in question are provided for; and (2) the ecological Reserve ensuring the water required to protect aquatic systems of the water resource are provided for. In terms of the NWA the preliminary determinations of Reserves may be made if a water resource has not been classified. However once water resources have been classified the preliminary Reserve must be superseded by the Reserve.

The Chief Directorate: Water Ecosystems has recently commissioned the study 'Determination, Review and Implementation of the Reserve in the Olifants/Letaba System. With water resources in the Olifants Water Management Area (WMA 2) having been classified and RQOs determined (2011-2014) the preliminary Reserve determined in 2001 for the Olifants system and in 2006 for the Letaba system, is now required to be superseded by the Reserve. With the preliminary Reserve having been determined nine years prior to the water resource classification, a review and update is required to ensure that the Reserve is in accordance with the water resource classes and is applicable to the current system needs and demands.

1.2 PURPOSE OF THE STUDY

The purpose of this study is to determine, review and implement the Reserve in the Olifants/Letaba System; with the aim of specifically addressing ecological gaps and reviewing and updating the preliminary Reserves that have been determined.

This study leads on from the recently completed classification and determination of RQOs for the water resources of the Olifants/Letaba system where water resources classes and associated RQOs have been set for significant water resources. The proposed management classes and RQOs have been published for public comment by Government Notice and once approved by the Minister of Water and Sanitation will be gazetted and thereafter be implemented. As the class of the water resources for the Olifants/Letaba system have now been determined, the Reserve can be determined and gazetted.

1.3 STUDY METHODOLOGY

There are four main components that will be addressed through the study work process. These include the:

- Review and analysis of existing information;
- Filling in of the ecological gaps identified;
- Scenario analysis and operational considerations;

- Setting the Reserve, defining the ecological specifications and developing the resource management plan.

The study will aim to provide a protection framework that will:

- Integrate the Ecological Water Requirements (EWRs) with the management and operation of the water resources of the Olifants/Letaba system to ensure its implementation and associated improvement in the state of water resources (where required) as well as their continued sustainability;
- Improve the detail and level of ecological specifications and management conditions; and
- Formulate practicable indicators for compliance monitoring and monitoring of ecological health and integrity of water resources.

The execution of this project will adhere to Regulation Number 810 (Government Gazette 33541), dated 17 September 2010, that gives effect to the WRCS and to the associated Reserve Determination Methodologies as prescribed by the DWS.

The main tasks to be undertaken in terms of the study Terms of Reference (TOR) include:

- Task 1: Project Inception;
- Task 2: Water Resources Information and Data Gathering;
- Task 3: Towards Implementation of the Reserve/EWR;
- Task 4: Communication and Liaison;
- Task 5: Capacity Building;
- Task 6: Study Management and Co-ordination; and
- Task 7: Study Closure.

1.4 STUDY AREA

The study area is the Olifants WMA (WMA 2) and includes the Olifants, Letaba and Shingwedzi systems. The spatial extent of the area includes tertiary drainage regions B11, B12, B20, B31, B32, B41, B42, B51, B52, B60, B71, B72 and B73 in the Olifants system, B81, B82 and B83 in the Letaba area, and B90, the Shingwedzi catchment.

The map of the study area is shown in Figure 1.

1.5 THE WATER RESOURCE INFORMATION AND DATA GATHERING TASK

The focus of this study is to finalise the Reserve and to develop a plan to facilitate implementation, building on the previous studies undertaken and outputs and objectives that have been defined for the Olifants/Letaba system. This study thus is not meant to start afresh but rather refine, optimise and fill in the gaps in terms of setting the Reserve.

The information analysis task is included to review the preliminary Reserve Determination studies, to assess the priority ecological gaps and how they may be addressed, to assess available data and data sources and to review set-up of the models to be applied.

The information and data gap analysis is also intended to propose appropriate recommendations on how to deal with the available information and data gaps.

The information and data obtained by the study team from Comprehensive Reserve Determination studies of the Olifants and Letaba Systems, the Water Resource Classification Studies and Resource Quality Objectives Studies in particular, and through other relevant studies undertaken over the past 15 years, will be supplemented through a review of reports and databases focusing on the requirements of the eight steps as defined for the Reserve determination process.

An understanding of the currently available models was obtained and a review of other models to be applied in the study was carried out and evaluated for possible application in the study.

1.6 PURPOSE OF THE REPORT

The purpose of the report is to document the assessment and review undertaken to determine the extent to which the information requirements of the study are met based on the information and data that is currently available through previous and parallel studies and to identify the gaps, ecological and other, that need to be addressed through this study.

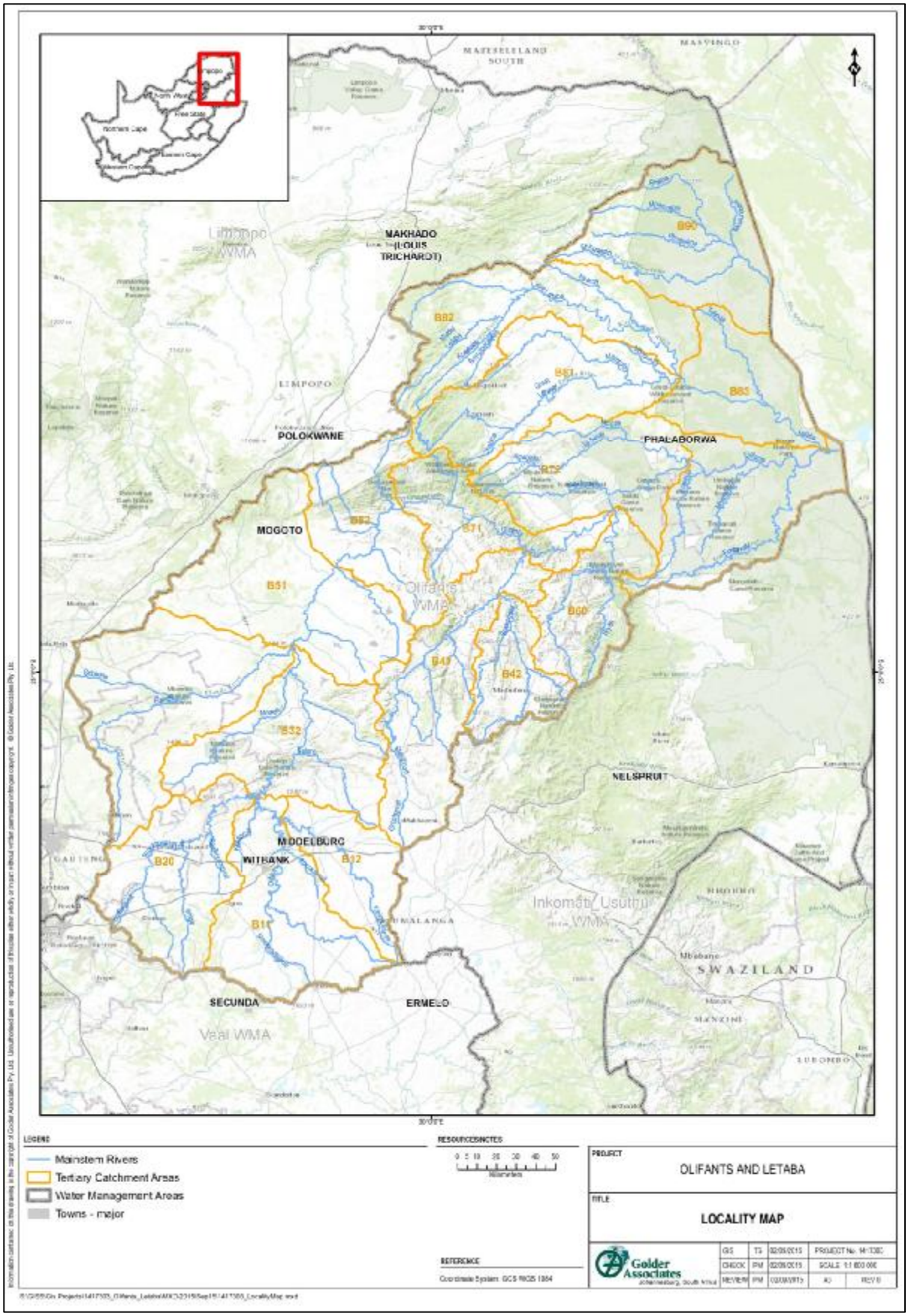

Figure 1: Olifants/Letaba System study area

2 INFORMATION REVIEW

This study is mostly reliant on existing results, assessments and information from previous studies and outcomes from parallel studies. Information analysis was therefore focussed on understanding the outputs of the preliminary Reserve studies, what can be applied, what needs to be built upon and where the key gaps/priorities exist. The Classification outcomes and RQOs determined also bear relevance to the Reserve and were reviewed to understand what needs to be achieved within the framework of resource directed measures. The other key components that relates to the information and data sources applicable to the Olifants/Letaba water resource system include the Continuation of the Olifants River Water Supply System Reconciliation Strategy (2015) and the Development of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System (2013). It is necessary to determine if any key information is outstanding or absent, in order that these may be addressed as to the best degree as possible.

2.1 INFORMATION AND DATA REQUIREMENTS

Table 1 lists the primary information and data required for the execution of the work in terms of achieving the outputs of the study. An assessment of the data and information received for the Olifants/Letaba water resource system indicate that a large percentage of the data and information elements that are necessary for the execution of the work is available for the main stem rivers. However, EWR information for some of the smaller tributaries is lacking, especially in the upper reaches of the Letaba system and limited information for the Shingwedzi River.

During the execution of the activities in the inception phase and going forward to the future tasks an evaluation of the validity/consistency and of the data will be carried out as a matter of course and any irresolvable anomalies and deficiencies will be brought under the attention of the Client for clarification or guidance required.

Data sources to be used for the assessment of the significant groundwater resources will be from existing hydrological studies, water use data from WARMS or the current Validation and Verification studies, appropriate groundwater characteristics data from the GRAII and other countrywide databases, geological maps, and detail studies carried out in the areas. Google Earth images will be used to address the information gap in terms of groundwater schemes developments, support by the All Towns Reconciliation Strategies (DWA, 2010).

Publications and data sources relating to the wetlands in the study area are available and accessible for large sections of the study area. However there are gaps in information for sections of the study area.

The modelling undertaken for water resource analysis studies of the Olifants and Letaba systems would need to be made available. The Water Resource Planning Model has been set up for the Olifants and Letaba systems as part of the reconciliation strategy studies and could be used during the analysis of the scenarios for the implementation of the Reserve.

At this stage the information analysis is not considered to be exhaustive and review will continue as new information and data come to light. The study team will liaise with the responsible persons/organisations to obtain the required data sources. However if necessary, the assistance of the Department may be required to facilitate the acquisition of some of the above data sources, specifically with obtaining some of the ecological-related data sources.

Table 1: Information and data requirements

Information/Data component	Review/Assessment	Comment
Comprehensive Reserve Determination Study - The Olifants River Ecological Water Requirements Assessment: Technical input into the Ecological Management Class (EMC)	• Required	The Ecological Water Requirements, the site information, eco-classification and detailed outputs and results have been reviewed and the priority gaps have been identified.
Basic Human Needs (BHN) Report	• Essential	Olifants: No information is available from the previous Reserve determination study of the Olifants River and the population information from the 2001 Census was used. Updated information for BHN from the classification and reconciliation strategy will be used during this study. Letaba: Updated population information from the classification and reconciliation strategy will be used for BHN.
The Olifants River Ecological Water Requirements Assessment: Hydraulics Specialist Report (with photos, site information and description)	• Required	Only part of the results has been obtained from the preliminary Reserve Study. This existing information will be built upon during this study. How the new survey data will be integrated with the previous study data is still to be determined.
Letaba: Hydraulics	• Required	Report and information is still to be sourced
Olifants Catchment Integrated Units of Analysis and Management Classes, Ecological categories	• Required	This will inform the scenario analysis step and form a key component of the overarching water resource management plan.
Resource Quality Objectives in the Olifants Water Management Area (WMA4): Resource Quality Objectives and Numerical Limits	• Required	The Resource Quality Objectives (RQOs) have been gazetted for comment but have not yet been finalised. The final Resource Quality Objectives are an important input to this study. The water quality RQOs will be reviewed in detail through this process and recommendations will be made on its finalisation.

Information/Data component	Review/Assessment	Comment
Letaba Catchment Integrated Units of Analysis and Management Classes, Ecological categories	• Required	This will inform the scenario analysis step and form a key component of the overarching water resource management plan.
Resource Quality Objectives in the Letaba Catchment	• Required	The RQOs are in final draft version and are still to be gazetted. The water quality RQOs will be reviewed in detail through this process and recommendations will be made on its finalisation.
Classification: Scenario Analysis Reports – Olifants and Letaba	• Essential	To support as an information source and guide.
Applicable Data – Dam constraints Olifants and Letaba (Capacity of the dam outlets)	• Required	Olifants Reconciliation Strategy: Maintenance Study and Reconciliation strategy for the Luvuvhu and Letaba systems.
Eco-classification of the 1999 Assessment at EWR sites in the Olifants River , 2010 – data supporting the Olifants Reconciliation Strategy Development – revisit of identified EWR sites in the Olifants system	• Required	To support the final selection of EWR sites for filling of gaps.
Hydrology – Olifants catchment	• Required	Updated and available to the study.
Hydrology – Letaba catchment	• Required	Available to the study.
MIRAI and FRAI Model outputs (1999 study and 2010 revisit)	• Essential	Outputs to supplement assessment and fill in gaps at priority sites.
Water Resource Planning Model (WRPM)	• Required	Available to the study. Will need to be re-configured to match system and flow requirements needed.
Water Resource Yield Model (WRYM)	• Required	Available to the study. Will be revisited and applied if required.

Information/Data component	Review/Assessment	Comment
Reserve Gazette Templates	• Required	To be provided by the Chief Directorate Water Ecosystems: Directorate: Reserve Determination.
Water Quality Model	• Required	No model available for the system. Key gap in terms of the study.
Updated water quality data and information from the Water Management System of the Department.	• Essential	Some information in hand. Additional data in the process of being obtained from the Directorate Resource Quality Services.
PES/EIS 2013 – Olifants Primary Catchment B	• Required	Understanding of Ecostatus.
River Health Programme Studies: Olifants River	• Essential	To enhance data biological data at priority sites.
Intermediate Groundwater Reserve Determination: Report – Groundwater (Intermediate) Reserve Determination for the Olifants River Catchment (DWAF, 2009)	• Obtained and will be used as basis for this project.	Good baseline document, but will have to be augmented with more recent assessments, i.e. a desktop land use assessment (look at developments of remote irrigations schemes, industries, mines, townlands and water treatment works).
Reserve Determination Hydrogeological Study: Report – Letaba Catchment Reserve Determination Study – Groundwater Report Final (DWAF, 2006)	• Obtained and reviewed	Approach used not user friendly and it might have to be transferred to the same methodology used by SRK for the Olifants WMA (DWAF, 2009).
Additional information from the "Development of a reconciliation strategy for all towns in the Northern Region" by DWS where available.	• Not received and not reviewed yet	Normally these documents are using recent, local hydrogeological investigations and provide a good indication of groundwater user requirements.

Information/Data component	Review/Assessment	Comment
Groundwater use figures	• 2014 Model available, but not sure if any new updates have been released	Although difficult to obtain and not complete, it provides a useful indication of groundwater use. WARMS Dataset could be applied.
Letaba Catchment Reserve Determination Study, Wetland Scoping Report	• Required	Available.
Data on the wetlands in the Kruger National Park	• Required	Require mapping or other wetland data from the sections of the study area within the Kruger National Park. Data needs to be sourced from the Kruger National Park.

2.2 DATA AVAILABILITY AND ACCESSIBILITY

- The existing Water Resource Planning Model (WRPM) and Water Resources Yield Model (WRYM) will be used to undertake the operational scenario analysis for the quantity component. The model will be adjusted to incorporate all the final EWRs at the selected sites to provide information for the ecological consequences assessment;
- The latest available naturalised hydrology from the reconciliation strategy studies will be used without any re-calibration or simulation. The simulated present day flows and scenario flows from the WRPM or WRYM will be used for the ecological consequences assessment. The Water Resources Yield Model will be applied if required;
- The existing DWS water quality database; *i.e*. DWS Water Management System will be used as the primary source of water quality data. This will be supplemented by other external sources of water quality data;
- Reserve Models: The following models are available and are to be applied:
  - The Desktop Reserve Model (DRM) will be used for the determination and/or extrapolation of the quantity component of the Reserve. Existing EWRs will be utilised and adjusted where required;
  - The ECOSTATUS4 1.01 model (August 2015) will be used to determine and/or revise the Present Ecological State (ECOSTATUS) for the EWR sites where additional data have been collected;
  - The latest FIFHA model developed by DWS (Dr Neels Kleynhans) will be used for the interpretation of the scenarios to determine ecological consequences; and
  - The MIRAI and FRAI models will be updated for the existing EWR sites with additional survey data that is collected.
- Groundwater:
  - Baseline groundwater data is available from the National Groundwater Archive (NGA), time series related data (water levels and quality) is available from Hydstra and the Water System Management platform and time series groundwater quality from the CHART system;
  - Several DWS reports of the groundwater potential and availability (e.g. the Northern Springbok Flats, the Wolkberg Dolomites, and the Gabbro-Norite Complexes) are available for references;
  - Although the WARMS dataset is regarded as incomplete in some respect, the information is valuable, especially in terms of surface water allocations. It was noted in the Groundwater Reserve Study (DWAF, 2009) that the records for groundwater is not representative of the actual water use, however, an assessment of land use activities will be used based on the SRK dataset in an effort to update groundwater utilisation;
  - Recent studies of the area, focussing on implementation of groundwater management protocols (dedicated groundwater monitoring programmes) are available for the northern parts of the Olifants/Letaba System;

- It has been noted that the northern two and southern two tertiary catchments of the former Letaba/Luvuvhu WMA have not been covered by any groundwater Reserve study. These areas will have to be studied within the available hydrogeological information framework and best be the same approach used by SRK for the 2009 Olifants sub-WMA study (DWAF, 2009); and
- The approach applied by the SRK research team to divide the area in Groundwater Resource Units will be followed and applied to the Letaba sub-water management area.

¡ Wetlands:

- Baseline wetland data is available from various sources including several DWS and other reports on the wetlands as well as wetland inventory databases. These include Marneweck and Batchelor, 2002; DWAF, 2006; DWA, 2011; Nel, Murray, Maherry, Petersen, Roux, Driver, Hill, van Deventer, Funke,, Swartz, Smith-Adao, Mbona, Downsborough, and Nienaber, 2011; DWA, 2013; DWA, 2014; DWS, 2014a; DWS, 2014b; DWS 2014c;Mbona, Job, Smith, Nel, Holness, Memani and Dini, 2015.

¡ Other supporting information such as water users in the catchment (and water quality requirements), land use, water infrastructure and water allocation information, environmental information, biodiversity and conservation data will also be reviewed. Data from the River Health programme will also be used to supplement biological information where needed.

3 INFORMATION/DATA ASSESSMENT AND GAP IDENTIFICATION

3.1 Hydrology

¡ The dolomitic contribution to the flows in the Upper Wilge catchment has not been modelled. This is a key gap;

¡ Integrated operating rules for the entire Olifants System for releases from the various dams to satisfy the water demands without shortages is absent. Ecological conditions will be specified in the absence of the overarching operating rules;

¡ As the latest hydrology in the Olifants catchments significantly different to the previous hydrology used for the Reserve Determination study of 2001, the updated hydrology will be used. This information, together with the revised hydraulic profiles and biological information and models will be used during the evaluation of the scenarios;

¡ Base hydrology for the Letaba System will need to be assessed (natural and present day flows);

¡ Present day flows and future (scenario) flows will be simulated using the WRPM or WRYM; and

¡ Hydrology for the Shingwedzi System has been updated as part of the Limpopo River Basin Monograph Study in 2012-2013 and will be used.

3.2 Ecological

¡ The approach followed during the 2001 Comprehensive Reserve study focused on Ecological Water Requirement (EWR) sites (formally IFR sites) on the main stem and major tributaries. Small, more sensitive and un-impacted tributaries were not part of the focus of this study;

- Scenario analysis was undertaken and the impact on yield was analysed but not the ecological consequences of these scenarios. This in part was addressed during the classification process, however scenarios were user demand driven and specific ecological scenarios were not identified and evaluated;
- The water quality component of the Reserve (2001) is outdated as the methodology has been changed since the previous comprehensive study. In addition, only desktop assessments of the water quality Reserve were undertaken by Directorate Resource Quality Services and included in the templates for each EWR site. The Water Quality Reserve will not be redone as part of this study – however at specific identified priority sites and catchments where water quality is identified as an issue, water quality objectives and specifications will be defined. These will be in alignment with the RQOs that have been set;
- The yield/planning models have been set up including to a certain extent dam constraints for releasing EWRs. It needs to be confirmed that these are indeed the actual dam constraints, and the ecological consequences of not releasing the EWRs (e.g. freshettes) need to be evaluated;
- For some rivers, no or limited surveyed biological data for determination of the PES is available (e.g. Selons, Bloed, etc.). At these sites the PES/EIS/ES desktop study of DWS, 2013 will be relied upon;
- In instances where the priority sites have been selected based on where RQOs have been set, only desktop requirements are available;
- The EWRs for the Olifants catchment were not determined for the alternative categories during the previous studies. Alternate categories will to a certain extent be addressed by the ecologically scenario analysis;
- The 2006 Letaba Comprehensive Reserve Study is considered adequate to support the information needs of this study; and
- A rapid II Reserve has been determined for the Shingwedzi catchment downstream of Kanniedood Dam, but it has not been classified. This is a key gap. A preliminary Reserve will be set through this study.

3.3 Water Quality

- The Department of Water and Sanitation's Resource Quality Services (RQS) water quality database will be used as the source of the water quality data. A substantial amount of data has been collected. Some further data sources will be investigated to obtain additional water quality monitoring data. For the purposes of this study, the certain indicator variables will be used to assess current status;
- The monitoring points of the DWS National Chemical Monitoring Programme (NCMP) (WMS data) within the Olifants WMA are primarily located on the main stem Rivers and the major tributaries. Data gaps exist at more remote sites where no monitoring is currently undertaken – specifically in smaller tributary catchments which are identified as high PES and ecological importance and sensitivity. Limited water quality data is available for the Shingwedzi catchment area; and

¡ The existing Water Resource Planning Model (WRPM) does not include a water quality module for the entire Olifants WMA which is a limitation in terms of the water modelling that is required. This gap cannot be addressed through the study.

3.4 Wetlands

During the July 2015 specialist workshop, priority quaternary catchments (in terms of wetlands) were identified for possible field visits based on a review of the available literature and a scan of the existing wetland databases. These included important wetlands that the wetland team felt should possibly be visited (already identified/prioritised in the current Reserve documents), and areas where potential gaps were identified (where additional important wetlands may exist and which possibly should also be included or prioritised in the Reserve process). These priority quaternary catchments formed the basis of the gap analysis for the wetlands component.

Examination of available imagery was then used to verify or discount the findings of the July workshop as part of the gap analysis. Attention was paid to those areas where the existing mapping coverage had not picked up wetlands and wetland clusters. Outside of the Kruger National Park, the focus was on larger wetlands (generally >5 hectares in extent) that had not been picked up by previous mapping or where there were wetland clusters that had been missed that provided clear signatures within the quaternary catchment. Where it was clear that small individual wetland systems had been missed, these were checked in relation to the extent and distribution of other wetlands in the surrounding area. Where few to no other wetlands occurred in the surrounding area, these smaller wetlands were not considered part of a priority wetland area. This did not mean that such smaller systems were not important wetlands, but simply that the focus of the gap analysis was on larger systems or clusters of wetlands where clear gaps in the general mapping layer were evident.

Where these gaps were identified, desktop mapping was used to capture (coarsely delineate) a sub-set of the wetlands missed. This was dependent on the resolution of the imagery and the information was generally captured at a mapping scale of approximately 1:5 000. Every attempt was made to at least capture a sample of the additional wetland systems identified. Within the Kruger National Park where the existing available wetland coverage (based on the databases examined) was poor, smaller wetland systems (<5 hectares in extent) were also captured where appropriate (in cases where these were considered to be linked to other wetland systems or part of wetland clusters). It has been indicated that additional coverages may be available for the Kruger National Park and the team will try to source these as part of the next phase of the study.

3.5 Groundwater

The quaternary catchments in the Olifants-Letaba where grouped in terms of the impact of groundwater utilisation (Table 2).The impact of groundwater utilisation is ranked according to water use estimations, based on the actual water use and the annual average groundwater recharge (a Stress Index) based on investigations done by (DWAF, 2001). Each quaternary catchment has been assessed in terms of its Stress Index (SI), *i.e.*

$$\mathrm{SI} = \frac{\text{Gwater use } (\frac{\text{mm}}{\text{a}})}{\text{Gwater recharge } (\frac{\text{mm}}{\text{a}})}$$

and expressed in percentage points.

The groundwater recharge used in the index is based on the Chloride Mass Balance method.

The following criteria are applied:

- Over Utilised: Stress index >1.0 (no annual recovery from average recharge events – water level recession rate >0.5 m/a, require a 1 in 10 yr. aquifer storage recharge event to recover);
- Heavily Utilised: Stress Index >0.65 to <1.0 (sporadic annual recovery from average recharge events – water level recession rate >0.5 m/a to 0.5 m/a, require a 1 in 5 yr. aquifer storage recharge event to recover; and
- Moderately Utilised: Stress Index <0.65 (Annual recovery from average recharge events - water level recession rate <0.25 m/a, but annual recovery causes rising trends to compensate for annual abstraction.

Table 2: List of Status of Quaternary Catchments in terms of the utilisation status and the impact relation on surface water

Quaternary Catchment	Groundwater utilisation status	Impact on surface water resources
B31C	Heavily-Utilised	Low
B51G	Heavily-Utilised	Negligible
B71B	Heavily-Utilised	Negligible
B72F	Heavily-Utilised	Moderate
B81D	Heavily-Utilised	High
B41C	Moderately-Utilised	Moderate
B41J	Moderately-Utilised	Negligible
B71E	Moderately-Utilised	Negligible
B31D	Over-Utilised	Low
B60E	Over-Utilised	High

The interconnection between large groundwater aquifers, such as the Wolkberg Dolomites and local surface water systems has not been quantitatively investigated, however, a DWS Feasibility Study (planned 2016 - 2018) of two areas of the Malmani Group (*i.e.* Wolkberg Dolomites), would support this uncertainty.

4 GAPS: PRIORITY AREAS

4.1 Rivers

Priority areas where ecological gaps exist have been identified. This has been based on the review of the preliminary Reserve Determinations, the Water Resource Classification studies, RQO determination studies, the Reconciliation Studies, water resource management studies, water quality studies, ecological information and data, and expert knowledge and experience. These have been supported by the determination of hotspot areas based on an Integrated Ecological Index and Water Resource Use Index (Appendix A). The hotspot assessment identifies the level of Reserve determination that is required.

This overview gap analysis has provided a list of priority quaternary catchments (with associated river reaches) that are important to the system from an ecological perspective or support the system to achieve the desired ecological condition, which require supplementary data, information or analysis to finalise the Reserve. The list of priority sub-catchments are listed in Table 3. Gaps are to be addressed either by Rapid III assessments, re-survey of hydraulics, including biological surveys at existing EWR sites, biological surveys and by the use of existing hydraulics for revision of requirements and ecological consequences.

4.2 Wetlands

The overview gap analysis of the wetland coverage has captured a number of potential additional wetland systems and clusters that may be important from an ecological, social/cultural or hydrological perspective, and which may require supplementary data, information or analysis to finalise the Reserve. A provisional map of the quaternary catchments identified as having gaps in terms of wetland data is shown in Figure 2. These represent a far smaller sample (refinement) of quaternary catchments than was initially captured during the July workshop. A field visit will be undertaken to as many of the quaternary catchments indicated in Figure 2 as possible with the aim to visit a representative sample of the additional wetland systems captured as part of this study.

Table 3: Summary of proposed new rapid EWR sites, re-survey of existing EWR sites, use of existing hydraulics for revision of requirements and ecological consequences and biological surveys

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
New rapid 3 or re-survey existing site						
B11G	1	Olifants	x		x	New rapid 3
B11J	2	Olifants	x		x	Replace existing Olifants-EWR1, rapid 3
B12E	3	Klein Olifants	x		x	Replace existing Olifants-EWR3, rapid 3
B20F	4	Wilge	x		x	New rapid 3
B20J	5	Wilge		x	x	Resurvey existing Olifants-EWR4
B32A	6	Olifants		x	x	Resurvey existing Olifants-EWR2
B32B/B32C	7	Selons	x		x	New rapid 3
B31C	8	Elands	x		x	New rapid 3
B42H	9	Spekboom	x		x	New rapid 3
B60J	12	Blyde		x	x	Resurvey existing Olifants-EWR12
B60B/B60D	11	Blyde	x		x	New rapid 3
B71J	13	Olifants		x	x	Resurvey existing Olifants-EWR11
B72D	14	Olifants		x	x	Resurvey existing Olifants-EWR13

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
B73H	15	Olifants		x	x	Resurvey existing Olifants-EWR16
B81A	16	Broederstroom	x			New rapid 3
B81F	17	Great Letaba		x		Resurvey existing Letaba-EWR4 (Hans Merensky)
B82F	18	Klein Letaba	x			New rapid 3
B82G	19	Klein Letaba		x		Resurvey existing Letaba-EWR3 (Klein Letaba)
B83D	20	Letaba		x	x	Resurvey existing Letaba-EWR7 (WQ)
B90H	21	Shingwidzi	x			New rapid 3
Use existing hydraulics + updated biological data from surveys						
B32A	1	Kranspoortspruit		x	x	Use existing hydraulics for Olifants-OLI-EWR3
B32D	2	Olifants			x	Use existing hydraulics for Olifants-EWR5
B31G	3	Elands			x	Use existing hydraulics for Olifants-EWR6
B41H	4	Steelpoort			x	Use existing hydraulics for Olifants-EWR9
B41K	5	Steelpoort			x	Use existing hydraulics for Olifants-EWR10
B51C	6	Olifants			x	Use existing hydraulics for Olifants-EWR7
B71D	7	Olifants			x	Use existing hydraulics for Olifants-EWR8

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
B72K	8	Ga-Selati			x	Use existing hydraulics for Olifants-EWR14b
B41H	9	Dwars			x	Use existing hydraulics for DWA-EWR1
B81B	10	Great Letaba			x	Use existing hydraulics for Letaba-EWR1
B81B	11	Letsitele			x	Use existing hydraulics for Letaba-EWR2
B83A	12	Letaba			x	Use existing hydraulics for Letaba-EWR6
Biological surveys only for revised ecostatus and extrapolation of EWR with DRM						
B11E	1	Steenkoolspruit			x	Biological survey, WQ and discharge
B20C	2	Bronkhorstspruit			x	Biological survey and discharge
B72C	3	Makhutswi			x	Biological survey and discharge
B73G	4	Timbavati			x	Biological survey and discharge, WQ u/s
B81B	5	Politisi			x	Biological survey and discharge
Biological surveys and reassess ecostatus						
B32H	1	Moses			x	Biological survey and reassess ecostatus
B41A	2	Lakenvleispruit			x	Biological survey and reassess ecostatus
	3	Grootspruit			x	Biological survey and reassess ecostatus

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
	4	Langspruit			x	New site. Biological survey and reassess ecostatus
B41C	5	Masala			x	Biological survey and reassess ecostatus
B41F	6	Upper Klip			x	Biological survey and reassess ecostatus
	7	Lower Klip			x	Biological survey and reassess ecostatus
B42B	8	Dorpspruit			x	Biological survey and reassess ecostatus; WQ
B60F	9	Ohrigstad			x	Biological survey and reassess ecostatus
B60H	10	Ohrigstad			x	Biological survey and reassess ecostatus, WQ
B60J	11	Blyde			x	Biological survey and reassess ecostatus, WQ (EWR12)
B71A	12	Paardevlei			x	Biological survey and reassess ecostatus
B71G	13	Olifants			x	Biological survey and reassess ecostatus, WQ
B72E	14	Ngwabatse			x	Biological survey, habitat integrity and reassess ecostatus
B72F	15	Ga-Selati			x	Biological survey and reassess ecostatus
B72K	16	Ga-Selati			x	Biological survey and reassess ecostatus EWR14a
B73A	17	Klaserie			x	Biological survey, habitat integrity and reassess ecostatus

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
B90D	18	Shisha			x	Biological survey and reassess ecostatus
Biological surveys/WQ						
B11C	1	Steenkoolspruit/Piekspruit and DeBeerspruit			x	Biological survey, WQ and discharge
B11D	2	Trichardspruit			x	Biological survey and discharge
	3	Dwars-in-die Wegspruit			x	Biological survey, water quality and discharge
B11K	4	Klipspruit, Blesbokspruit			x	Biological survey and water quality
B11L	5	Olifants, Klipspruit			x	Biological and quality on Olifants, biological on Klip
B12B	6	Klein Olifants				Water quality (confluence Coetzee, East Woe-Alleenspruit and Woes-Alleenspruit
B12C	7	Klein Olifants			x	Biological and quality (just after tributaries confluence)
B20F	8	Wilge			x	Biological survey at water quality site (Kendall B2WIL/DEWAAL and 4OF148)
B32B	9	Klipspruit			x	Biological survey and discharge
B31A	10	Elands			x	SASS5 and WQ (Little Eden)
B31F	11	Elands			x?	Water quality and possibly biological?

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
B31G	12	Kameel				Water quality (Diatoms)
B31J	13	Elands			x	Biological
B32F	14	Bloed				Water quality
B51B	15	Olifants (releases from Flag Bashielo)				Water quality
B51C	16	Olifants				Water quality
B41G	17	Upper Dwars			x	Biological survey
B41H	18	Olifants				Water quality (EWR9)
B71C	19	Mohlapitse			x	Fish survey; habitat integrity
B71D	20	Mohlapitse			x	Fish survey; habitat integrity, WQ
B71E	21	Motse				Water quality
B73C	22	Tsiri				Water quality
B73J	23	Olifants				Water quality
B60D	24	Blyde			x	Biological survey, water quality
B81C	25	Great Letaba			x	Biological survey, water quality
B81D	26	Bobs			x	Biological survey, water quality

Quaternary catchment	Site nr	River	New rapid 3	Re-survey existing EWR sites	Biological surveys	Gap to be addressed
B81E	27	Great Letaba			x	Biological survey, water quality
B81J	28	Letaba			x	Biological only
B82D	29	Middle Letaba			x	Biological survey, water quality (plus visual assessment of EWR site)
B82J	30	Middle Letaba			x	Biological survey, water quality (at outlet)
B82H	31	Nsama			x	Biological survey
B83A-B83E	32	Letaba			x	Biological survey, water quality
B90A	33	Shisha			x	Biological survey
B90B	34	Mphongolo			x	Biological survey
B90C	35	Phugwane			x	Biological survey
B90D	36	Shisha			x	Biological survey (confluence of Mphongolo and Phugwane)
B90F	37	Shingwedzi			x	Biological survey/water quality R81 site (upper catchment)
B90F	38	Shingwedzi			x	Biological survey/water quality border of KNP
B90G	39	Shingwedzi			x	Biological survey/water quality (confluence with Tshange)

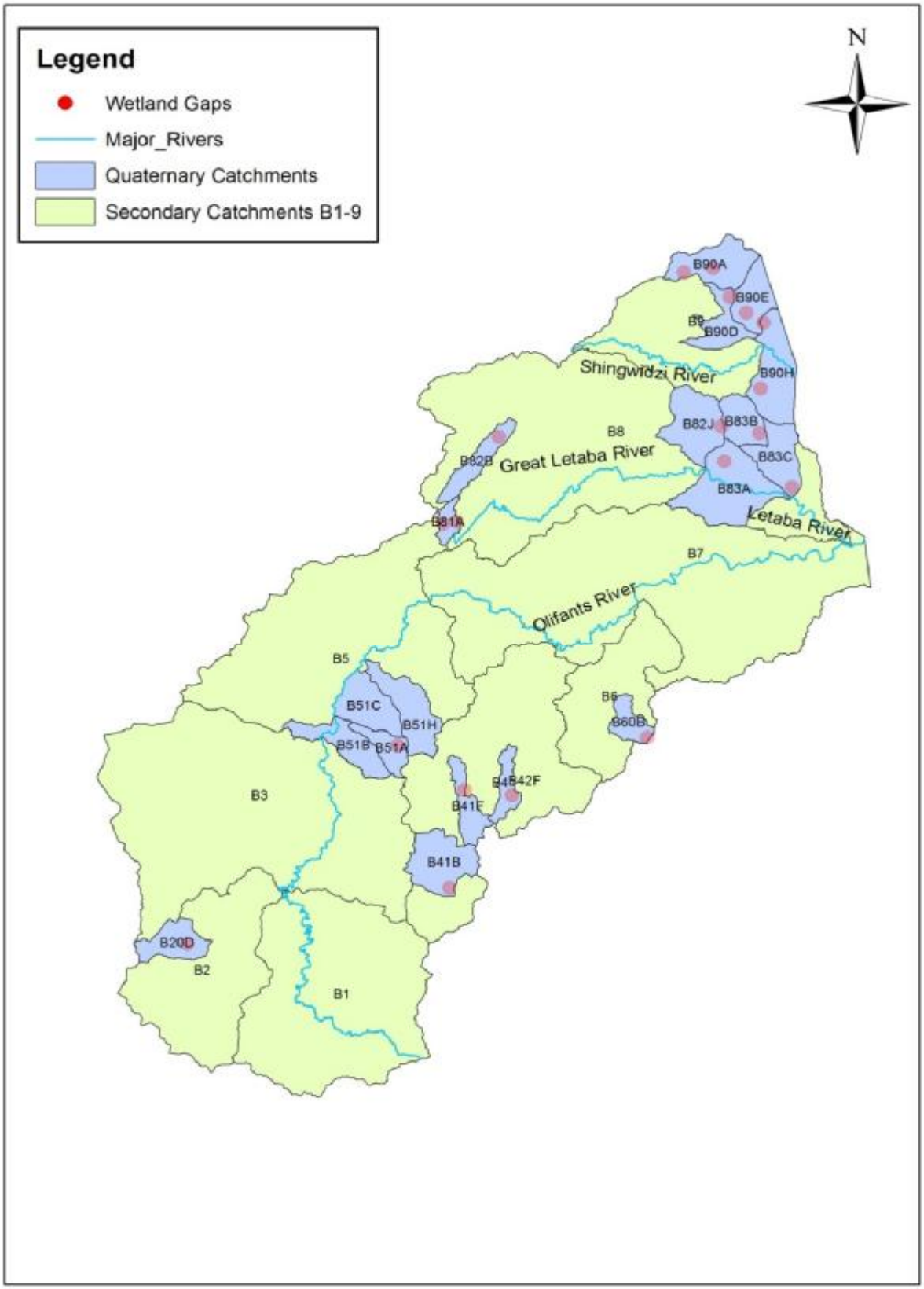

Figure 2: Provisional map showing the quaternary catchments within the study area identified as having gaps in terms of the wetland coverage and associated wetland data

4.3 Groundwater

As stated in Table 2, groups of quaternary catchments have been identified by Haupt *et. al*. (DWAF, 2001, 2006) where groundwater abstractions pose an impact on local surface water resources. These quaternary catchments are categorised in Table 4 below. This is the grouping of quaternary catchments in the Olifants/Letaba catchment where groundwater is augmenting local surface water resource based on the Baseflow Factor, specified as follows:

- High: +80% of surface water supplies are from local groundwater aquifers;
- Moderate: 30% to 80% of surface water supplies are from local groundwater aquifers; and
- Low: <30% of surface water supplies are from local groundwater aquifers.

Those indicated as Negligible («Gwater to Baseflow) are not classified as linked systems.

It also provides an indication of the groundwater utilisation in the quaternary catchments, *i.e*. "Underutilised" indicates that groundwater can still be allocated for use; however, the impact on the local surface resource remains a concern and should be managed (a monitoring requirement).

It is required that the groundwater utilisation status of these quaternary catchments is reviewed in light of the date of the actual assessment (*i.e.* pre 2003).

Table 4: Quaternary Catchments in the Olifants WMA where groundwater use has a potential impact on the surface water resource

Quaternary catchment	Groundwater utilisation status	Impact on surface water Resources
B20C	Under-Utilised	High
B41F	Under-Utilised	High
B41G	Under-Utilised	High
B42A	Under-Utilised	High
B42B	Under-Utilised	High
B42D	Under-Utilised	High
B42F	Under-Utilised	High
B60E	Over-Utilised	High
B71C	Under-Utilised	High
B71D	Under-Utilised	High
B71F	Under-Utilised	High
B71G	Under-Utilised	High
B72G	Data not available	High

Quaternary catchment	Groundwater utilisation status	Impact on surface water Resources
B73A	Under-Utilised	High
B60A	Data not available	High
B60B	Under-Utilised	High
B60C	Data not available	High
B60D	Under-Utilised	High
B81A	Under-Utilised	High
B81B	Under-Utilised	High
B81D	Heavily-Utilised	High
B11J	Under-Utilised	Moderate
B11K	Data not available	Moderate
B11L	Under-Utilised	Moderate
B12E	Under-Utilised	Moderate
B20D	Under-Utilised	Moderate
B20E	Under-Utilised	Moderate
B20F	Under-Utilised	Moderate
B20G	Under-Utilised	Moderate
B20H	Under-Utilised	Moderate
B20J	Under-Utilised	Moderate
B32A	Under-Utilised	Moderate
B32B	Data not available	Moderate
B32C	Under-Utilised	Moderate
B41A	Under-Utilised	Moderate
B41B	Under-Utilised	Moderate
B41C	Data not available	Moderate
B41D	Under-Utilised	Moderate
B60F	Under-Utilised	Moderate

Quaternary catchment	Groundwater utilisation status	Impact on surface water Resources
B60G	Under-Utilised	Moderate
B60J	Under-Utilised	Moderate
B72A	Under-Utilised	Moderate
B72F	Heavily-Utilised	Moderate
B81C	Under-Utilised	Moderate
B11A	Under-Utilised	Low
B11B	Under-Utilised	Low
B11C	Under-Utilised	Low
B11D	Under-Utilised	Low
B11E	Under-Utilised	Low
B11F	Data not available	Low
B11G	Under-Utilised	Low
B11H	Under-Utilised	Low
B12A	Under-Utilised	Low
B12B	Under-Utilised	Low
B12C	Under-Utilised	Low
B12D	Under-Utilised	Low
B20A	Under-Utilised	Low
B20B	Under-Utilised	Low
B31A	Under-Utilised	Low
B31B	Data not available	Low
B31C	Heavily-Utilised	Low
B31D	Over-Utilised	Low
B31G	Data not available	Low
B32D	Under-Utilised	Low
B31H	Data Not Available	Low

Quaternary catchment	Groundwater utilisation status	Impact on surface water Resources
B32E	Under-Utilised	Low
B32F	Under-Utilised	Low
B32G	Data not available	Low
B32H	Under-Utilised	Low
B42C	Under-Utilised	Low
B42E	Under-Utilised	Low
B42G	Under-Utilised	Low
B60H	Under-Utilised	Low
B82A	Under-Utilised	Low
B82B	Under-Utilised	Low
B82C	Data not available	Low
B82D	Under-Utilised	Low
B82E	Under-Utilised	Low
B82F	Under-Utilised	Low

Recent information on the status of groundwater quality variations is not frequently available, and is a concern. The source of this required update is unknown and can at best be improved by using the SRK dataset (DWAF, 2006).

The same criteria used for identification of the surface water-groundwater use interaction (as per Table 4 above) applies for identification of water quality impacts. Industrial areas, mining area, waste water treatment works and waste sites can be identified through recent land use GIS datasets and these areas will be used to select groundwater priority areas.

5 MITIGATION MEASURES FOR RISKS IDENTIFIED

Potential risks/limitations identified are listed in Table 5**.**

Table 5: List of possible identified risks and limitations with proposed mitigation measures

Risk/Limitation	Mitigation Measure
Existing ecological/EWR and available information may be found to be inadequate to support all modelling processes.	Best available information will be used and where possible modelling, extrapolation, estimations will be used. Every effort will be taken to ensure that the end results and outputs are technically sound, scientifically supported and defendable. Assumptions made will be documented.
Water quality data may not be available for smaller tributary catchments.	The PES/EIS/ES, 2013 desktop assessment of the Olifants Primary Catchment B, will be used as a guide to understand physico-chemical status and impacts present. Further information on water use authorisations, compliance monitoring and any other water quality information available from the DWS will be used to fill in the gaps where possible.
An Integrated Water Quality model of the Olifants Catchment and the Letaba System is not available.	A TDS model is planned to be setup for the Olifants Catchment as part of the DWS project to develop an Integrated Water Quality Management Plan for the Olifants WMA. If this model is available in time, it will be used in the project to evaluate the water quality impacts of the different scenarios on TDS. If not available a high level mass balance approach will be applied based on the measured water quality data and simulated flow volumes. The understanding gained on the load contributions will be used to assess at a high level the impact of the scenarios on the water quality.
Shingwedzi catchment: Absence of a Comprehensive Reserve Study, Classification or RQOs determination.	Preliminary Reserve will be determined and RQOs will be set in the absence of the Classification, however it will not be gazetted.
Existing natural hydrology might be inadequate (e.g. dolomitic areas).	Where the hydrology is found to be lacking, it will be noted for future studies as this study intention is not to re-calibrate the hydrology.
Existing hydraulics (benchmarks and data) at the previous selected EWR sites for the comprehensive sites might not be available.	These sites have been identified and re-surveyed.

Risk/Limitation	Mitigation Measure
The status of groundwater quality data as water quality is linked to the Reserve determination (*i.e.* fresh water status). This dataset does not cover the area to a level where time series data can be collated and used for long-term trend analyses.	Very complex to solve without a regional groundwater quality survey which is not included in this project. However, the status of the regional groundwater quality can be assessed using the long-term groundwater quality dataset of DWS's National Groundwater Quality Monitoring Programme; although infrequently populated in the Olifants WMA area. It could also be augmented with a detailed assessment of the DWS's surface water gauging station datasets (*viz.* base flow water quality in pristine environments).
Groundwater use values to balance the water resources within a particular quaternary catchment (groundwater allocation may already override the reserve allocation, *i.e*. negative water balance in quaternary catchment).	The only way to specify a balanced groundwater use allocation is to have a good measurement of the actual water use by the different sectors. The best way is through the WARMS process. Support, should therefore be directed to keep this process running and improvements through water use license audits and physical inspections of water works/schemes where groundwater is used.
Updated base flow estimations and review of surface water – groundwater interaction (update of the Haupt, 2003 dataset); and EWRs.	Databases are available (Hughes, Vegter & Schulze, Pitman, and Van Tonder); Groundwater Resource Directed Measures methodology available.

6 CONCLUSION

From the information analysis that has been undertaken on understanding the availability, accessibility and usefulness of the information and data sources applicable to the Olifants/Letaba System, it is evident that sufficient data does exist for the determination of the Reserve.

It can be concluded that the Olifants/Letaba system is fortunately, well studied and a wide range of experts, with first-hand knowledge of the system, are available both in the project team and within the networks of the project team. Best available and reasonable data and information sources will be relied upon to meet the objectives of the study.

Based on the above assessment undertaken it is recommended that a review of the Departmental water quality and hydrological monitoring programmes and networks, including groundwater, be undertaken.

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APPENDIX A

HOTSPOT IDENTIFICATION

IEI - Integrated Ecological Index
WRUI - Water Resource Use Index

Olifants River catchment - B1													
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**		**IEI**		**FINAL**
B11A-01331	Leeufonteinspruit	3.00	2.00		3	MODERATE	HIGH	HIGH	D		2		Rap3
B11A-01369	Olifants	2.00	2.00		2	HIGH	HIGH	HIGH	C		2		Biol
B11A-01396	Olifants	2.00	4.00		4	MODERATE	HIGH	HIGH	C		2		Int
B11A-01411	Viskuile	3.00	2.00		3	MODERATE	HIGH	HIGH	C		2		Rap3
B11A-01430	Viskuile	3.00	2.00		3	HIGH	HIGH	HIGH	C		2		Rap3
B11A-01443	Joubertsvleispruit	3.00	3.00		3	MODERATE	HIGH	HIGH	D		2		Rap3
B11B-01294	Koringspruit	3.00	5.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11B-01304	Olifants	3.00	4.00		4	MODERATE	HIGH	HIGH	E		2		Int
B11B-01327	Olifants	2.00	3.00		3	HIGH	HIGH	HIGH	C		2		Rap3
B11C-01449	Steenkoolspruit	2.00	2.00		2	MODERATE	HIGH	HIGH	C		2		Biol
B11C-01472	Piekespruit	1.00	2.00		2	MODERATE	HIGH	HIGH	B		3		Rap3
B11C-01501	Piekespruit	1.00	2.00		2	MODERATE	HIGH	HIGH	B		3		Rap3
B11C-01503	Debeerspruit	1.00	2.00		2	MODERATE	HIGH	HIGH	C		2		Biol
B11C-01527	0	1.00	2.00		2	MODERATE	HIGH	HIGH	B		3		Rap3
B11C-01542	Piekespruit	1.00	1.00		1	HIGH	HIGH	HIGH	B		3		Biol

Olifants River catchment - B1													
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**		**IEI**		**FINAL**
B11D-01366	Steenkoolspruit	2.00	4.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11D-01424	Dwars-in-die-wegspruit	2.00	4.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11D-01435	Steenkoolspruit	3.00	5.00		4	LOW	MODERATE	MODERATE	D		1		Rap3
B11D-01467	Dwars-in-die-wegspruit	2.00	2.00		2	MODERATE	HIGH	HIGH	C		2		Biol
B11D-01481	Trichardspruit	4.00	4.00		4	MODERATE	HIGH	HIGH	E		2		Int
B11E-01297	Steenkoolspruit	3.00	4.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11E-01353	Rietspruit	3.00	4.00		4	MODERATE	HIGH	HIGH	E		2		Int
B11E-01373	Blesbokspruit	1.00	2.00		2	MODERATE	HIGH	HIGH	B		3		Rap3
B11E-01399	Rietspruit	4.00	2.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11F-01257	Tweefonteinspruit	4.00	4.00		4	LOW	MODERATE	MODERATE	E		1		Rap3
B11F-01273	Tweefonteinspruit	3.00	4.00		4	LOW	MODERATE	MODERATE	E		1		Rap3
B11F-01274	Olifants	3.00	4.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11F-01286	Klippoortjiespruit	4.00	4.00		4	MODERATE	HIGH	HIGH	E		2		Int
B11G-01193	Noupoort	4.00	3.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11G-01225	Olifants	3.00	4.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11H-01161	Spookspruit	3.00	2.00		3	HIGH	HIGH	HIGH	C		2		Rap3

Olifants River catchment - B1													
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**		**IEI**		**FINAL**
B11J-01086	Olifants	4.00	3.00		4	VERY HIGH	VERY HIGH	VERY HIGH	B		2		Int
B11J-01155	Olifants	4.00	3.00		4	MODERATE	HIGH	HIGH	D		2		Int
B11K-01121	Blesbokspruit	3.00	4.00		4	MODERATE	HIGH	HIGH	E		2		Int
B11K-01127	Klipspruit	3.00	5.00		4	MODERATE	HIGH	HIGH	E		2		Int
B11L-01024	Olifants	3.00	3.00		3	HIGH	VERY HIGH	VERY HIGH	C		3		Rap3
B11L-01044	Olifants	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	B		4		Compr
B11L-01051	Klip	3.00	4.00		4	HIGH	MODERATE	HIGH	D		2		Int
B12A-01306	0	2.00	2.00		2	MODERATE	HIGH	HIGH	C		2		Biol
B12A-01309	Klein-Olifants	2.00	2.00		2	HIGH	HIGH	HIGH	C		2		Biol
B12B-01187	Bosmanspruit	3.00	3.00		3	MODERATE	HIGH	HIGH	D		2		Rap3
B12B-01191	Coetzerspruit	4.00	4.00		4	LOW	MODERATE	MODERATE	E		1		Rap3
B12B-01192	Klein-Olifants	4.00	3.00		4	MODERATE	HIGH	HIGH	D		2		Rap3
B12B-01207	Klein-Olifants	3.00	3.00		3	MODERATE	HIGH	HIGH	C		2		Rap3
B12B-01213	Rietkuilspruit	4.00	4.00		4	MODERATE	MODERATE	MODERATE	E		1		Rap3
B12B-01217	Klein-Olifants	3.00	3.00		3	MODERATE	MODERATE	MODERATE	D		1		Biol
B12B-01222	Woes-Alleenspruit	5.00	4.00		4	VERY LOW	LOW	LOW	F		1		Rap3
B12B-01223	Woes-Alleenspruit	4.00	4.00		4	MODERATE	HIGH	HIGH	E		2		Int
B12B-01228	Klein-Olifants	4.00	4.00		4	MODERATE	HIGH	HIGH	D		2		Int

Olifants River catchment - B1													
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**		**IEI**		**FINAL**
B12B-01233	East Woes-Alleenspruit	4.00	4.00		4	LOW	MODERATE	MODERATE	E		1		Rap3
B12B-01241	Zevenfonteinspruit	3.00	4.00		4	LOW	MODERATE	MODERATE	E		1		Rap3
B12B-01256	Klein-Olifants	2.00	2.00		2	HIGH	HIGH	HIGH	C		2		Biol
B12C-01119	0	3.00	2.00		3	MODERATE	HIGH	HIGH	D		2		Rap3
B12C-01153	Klein-Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	C		2		Int
B12D-01095	Klein-Olifants	4.00	3.00		4	MODERATE	HIGH	HIGH	D		2		Int
B12D-01118	Klein-Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D		2		Int
B12D-01144	Vaalbankspruit	3.00	3.00		3	MODERATE	HIGH	HIGH	D		2		Rap3
B12E-01030	Doringboomspruit	1.00	1.00		1	HIGH	HIGH	HIGH	B		3		Biol
B12E-01050	Keeromspruit	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C		3		Rap3
B12E-01062	Klein-Olifants	4.00	2.00		4	HIGH	VERY HIGH	VERY HIGH	C		3		Compr
B12E-01078	Klein-Olifants	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	C		3		Int

Olifants River catchment – B2												
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	EIS	**PES**		**IEI**	**FINAL**
B20A-01298	Bronkhorstspruit	3.00	4.00		4		MODERATE	MODERATE	MODERATE	D		1	Rap3
B20A-01362	0	2.00	1.00		2		MODERATE	MODERATE	MODERATE	C		1	Biol
B20A-01374	0	2.00	2.00		2		MODERATE	MODERATE	MODERATE	C		1	Biol
B20A-01245	Bronkhorstspruit	3.00	4.00		4		MODERATE	HIGH	HiGH	D		2	Int
B20A-01308	0	3.00	4.00		4		MODERATE	MODERATE	MODERATE	D		1	Rap3
B20B-01253	0	4.00	4.00		4		MODERATE	MODERATE	MODERATE	C		1	Rap3
B20B-01285	Koffiespruit	3.00	2.00		3		MODERATE	MODERATE	MODERATE	D		1	Biol
B20B-01303	0	3.00	2.00		3		MODERATE	MODERATE	MODERATE	C		1	Biol
B20B-01234	Koffiespruit	1.00	2.00		2		MODERATE	HIGH	HiGH	C		2	Biol
B20B-01283	0	2.00	1.00		2		MODERATE	HIGH	HiGH	B		3	Rap3
B20C-01170	Osspruit	4.00	3.00		4		HIGH	HIGH	HiGH	D		2	Int
B20C-01186	Bronkhorstspruit	3.00	2.00		3		HIGH	HIGH	HiGH	C		2	Rap3
B20D-01089	Honde	3.00	2.00		3		HIGH	HIGH	HiGH	C		2	Rap3
B20D-01088	Bronkhorstspruit	4.00	3.00		4		HIGH	HIGH	HiGH	C		2	Int
B20D-01146	Bronkhorstspruit	4.00	3.00		4		HIGH	VERY HIGH	VERY HIGH	C		3	Compr
B20E-01301	0	2.00	3.00		3		MODERATE	MODERATE	MODERATE	D		1	Biol
B20E-01310	0	3.00	3.00		3		MODERATE	MODERATE	MODERATE	D		1	Biol

Olifants River catchment – B2													
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	EIS	**PES**		**IEI**	**FINAL**
B20E-01376	Kromdraaispruit	4.00	1.00		4		HIGH	HIGH	HiGH	C		2	Int
B20E-01383	Wilge	2.00	3.00		3		HIGH	HIGH	HiGH	C		2	Rap3
B20E-01290	0	3.00	4.00		4		MODERATE	MODERATE	MODERATE	D		1	Rap3
B20E-01292	Wilge	3.00	2.00		3		HIGH	HIGH	HiGH	C		2	Rap3
B20F-01150	Wilge	3.00	2.00		3		HIGH	VERY HIGH	VERY HIGH	C		3	Int
B20G-01099	Saalboomspruit	2.00	3.00		3		HIGH	HIGH	HiGH	C		2	Rap3
B20H-01015	Grootspruit	2.00	3.00		3		HIGH	VERY HIGH	VERY HIGH	C		3	Int
B20H-01067	Wilge	2.00	2.00		2		HIGH	VERY HIGH	VERY HIGH	B		4	Int
B20H-01109	Wilge	3.00	2.00		3		HIGH	VERY HIGH	VERY HIGH	B		4	Compr
B20J-00979	0	1.00	1.00		1		HIGH	HIGH	HiGH	B		3	Biol
B20J-00998	Wilge	2.00	2.00		2		HIGH	VERY HIGH	VERY HIGH	C		3	Rap3
B20J-01003	Wilge	2.00	2.00		2		HIGH	HIGH	HiGH	B		3	Rap3

Olifants River catchment - B3												
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	EIS	**PES**		**IEI**	**FINAL**
B31A-00963	Elands	1.00	3.00		3		HIGH	VERY HIGH	VERY HIGH	C		3	Int
B31B-00942	Hartbeesspruit	2.00	2.00		2		HIGH	HIGH	HIGH	C		2	Biol
B31C-00770	Elands	2.00	2.00		2		HIGH	VERY HIGH	VERY HIGH	C		3	Rap3
B31D-00816	Enkeldoringspruit	2.00	2.00		2		HIGH	HIGH	HIGH	C		2	Biol
B31E-00608	0	2.00	3.00		3		LOW	LOW	LOW	D		1	Biol
B31E-00612	0	3.00	2.00		3		MODERATE	LOW	MODERATE	C		1	Biol
B31E-00618	0	3.00	2.00		3		MODERATE	LOW	MODERATE	C		1	Biol
B31E-00624	0	2.00	2.00		2		MODERATE	LOW	MODERATE	C		1	Biol
B31E-00631	Gotwane	3.00	2.00		3		LOW	LOW	LOW	D		1	Biol
B31E-00718	0	3.00	2.00		3		LOW	LOW	LOW	D		1	Biol
B31E-00659	0	3.00	2.00		3		MODERATE	LOW	MODERATE	D		1	Biol
B31E-00692	Gotwane	2.00	2.00		2		MODERATE	LOW	MODERATE	C		1	Biol
B31E-00719	Gotwane	2.00	2.00		2		MODERATE	LOW	MODERATE	C		1	Biol
B31E-00679	Gotwane	3.00	3.00		3		MODERATE	LOW	MODERATE	D		1	Biol
B31E-00732	Gotwane	4.00	3.00		4		MODERATE	LOW	MODERATE	D		1	Rap3
B31F-00753	Elands	2.00	2.00		2		MODERATE	HIGH	HIGH	C		2	Biol
B31F-00654	Elands	5.00	3.00		5		MODERATE	HIGH	HIGH	D		2	Int

Olifants River catchment - B3												
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	EIS	**PES**		**IEI**	**FINAL**
B31G-00776	Kameel	3.00	3.00		3		MODERATE	HIGH	HIGH	D		2	Rap3
B31G-00769	Elands	4.00	3.00		4		LOW	MODERATE	MODERATE	E		1	Rap3
B31H-00700	0	2.00	3.00		3		LOW	MODERATE	MODERATE	D		1	Biol
B31H-00712	0	4.00	3.00		4		MODERATE	MODERATE	MODERATE	D		1	Rap3
B31H-00761	Kgobokwane	3.00	4.00		4		LOW	MODERATE	MODERATE	D		1	Rap3
B31H-00780	0	4.00	4.00		4		MODERATE	MODERATE	MODERATE	E		1	Rap3
B31H-00711	Elands	4.00	4.00		4		MODERATE	MODERATE	MODERATE	E		1	Rap3
B31H-00738	Elands	4.00	4.00		4		MODERATE	MODERATE	MODERATE	E		1	Rap3
B31H-00748	Elands	4.00	4.00		4		MODERATE	MODERATE	MODERATE	E		1	Rap3
B31H-00767	Elands	4.00	3.00		4		LOW	MODERATE	MODERATE	E		1	Rap3
B31J-00672	0	3.00	4.00		4		LOW	MODERATE	MODERATE	E		1	Rap3
B31J-00648	Elands	4.00	4.00		4		HIGH	HIGH	HIGH	D		2	Int
B31J-00675	Elands	4.00	4.00		4		MODERATE	MODERATE	MODERATE	D		1	Rap3
B32A-00950	Kranspoortspruit	2.00	2.00		2		HIGH	VERY HIGH	VERY HIGH	C		3	Rap3
B32A-00965	Boekenhoutloop	1.00	1.00		1		HIGH	HIGH	HIGH	B		3	Biol
B32A-00937	Olifants	3.00	3.00		3		HIGH	HIGH	HIGH	B		3	Int
B32B-00954	Klipspruit	1.00	1.00		1		HIGH	HIGH	HIGH	B		3	Biol
B32B-00974	Selons	3.00	1.00		3		HIGH	HIGH	HIGH	C		2	Rap3

Olifants River catchment - B3													
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	EIS	**PES**		**IEI**	**FINAL**
B32B-00944	Selons	2.00	1.00		2		HIGH	HIGH	HIGH	B		3	Rap3
B32C-00910	Kruis	1.00	1.00		1		HIGH	HIGH	HIGH	B		3	Biol
B32C-00936	Selons	4.00	2.00		4		HIGH	VERY HIGH	VERY HIGH	C		3	Compr
B32C-00916	Olifants	4.00	2.00		4		HIGH	HIGH	HIGH	D		2	Int
B32D-00840	0	1.00	1.00		1		MODERATE	MODERATE	MODERATE	B		2	Biol
B32D-00787	Olifants	4.00	3.00		4		HIGH	HIGH	HIGH	D		2	Int
B32D-00855	Olifants	4.00	3.00		4		HIGH	HIGH	HIGH	D		2	Int
B32E-00872	Bloed	1.00	1.00		1		MODERATE	HIGH	HIGH	B		3	Biol
B32F-00743	0	1.00	1.00		1		HIGH	MODERATE	HIGH	B		3	Biol
B32F-00795	Buffelsvleispruit	2.00	2.00		2		MODERATE	MODERATE	MODERATE	C		1	Biol
B32F-00837	0	1.00	0.00		1		MODERATE	LOW	MODERATE	A		3	Biol
B32F-00866	0	0.00	1.00		1		MODERATE	LOW	MODERATE	B		2	Biol
B32F-00871	0	1.00	1.00		1		MODERATE	MODERATE	MODERATE	B		2	Biol
B32F-00854	Doringpoortloop	1.00	1.00		1		MODERATE	LOW	MODERATE	B		2	Biol
B32F-00870	Bloed	1.00	1.00		1		MODERATE	LOW	MODERATE	B		2	Biol
B32F-00754	Bloed	3.00	3.00		3		MODERATE	MODERATE	MODERATE	D		1	Biol
B32F-00809	Bloed	4.00	1.00		4		MODERATE	MODERATE	MODERATE	C		1	Rap3
B32F-00867	Bloed	1.00	0.00		1		MODERATE	LOW	MODERATE	B		2	Biol

Olifants River catchment - B3												
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	EIS	**PES**		**IEI**	**FINAL**
B32G-00885	Klipspruit	4.00	3.00		4		MODERATE	HIGH	HIGH	D		2	Int
B32G-00945	Moses	2.00	3.00		3		HIGH	HIGH	HIGH	C		2	Rap3
B32G-00952	0	2.00	2.00		2		MODERATE	HIGH	HIGH	C		2	Biol
B32G-00847	Moses	4.00	3.00		4		MODERATE	HIGH	HIGH	D		2	Int
B32G-00924	Moses	3.00	1.00		3		HIGH	HIGH	HIGH	B		3	Int
B32H-00874	Mametse	1.00	1.00		1		MODERATE	MODERATE	MODERATE	B		2	Biol
B32H-00698	Moses	4.00	3.00		4		HIGH	HIGH	HIGH	D		2	Int
B32J-00709	Rulokwane	3.00	3.00		3		MODERATE	MODERATE	MODERATE	D		1	Biol
B32J-00655	Olifants	4.00	3.00		4		HIGH	HIGH	HIGH	D		2	Int
B32J-00714	Olifants	4.00	3.00		4		HIGH	HIGH	HIGH	D		2	Int
B32J-00724	Olifants	4.00	3.00		4		HIGH	HIGH	HIGH	D		2	Int

Olifants River catchment - B4											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B41A-01002	Kleinspruit	4.00	2.00		4	MODERATE	HIGH	HIGH	C	2	Int
B41A-01005	Lakensvleispruit	4.00	2.00		4	HIGH	MODERATE	HIGH	D	2	Int
B41A-01025	Grootspruit	3.00	2.00		3	HIGH	HIGH	HIGH	C	2	Rap3
B41A-01047	Langspruit	4.00	3.00		4	HIGH	VERY HIGH	VERY HIGH	D	3	Compr
B41B-00905	Laersdrift	4.00	2.00		4	HIGH	VERY HIGH	VERY HIGH	D	3	Compr
B41B-00912	Steelpoort	4.00	3.00		4	HIGH	VERY HIGH	VERY HIGH	D	3	Compr
B41C-00766	Masala	3.00	2.00		3	HIGH	HIGH	HIGH	C	2	Rap3
B41C-00862	Vlugkraal	3.00	1.00		3	MODERATE	HIGH	HIGH	C	2	Rap3
B41C-00863	Tonteldoos	3.00	2.00		3	MODERATE	HIGH	HIGH	C	2	Rap3
B41D-00777	Steelpoort	4.00	2.00		4	HIGH	VERY HIGH	VERY HIGH	C	3	Compr
B41E-00689	Steelpoort	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B41F-00699	Klip	2.00	1.00		2	HIGH	VERY HIGH	VERY HIGH	B	4	Int
B41F-00848	Klip	1.00	1.00		1	HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B41F-00851	Draaikraalspruit	2.00	1.00		2	HIGH	VERY HIGH	VERY HIGH	B	4	Int
B41G-00674	Groot-Dwars	3.00	3.00		3	HIGH	VERY HIGH	VERY HIGH	D	3	Int
B41G-00685	Klein-Dwars	3.00	3.00		3	MODERATE	HIGH	HIGH	D	2	Rap3
B41G-00721	Groot-Dwars	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B41G-00726	0	2.00	1.00		2	HIGH	VERY HIGH	VERY HIGH	B	4	Int

Olifants River catchment - B4											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B41H-00610	Steelpoort	3.00	2.00		3	HIGH	HIGH	HIGH	D	2	Rap3
B41H-00640	Dwars	3.00	4.00		4	HIGH	HIGH	HIGH	D	2	Int
B41J-00502	Hodupong	1.00	4.00		4	LOW	MODERATE	MODERATE	D	1	Rap3
B41J-00512	Moopetsi	3.00	5.00		4	LOW	LOW	LOW	E	1	Rap3
B41J-00546	Moopetsi	3.00	5.00		4	LOW	LOW	LOW	E	1	Rap3
B41J-00554	Steelpoort	3.00	4.00		4	MODERATE	HIGH	HIGH	D	2	Int
B41J-00562	Tubatsane	1.00	3.00		3	LOW	VERY LOW	VERY LOW	E	1	Biol
B41J-00563	Steelpoort	3.00	4.00		4	HIGH	HIGH	HIGH	D	2	Int
B41J-00576	Steelpoort	2.00	3.00		3	HIGH	HIGH	HIGH	D	2	Rap3
B41K-00476	Tshwetlane	2.00	4.00		4	LOW	LOW	LOW	E	1	Rap3
B41K-00477	Steelpoort	3.00	4.00		4	MODERATE	HIGH	HIGH	D	2	Int
B41K-00487	Steelpoort	3.00	4.00		4	MODERATE	HIGH	HIGH	D	2	Int
B41K-00496	0	1.00	2.00		2	MODERATE	MODERATE	MODERATE	C	1	Biol
B41K-00506	Steelpoort	4.00	4.00		4	MODERATE	HIGH	HIGH	E	2	Int
B41K-00515	Steelpoort	3.00	4.00		4	MODERATE	HIGH	HIGH	D	2	Int
B41K-00526	Steelpoort	3.00	4.00		4	MODERATE	HIGH	HIGH	D	2	Int
B41K-00527	0	1.00	2.00		2	MODERATE	MODERATE	MODERATE	C	1	Biol
B41K-00544	Mabitsana	1.00	3.00		3	MODERATE	HIGH	HIGH	D	2	Rap3

Olifants River catchment - B4											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B42A-00805	Dorps	2.00	2.00		2	MODERATE	HIGH	HIGH	C	2	Biol
B42A-00814	Dorps	2.00	2.00		2	HIGH	HIGH	HIGH	C	2	Biol
B42A-00825	Hoppe se Spruit	1.00	2.00		2	MODERATE	HIGH	HIGH	C	2	Biol
B42A-00852	Dorps	1.00	2.00		2	HIGH	HIGH	HIGH	C	2	Biol
B42A-00857	Dorps	2.00	2.00		2	MODERATE	HIGH	HIGH	C	2	Biol
B42A-00877	0	2.00	1.00		2	MODERATE	MODERATE	MODERATE	C	1	Biol
B42A-00883	0	1.00	1.00		1	MODERATE	HIGH	HIGH	B	3	Biol
B42A-00900	Dorps	1.00	1.00		1	MODERATE	HIGH	HIGH	C	2	Biol
B42B-00807	Doringbergspruit	2.00	3.00		3	MODERATE	HIGH	HIGH	C	2	Rap3
B42C-00744	Dorps	3.00	3.00		3	HIGH	HIGH	HIGH	C	2	Rap3
B42C-00746	Potloodspruit	1.00	2.00		2	HIGH	HIGH	HIGH	C	2	Biol
B42D-00705	Spekboom	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B42D-00762	Kliprots	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B42D-00788	Spekboom	2.00	3.00		3	HIGH	HIGH	HIGH	D	2	Rap3
B42E-00633	Spekboom	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B42E-00725	Dorps	2.00	2.00		2	HIGH	HIGH	HIGH	C	2	Biol
B42F-00680	Waterval	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B42F-00808	0	2.00	2.00		2	MODERATE	HIGH	HIGH	C	2	Biol

Olifants River catchment - B4											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B42F-00812	Potspruit	2.00	2.00		2	HIGH	HIGH	HIGH	C	2	Biol
B42G-00634	Waterval	2.00	3.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B42G-00704	Rooiwalshoek se Loop	1.00	1.00		1	HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B42G-00733	0	1.00	1.00		1	HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B42G-00734	0	1.00	1.00		1	HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B42H-00553	Spekboom	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B42H-00591	0	1.00	2.00		2	HIGH	HIGH	HIGH	B	3	Rap3
B42H-00599	Spekboom	3.00	3.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B42H-00626	Eloffspruit	1.00	3.00		3	HIGH	HIGH	HIGH	C	2	Rap3
B42H-00627	Spekboom	2.00	3.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int

Olifants River catchment - B5											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B51A-00614	Motsephiri	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B51A-00682	Malekani	2.00	3.00		3	LOW	LOW	LOW	D	1	Biol
B51A-00686	Gemsbokspruit	3.00	3.00		3	LOW	LOW	LOW	D	1	Biol
B51B-00589	Olifants	5.00	3.00		4	MODERATE	HIGH	HIGH	D	2	Int
B51B-00638	Puleng	1.00	3.00		3	MODERATE	HIGH	HIGH	B	3	Int
B51B-00646	Ga-Makatle	2.00	3.00		3	MODERATE	MODERATE	MODERATE	C	1	Biol
B51B-00649	Puleng	1.00	3.00		3	MODERATE	MODERATE	MODERATE	C	1	Biol
B51C-00411	Olifants	4.00	2.00		4	MODERATE	VERY HIGH	VERY HIGH	D	3	Compr
B51C-00509	Olifants	4.00	2.00		4	HIGH	HIGH	HIGH	C	2	Int
B51C-00519	Motsemohlaba	3.00	3.00		3	MODERATE	MODERATE	MODERATE	D	1	Biol
B51C-00555	Olifants	4.00	2.00		4	MODERATE	HIGH	HIGH	C	2	Int
B51C-00556	Madibjaneng	3.00	3.00		3	MODERATE	MODERATE	MODERATE	D	1	Biol
B51C-00559	Motseleope	3.00	3.00		3	MODERATE	MODERATE	MODERATE	D	1	Biol
B51C-00585	Makotswane	2.00	3.00		3	MODERATE	MODERATE	MODERATE	D	1	Biol
B51E-00483	Grass Valley	4.00	2.00		4	MODERATE	LOW	LOW	D	1	Rap3
B51E-00548	Olifants	4.00	2.00		4	HIGH	HIGH	HIGH	C	2	Int
B51E-00571	Olifants	4.00	2.00		4	MODERATE	HIGH	HIGH	D	2	Int

Olifants River catchment - B5											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B51F-00313	Nkumpi	2.00	2.00		2	MODERATE	MODERATE	MODERATE	C	1	Biol
B51F-00317	0	1.00	2.00		2	MODERATE	LOW	LOW	B	2	Biol
B51F-00372	Nkumpi	2.00	2.00		2	MODERATE	LOW	LOW	C	1	Biol
B51G-00352	Mogoto	3.00	1.00		3	HIGH	MODERATE	MODERATE	C	1	Biol
B51G-00379	Doring	2.00	3.00		3	MODERATE	LOW	LOW	D	1	Biol
B51G-00410	Nkumpi	4.00	3.00		4	MODERATE	MODERATE	MODERATE	E	1	Rap3
B51G-00423	Nkumpi	4.00	3.00		4	LOW	LOW	LOW	D	1	Rap3
B51G-00482	Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B51H-00491	Ngwaritsi	4.00	3.00		4	MODERATE	MODERATE	MODERATE	D	1	Rap3
B51H-00542	Ngwaritsane	1.00	3.00		3	LOW	LOW	LOW	D	1	Biol
B51H-00547	Ngwaritsi	4.00	3.00		4	MODERATE	MODERATE	MODERATE	D	1	Rap3
B51H-00636	Mphofotse	2.00	3.00		3	LOW	LOW	LOW	D	1	Biol
B51H-00637	Ngwaritsi	2.00	4.00		4	LOW	MODERATE	MODERATE	E	1	Rap3
B52A-00397	Olifants	4.00	3.00		4	HIGH	MODERATE	MODERATE	D	1	Rap3
B52B-00467	Lepellane	3.00	3.00		3	MODERATE	MODERATE	MODERATE	D	1	Biol
B52D-00307	Chunies	3.00	3.00		3	HIGH	HIGH	HIGH	D	2	Rap3
B52E-00309	Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B52E-00435	Pelangwe	1.00	3.00		3	HIGH	HIGH	HIGH	C	2	Rap3

Olifants River catchment - B5											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B52E-00436	Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B52E-00439	Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B52E-00452	Mohlaletsi	1.00	4.00		4	MODERATE	LOW	LOW	E	1	Rap3
B52E-00458	Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B52G-00309	Hlakaro	2.00	3.00		3	HIGH	HIGH	HIGH	C	2	Rap3
B52G-00382	Olifants	4.00	3.00		4	HIGH	HIGH	HIGH	D	2	Int
B52H-00259	0	3.00	3.00		3	MODERATE	HIGH	HIGH	D	2	Rap3
B52H-00284	Thlabasane	1.00	2.00		2	MODERATE	LOW	LOW	C	1	Biol
B52H-00286	0	2.00	3.00		3	MODERATE	LOW	LOW	C	1	Biol
B52H-00295	Mphogodima	4.00	3.00		4	MODERATE	VERY LOW	VERY LOW	D	1	Rap3
B52H-00320	Masokuditsi	1.00	3.00		3	MODERATE	LOW	LOW	C	1	Biol
B52H-00325	Mphogodima	3.00	3.00		3	MODERATE	MODERATE	MODERATE	C	1	Biol
B52J-00315	Mphogodima	2.00	2.00		2	HIGH	HIGH	HIGH	C	2	Biol
B52J-00347	0	0.00	0.00		0	HIGH	VERY LOW	VERY LOW	A	3	Biol
B52J-00350	Mphogodima	3.00	2.00		3	MODERATE	LOW	LOW	C	1	Biol
B52J-00415	Olifants	3.00	3.00		3	MODERATE	HIGH	HIGH	D	2	Rap3
B52J-00417	Monametsi	1.00	4.00		4	LOW	LOW	LOW	E	1	Rap3

Olifants River catchment - B6											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B60A-00653	Blyde	1.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B60B-00650	Lisbon	1.00	1.00		1	VERY HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B60B-00566	Blyde	1.00	1.00		1	HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B60C-00581	Treur	1.00	1.00		1	VERY HIGH	VERY HIGH	VERY HIGH	B	4	Rap3
B60D-00525	Blyde	2.00	1.00		2	VERY HIGH	VERY HIGH	VERY HIGH	B	4	Int
B60E-00667	Ohrigstad	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B60F-00632	Mantshibi	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B60F-00658	Kranskloofspruit	3.00	2.00		3	HIGH	VERY HIGH	VERY HIGH	C	3	Int
B60F-00644	Ohrigstad	4.00	3.00		4	MODERATE	VERY HIGH	VERY HIGH	D	3	Compr
B60G-00550	0	2.00	2.00		2	MODERATE	HIGH	HIGH	C	2	Biol
B60G-00568	Vyehoek	2.00	2.00		2	HIGH	VERY HIGH	VERY HIGH	C	3	Rap3
B60G-00567	Ohrigstad	3.00	3.00		3	HIGH	VERY HIGH	VERY HIGH	D	3	Int
B60G-00570	Ohrigstad	4.00	3.00		4	MODERATE	HIGH	HIGH	D	2	Int
B60H-00485	Ohrigstad	4.00	3.00		4	HIGH	VERY HIGH	VERY HIGH	D	3	Compr
B60J-00460	Rietspruit	1.00	2.00		2	HIGH	LOW	HIGH	B	3	Rap3
B60J-00495	0	1.00	1.00		1	HIGH	HIGH	HIGH	B	3	Biol
B60J-00498	Qunduhlu	1.00	1.00		1	HIGH	MODERATE	HIGH	B	3	Biol
B60J-00448	Sandspruit	3.00	3.00		3	HIGH	HIGH	HIGH	D	2	Rap3

Olifants River catchment - B6											
SQ Number	**River**	**Water use**	**Quality**		**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B60J-00453	Sandspruit	1.00	2.00		2	HIGH	MODERATE	HIGH	B	3	Rap3
B60J-00424	Blyde	3.00	2.00		3	VERY HIGH	VERY HIGH	VERY HIGH	C	3	Int
B60J-00444	Blyde	3.00	3.00		3	VERY HIGH	VERY HIGH	VERY HIGH	C	3	Int

Olifants River catchment - B7											
SQ Number	**River**	**Water use**	**Quality**	**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**		**FINAL**
B71A-00305	Paardevlei	1.00	1.00	1	HIGH	VERY HIGH	VERY HIGH	B	4		Rap3
B71A-00314	0	1.00	1.00	1	HIGH	VERY HIGH	VERY HIGH	B	4		Rap3
B71A-00342	0	0.00	1.00	1	HIGH	MODERATE	HIGH	B	3		Rap3
B71A-00348	Tongwane	1.00	2.00	2	HIGH	HIGH	HIGH	B	3		Rap3
B71A-00390	Olifants	4.00	3.00	4	HIGH	HIGH	HIGH	D	2		Int
B71A-00396	Olifants	4.00	3.00	4	HIGH	HIGH	HIGH	D	2		Int
B71B-00335	Olifants	4.00	3.00	4	HIGH	HIGH	HIGH	C	2		Int
B71C-00292	Mohlapitse	1.00	2.00	2	VERY HIGH	VERY HIGH	VERY HIGH	B	4		Int
B71D-00378	Kgotswane	1.00	1.00	1	HIGH	MODERATE	HIGH	B	3		Biol
B71D-00412	Olifants	4.00	3.00	4	HIGH	HIGH	HIGH	D	2		Int
B71D-00422	Olifants	4.00	3.00	4	HIGH	HIGH	HIGH	D	2		Int
B71E-00425	Motse	3.00	4.00	4	LOW	LOW	LOW	E	1		Rap3
B71E-00429	Motse	3.00	4.00	4	LOW	LOW	LOW	E	1		Rap3
B71E-00440	Mabogwane	3.00	3.00	3	LOW	LOW	LOW	E	1		Biol
B71E-00447	Motse	2.00	3.00	3	LOW	LOW	LOW	D	1		Biol
B71E-00466	Moopetsi	2.00	4.00	4	LOW	VERY LOW	LOW	E	1		Rap3
B71E-00468	Matadi	1.00	4.00	4	LOW	LOW	LOW	E	1		Rap3

Olifants River catchment - B7											
SQ Number	**River**	**Water use**	**Quality**	**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**		**FINAL**
B71E-00474	Moopetsi	2.00	4.00	4	LOW	LOW	LOW	E	1		Rap3
B71F-00393	Olifants	4.00	3.00	4	HIGH	VERY HIGH	VERY HIGH	D	3		Compr
B71G-00428	Olifants	4.00	3.00	4	HIGH	VERY HIGH	VERY HIGH	C	3		Compr
B72A-00360	Makhutswi	2.00	2.00	2	HIGH	LOW	HIGH	C	2		Biol
B72A-00364	Makhutswi	3.00	2.00	3	HIGH	HIGH	HIGH	C	2		Rap3
B72A-00403	Moungwane	3.00	2.00	3	HIGH	VERY HIGH	VERY HIGH	C	3		Int
B72A-00405	Malomanye	3.00	2.00	3	HIGH	HIGH	HIGH	C	2		Rap3
B72B-00322	Makhutswi	3.00	1.00	3	MODERATE	LOW	MODERATE	B	2		Rap3
B72C-00387	Makhutswi	2.00	1.00	2	MODERATE	VERY LOW	MODERATE	B	2		Biol
B72C-00394	Ga-Matombane	1.00	1.00	1	MODERATE	VERY LOW	MODERATE	B	2		Biol
B72C-00406	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int
B72C-00409	Molomahlapi	2.00	1.00	2	HIGH	LOW	HIGH	C	2		Biol
B72C-00419	Mosomeetse	1.00	1.00	1	MODERATE	LOW	MODERATE	B	2		Biol
B72D-00326	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int
B72D-00327	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int
B72D-00328	Olifants	5.00	4.00	4	MODERATE	HIGH	HIGH	E	2		Int
B72D-00341	Sedumoni	2.00	1.00	2	MODERATE	LOW	MODERATE	B	2		Biol
B72D-00356	0	1.00	1.00	1	HIGH	VERY LOW	HIGH	B	3		Biol

Olifants River catchment - B7											
SQ Number	**River**	**Water use**	**Quality**	**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**		**FINAL**
B72D-00377	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int
B72D-00399	Mohlabetsi	2.00	1.00	2	HIGH	LOW	HIGH	B	3		Rap3
B72E-00291	Ngwabitsi	3.00	3.00	3	HIGH	HIGH	HIGH	D	2		Rap3
B72F-00361	0	0.00	0.00	0	HIGH	HIGH	HIGH	A	4		Rap3
B72F-00367	Ga-Selati	1.00	1.00	1	HIGH	VERY HIGH	VERY HIGH	B	4		Rap3
B72F-00368	Ga-Selati	0.00	1.00	1	HIGH	VERY HIGH	VERY HIGH	B	4		Rap3
B72F-00381	0	0.00	0.00	0	HIGH	HIGH	HIGH	A	4		Rap3
B72G-00321	Ga-Selati	2.00	2.00	2	HIGH	VERY HIGH	VERY HIGH	C	3		Rap3
B72H-00282	Ga-Selati	3.00	2.00	3	HIGH	HIGH	HIGH	C	2		Rap3
B72J-00257	Molatle	1.00	2.00	2	HIGH	MODERATE	HIGH	C	2		Biol
B72J-00258	Molatle	1.00	2.00	2	MODERATE	MODERATE	MODERATE	B	2		Biol
B72J-00287	0	1.00	2.00	2	MODERATE	LOW	MODERATE	C	1		Biol
B72K-00260	Ga-Selati	3.00	4.00	4	MODERATE	HIGH	HIGH	E	2		Int
B73A-00461	Klaserie	3.00	2.00	3	HIGH	VERY HIGH	VERY HIGH	C	3		Int
B73B-00343	Klaserie	2.00	1.00	2	HIGH	HIGH	HIGH	C	2		Biol
B73B-00463	Monwana	2.00	1.00	2	HIGH	VERY LOW	HIGH	B	3		Rap3
B73C-00288	Tshutshi	0.00	1.00	1	HIGH	LOW	HIGH	B	3		Biol
B73C-00293	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int

Olifants River catchment - B7											
SQ Number	**River**	**Water use**	**Quality**	**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**		**FINAL**
B73C-00318	Olifants	4.00	3.00	4	HIGH	HIGH	HIGH	D	2		Int
B73C-00329	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int
B73C-00332	Olifants	4.00	2.00	4	HIGH	VERY HIGH	VERY HIGH	C	3		Compr
B73C-00351	Tsiri	1.00	0.00	1	HIGH	VERY LOW	HIGH	B	3		Biol
B73D-00338	Nhlaralumi	1.00	1.00	1	MODERATE	MODERATE	MODERATE	B	2		Biol
B73D-00358	Nhlaralumi	0.00	1.00	1	HIGH	MODERATE	HIGH	B	3		Biol
B73D-00365	Nyameni	1.00	1.00	1	MODERATE	MODERATE	MODERATE	B	2		Biol
B73D-00407	Nhlaralumi	2.00	1.00	2	LOW	LOW	LOW	D	1		Biol
B73D-00408	Ga-Sekgobela	2.00	1.00	2	MODERATE	LOW	MODERATE	C	1		Biol
B73D-00431	Thlaralumi	1.00	0.00	1	HIGH	LOW	HIGH	B	3		Biol
B73D-00434	Machaton	0.00	0.00	0	HIGH	LOW	HIGH	A	4		Rap3
B73E-00493	Timbavati	2.00	2.00	2	MODERATE	MODERATE	MODERATE	C	1		Biol
B73E-00522	Sesete	1.00	1.00	1	HIGH	LOW	HIGH	B	3		Biol
B73F-00404	Timbavati	1.00	1.00	1	HIGH	MODERATE	HIGH	B	3		Biol
B73G-00308	Olifants	4.00	2.00	4	HIGH	HIGH	HIGH	C	2		Int
B73G-00339	Timbavati	2.00	1.00	2	HIGH	MODERATE	HIGH	B	3		Rap3
B73G-00391	Shisakashangho ndo	0.00	0.00	0	HIGH	LOW	HIGH	A	4		Rap3

Olifants River catchment - B7											
SQ Number	**River**	**Water use**	**Quality**	**IWUI**	**EI**	**ES**	**EIS**	**PES**	**IEI**		**FINAL**
B73H-00311	Olifants	4.00	2.00	4	HIGH	VERY HIGH	VERY HIGH	C	3		Compr
B73J-00323	Hlahleni	0.00	0.00	0	MODERATE	LOW	MODERATE	A	3		Biol

Letaba River catchment (from classification study)					
SQ Number	**River**	**WRUI**	**IEI**	**Hotspot**	**FINAL**
B81A-00242	Broederstroom	4	3	4	Compr
B81A-00256		3	3	3	Int
B81A-00263		3	2	3	Rap3
B81A-00270	Broederstroom	4	5	4	Compr
B81B-00233	Mahitse	2	4	3	Int
B81B-00234	Mahitse	2	3	2	Rap3
B81B-00246	Politsi	3	5	4	Compr
B81B-00251		2	2	2	Biol
B81B-00269	Morudi	2	5	3	Int
B81B-00227	Mahitse	3	3	3	Int
B81B-00240	Politsi	3	3	3	Int
B81B-00247	Great Letaba	4	3	4	Compr
B81B-00264	Great Letaba	4	5	4	Compr
B81C-00245	Great Letaba	4	3	4	Compr
B81D-00277	Thabina	3	3	3	Int
B81D-00280	Bobs	1	5	2	Rap3
B81D-00296	Mothlaka-Semeetse	1	5	2	Rap3
B81D-00271	Letsitele	3	3	3	Int

Letaba River catchment (from classification study)					
SQ Number	**River**	**WRUI**	**IEI**	**Hotspot**	**FINAL**
B81D-00272	Letsitele	3	5	4	Compr
B81E-00213	Nwanedzi	3	3	3	Int
B81E-00244	Great Letaba	4	3	4	Compr
B81F-00189	Merekome	2	3	2	Rap3
B81F-00203	Lerwatlou	2	3	2	Rap3
B81F-00228	Reshwele	1	4	2	Rap3
B81F-00232	Makwena	1	4	2	Rap3
B81F-00200	Great Letaba	3	4	4	Compr
B81F-00212	Great Letaba	3	3	3	Int
B81F-00215	Great Letaba	3	3	3	Int
B81F-00218	Great Letaba	3	3	3	Int
B81F-00231	Great Letaba	3	3	3	Int
B81G-00164	Molototsi	2	2	2	Biol
B81H-00162	Metsemola	1	3	2	Biol
B81H-00171	Molototsi	3	2	3	Rap3
B81J-00187	Mbhawula	2	3	2	Rap3
B81J-00209	Great Letaba	3	3	3	Int
B81J-00219	Great Letaba	3	4	4	Compr

Letaba River catchment (from classification study)					
SQ Number	**River**	**WRUI**	**IEI**	**Hotspot**	**FINAL**
B82A-00168	Middel Letaba	2	3	2	Rap3
B82B-00173	Koedoes	3	2	3	Rap3
B82C-00175	Brandboontjies	3	3	3	Int
B82D-00163	Lebjelebore	2	3	2	Rap3
B82D-00154	Middel Letaba	2	2	2	Biol
B82D-00166	Mosukodutsi	3	2	3	Rap3
B82D-00146	Middel Letaba	4	2	3	Int
B82E-00149	Khwali	1	5	2	Rap3
B82E-00150	Little Letaba	1	3	2	Biol
B82F-00141	Soeketse	2	3	2	Rap3
B82F-00128	Little Letaba	3	3	3	Int
B82F-00137	Little Letaba	3	2	3	Rap3
B82G-00135	Little Letaba	4	3	4	Compr
B82H-00127	Nsama	3	3	3	Int
B82H-00139	Magobe	1	4	2	Rap3
B82H-00157	Nsama	3	4	4	Compr
B82J-00153	Nalatsi	0	5	2	Biol
B82J-00159	Byashishi	0	5	2	Biol

Letaba River catchment (from classification study)					
SQ Number	**River**	**WRUI**	**IEI**	**Hotspot**	**FINAL**
B82J-00197	Ka-Malilibone	1	4	2	Rap3
B82J-00165	Little Letaba	3	4	4	Compr
B82J-00178	Little Letaba	3	3	3	Int
B82J-00201	Little Letaba	3	5	4	Compr
B82J-00207	Little Letaba	3	5	4	Compr
B83A-00193	Shipikani	1	5	2	Rap3
B83A-00238	Nharhweni	1	5	2	Rap3
B83A-00254	Ngwenyeni	0	5	2	Biol
B83A-00220	Letaba	3	5	4	Compr
B83A-00230	Letaba	3	4	4	Compr
B83A-00235	Letaba	3	4	4	Compr
B83A-00252	Letaba	3	3	3	Int
B83B-00161	Tsende	1	5	2	Rap3
B83D-00204	Manyeleti	0	5	2	Biol
B83D-00208	Makhadzi	0	5	2	Biol
B83D-00261	Nwanedzi	0	5	2	Biol
B83D-00236	Makhadzi	0	5	2	Biol
B83D-00250	Letaba	3	3	3	Int

Letaba River catchment (from classification study)					
SQ Number	**River**	**WRUI**	**IEI**	**Hotspot**	**FINAL**
B83D-00255	Letaba	3	3	3	Int
B83E-00265	Letaba	4	3	4	Compr

Shingwedzi River catchment - B9												
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B90A-00062	0	0.00	0.00		0		HIGH	LOW	HIGH	B	3	Biol
B90A-00066	Shisha	0.00	1.00		1		HIGH	VERY LOW	HIGH	B	3	Biol
B90B-00080	0	0.00	0.00		0		HIGH	VERY LOW	HIGH	A	4	Rap3
B90B-00096	Mphongolo	1.00	2.00		2		MODERATE	MODERATE	MODERATE	C	1	Biol
B90B-00097	0	2.00	1.00		2		MODERATE	MODERATE	MODERATE	C	1	Biol
B90B-00099	0	2.00	2.00		2		MODERATE	MODERATE	MODERATE	C	1	Biol
B90B-00081	Mphongolo	2.00	1.00		2		HIGH	MODERATE	HIGH	B	3	Rap3
B90B-00082	Mphongolo	3.00	2.00		3		MODERATE	MODERATE	MODERATE	D	1	Biol
B90B-00101	Mphongolo	2.00	1.00		2		HIGH	MODERATE	HIGH	C	2	Biol
B90C-00104	Shihloti	0.00	0.00		0		HIGH	VERY LOW	HIGH	A	4	Rap3
B90C-00106	Phugwane	2.00	2.00		2		HIGH	MODERATE	HIGH	C	2	Biol
B90D-00067	Shisha	0.00	0.00		0		HIGH	MODERATE	HIGH	A	4	Rap3
B90D-00109	Phugwane	2.00	0.00		2		HIGH	MODERATE	HIGH	A	4	Int
B90D-00085	Mphongolo	2.00	0.00		2		HIGH	MODERATE	HIGH	B	3	Rap3
B90D-00112	Mphongolo	2.00	0.00		2		HIGH	VERY LOW	HIGH	A	4	Int
B90E-00072	Nkulumbeni	1.00	0.00		1		HIGH	MODERATE	HIGH	B	3	Biol
B90F-00114	Shingwidzi	2.00	2.00		2		HIGH	MODERATE	HIGH	C	2	Biol
B90G-00121	Bububu	0.00	0.00		0		MODERATE	VERY LOW	MODERATE	A	3	Biol

Shingwedzi River catchment - B9												
SQ Number	**River**	**Water use**	**Quality**		**IWUI**		**EI**	**ES**	**EIS**	**PES**	**IEI**	**FINAL**
B90G-00136	Nshenhene	0.00	0.00		0		HIGH	VERY LOW	HIGH	A	4	Rap3
B90G-00144	Tshange	0.00	0.00		0		HIGH	MODERATE	HIGH	A	4	Rap3
B90G-00125	Bububu	0.00	0.00		0		HIGH	MODERATE	HIGH	A	4	Rap3
B90G-00130	Shingwedzi	2.00	0.00		2		HIGH	HIGH	HIGH	B	3	Rap3
B90G-00124	Shingwedzi	2.00	0.00		2		HIGH	MODERATE	HIGH	A	4	Int
B90H-00147	Dzombo	0.00	0.00		0		HIGH	MODERATE	HIGH	B	3	Biol
B90H-00152	Kumba	0.00	0.00		0		HIGH	MODERATE	HIGH	A	4	Rap3
B90H-00113	Mphongolo	1.00	0.00		1		MODERATE	VERY LOW	MODERATE	A	3	Biol
B90H-00117	Shingwidzi	3.00	1.00		3		HIGH	HIGH	HIGH	C	2	Rap3
B90H-00145	Shingwidzi	2.00	1.00		2		HIGH	HIGH	HIGH	B	3	Rap3

SHINGWIDZI OR SHINGWEDZI: WHICH ONE IS RIGHT