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Ecosystem Restoration:

DEA Natural Resource Management Programmes Case Study

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USAID: RESILIENCE IN THE LIMPOPO BASIN PROGRAM (RESILIM) – OLIFANTS

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Aim of report

This report provides a first update on the progress made so far on the Natural Resource Management programmes Case study (start-up site) under the Biodiversity theme within the RESILIM-O programme. The report profiles the current available information on the main NRMPs operating within the Olifants catchment. This includes processes and operations around planning/prioritization, implementation, monitoring, evaluation and feedback, as well as alignment and coordination around these previously mentioned processes. Further plans for the development of the case study, in line with the aims of the RESILIM-O programme, are outlined. This case study is aimed at developing a systemic understanding through participative processes of natural resource management and its associated practices within the catchment, and how these practices can be supported and improved to contribute to the resilience of ecosystems and people in the catchment

Contents

List of figures

List of tables

List of acronyms

AHP	Analytic Hierarchy Process
APO	Annual Plan of Operation
BSP	Biodiversity Social Projects
CARA	Conservation of Agricultural Resource Act
CSIR	Council for Scientific and Industrial Research
DAC	Department of Arts and Culture
DAFF	Department of Agriculture, Forest and Fisheries
DEA	Department of Environmental Affairs
DWAS	Department of Water and Sanitation
DWP	Department of Public Works
EPWP	Expanded Public Works Programmes
E&C	Environmental and Culture sector
IDT	Independent development Trust
INRM	Integrated Natural Resource Management
GIS	Geographic Information System
IAP	Invasive Alien Plants
HAT	High Altitude Teams
KPIs	Key Performance Indicators
K2C	Kruger to Canyons
LUI	Land Users Incentive
MTPA	Mpumalanga Tourism & Parks Agency
M&E	Monitoring and Evaluation
NEMBA	National Environmental Management: Biodiversity Act
NRM	Natural Resource Management
NRMPs	Natural Resource Management Programmes
RESILIM-O	Resilience in the Limpopo River Basin-Olifants
SANParks	South African National Parks

SMMEs	Small Medium and Micro Enterprises
WfW	Working for Water
WoF	Working on Fire
WfL	Working for Land
WfWet	Working for Wetland
WIMS	Working for Water Information Management System

RESILIM-O Biodiversity theme objective

The overall objective of RESILIM-O Biodiversity theme is to conserve biodiversity and sustainably manage high-priority ecosystems in the Olifants catchment. The purpose is to develop and institutionalize tenable, systemic and multiple-scaled Natural Resource Management governance arrangements and practices associated with the NRMPs, through reflective and collaborative processes, so as to contribute to enhanced water, biodiversity and livelihood security for the Olifants River Catchment (see figure 1 below for current focus area).

1 Introduction

1.1 Background of NRMPs & the Expanded Public Works Programme

The DEA's Natural Resource Management Programmes (NRMPs) form part of the Expanded Public Works Programme (EPWP), which is one of the government's short to medium term strategies to address unemployment and poverty relief. The EPWP is a nationwide government programme aimed at creating labour-intensive employment (poverty alleviation) to previously disadvantaged people, skills development (youth empowerment), and to promote economic empowerment (SMMEs- Small Medium and Micro Enterprises) within the public works' framework.

The EPWP has been divided into four sectors, namely environment and cultural, social, economic and infrastructure, each consisting of a number of government departments with one department nominated to lead each sector. The Department of Environmental Affairs (DEA) has been nominated to lead the environmental and cultural sector, with the overall coordination (all sectors) led by the Department of Public Works (DWP). Other implementing departments within the environment and culture sector includes: Departments of Agriculture, Forestry and Fisheries (DAFF), Water and Sanitation (DWAS), and Arts and Culture (DAC) (see the figure 1.1).

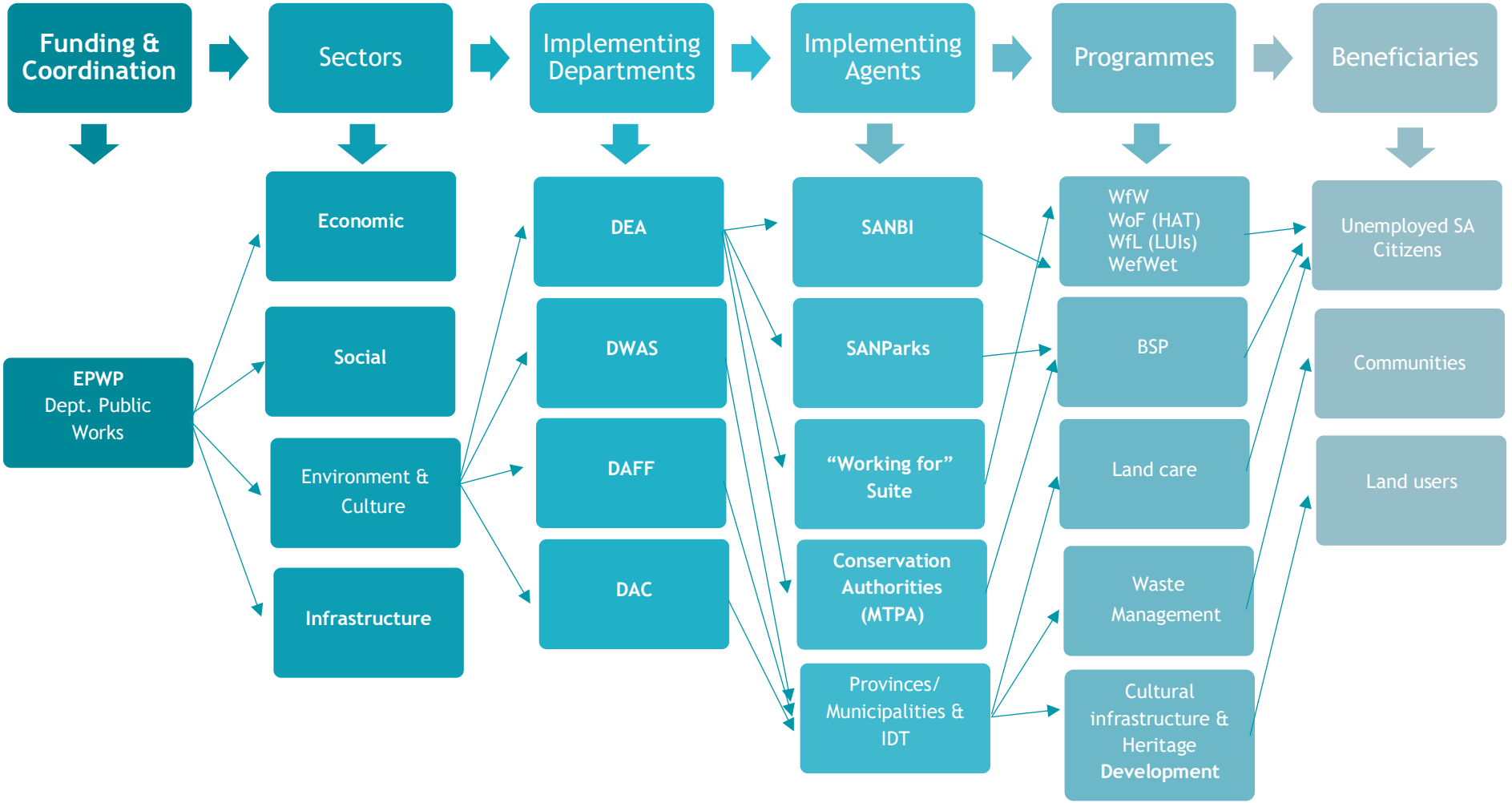

Figure 1.1: EPWP institutional mapping

The overarching objective of the Environment and Culture Sector is rehabilitating natural resources and protecting biodiversity, and promoting cultural diversity and tourism, while at the same time generating job opportunities (poverty relief) and improving livelihoods (SMMEs) within a public works framework. The E&C sector is coordinated by the Department of Environmental Affairs (DEA), i.e. DEA is both an implementer (plan and design technical interventions, operational management, project financial management & reporting, monitoring and evaluation, capacity building) and the coordinator of the programmes within its sector. As the lead department, DEA must establish a sector co-coordinating committee, determine a sector strategic framework, and produce a sector plan to set targets and performance standards, and establish an effective monitoring and evaluation system for the sector (EPWP Sector plan, 2004).

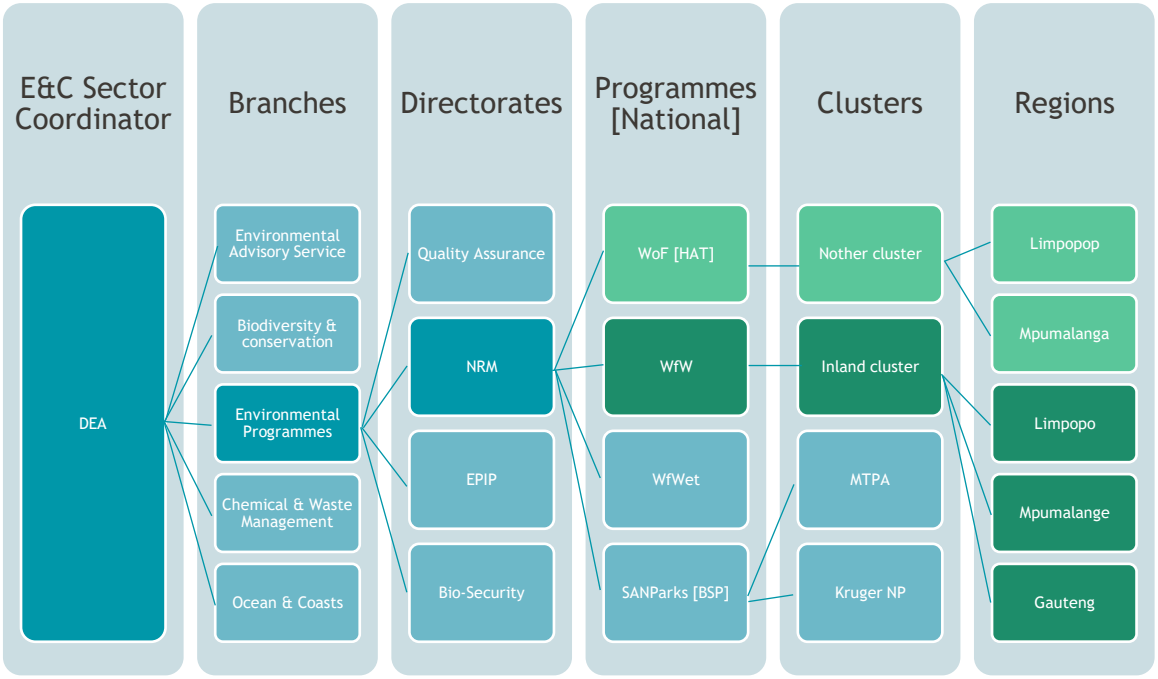

Figure 1.2. DEA NRMPs in Olifants catchment with focus on the WfW and WoF programmes

1.2 RESILIM-O NRMP case study area

The programme currently considers two case studies (which are being developed), one with a broader, programmatic focus on the Natural Resource Management Programmes (NRMP) working in the escarpment and lower Olifants area (Working for Water, Working on Fire, Working for Land, etc.), and then a more specific case study falling within the above area on natural resource use and land use within the Ga-Mametja area (to inform a Land User Incentives project aimed at restoration of eroded and degraded areas) (see map below, figure 1.3).

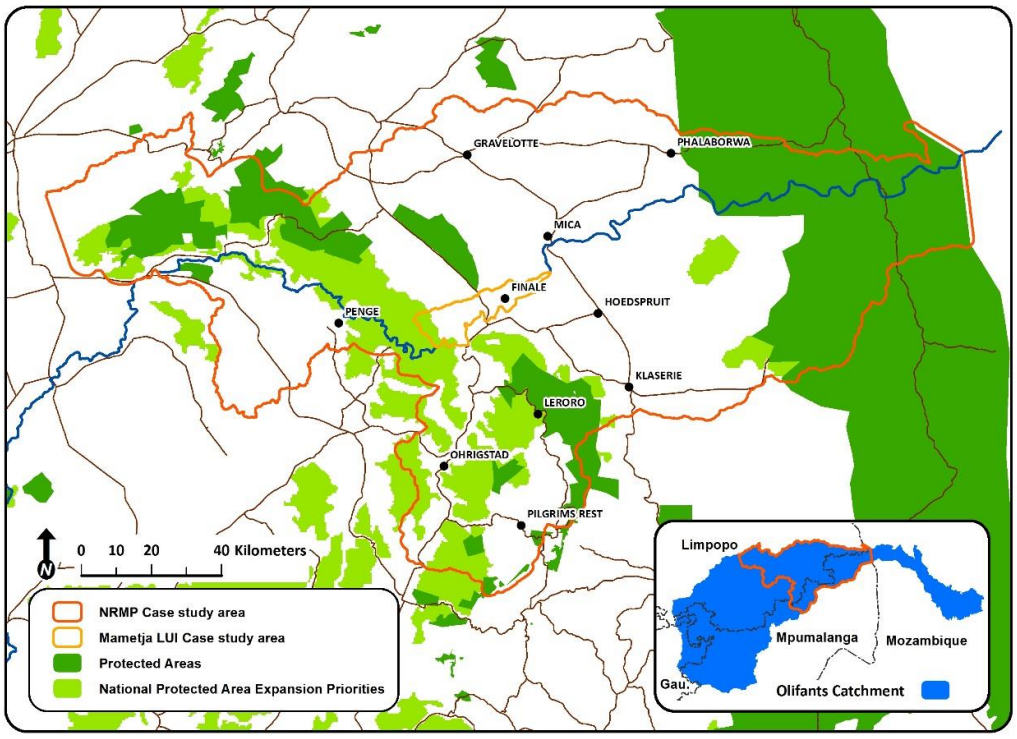

***Figure 1.3**: Map indicating the approximate outlines of respectively, the NRMP Programme focus area, and the Mametja case study area. Inset indicating the location of the NRMP Programme case study area within the Olifants catchment.*

2 NRMPs in the study area

2.1 Working for Water (WfW)

2.1.1 Background to WFW

Working for Water is a national-level initiative in South Africa, operating in all nine of the country's provinces and across all major terrestrial biomes (van Wilgen, 1998). The programme was instigated by South Africa's Department of Water Affairs and Forestry in 1995 under the leadership of Ahmed Khan, to combat invading alien plants and to create employment (Marias et al. 2001). The WfW programme's overarching goal is to alleviate poverty by creating short- to medium-term jobs for unskilled workers through clearing alien vegetation, (WfW 2000/01 Annual Report). At the same time, the programme was thought to have significant social benefits for the country's poorest of the poor, women, the disabled, youth, and rural communities (Magadlela, 2004), through the promotion of small business and entrepreneurship development (Rogerson, 2008. Coted in Coetzer and Louw, 2012). The programme was launched with a budget of R25 million in 1995. Its success saw the programme grow rapidly to a point where the annual budget exceeded R400 million in the 2003/04 financial year. (Marias, 2004).

Working for Water has since spent R3.20 billion (expressed as 2008 rands, approximately 457 million US$) on alien plant control. Whether or not the correct, top-priority, species are being targeted, and whether or not progress has been made in reducing the extent of invasions, remains unknown (Van Wilgen, 2010).

The EPWP was officially launched by former President Thabo Mbeki on the 18th May 2004. EPWP is an expansion of traditional PWP (focus on infrastructure), into Social, Environmental and Economic work activities, of which WfW became one the environmental programmes under EPWP since 2004. (EPWP Five Year report, 2004-2009). On the 01st April 2011, the Natural Resources Management Programme (NRMP), of which Working for Water was a sub-programme, was transferred from the Department of Water Affairs (DWA) to the Department of Environmental Affairs (Coetzer and Louw, 2012).

2.1.2 Aims and Objectives

The main aim of Working for Water is the management and control of invasive alien plants (IAP) to enhance the sustainable use and conservation of natural resources, and to promote socio-economic development as part of the Governments Expanded Public Works Programme. In doing so, it aims to address poverty relief, skills development and promote economic empowerment and transformation within a public works' framework.

The first key objective of WfW is to control or manage Invasive Alien Plants (IAP), which are a major threat to the functioning of ecosystems and biodiversity and the ecosystem services derived from these. Therefore, IAP management aims to restore and rehabilitate ecosystems in order to promote or maintain the ecological integrity of ecosystems, and hence their functioning and provision of ecosystem services. This includes services such as water flow/flood regulation and water security, soil fertility and production potential of land, etc.

The second key objective is Socio-Economic Development. To reduce poverty by provide employment and develop skills through various technical and life skills training opportunities to previously disadvantaged people, and to facilitate broad-based economic empowerment and building social capital through SMMEs (Small Medium and Micro Enterprises) within the public works' framework.

2.1.3 Organisational structure

General Structure

WfW forms part of a larger "Working for" suite of practices including Working for Water, Working on Fire, Working for Wetlands, Working for Land, under the DEA Natural Resource Management Programmes (NRM Directorate, Environmental Programmes Branch, Department of Environmental Affairs)..

This programme is implemented nationwide, across all provinces which are referred to as regions. Regional boundaries roughly correspond to provincial boundaries, with some adjustments made according to catchment boundaries (see more detail regarding Regions below). These regions are further scaled down to Management Areas, which themselves contain multiple Projects with defined project areas. Three WfW regions overlap with the Olifants catchment, namely those of Mpumalanga, Limpopo and Gauteng. (See figure 2.1 below). The WfW programme is also implemented by SANParks in various national parks (and adjoining areas/buffer zones) including the Kruger National Park, which overlaps with the Olifants catchment. SANParks BSP also oversees several clearing projects implemented by the MTPA, which fall within the Olifants catchment.

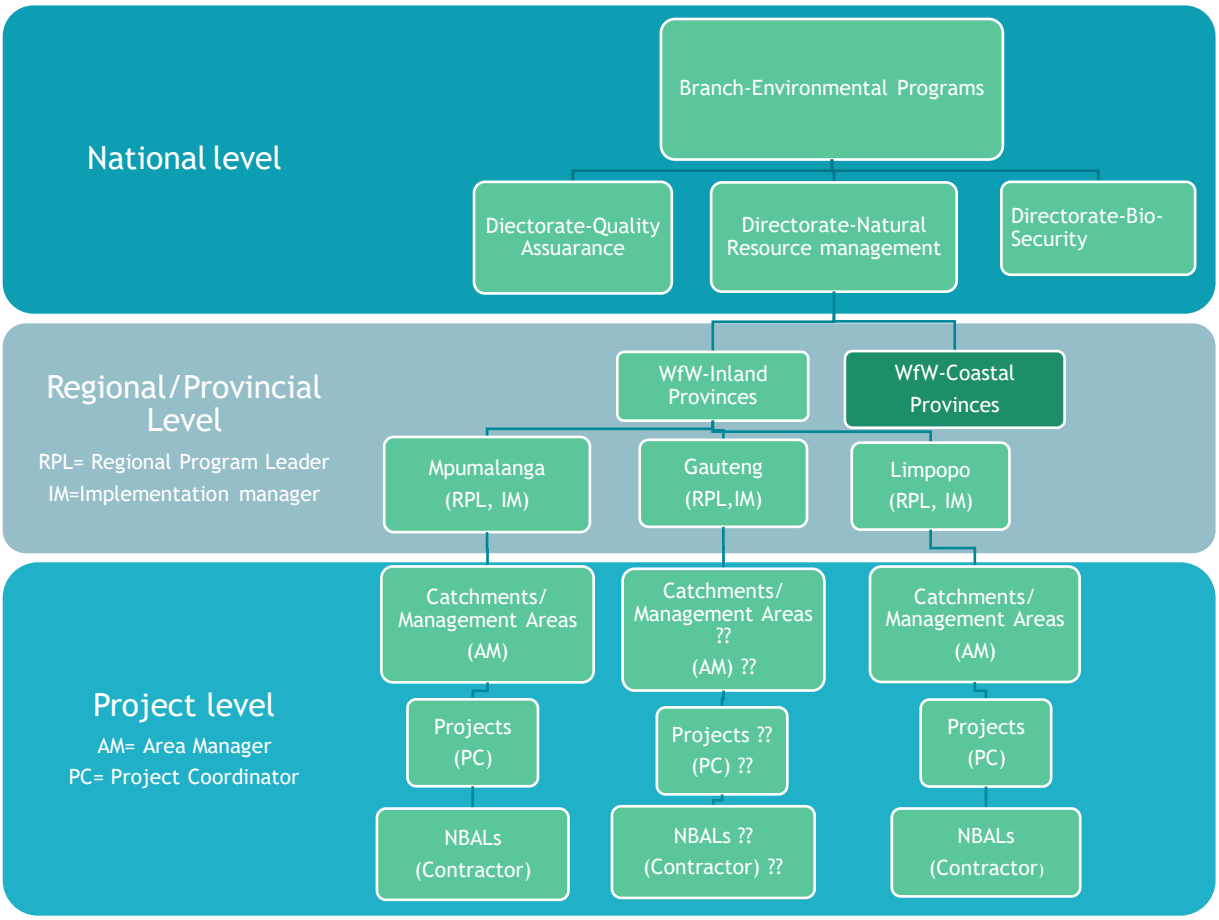

Figure 2.1 Working for Water Organogram with specific reference to Olifants Catchment.

Detailed regional Structures with specific reference to Olifants catchment

The Limpopo region has four Management Areas with two (Tzaneen & Groblersdal) overlapping with the Olifants Catchment. The Groblersdal management area contains 5 projects, which all fall completely within the Olifants catchment. Tzaneen management area contains 8 projects, with 4 of these overlapping with the catchment. In Mpumalanga region, two Management Areas (Lowveld North, Highveld) overlap with the catchment, with about four projects falling within the catchment. See Table 2.1 below for detailed description of regions, projects and dominant species in WfW projects falling within the Olifants catchment.

The Gauteng region has a different organizational structure compared to the Limpopo and Mpumalanga regions, with much of their work implemented by implementing agents (we are still gathering further details on this). Within National Parks the Biodiversity Social Projects section implements WfW projects, which within the Kruger NP portion of the Olifants catchment are mainly focussed on sections along the Olifants river and its tributaries (including upstream of the park). There are about four IAP clearing projects implemented by SANparks which overlap with the Olifants catchment (Table 2.1), and the MTPA is currently in the process of taking over full responsibility for the management of these projects from SANParks (pers. com. M. Bain).

TABLE 2.1 IAP CLEARING PROJECTS IN THE OLIFANTS CATCHMENT

REGION	MANAGEMENT AREA	PROJECT NAME	QUATERNARY CATCHMENT NO.	AVERAGE TOTAL HECTARES	NO. TEAMS
LIMPOPO (WFW)	Groblersdal	Lower Olifants	B32F	29345,17	12 teams/ 11 workers
		Lower Steelpoort	B41C	3834,748	7 teams/ 11 workers
		Lebowakgomo	B52A	5300,568	10 teams/ 11 workers
		Zebediela	B51F	21366,01	10 teams/ 11 workers
		Aquatics	B32J		2 teams/ 11 workers
	Tzaneen	Lekgalameetse	B72F	4489,702	9 teams/ 11 workers
		Wolkberg	B81A		8 teams/ 11 workers
		Gravellotte	B81E		6 teams/ 11 workers
		Lekgalameetse Special Project	S07P	923,992	5 teams/ 15 workers
MPUMALANGA (WFW)	Lowveld North	Blyde			4 teams/ 12 workers
		Robbers pass			5 teams/ 12 workers
	Highveld	Olifants			6 teams/ 12 workers
		Witbank			1 teams/ 12 workers
GAUTENG (WFW)	Bronkhorst-spruit	Unknown			
MTPA (UNDER SANPARKS BIODIVERSITY SOCIAL PROJECTS)	MTPA	Andover NR			2 teams, 11 workers
		Blyde river Canyon NR			3 teams/ 11 workers
		Sterkspruit NR			2 teams, 11 workers
KRUGER NP	(BSP) WfW	Nxanasheni South			6 teams
		Marula North			Unknown

2.1.4 Planning and Prioritization

According to NEMBA regulations, IAP are grouped into different categories so that action can be taken to control the spread of these species, and it is these categories that guides the IAP management programmes ito prioritisation, planning, implementations and monitoring. Some of the criteria used in deciding such categories includes value of the plant and the extent of invasion. I.e. some IAP are used for ornamental values (decoration, shades), while other are important source of timber, and the same plant species could be in different categories depending on its invasion status in different locations. E.g. Morning glory (Category 1 plant only in the Limpopo, KwaZulu-Natal & Mpumalanga, and Category 3 plant in the rest of South Africa. Below is the detailed explanation of different IAP categories, with specific categories of species under the IAP control programmes in the Olifants catchment further explained in Appendix 5.

2.1.4.1 Categories of listed Invasive alien plants

Category 1a: Invader plants must be removed & destroyed immediately

Invasive species requiring compulsory control (remove and destroy). Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued. No person shall, except in or for purposes of a biological control reserve establish, plant, maintain, multiply or propagate category 1 plants. The focus of categoy1a is mainly on emerging species (NEMBA 1 August 2014).

Category 1b:

Invasive species requiring compulsory control as part of an invasive species control programme (remove and destroy). These plants are major invaders or have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. No permits will be issued to own, import into South Africa, grow, move, sell, give as a gift or dump these plants in waterways.

Category 2: Invader plants may be grown under controlled conditions only

Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones. Growing of category 2 plants in a demarcated area qualifies for water use and according to section 21 of national Water Act, No. 36 of 1998, the land user need to obtain a water use licence if the demarcated area is 1 hectare or larger and is for commercial purposes. Land user must undertake all reasonable steps to curtail the spreading of seeds or vegetative reproducing materials outside the demarcated area, and all specimen outside the demarcated are have to be controlled. Category 2 plants may not occur within 30 metres from the 1:50 year flood line of watercourses or wetlands, unless authorisation has been obtained in terms of the National water Act.

Category 3: Invader plants may no longer be planted

These plants are undesirable because they have the proven potential of becoming invasive, but most of them are nevertheless popular ornamentals or shade trees. Category 3 plants can remain in your garden. However, you cannot propagate or sell these species and must control them in your garden. In riparian zones or wetlands all Category 3 plants become Category 1b plants.

2.1.4.2 WFW IAP Planning and Prioritisation

The WfW programme has conducted a number of planning or "prioritization" processes at larger spatial scales, while also conducting annual planning processes at smaller spatial scale, to inform the implementation of their projects. Previous higher level prioritisation processes have been conducted at national and regional levels (van Wilgen et al. 2008, 2010, Le Maitre et al. 2012). These processes were conducted to ensure a strategic, transparent, and defensible approach to determine priority areas and IAP species targeted for IAP control in the context of limited resources, in order to leverage maximum benefits (returns) for these resource allocations (van Wilgen et al. 2008, 2010, Forsyth et al. 2012). These processes were conducted in the context of and in response to concerns raised previously and ongoing in regards to the objective setting of priorities for IAP clearing (Breen et al. 1997, Common Ground, 2003, Robertson et al. 2003, Nel et al. 2004, Forsyth et al. 2012). At the smallest spatial scale and management unit (project level), planning and prioritization is achieved via an Annual Plan of Operations (APO) and various tools associated with this (WfW APO guidelines, 2011).

High level prioritisations

To inform both national and regional level priority areas and species WfW used a multi-criteria decision making tool/model called the Analytic Hierarchy Process (AHP) to facilitate prioritisation (Forsyth et al. 2012, Le Maitre et al. 2012). This prioritization process was conducted between 2009 and 2011 during which the CSIR completed a series of national and regional workshops with the regional managers of WfW, invited experts, and representatives from other important sectors (conservation, agriculture and water). The AHP technique involved the identification of criteria which were then each assigned a relative weight based on the perceived importance of such criteria. Two models were developed at national level, the first for prioritising species based on their traits and management considerations.

The second model was developed for prioritising areas, in this case biomes and primary catchments within these. At the regional workshops in Limpopo, Mpumalanga and Gauteng, a set of priority IAPs were identified per region by its participants (table 2.2), who then also developed and weighted criteria for an area-based model per region. All criteria were spatially represented across the region in question. Combining the IAP priorities with the area-based models then allowed for the prioritization of quaternary catchments for IAP control per region (Appendix 2, 3, and 4).

The criteria developed for all these regional models were generally based on reducing impacts on ecosystem services, particularly water-based services, conservation of biodiversity, as well as socio-economic factors including tourism and agriculture (Le Maitre et al. 2012) (see Table 2.2). Other socio-economic factors such as the location of poverty nodes were also taken into consideration, although it was subsequently decided that, given the pervasive nature of poverty across South Africa, all areas of a region contained many more unemployed poor people than the Working for Water programme would be able to employ, and such a criterion would therefore be unhelpful in deciding between priorities.

TABLE 2.2: CRITERIA AND DESCRIPTIONS OF THE ATTRIBUTES IDENTIFIED IN PRIORITISING QUATERNARY CATCHMENTS FOR WFW INVASIVE ALIEN PLANT CONTROL WITHIN THE LIMPOPO, MPUMALANGA, AND GAUTENG REGIONS (FORSYTH, 2011).

Criterion	Description of the criteria attributes
Provision of water/water security/ water resources	The degree to which alien species affect our limited water resources. This includes water quantity and quality (of both surface and ground water), high yielding areas and ground water recharge areas. The objective behind this criterion was to secure the sustainable provision of water.
Biodiversity Conservation	The degree to which the alien species are able to displace indigenous species, in particular their impact on protected areas, terrestrial, wetland, and riparian systems, and the biodiversity they contain. The objective behind this criterion was to protect biodiversity priority areas.
Land capability/ land resources/ agricultural potential	The degree to which the alien species are able to displace indigenous species which are important for grazing and harvestable resources. The objective behind this criterion was to retain land capability.
Protected areas	The degree to which the alien species is able to displace indigenous species, within protected areas. The objective behind this criterion was to maintain protected areas.
Presence of priority Invasive alien species	The actual presence of invaders, both density and number (i.e. whether an invasive species is an ecosystem transformer). The objective behind this criterion was to identify areas with a large scale presence of invasive alien species capable of transforming ecosystems.
Cultural and tourism Sites and routes	The degree to which the alien species is able to displace indigenous species, negatively affecting cultural and tourist features and sites, e.g. restricting access, impacting views and restricting recreation opportunities and cultural practices. The objective behind this criterion was to maintain these important cultural and tourism sites and routes.
Fuel load	The degree to which the alien species is able to increase the vegetation fuel load posing a potential risk to natural and built capital. The objective behind this criterion was to identify the potential to remove the risk of increased fuel loads by controlling invasive alien plants in catchments where they have the greatest collective biomass and therefore fuel load.

Identified priority quaternary catchments were then used to evaluate the location of the then current clearing areas in each region. This was judged approximately at the management area level, and to see how these corresponded or not with the prioritization models. Existing management areas in Limpopo region were considered to be fairly well located in terms of priorities (pers. com. Werner Roux), whereas within Mpumalanga this was considered less so (pers. com. Hannes de Lange). Within Mpumalanga a need to move clearing efforts from the Lowveld up onto the Highveld was identified, which had major (still lasting) implications for the management of the involved projects (see Challenges section).

Planning and Prioritisation at Project level

Project selection is also based on input from departmental regional offices, spatial information of IAP distribution and density, the various participating departments' priorities. Some of the criteria used to guide project selection includes: IAP Impact on regional water resources, the extent and distribution of alien species, and the levels of poverty and unemployment.

At project level, the project coordinator plays a major role in deciding the scope of work (where to clear, when to clear, which species and the methods to be used). However, some of the criteria used at project level include: follow-up of areas and maintenance are major priority, clearing should proceed from the top of catchments downward, species for biological control, Aquatic weeds, and emerging species are priority.

2.1.5 WfW Functions and Procedures (De Jure)

Adopted from the following documents: WfW Project Operational guidelines (Previously the Self-assessment Standards); WfW Strategic Plan (2008-2012); Working for Water's Research Strategy & Action; WfW Annual Plan of Operation (APO) guidelines; WfW mapping standard (version5).

Figure 2.2: WfW Functions and Procedures (De Jure).

Responsible person

PC- Project Coordinator,
S&T- Social and Training officer
AC- Advisory committee
SCM- Supply Chain Management
DM- Data/ GIS manager
AM- Area Manager
CO- Contractor/ Team Leader
IM- Implementation Manager
RPL- Regional Program Leader
D- Director
CD- Chief Director

1. Stakeholder Engagement

All local stakeholders must be involved at the planning stage in order to gain support for all programme activities. This serves as a way to introduce the proposed project to interested and affected parties. Internal stakeholders include all implementation and support service staff, while external Stakeholders can include communities, land owners, municipalities and all interested and affected parties.

2. Area/ Project profiling

This involve a scoping survey to acquire demographics information, resource conditions, economic opportunities, etc. This is very crucial prior to the start of a project, as it informs project managers about the type of social development, employment target, training and support program that are required.

3. Appointment of contractors

Contractors/ team leaders are selected based on the information from step 2, however the selection must be in line with the region and project's employment target. The advisory committee or local consultative forum needs to play a support role in this process. WFW only appoint contractors, therefore contractors must appoint their workers. The Advisory Committee, together with Social and training officer must ensure compliance to the workers selection criteria. Work selection must again be in line with the Expanded Public Works Programme (EPWP) which stipulates that 60% of the programme's beneficiaries should be women, 25% youth and 2% persons with disabilities.

After the employment of contractors and workers, the Social and Training officer must ensure that all personal details, educational, skills and aptitude profile of contractors and workers are submitted to the GIS manager for recording. The household conditions must also be recorded, and it's this profiling that will inform the type of socio-economic development programme and types of training required.

4. Training

Project Coordinator must develop an operational Training plan based on a training needs assessment (e.g. workers cannot attend training outside their job category) and must be in line with the Training Matrix. The Social Development Plan must also be developed at project level, but it must be based on the national Key Result Areas for the Social Development Programme, i.e. Peer Educator Programme, Health Promotion, Awareness and commemorative initiatives. The plan must also be based on the needs of the workers in the project. (E.g. substance abuse, financial literacy, Gender-based violence, etc.). These Training Plans developed at a project level are used to inform the regional training APO.

To enhance employment data and to provide data to the Expanded Public Works, WIMS requires that we capture vital indicators, like name, id, health status, age, Job function, timesheets, Wages of workers are captured in WIMS. Any further more Training done by personnel is also captured: duration, course types, and Service Providers.

5. Mapping Procedures

Data is on AIPs is collected by mapping with either a GPS or digitising them on screen using the latest Aerial Photos to get what is known as polygons (a set of points on a map connected with a

line, which is closed and thus has an area). All polygons must be verified on species data, size, density collected (according to Working for Water Mapping Standards). Data is then downloaded from a GPS and cleaned with GIS software like ArcView, ArcGIS and Mapinfo. Once satisfied that data is of correct quality, data gets imported into the specific project in WIMS (Working for Water Information Management System) where it is assigned a unique Identifying number called Nbal. I.e. The Polygon is now known as an Nbal (Natural Biology Alien).

6. Field Survey, APO, and Contracts generation

In order to develop APO (Annual Plan of Operation), PC (Project Coordinator) must go to the field to acquire species data (types, size, density, etc), and from the species data, PC can now determine the treatment method and herbicide to be used. All these data, together with built in Norms and Standards (provided by technical advisors and research) is entered into WIMS to determine the workload, which is called person days.

The APO follows a hierarchal order of approval before it gets implemented. It is developed by Project Coordinator (project level), the Area Manager must approve it (Management Level), the Regional Implementation Manager (Provincial), and finally the Director (National).

Once the APO is approved, the Treatment Area Maps (contracts) is generated, and the Project Coordinator advertises the AIP clearing tenders to team leaders/ contractors for biding. I.e. PC does not decide or give tender to team leaders, but instead they bid. This is because tenders varies in terms of number of days and money. However, the number of contracts is align with the number of teams per project. I.e. if the project has 10 teams, number of contracts will also be 10, but this also depend on the project budget.

7. Contracts administration and approval

Team leaders submits completed AIP tenders together with all biding documents back to PC for adjudication/assessment, if PC is satisfied s/he submit the tenders to the Area Manager for further assessment. From the AM, the tenders goes to SCM (Supply Chain Management) which is a special committee for Tender adjudication and procurement at regional level. If the tenders meet all the requirements, they are submitted to Regional Programme Leader for sign off, and finally to the Director for approval. However, any tender with amount over R150 000 require the approval from the Chief Director.

After the approval by the Director or Chief Director, the tenders are submitted to SCM at National level for capturing to generate Order number. An order number is needed to obtain any kind of service or purchase. I.e. No order number – no payment. After the order number is generated, the tender is now called contract/AIP clearing contract, and it's sent back to the Project Coordinator for implementation.

8. Field and Contract verification

After the contract is sent back, Project Coordinator and Team leader/ Contractor verify each and every detail within the contract. The contract spell out each and every detail of the operation including: Number of clearing days, Hectors, Budget, Type of species, density, type of treatment methods, Type of herbicide to be used, etc.). Both Project Coordinator and Contractor must go to field for boundaries and species data verification. This is to ensure that the contract is the true reflection of the polygon/area to be cleared, and if new species are identified they must be added into the contract.

After field verification, if the Contractor is satisfied with the contract details (especially number of working days), the actual AIP clearing can commence. I.e. AIP clearing work have to be completed on or before the date stipulated in the contract, any work beyond the stipulated contract days will not be paid unless provide valid and authorised reasons. Therefore, if the contractor is not satisfied, the contract must be cancelled or if possible adjusted according to new field findings before implementation.

9. Implementation

This involves the actual clearing of AIP. The store clerk will provide all necessary equipment to workers (working Tools, Protective clothing, Herbicides, etc.) according to the contract stipulations. The Project Coordinator supervises all work proceedings in terms of WFW operational, and health & Safety standards.

10. Reporting, monitoring and evaluation

Project coordinator & contractor (project level)
It's the duty of PC (Project Coordinator) to monitor the work performance and ensure compliance in terms of WFW operational norms and Health & safety standards. PC use site inspection reports as a monitoring tools and all these report must be attach when the Contractor invoice for the work done. In the absence of the PC, the Contractor is the supervisor and must record each and every detail in terms of Incidents/Hazards in work place, Health & Safety issues, Timesheet, and all the operational challenges.

Based on the information from the site inspection reports and contractor's report, the PC must develop the monthly and quarterly Key Performance Report (KPI) reports which mainly indicates the expenditure of the months, Number of hectares, Persondays, NBALs worked, etc.). The PC must also develop Health & Safety reports which mainly focus on the health issues, hazards, operational challenges, etc.), and all these reports are submitted to the A
rea Manager for further assessment.

Area manager (Management Area level)
The AM (Area Manager) must thoroughly assess the inspection and KPI reports from the PC, and as a verification tool the AM must at least conducts 10% site inspections of each and every contract in all projects within the management area. If the AM is not satisfied with the quality of the work done, no invoice will be processed until the matter is fixed. After the approval of the AM, all information on the KPI reports must be captured by the GIS officer into the WIMS (Working for Water Information Management System), which is a planning and monitoring tool designed to monitor and record all activities within the programme.

From the KPI of all projects, the AM compiles a monthly and quarterly management area KPI report which is submitted and presented to the Regional Implementation Manager for further assessment. The Am also compiles the management area Health and Safety report which is also submitted and presented to Regional Health and Safety officer.

Implementation manager (Provincial level)
All Area managers present their monthly and quarterly KPI reports in a collective regional meeting in which director/representative from national office are invited to attend. It is in this meeting where collective action are taken to improve performance and to address challenges and issues at ground level.

The Implementation must at least monitor/site inspect 10% of each and every project, this serve as the verification of the reports submitted by the AM. If the implementation manager is not satisfied with the work done, he will give mandate for teams to go back to field even though the contract was already completed, and there could be penalties to personnel responsible, depending on the extent of the situation and this will be guided by WFW operational procedures, rules and regulations.

If the KPI reports are satisfactory, the data is captured into WIMS by the Regional GIS manager to generate a Regional KPI report which is export to the National data manager for reference at national level. The Regional Programme leader also present the quarterly KPI reports at national meetings.

Director, Chief-Director (National level)
The Director normally attends regional KPI meetings, but rarely go to the field. Both Director and Chief-Director always gets monthly updates KPI reports from the Regional Programme leaders and National data manager, and always attends national quarterly meetings where all RPLs presents their KPIs and Health & safety reports for their respective regions.

There is a new Quality Assurance Directorate at DEA, which specialises in Monitoring & Evaluation of all programmes in DEA including WFW. This directorate conducts an in-depth survey in terms of financial management, operational/AIP clearing, health & Safety, etc, and they synthesize an independent report which is submitted directly to the Chief-director, and their recommendation will then be escalated down to the ground level. The Quality Assurance directorate is also delegated powers for action against noncompliance at any level. I.e. they can suspend, recommend further trainings or even dismiss any noncomplying personnel.

2.2 Working on Fire (High Altitude Teams)

2.2.1 Purpose & objectives

High altitude Teams (HAT) are highly trained workers using twin rope access techniques to remove invasive problem plants from inaccessible areas and steep slopes. I.e. work that is deemed too dangerous for Working for Water normal clearing teams is carried out by these teams. The key objective of HAT is to remove invasive alien plants from areas prioritized for clearing. However they are also trained in fire fighting and advanced search and rescue, in order to assist disaster management agencies when called upon.

2.2.2 Organizational structure

HAT is a national project and they often work hand in hand with the Working for Water programme and conservation authorities. All funding comes from the Natural Resource Management Programme and is in line with the Department of Environmental Affairs and EPWP employment criteria. From national level, HAT management structures are further subdivided into Clusters, with the Northern Cluster (KwaZulu-Natal, Free State, Mpumalanga and Limpopo) overlapping with the catchment. Within the Northern cluster, two regions (Limpopo, Mpumalanga) overlap with the Olifants catchment. See table 3.1 below.

Contrary to WfW normal teams, The High Altitude Teams (HAT) has few beneficiaries because the programme requires strong motivated people with high level fitness, and extensive trainings. Currently HAT has 101 beneficiaries in the Olifants catchment, with 4 teams working in Lekgalameetse reserve and 6 in the Blyde river catchment. WoF HAT promised to recruit a whole new team (12 people) in addition to its current teams in Lekgalameetse (Hannes de Lange, Northern region Manager WoF HAT).

TABLE 3.1. NORTHERN CLUSTER HAT, WITH SPECIFIC FOCUS ON OLIFANTS CATCHMENT

Northern cluster	Site of operation	No teams	No WoF beneficiaries	Total planned NBAL hectares (2014/15)
Limpopo Project	Lekgalameetse Nature Reserve	4	40	424 ha
Mpumalanga Project	Blyde river catchment	6	61	412 ha

2.3 NRMP challenges

There is an extensive literature concerning the review or evaluation of the NRMPs (especially WfW) in terms of various aspects, both bio-physical and socio-economic. During our engagements so far with NRMP personnel at different management levels, a number of challenges faced by the NRMPs have also been noted. Many of these are very similar to those already identified in the literature, although with local context adding additional facets and complexities. A major theme through these is the need for more coherent and clear institutional arrangements and alignment (coordination) both vertically and horizontally within the NRMPs, and between NRMPs and other agencies involved in natural resource management (i.e. conservation, water, and agriculture agencies). The need for an adaptive management approach with feedback to implementation and policy, from a monitoring and evaluation system which is able to track the status of outcomes, whether these are inline (or not) with the objectives of the programme, and how learning could be incorporated within this approach is also evident.

Prioritization

The prioritization models and processes used by the WfW programme were described above. These processes were designed to inform planning and funding allocations at quaternary catchment scale within the WfW regions. Since criteria and weighting were done independently for each region and alignment across regions was not included explicitly as a criterion (as for instance in the Provincial systematic conservation plans), priority areas across regional boundaries often did not align. An example of this is where quaternary catchments situated at the bottom of the Steelpoort catchment within the Limpopo region were considered a priority in Limpopo, while quaternary catchments upstream within the Steelpoort catchment in the Mpumalanga region were not ranked high. This is of course problematic for the general catchment based clearing approach, where catchments should be cleared of IAPs from the top downwards. (Within the Limpopo region there is a project focussed on the lower Steelpoort, and as far as we are aware there are no projects working in Mpumalanga in the upper Steelpoort, although this still needs to be confirmed).

Within Mpumalanga a need to move clearing efforts from the Lowveld up onto the Highveld was identified by CSIR, which had major (still lasting) implications for the management of the involved projects (see Challenges section). Prioritization has also had a number of implications for the Mpumalanga region, with a need to move away from the Lowveld and up onto priority areas on the Highveld. Pressure to keep contracts and team from Lowveld (court case?). Pressure in new areas to take workers from local area, slow process.

In theory, prioritization of WoF HAT and certain LUI projects involved in IAP control should be informed by areas identified by WfW as priorities, of which normal WfW teams are not able to clear because of steep and/or inaccessible terrain. However, with lack of coordination between NRMPs, it is not clear whether the coordination between WfW and WoF HAT in terms of planning and prioritization is functional. We are currently still trying to get a better understanding how the HAT prioritization is fully aligned).

Institutional alignment & integration (Improve participation, coordination, collaboration & alignment within NRMPs)

The institutional alignments envisaged are to ensure that DEA as the lead sector Department is able to coordinate sector programme activities that will give effect to the achievement of the objectives of the Expanded Public Works Programmes (EPWP Five year report, 2004-2008). The intention is not to complicate or impinge on various line departmental functional mandates and obligations, but to foster interdepartmental relations or partnerships which will facilitate minimum duplication of efforts, effective implementation models, consistency in reporting and tools of measurement used, efficient resource allocation and use and sharing of best models. However, the alignment is still a major challenge within NRMPS and E&C sector as a whole.

Realignment of regions to provincial boundaries, as opposed to catchments, has had implications for prioritization and implementation. So far coordination and alignment across provincial boundaries in regards to this has not been fully and coherently addressed.

The Blyde catchment (An example for lack of Adaptive and Integrated management)

The Blyde catchment is one of the highest known plant diversity area in the K2C Lower Olifants and contains many endemic species. The Mariepskop complex alone has over 1,400 floral species. However, the large portion of the catchment is under severe threat from afforestation and the spread of alien invasive plants such as pines (Pinus species) and Black Wattles (Acacia mearnsii), (MTPA, 2013. Integrated Management Plan: Blyde Canyon *Nature Reserve*). The alien invasion threat has also been supported by CSIR IAP prioritization model (Forsyth *et al,* 2011), whereby three quaternary catchments (B60A, B60B, B60C, B60D) where raked in the top 10 priority catchments for IAP control out of 162 quaternary catchments in the Mpumalanga region.

Although there are invasive alien clearing projects in the Blyde catchment through WfW, Wof HAT, and MTPA (figure 2.2 below), it is evident that BLyde, which is one the highest priority catchments with high water yields, contain areas that are considered to be irreplaceable for a biodiversity perspective, have relatively high carrying capacities and contain fresh water biodiversity priority areas, still receive less attention.
The RESILIM-O questionnaire interviews with protected area managers shows evident that alien invasion is a major threat in the catchment. This evidence was supported by the management plans

of Blyde Canyon nature reserve, Mariepskop Woodlands Indigenous Forest management, whereby they IAP was identified as a major priority. The NRMPs partners, through RESILIM-O stakeholder engagements has also identified coordination and integration within and between NRMPs is crucial in IAP control. However, this coordinations are not happening in practice.

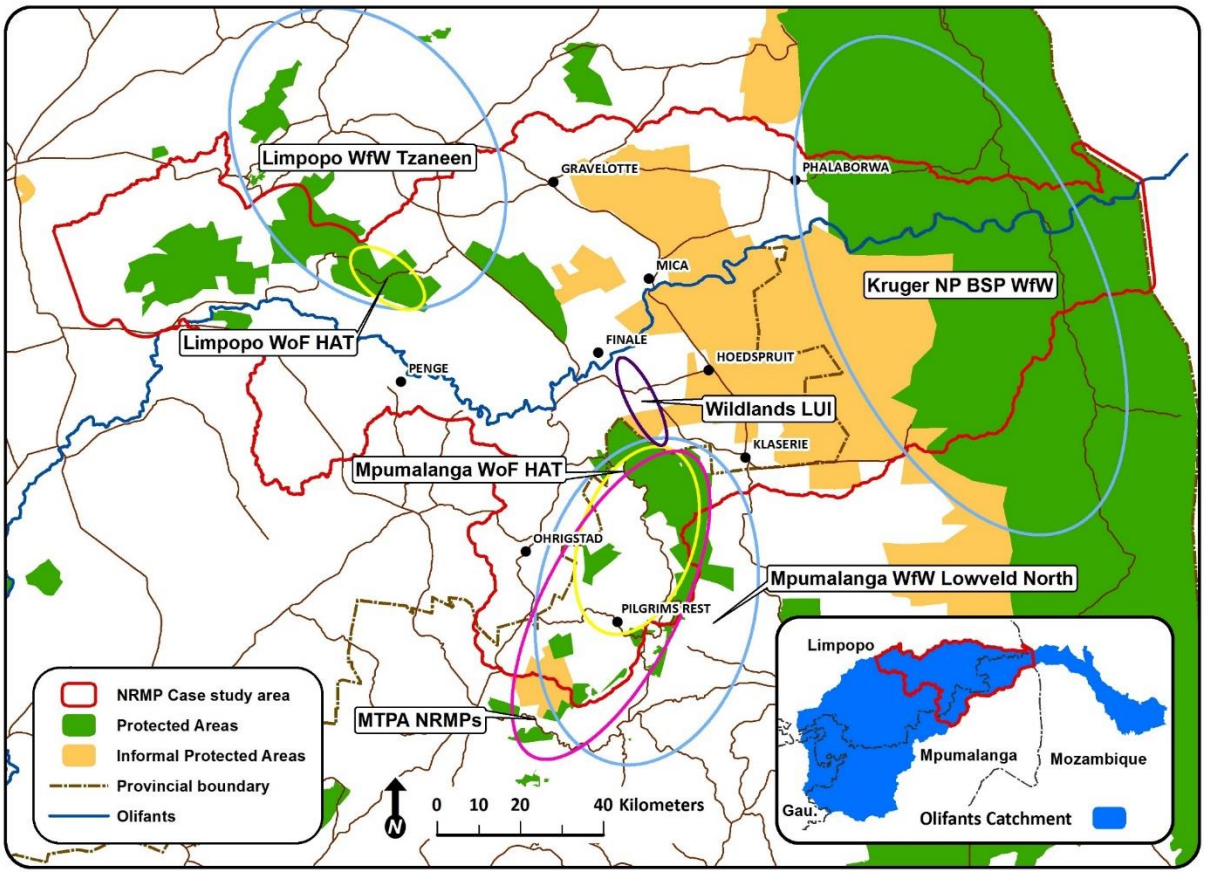

Figure 2.2. Invasive Alien Plant Clearing Projects in K2C Lower Olifants

Monitoring & evaluation (Objectives & outcomes)

In accordance with the EPWP M&E Framework, DEA in consultation with sector partners, will be responsible for the alignment of reporting and mentoring processes of all NRMPs to ensure cohesive co-ordination, management and implementation at all spheres of government (EPWP, five year report, 2004-2008). The EPWP M&E framework also stipulates that cross-sectional Surveys of contractors and beneficiaries must be conducted at the end of the project cycle (in years one, three and five) to determine the impact of the project on biodiversity, impact of income transfers on beneficiaries and their households, impact of assets created, and relevance and quality of training. Furthermore, a longitudinal surveys must be conducted six months after beneficiaries exit the EPWP and a further six months thereafter to assess whether employment or self-employment occurred after exiting the EPWP, and to determine longer-term impact of income transfers and training. However, with the current available information, it is not clear whether such surveys have been conducted by DEA.

Compliance (NEMBA/CARA legislations?)

Compliance in terms of Invasive Alien Species regulations has been a major challenge over the years. The new Bio-security directorate at DEA is aimed to strengthen enforcement of the new NEMBA IAS regulation (1st August 2014). Land owners especially in forestry industry are the major culprits in terms of compliance. In theory, according to regulation 15 and 16 of CARA and NEMBA regulation 5 (section 64-79), land owners are permitted to grow category 2 plants forestry/plantation) only in special demarcated areas. Furthermore, land user must undertake all reasonable steps to curtail the spreading of seeds or vegetative reproducing materials outside the demarcated area, but through our stakeholder engagements this is not happening on the ground.

Human resource

There is lack of personnel in the region, with key vacant positions such as Area manager, Implementation manager, project coordinator, and most importantly there is no GIS coordinator in the whole Mpumalanga region. It is interesting to compare Limpopo WfW and Mpumalanga WfW in terms of personnel/ human resources. Limpopo has almost a complete structure with all the core positions occupied, while on the other hand Mpumalanga's key operational positions are vacant and both the regions are under same chief-directorate and are expected to deliver same product/ service. To make it more interesting Mpumalanga has more budget but they don't have sufficient personnel to implement and they are told the department compensation for employment is too high to fill such positions (all positions are frozen).

There are also employment challenges for EPWP projects of which WFW is one of them in the mining and urban environments, whereby people prefer to work in other sectors than EPWP project. In Witbank project under Mpumalanga WfW, this job conflicts are reported to be drastically affecting the project. Local communities say "*they are not bulldozers to kill trees*" as they prefer to work in mine, and this has left no choice for project managers than opting to move the project to rural areas, and this again affect the prioritization of IAP clearing projects.

DEA Bureaucracy

This is both affecting the operations because of delays in contracts. This also disrupt all the planning and performance of the region. I.e. when contracts are delayed, it put more pressure on the implementation team and this could compromise the quality of work if they are to fining on time. Therefore, in order to finish on time, the implementation team employ double or triple number of beneficiaries and as the number dramatically it decrease the impacts the project has on livelihoods because they will be pain too little to can make a difference. Long-term contracts system is required for WfW to function more effectively and efficiently. I.e. more than one year planning cycle (3years, just like LUIs projects) is required due to the current bureaucracy.

Catchment hegemony

Seed dispersal mechanisms of IAPs may not all necessarily follow water or downhill routes, and consequently clearing of species (dispersed through other mechanisms) through catchment approach methodologies (top-to-bottom) may not necessarily be most appropriate. Especially wind dispersed species such as Paraffin weed (*Chromoleana odorata*) may be of relevance here.

Integrated approach required- one of the major challenge is silo approach whereby NRMPS don't talk to each other. Integrated approach must be mandated in order to improve coordination. i.e. currently WFW has little relationship with WoF HAT (they invite us to their bi-annual meetings, we are also exploring their expertise in terms of fire as a tool for IAP control), There is no relationship with MTPA (however, we have little one-on-one relationship in their reserves that we are working on). We also don't have are relationship with Land care but they also have NRM projects operating adjacent to our projects.

Stakeholder engagement (Prioritize consultation with local authorities)

Local political interest play an important role in rural development. In other provinces such as Eastern Cape, the ministers are always launching various projects because of the political and local interests, but here our people are not interested in Natural resource management. NRMPs need to work with corporates, CBOs, Traditional councils, not just individual beneficiaries. This will help improve livelihoods security because there will be longer-term benefits, not just employment (Said Brendon, Regional Programme Leader-WfW Mpumalanga).

Furthermore, stimulation of local people's interest in NRM requires a strong capacity development and coordination between NRMPS, NGOs, Private organizations and Traditional authorities. DEA has a perfect opportunity to facilitate such collaboration and integration through Land user incentive programme (LUIs), which is sort of a community based natural resource management. However, form our engagements with stakeholders, it is clear there is lack of interest by organization to put proposals LUIs. Brendon also indicated that the chief-Director (Christo Marais) has suggested that the functions of regional programme leaders and Area Managers within WfW need to change in order to fit the new community driven LUI idea to empower and support local corporate/ CBOs. This seems like the chief-directorate is opting for a promising integrated approach (LUIs), in order to break the silo mentality [1] within the current NRMPs setup.

2.4 Engagements & further plans

2.4.1 Engagement so far

The NRMPs have been a major and often dominant actor and transformer of NRM in Olifants catchment. In the context RESILIM-O and Biodiversity theme work, we want to build a collective/participatory long-term vision for the catchment to guide an INRM approach, to enable institutional alignment both vertically and horizontally within and across agencies involved in NRM in terms of: planning and prioritization, implementation, monitoring and evaluation (especially outcomes) and subsequent feedback to relevant dimensions via adaptive management approaches.

To achieve the above approach at a feasible scale within the catchment, we are currently applying this within our main case study area in the Lower Olifants, with assistance from the K2C NRMP forum. We have already build relationship to a certain degree with NRMPs stakeholders in the Lower Olifants, and as part of profiling we are currently unpacking/understanding the current status quo (what institutional relationships look like at moment) and how (processes,

[1] *Silo Mentality- An attitude found in organizations that occurs when several departments or groups do not coordinate, integrate or share information or knowledge with other individuals in the same company.*

methodologies) we can bring them together to achieve an Integrated Natural Resource Management. Appendix 1 summaries some of the past activities/engagements in Lower Olifants case study areas.

2.4.2 Further Plans

We are planning to have a high level institutional workshop towards the end of the year, with the assistance of Professor James Blignaut, to define a process to guide/enable institutional alignment at all levels/spheres of government as well as across NRM agencies.

From the workshop proceedings, we could then develop a framework to be tested at a site specific level. Such areas for testing at implementation level could be identified and discussed by linking to potential current initiatives, and also used to inform the higher level INRM guiding framework. To provide background to this process, we will provide more detail on the local level context after we have completed our profiling exercise in the Lower Olifants study area.

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2.6 Appendices

Appendix 1: List of Activities/ Engagement on NRMP

ACTIVITY	STAKEHOLDERS INVOLVED	VENUE	DATE
NRMP forum meeting	K2C, WfW(Limpopo), DAFF, WfW (Mpumalanga), WfWet, WoF (HAT), SANParks BSP & KNP, LEDET, MTPA	Hoedspruit-K2C Nodal Office	???
Scoping/ introductory meeting to WoF provincial	WoF HAT, Northern Cluster (Mpumalanga & Limpopo)	Nelspruit WoF offices	???
NRMP forum meeting	K2C, WfW(Limpopo), DAFF, WfW (Mpumalanga), WfWet, WoF (HAT), SANParks BSP & KNP, LEDET, MTPA	Hoedspruit-K2C Nodal Office	19 August 2014
Scoping/ introductory meeting to WfW project level	Limpopo WfW	Groblersdal WfW office (Maleoskop)	21 August 2014
Scoping/ introductory meeting to WfW provincial	Limpopo WfW	Water Affair office (Tzaneen Dam)	19 September 2014
Scoping/ introductory meeting to SANparks	Marius Snyders (SANParks Kruger NP, Biodiversity Social Projects).	SANParks offices, Phalaborwa	06 November 2014
Resilim-O introductory meeting to DEA-NRMP national.	Christo Marais (DEA-NRMP National), WfW Mpumalanga,	Pretoria	13 November 2014
Scoping/ introductory meeting to WfW provincial	Mpumalanga WfW	Mpumalanga WfW office (Nelspruit)	28 January 2015

Appendix 2: Prioritising quaternary catchments for invasive alien plant control within the for water Gauteng region

TABLE: NESTED CRITERIA, TOGETHER WITH THE RELATIVE WEIGHTINGS, IDENTIFIED AS SIGNIFICANT FOR THE PURPOSES OF PRIORITISING QUATERNARY CATCHMENTS.

CRITERION	WEIGHTING ASSIGNED (%)	SUB-CRITERION	WEIGHTING ASSIGNED (%)
Water resources	0.373	Water yield	0.259
		Water quality	0.049
		Erosion	0.065
Biodiversity conservation	0.248	Land (biodiversity)	0.083
		Rivers (biodiversity)	0.165
Agricultural potential	0.146	Grazing capacity	0.049
		Crop potential	0.097
Presence of priority species	0.124	Current extent	0.018
		Invasive potential	0.106
Protected areas	0.049	Provincial reserves world heritage sites	0.036
		Municipal reserves	0.009
		Conservancies	0.004
ECO-	0.039		

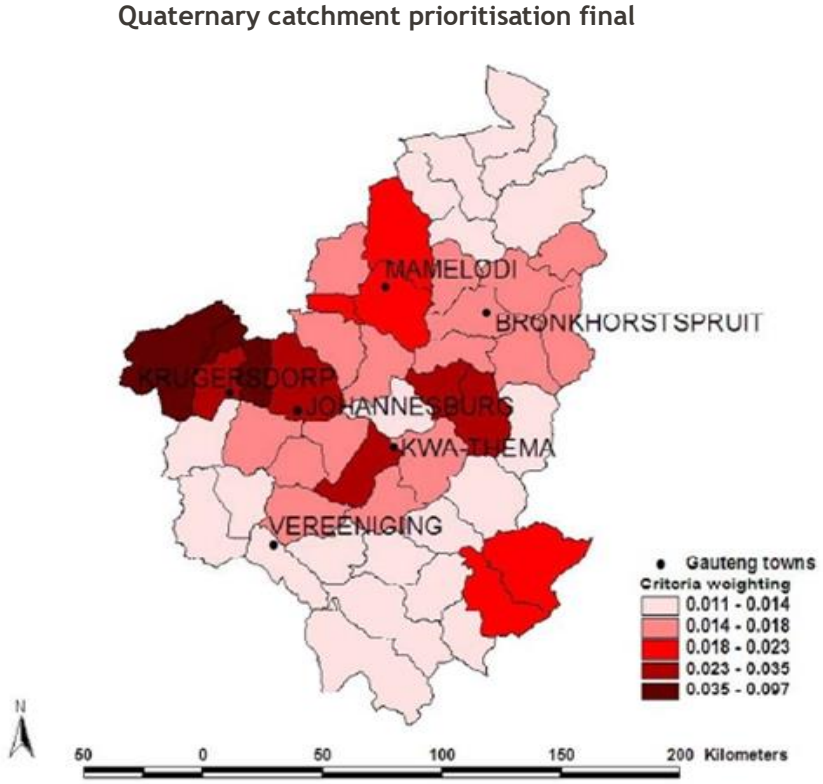

Figure: The priority quaternary catchments identified according to priority classes within the Gauteng Region. Priority weightings reflect the scores for each catchment

Appendix 3: Prioritising quaternary catchments for invasive alien plant control within the Working for Water Mpumalanga Region

TABLE: NESTED CRITERIA, TOGETHER WITH THE RELATIVE WEIGHTINGS, IDENTIFIED AS SIGNIFICANT FOR THE PURPOSES OF PRIORITIZING QUATERNARY CATCHMENTS

Criterion	Weighting assigned (%)	Sub-criterion	Weighting assigned (%)	Sub-sub-criterion	Weighting assigned (%)
Provision of water	0.404	Water yield	0.269		
		Water demand	0.045		
		Water stress	0.09		
Biodiversity conservation	0.288	Terrestrial conservation	0.216	Irreplaceabilit	0.158
				Highly significant	0.041
				Important and necessary	0.017
		Fresh water conservation	0.072		
Land capability	0.129	Carrying capa	0.094		
		Cultivation po	0.013		
		Utilisable spe	0.022		
Protected areas	0.09	Nature reserv	0.035		
		Protected environments	0.009		
		Conservancies	0.005		
		State protect ed	0.041		
Presence of priority invasive alien species	0.055	Invader status	0.041		
		Abundances	0.014		
Key tourism and cultural features	0.033		0.033		

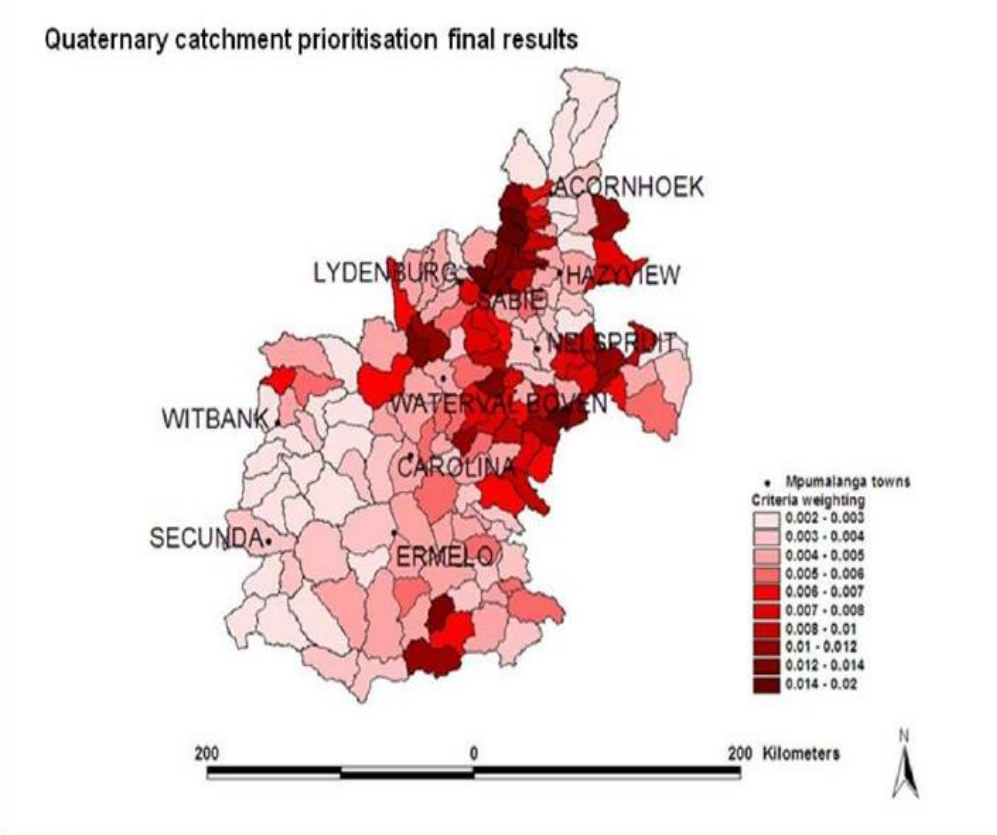

Figure: priority quaternary catchments identified according to priority classes within Mpumalanga region. Priority weighting reflect the score for each catchment.

Appendix 4: Prioritising quaternary catchments for invasive alien plant control within the working for water Limpopo region

TABLE: NESTED CRITERIA, TOGETHER WITH THE RELATIVE WEIGHTINGS, IDENTIFIED AS SIGNIFICANT FOR THE PURPOSES OF PRIORITISING QUATERNARY CATCHMENTS.

Criterion	Weighting (%)	Sub-criterion	Weighting assigned (%)	Sub-sub-criterion	Weighting assigned (%)
Water security	0.372	Water quantity	0.308	Wetlands quantity	0.081
				Ground water recharge	0.095
				Water yield	0.099
				Catchment reserve	0.019
				Water demand	0.014
		Water quality	0.064	Wetlands quality	0.052
				River bank stability	0.012
Biodiversity conservation	0.251	Protected areas	0.034		
		Degree of threat to terrestrial ecosystems	0.109	Centres of endemism	0.022
				Threatened ecosystems	0.087
		Degree of threat to river ecosystems	0.095	Free flowing rivers	0.016
				Threatened rivers	0.079
		Degree of threat to wetlands	0.013		
Land resources	0.091	Harvestable resources	0.076		
		Forage production	0.015		
Cultural and tourism sites and routes	0.04	Cultural uses	0.02		
		Tourism routes and features	0.02		
Presence of priority invasive alien plant species	0.246	Number of invasive alien plant species	0.197		
		Density of invasive alien plants	0.049		

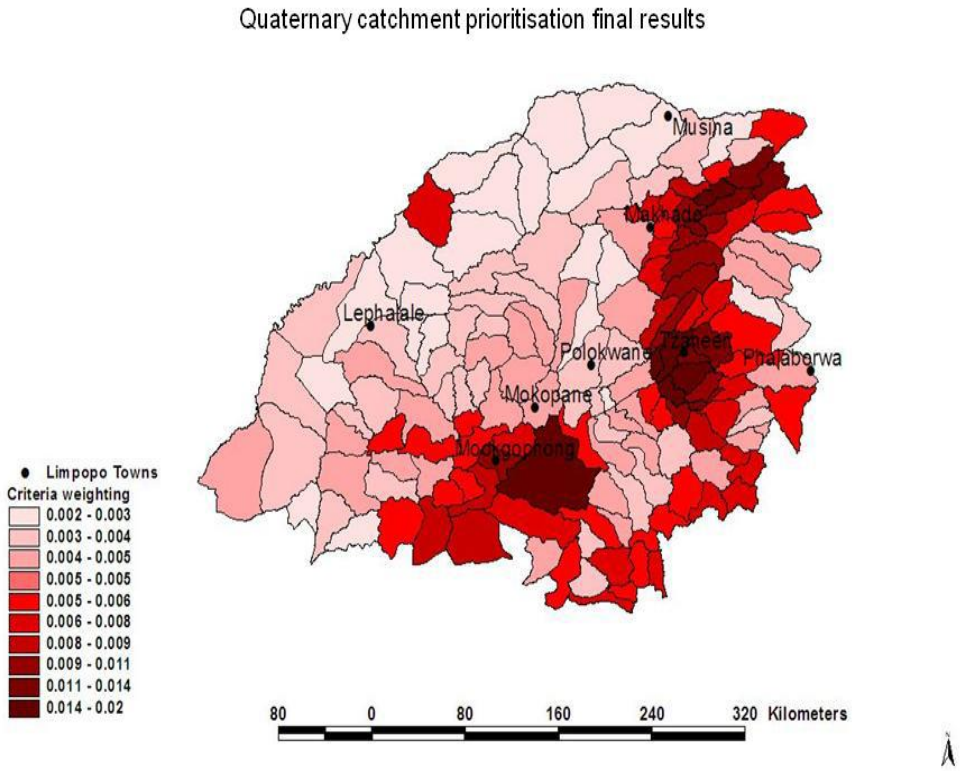

Figure: priority quaternary catchments identified according to priority classes within the Limpopo Region. Priority weightings reflect the scores for each catchment.

Appendix 5: Categories of species under IAP control programmes in the Olifants catchment.

- Category 1a: Invasive plants that require compulsory control or must be removed & destroyed immediately (prohibited)
- Category 1b: Invasive plants that require control by means of an invasive species management programme (prohibited)
- Category 2: Invader plants may be grown under controlled conditions only (permit required).
- Category 3: Invader plants may no longer be planted (prohibited).

Project name/ Operation area	Botanical name	Common name	Categories	Type/ Status **Declared weeds**= Category 1 plants ***Invaders***= Category 2 & 3 plants	Special conditions
Working for water Limpopo region					
Lower Olifants	*Jacaranda mimosifolia* *Lantana camara* *Sebania punicea* *Cereus jamacaru* *Melia azedarach* *Lopholaena corrifolia*	Jacaranda Lantana Red sesbania Queen of the night Syringa Lopholaena	3 1b 1b 1b 1b Indigenous	Invader/ weed Weed Weed Weed Weed/ invader Bush encroachment	Jacaranda- 1b category in Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and North-West. *Syringa- category 3 in urban areas, and 1b elsewhere.*
Lower Steelpoort	*Acacia dealbata* *Acacia mearnsii* *Dodonaea anguistifolia*	Silver wattle) Black wattle) Sand olive	2 2 Indigenous	Invader/ weed Invader Bush encroachment	Silver wattle- Category 1 plant in the Western Cape, Category 2 plant in the rest of SA
Lebowakgomo	*Prosopis glandulosa* *Agave sisalana* *Sebania punicea* *Tecoma stans*	Honey mesquite Sisals Red sesbania Yellow bells	2 2 1b 1b	Invader/ weed Invader Weed Weed	**Prosopis spp** - 1b in Eastern Cape, Free State, North-West and Western Cape. 3 in Northern Cape.

Zebediela	*Melia azedarach* *Lantana camara* *Lopholaena corrifolia*	Syringa Lantana Lopholaena	3 1b Indigenous	Invader Weed Bush encroachment	
Groblersdal Aquatics	*Elchhornia crassipes* *Parthenium hysterophorus* *Campuloclinium macrocephalum*	Water hyacinth Famine weed Pompom weed)	1b 1b 1b	Weed Weed Weed	
Lekgalameetse	*Lantana camara* *Solanum mauritiamum* Caesalpinia decapetala *Chromolaena odorata* *Solanum seaforthianum* *Ricinus communis* *Tithonia rotundifolia* *Tithonia diversifolia* *Arundo donax* *Acacia species* *Acacia melanoxylon* *Eucalyptus species* *Psidium guajava* *Campuloclinium macrocephalum* *Cardiospermum granditlorum* *Aristolochia elegans* *Pinus species*	Lantana Bugweed Mauritius thorn Triffid weed Potato creeper Castor oil Red sunflower Mexican sunflower Giant reed Black & Silver wattle Blackwood Saligna gum Guava Pompom weed Balloon vine Dutchman's pipe Pines	1b 1b 1b 1b 1b 2 1b 1b 1b 2 2 2 2 1b 1b 1b 2	Weed Weed Weed Weed weed Invader Weed Weed Weed Invaders Invader Invader Invader Weed Weed Weed Invader	**Eucalyptus spp**- Category 1 b within riparian areas, Protected Areas declared or within a Listed Ecosystem or an ecosystem identified for conservation in terms of a Bioregional Plan or Biodiversity Management Plans published under the NEMPAA. **Blackwood-** Exempted for an existing plantation. **Guava**- Category2 for plantations in Eastern Cape, KwaZulu-Natal, Limpopo, Mpumalanga and North-West, and category 3 elsewhere. **Pinus spp-** Category 2 for sterile specimens, for plantations and wind-rows. 1b for non-sterile specimens and elsewhere.

Wolkberg	*Solanum mauritiamum*	Bugweed	1b	Weed	
	Rubus cuneifolius	Bramble	1b	Weed	
	Acacia species	Black & Silver	2	Invaders	
	Acacia melanoxylon	wattle, Blackwood	2	Invader	
	Eucalyptus species	Saligna gum	2	Invader	
	Pinus species	Pines	2	Invader	
	Caesalpinia decapetala	Mauritius thorn	1b	Weed	
Gravellotte	*Lantana camara*	Lantana	1b	Weed	
	Solanum mauritiamum	Bugweed	1b	Weed	
	Caesalpinia decapetala	Maurius thorn	1b	Weed	
	Chromolaena odorata	Triffid weed	1b	Weed	
	Riccinus communis	Castor oil	2	Invader	
	Rubus cuneifolius	Bramble	1b	Weed	
	Tithonia diversifolia	Mexican sunflower	1b	Weed	
	Arundo donax	Giant reed	1b	Weed	
	Acacia species	Black & Silver wattle	2	Invaders	
	Sesbania punicea	Red sesbania	1b	Weed	
	Eucalyptus species	Saligna gum	2	Invader	
	Psidium guajava	Guava	2	Invader	
	Jacaranda mimosifolia	Jacaranda	3	Invader	
	Macfadyena unguis-cati	Cat's claw creeper	1b	Weed	
	Dodonaea anguistifolia	Sand olive	Indigenous	Bush encroachment	

Lekgalameetse Special Project	*Dichrostachys cinerea* *Latana camara* *Chromolaena odorata* *Senna didymobotrya* *Dodonaea anguistifolia*	Sicklebush Lantana Triffid weed Peanut butter cassia Sand olive	Indigenous 1b 1b 3 Indigenous	Bush encroachment Weed Weed Invader Bush encroachment	**Peanut butter cassia-** Category 1 b in Eastern Cape, KwaZulu-Natal, Limpopo, Mpumalanga and Western Cape, and 3 elsewhere.
Working for water Mpumalanga region					
Blyde Robbers pass	*Rubus cuneifolius* *Acacia species* *Acacia melanoxylon* *Eucalyptus species* *Solanum mauritiamum*	Bramble Black & Silver wattle Blackwood Saligna gum Bugweed	1b 2 2 2 1b	Weed Invaders Invader Invader Weed	
Olifants Witbank	*Acacia speacies* *Melia azedarach* *Campuloclinium macrocephalum* *Lantana camara* *Populus* species *Eucalyptus* species *Eichhornia crassipes* *Gleditsia triacanthos*	Silver & Black wattle Syringa Pompom weed Lantana White & Grey poplar Saligna gums Water hyacinth Honey locust	2 1b 1b 1b 2 2 1b 1b	Invaders Weed Weed Weed Invader Invader Weed Weed/ invader	*Syringa- category 3 in urban areas, and 1b elsewhere.* **Honey Locust**- Category 2 for sterile cultivars or hybrids.
Working on fire (High Altitude Teams)					
Lekgalameetse Nature Reserve	*Acacia mearnsii* *Eucalyptus grandis* *Pinus patula* *Solanum mauritianum*	Black wattle Sligna gums Patula pine Bugweed	2 2 2 1b	Invader Invader Invader Weed	

Blyde river catchment	*Rubus coneifolius* *Acacia mearnsii* *Eucalyptus grandis* *Pinus patula* *Solanum mauritianum*	Bramble Black wattle Saligna gum Patula pine Bugweed	1b 2 2 2 1b	Weed Invader Invader Invader Weed	
MTPA Biodiversity special projects					
Andover					
Blyde					
Sterkspruit					
SANParks (Kruger NP) Biodiversity Special Projects					
Nxanasheni South					
Marula North					

award

The Association for Water and Rural Development

AWARD is a non-profit organisation specialising in participatory, research-based project implementation. Their work addresses issues of sustainability, inequity and poverty by building natural-resource management competence and supporting sustainable livelihoods. One of their current projects, supported by USAID, focuses on the Olifants River and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems to sustain livelihoods and resilient economic development in the catchment.

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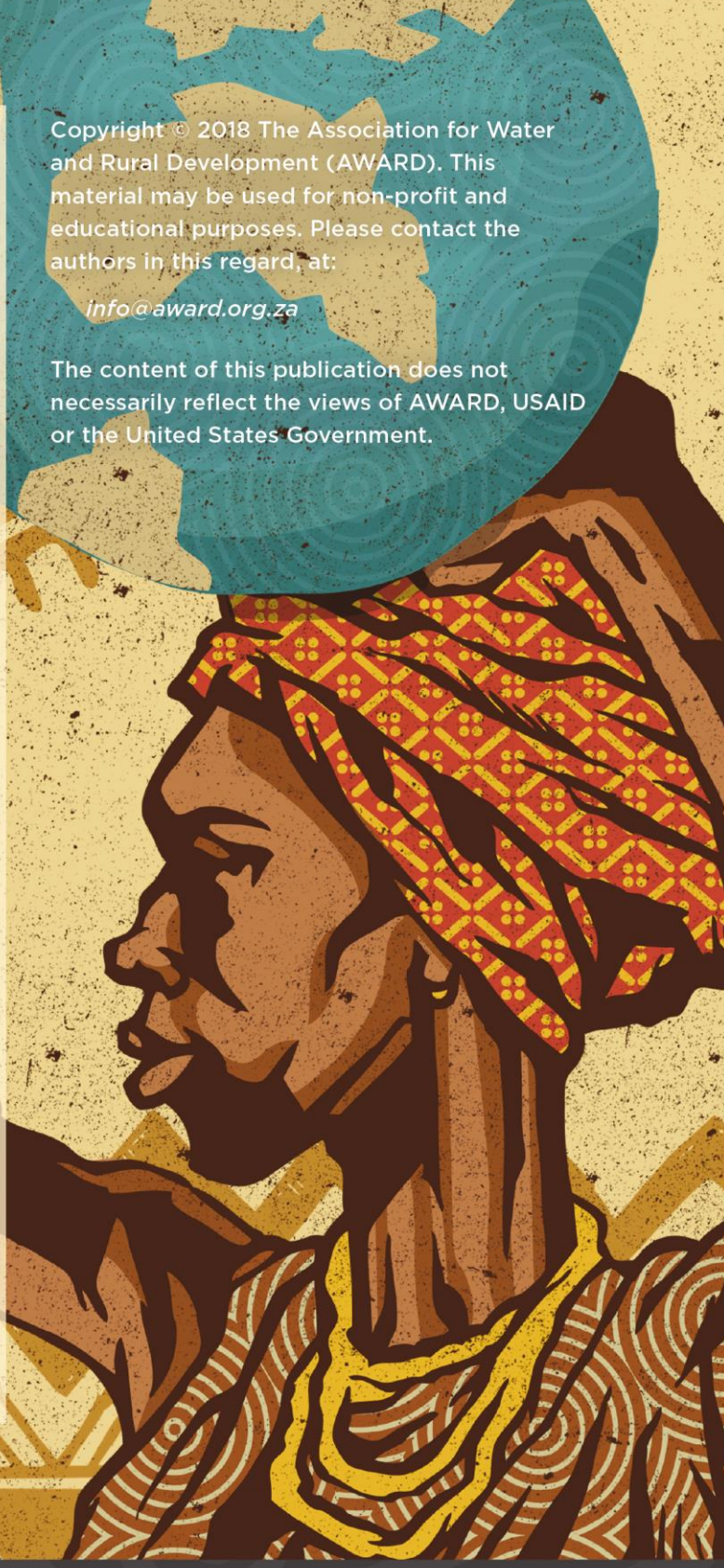
About USAID: RESILIM-O

USAID: RESILIM-O focuses on the Olifants River Basin and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems that support livelihoods and resilient economic development in the catchment. The 5-year programme, involving the South African and Mozambican portions of the Olifants catchment, is being implemented by the Association for Water and Rural Development (AWARD) and is funded by USAID Southern Africa.



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