CEPF - MPAH GRANT CLOSE OUT REPORT

WWF-SA GRANT NUMBER: 59096

Catchment Stewardship in Upper uMngeni Area: Biodiversity Stewardship and WWF's Water Balance Programme

15 November 2015

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1. Grantee Information

1.1 Organisation details

Organization Legal Name:	World Wide Fund for Nature South Africa (WWF-SA)
Project Title:	Catchment Stewardship in Upper uMngeni Area: Biodiversity Stewardship and WWF's Water Balance Program
Date of Report:	15 November 2015
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1.2 Grant information

- **CEPF Region:** Maputaland – Pondoland – Albany Hotspot
- **Strategic Direction:** 3. Corridor-level ecosystem function
- **Grant Amount:** **$**258,712.00
- **Project Dates:** May 2012 – September 2015 (with implementation starting 1st of August, 2012 on appointment of a project coordinator)

1.3 Implementation partners

On implementation of this project, WWF-SA (hereafter referred to as WWF) formalized a partnership with the KwaZulu-Natal Biodiversity Stewardship Programme (hereafter referred to as KZN BSP), housed within and championed by Ezemvelo (hereafter referred to as Ezemvelo), the provincial conservation authority for KwaZulu-Natal.

This partnership enabled WWF to receive guidance and support in the establishment and proclamation of the uMngeni Plateau Nature Reserve and one large Biodiversity Agreement (Brigadoon farm) within the project area.

In turn, this partnership, together with the other 9 NGO programme partners, assisted Ezemvelo in meeting its provincial protected area expansion targets set for 2014/2015.

1.4 Relationships developed with other stakeholders during project implementation

Table 1: Stakeholders engaged during the project period

Stakeholder	Relationship
Botanical Society of South Africa	Staff members from this organization assisted WWF with floristic biodiversity information for the various sites assessed as potential stewardship sites. Assistance included support in conducting on site biodiversity assessments and detailed grassland condition assessments for sites where grazing with cattle occurred as well as mapping assistance.
Endangered Wildlife Trust (EWT)	This NGO provided similar assistance, providing knowledge on the management of habitat for endangered species on both potential stewardship sites and sites proclaimed. This included conducting wetland condition assessments and provision of management advice for wetlands containing crane breeding sites.
Provincial Department of Water & Sanitation (DWS)	Regular engagement with the Upper uMngeni Catchment Management Forum, coordinated by DWS, provided WWF with insight into the water related issues within the catchment.
Department of Agriculture	This Dept. provides management advice and support specifically for grassland/rangeland condition assessments and the development of grazing and burning plans for stewardship sites.
UEIP – uMngeni Ecological Infrastructure Partnership	WWF is a signatory to the recently established uMngeni Ecological Infrastructure Partnership. WWF provided information for the development of the UEIP investment plan, specifically providing costing data for clearing of invasive alien plants.
Ezemvelo KZN Wildlife (EKZNW)	The partnership with the KZN Biodiversity Stewardship Programme mentioned above, has enabled the project to develop relationships with Ezemvelo's Protected Area Planning Unit, Scientific Services department and Conservation Planning division. WWF also work closely with Ezemvelo's District Conservation Officers where applicable.
Working for Water (WfW) Natural Resources Programme: Department of Environment and Agriculture Affairs	WWF entered into a Memorandum of Agreement with Working for Water (WfW) to enable access to free government-supplied suitable herbicides through their herbicide assistance programme, which were used to clear Invasive Alien Plants in the WWF Water Balance sites. This agreement also allowed WWF to make use of planning and costing tools developed by WfW, which WWF customized further, to plan for project implementation.
The Duzi-Umgeni Conservation Trust (DUCT)	The Duzi-Umgeni Conservation Trust (DUCT) provided input into the project at various points. Off the back of the uMngeni River walk which DUCT conducted, WWF-SA organized 2 x Mini-SASS training days. DUCT trained staff from the KZN Department of Environment & Agriculture and other biodiversity stewardship facilitators how to conduct river health assessments using the Mini-SASS citizen science tool

2. Conservation Impacts

2.1 Contributions to implementation of the CEPF Ecosystem Profile 2010

The Maputaland-Pondoland-Albany Hotspot Ecosystem Profile highlights several Key Biodiversity Areas (KBA's). This project falls directly within the Mistbelt Grasslands KBA (18). A summary of this KBA has been extracted from the Ecosystem Profile in the following tables, indicating the biodiversity values and protection status for this KBA (section 2.1.1).

2.1.1 Relevance to Ecosystem Profile KBA's

Table 2: Red listed Species and Habitat within KBA 18

Extent (hectares)	IUCN Red List Species (Number)			Threatened Habitat in Key Biodiversity Area (Ha)		
Total area	Critically Endangered	Endangered	Vulnerable	Critically Endangered	Endangered	Vulnerable
80 165	1	4	13	6 375	5 727	55 965

Table 3: Protected areas, representation of protected habitat and ecosystem service value within KBA 18.

Protected Areas (No.)			Protection Levels of Habitats (Hectares)					Ecosystem services
Formal	Informal	Area (%) proclaimed	Completely unprotected	Very poorly protected	Poorly protected	Partially protected	Habitat with targets met	(v. high / high / med / low)
497	0	0.6	2 726	52 312	6 035	19 092	0	Very high

2.1.2 Actual Contributions made

In comparison, the project contributions to securing important biodiversity highlighted in the ecosystem profile appear in table 4 and section 2.1.3 below. Table 4 summarizes the contributions made through securing stewardship sites and section 2.1.3 reports on gains made in implementation of the WWF Water Balance Programme.

Table 4: Area, species and habitat protected or better managed through this grant

Area secured (hectares)	IUCN Red List Species better protected			Threatened Habitat in Key Biodiversity Area better managed		
Total area 80 165	Critically Endangered 1	Endangered 4	Vulnerable 13	Critically Endangered 6 375	Endangered 5 727	Vulnerable 55 965
2424 or 3.02%	3	5	8	0	4.36%	2.59%

The ecosystem profile does not reflect IUCN species with Near Threatened (NT) and Declining status. Site assessments revealed the presence of 2 Near Threatened plant species within the Umgeni Plateau Nature Reserve and 1 plant species categorized as Declining.

Oribi Antelope - Endangered

Wattled Crane – Critically Endangered

***Disa Scullyii* - Endangered**

2.1.3 Ecosystem function contributions

144 condensed hectares* of woody Invasive Alien Plants (IAP's) were cleared during the project period on privately owned land with high biodiversity value through implementation of the WWF Water Balance Programme. According to accepted scientific modelling, a condensed hectare of woody Invasive Alien Plants are able to use an average of 2076 kiloliters of water. This can be translated to a gain of approximately 300 000 kiloliters (kl) of water released back into the upper catchment. This is approximately equivalent to 120 Olympic size swimming pools (assuming a 2.5 million liter capacity Olympic pool)!

Condensed hectare = 1 hectare at 100% density of Invasive Alien Plants

This is a significant achievement considering the national hydrological importance and economic value of the uMngeni River. This river supplies water to 45% of the KwaZulu-Natal population, including the important economic, urban centres of Pietermaritzburg and Durban. The upper reaches are particularly significant for ecosystem service delivery and biodiversity conservation. These areas host threatened grassland, wetland and forest ecosystems, which provide habitat for a number of threatened species such as cranes, oribi and red data listed amphibians, invertebrates and plants. Through entering into legal agreements with WWF, the landowners involved have committed to keeping areas cleared free of IAP re-infestation and to allow natural vegetation to re-establish in these areas.

One of the primary threats in the catchment is the extensive footprint of invasive alien plants, particularly the woody species along the watercourses such as black wattle, gum and pine. These non-native plants, mostly introduced from other continents, use large quantities of water (thereby affecting water flows and hydrology), increase the impact of fire and flood events should they occur, reduce habitat for indigenous species, and negatively impact on biodiversity.

Invasive Plants invading and degrading natural riparian habitat

Clearing work in progress at Ivanhoe

Application of herbicide using the correct personal protective equipment (PPE)

The establishment of the Umgeni Plateau Nature Reserve has effectively doubled the Protected Area footprint as it is roughly the same size as the adjoining state-owned Umgeni Vlei Nature Reserve, managed by Ezemvelo.

While the uMngeni Plateau Nature Reserve (UPNR) has been proclaimed independently of the uMgeni Vlei Nature Reserve, it is envisaged that the UPNR will be managed as an extension of the uMgeni Vlei Nature Reserve as contemplated in the uMgeni Vlei Nature Reserve and Greater uMgeni Vlei Expansion Area – Protected Area Management Plan (Ezemvelo,2012).

The Umgeni Plateau Nature Reserve has similar biodiversity values to uMgeni Vlei Nature Reserve with similar management objectives having being identified for both properties. Management of both properties under a common management plan aims to improve the management and protection of threatened niche habitats and species present as well as reducing the risk of fragmented management of key ecosystems such as the grassland continuum and embedded wetlands that extend across property boundaries.

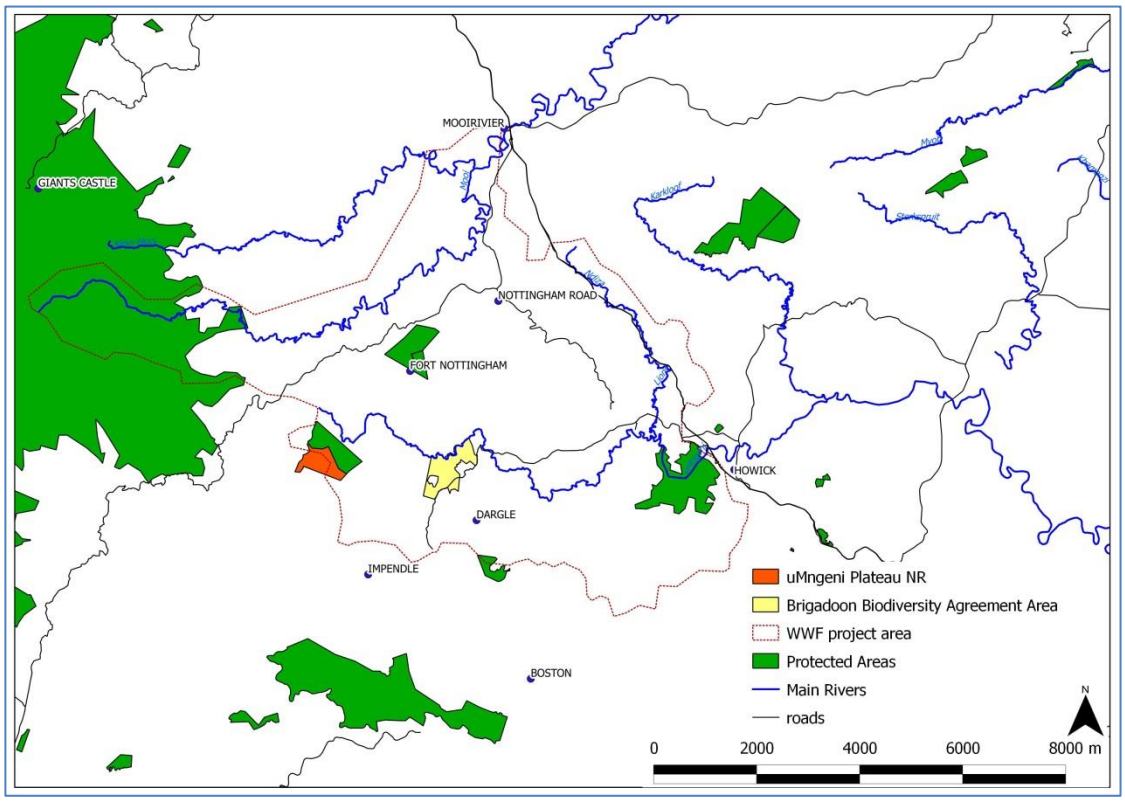


Figure 1: Location of the Umgeni Plateau Nature Reserve (indicated in orange) adjoining the Umgeni Vlei Nature Reserve.

2.2 Planned long term impacts + 3 years and actual progress made

2.2.1 *Sustainable land use management enabled through biodiversity stewardship agreements, with landowners responsible for maintenance of cleared areas, and ensuring land use management practices that prevent / minimise the risk of further invasion.*

Protected area management plans have been developed for The Umgeni Plateau Nature Reserve located on Ivanhoe farm and the Biodiversity Agreement established on Brigadoon farm. These plans have been developed with consideration of the dominant land use, namely grazing with cattle on indigenous grassland and wetland areas. The implementation of these management plans is enabled through a separate landowner agreement with Ezemvelo (referred to as a Protected Area Management Agreement) which appoints the landowners as the designed management authority for the property but allows for landowners to periodically draw on the advice and expertise of KZN Wildlife staff regarding management programs. This is usually done through formal Advisory Forum meetings at specific times of the year, depending on management needs. These agreements are in place for a period of 5 years with the option or renewal in 5 year periods.

More detailed grazing and burning plans have been put together for these properties aimed at maintaining or improving local biodiversity features and with the objective of sustaining beef production for the farmer referred to as Rangeland Condition Assessments. These plans are based

on the best scientific knowledge made available by the KwaZulu-Natal Department of Agriculture, the South African Botanical Society and the Botanical Society of South Africa.

The protected area management plans have been designed to enable incorporation of adjacent properties that originally qualified for one of the biodiversity stewardship options, if the landowners wish to participate at a later stage.

In addition, WWF has ensured that it entered into legal agreements with the landowners participating in the WWF Water Balance Programme. These agreements ensure that landowners and successors in title are obligated to continue maintaining areas cleared of IAP's and where applicable to undertake rehabilitation of sites susceptible to further degradation post clearing.

2.2.2 *Key corporate partners operationally water balance for key contract periods*

The WWF Water Balance Programme is about balancing one's water use through positive investments into high water provisioning catchments. The programme incorporates demand-side management of the country's water supply through encouraging business and industry in South Africa to voluntarily monitor and reduce (through improved processing efficiencies) their operational water consumption. Simultaneously, programme participants contribute towards water supply-side management through these positive investments. Currently this is achieved by facilitating the clearing of invasive alien vegetation, thus rehabilitating critical catchment areas. Through this innovative approach, the WWF Water Balance Programme achieves the holistic view of water supply management greatly needed in our country.

WWF has 5 priority Water Balance investment nodes across South Africa, namely the uMngeni, Ekangala Grasslands (Mpumalanga Province), the Garden Route and Berg & Breede River catchments in the Western Cape.

Nedbank funds the investments in the uMngeni and Ekangala nodes and joined the Water Balance Programme as a participant in August 2011. This investment balances Nedbank's operational water use of 553 000kl worth R9million over five years (2011 – 2016). Nearly 40% of this investment in placed in the uMngeni node.

2.2.3 *Collective action by multiple stakeholders ensures very low levels of IAPs, and optimum water flows from the Upper uMngeni River catchment.*

From project inception WWF strived to engage relevant stakeholders to address this issue in the uMngeni Catchment. Several meetings (at least 4) and field visits were held with the coordinators of the local Working for Water teams to try ensure a better coordinated clearing approach on identified potential Water Balance sites and sites prioritized for clearing by Working for Water. Despite this, an unexpected challenge was encountered when one of the Working for Water teams, started clearing on the same property (namely Zuvuya) where WWF was about to commence clearing even though they were issued with maps and locations of the WWF water balance sites.

Progress on clearing was reported consistently to the Department of Environmental Affairs' Working for Water and at the local Upper uMngeni Catchment Management Forum meetings.

WWF is a signatory to the uMngeni Ecological Infrastructure Partnership (UEIP), a collaborative of 36 partners representing government, NGO's and private business in the catchment that have convened to address the water related issues (supply and quality) currently faced. WWF has a strong presence in the collaborative and has recently contributed information for the development of an 'Ecological Infrastructure Investment Plan' for the catchment to address water risk. WWF has supplied data generated through Water Balance clearing activities in the catchment contributing to the development of a prioritization plan for where investment in ecological infrastructure should be directed in the catchment. Removal of IAPs is one of four priority investment areas due to potential water gains in the catchment.

2.2.4 *Corridors created for climate adaptation by biodiversity features*

Ezemvelo's strategic conservation planning tool called "C-Plan" has mapped out macro-ecological conservation corridors (18 for the province) based on modelled data. Ezemvelo is striving to secure some level of protection within these corridors with the intention to secure habitat for species movement due to or during climate change events. While there are several formal protected areas located within these corridors, it is still largely a theoretical concept. The modelling is done using a set of 'driving features' that are likely to occur in a particular habitat based on point source data gathered to date.

The Tugela Corridor passes through the north western corner of the boundaries of the Upper uMngeni planning domain which WWF identified as the area it would focus on for this project (refer to Figure 9 in the Upper uMngeni Catchment overview report which WWF produced for deliverable 1). However the Umgeni Plateau Nature Reserve and the Brigadoon Biodiversity Agreement do not fall within this Tugela Corridor and therefore do not contribute to securing any of these macro-ecological corridors. These 2 sites do however act as 'stepping stones' and local micro corridors for several IUCN Red List bird and mammal species such as Wattled Crane and Grey Rhebuck moving to and from nearby Protected Areas or preferred habitat across altitudinal gradients.

2.2.5 *Catchments intact, restored resilience ito predicted impacts of climate change on rainfall patterns.*

The implementation of the WWF Water Balance Programme is largely focused in the upper reaches of important water source areas with clearing mostly happening along riparian areas. The clearing of IAPs contributes to the re-establishment of natural riparian vegetation, best suited to buffer the effects of flooding and erosion of stream banks. Clearing encourages the return of natural aquatic invertebrates and other organisms, due to more light entering the system, increasing water temperatures and lowering the acidity levels, which assists with assimilation of abnormal nutrient loads entering the system from farming activities. Restoring the upper reaches of important water sources through Water Balance clearing allows for additional cleaner water to enter the system for use downstream and assists with buffering the effects of extreme weather events lower down in the catchment.

This grant contributed significantly to the restoration of the upper reaches of the main stem of the uMngeni River and several important tributaries to the uMngeni, in particular the UMngeni Poort tributary located on Ivanhoe farm and the Old Furth tributary which flows through Old Furth farm and Brigadoon. In total approximately 19 kilometers of riparian vegetation along the main stem of the uMngeni River and main tributaries have been cleared of woody, water-thirsty IAP's during this project.

2.2.6 *Contribute to Learnings for Water PES initiatives going forward*

The WWF Water Balance model is regarded as a type of payment for ecosystem services (PES) because landowners are being given a direct financial assistance to remove IAPS's and improve habitat condition and the ability of their natural areas to deliver ecosystem services, namely water provisioning. The Water Balance PES/assistance was also offered as a form of recognition and reward for their conservation commitment of entering into a biodiversity stewardship agreement. As mentioned in 2.2.3, data generated through the implementation of the WWF Water Balance clearing related to clearing costings and person days required was incorporated into a recently developed investment plan (funded by the DBSA Green Fund) for ecological infrastructure in the greater uMngeni River catchment. The outputs of this project will help those who have an interest in the way the catchment is managed (in this case the UMngeni Ecological Infrastructure Partnership signatories) to better understand where and how to invest in rehabilitating and/or securing the key ecosystems that provide water-related benefits to people in the catchment.

The project has developed and applied new techniques for mapping and modelling water-related ecosystem services in the uMngeni River catchment, in order to identify priority areas of water-related ecological infrastructure for inclusion in the investment plan. The clearing of IAP's to increase stream flow is one of four priority interventions identified for the plan. WWF was able to provide accurate costs for clearing activities which are detailed in several Annual Plan of Operations (APO's) developed for each property that was cleared through the Water Balance programme.

The APO tool, originally developed by the Working for Water Program has been adapted and simplified by WWF and undergone several iterations during implementation of WWF Water Balance Projects across the country. These refinements, which were informed by experiences of using the APO tool in the uMngeni water balance clearing work, will enable future water PES related programmes to be implemented more efficiently that use IAP clearing on private land as the mechanism for offering PES.

The WWF Water Balance Program uses two different models for clearing. The first, most commonly used model makes use of an Implementing Agent, appointed by WWF to undertake clearing work. The second model allows for landowners to undertake clearing work using their own staff capacity without the use of an independent contractor. This model is a cheaper investment but has been found to be generally unsuitable for a number of reasons. In many cases the landowner is unable to keep to set clearing schedules as the landowner often needs to focus on other business operations important that generate an income for living. The shift in focus often requires staff implementing clearing activities are either left unsupervised or are required to work elsewhere, compromising effective and efficient clearing.

2.3 Planned Short-term Impacts - 1 to 3 years and actual progress made

2.3.1 *Approximately 104 Hectares of IAPs cleared in priority water supply catchments.*

WWF has secured 145.85 condensed hectares (221.6 hectares on the ground) for Water Balance clearing during the grant period on 6 privately owned properties. Table 5 below provides the details per property where clearing is underway, the contractors undertaking the clearing, total financial investment co-funded by the Water Balance corporate funder (Nedbank) and expected completion dates. It should be noted that Nedbank's funding agreement extends until April 2016. Clearing activities will therefore continue until then even though the CEPF grant period has ended, in order to complete the required follow-up treatments.

WATER BALANCE SITE DETAILS - UPPER UMGENI NODE						
SITE	HA Cond.	LANDOWNER	CONTRACTOR	ZA Contract done	LO Agreement done	VALUE (excl VAT)
Old Furth	9.5	Evert/ VB investment trust	Self	ZA 2391	YES	R 72 715.00
Old Furth	11	Evert/ VB investment trust	Jabulani and Partners	ZA 2269 E	Yes	R 101 026.00
Brigadoon	48.22	Russell Watson	Branecca CC	ZA2269B	YES	R 774 540.00
Wakecroft	10.76	Dieter/Josie Rowesetz	Branecca CC		YES	
Ivanhoe - Umgeni poort	20.35	Ivanhoe Farming	R&M Consultants	ZA2269A	YES	R 261 536.00
Ivanhoe - UPNR	17.32	Ivanhoe Farming	R&M Consultants			R 234 581.00
Zuvuya	20.85	Jill Hamilton	Branecca CC	ZA 2269C	YES	R 239 000.00
Boston View	7.85	Rob Geldart	Jabulani and Partners	ZA2269D	YES	R 101 540.00
6 Sites	**145.85**	**6 landowners**	**3 Implementing Agents**	**6 ZA contracts**	**6 LO Agreements**	**R 1 784 938.00**

Clearing Start/ end dates + Treatments						
SITE	Start	End	FU 1	FU 2	FU 3	FU 4
Old Furth	June 2014	30 April 2016	Yes	Yes		
Brigadoon	November 2014	30 April 2016	Yes	Yes	Yes	
Wakecroft	February 2015		Yes	Yes	Yes	
Ivanhoe - Umgeni poort	October 2013	June 2015	Yes	Yes	Yes	Yes
Ivanhoe - UPNR	March 2015	30 April 2016	Yes	Yes		
Zuvuya	FEB/MAR 2015	January 2016	Yes	Yes		
Boston View	March 2015	30 March 2016	Yes	Yes		

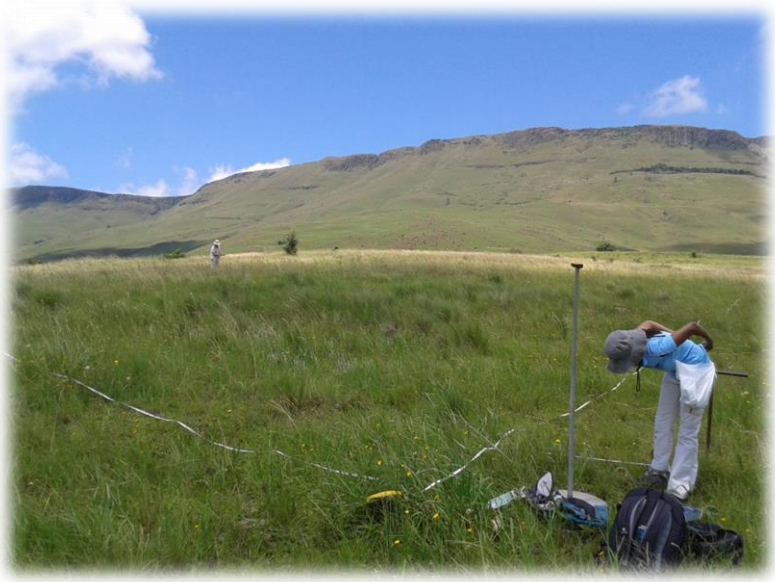
* FU = Follow Up treatments. Each site is to receive a minimum of 2 follow up treatments as per project proposal)
* LO agreement: this is an additional agreement between the Landowner and WWF, an important aspect of which is to secure post maintenance and rehabilitation (where applicable) of areas cleared through the Water Balance Programme
* ZA contracts: refer to contracts developed to appoint Implementing Agents to undertake Water Balance clearing.

2.3.2 *Landowners empowered through investment in "catalytic" IAP clearing*

It is WWF's view that the landowners (Ivanhoe and Brigadoon) were incentivized to participate in the KZN Biodiversity Stewardship Programme on seeing the benefits of receiving Water Balance clearing.

It is the KZN BSP's overall objective to assist landowners to better protect and manage important biodiversity on their properties and to empower these landowners in the use of management tools developed for improved management. A good example of one tool is the development of rangeland condition (grassland) management plans for properties where commercial grazing of natural grassland takes place. Site specific plans were developed for Brigadoon farm and the Umgeni Plateau Nature Reserve with the aim of maintaining threatened vegetation types and species richness while supporting the use of these resources for beef production. These plans were developed as a collaborative with Ezemvelo, the Department of Agriculture, the Botanical Society of South Africa and the Endangered Wildlife Trust.

The sound management of these species rich grasslands enables landowners to farm these areas in a sustainable manner allowing for important ecological processes to continue and to maintain production simultaneously.



Assessing rangeland condition on Zuvuya with staff from Ezemvelo and the Botanical Society of SA – January 2015.

2.3.4 *Supporting securing of BD stewardship agreements with 2-4 landowners, covering approximately 1,000-2,000ha*

Two Biodiversity Stewardship Agreements were secured on two separate properties during the project period as follows:

Property & Landowner	Stewardship category	Agreement period	Property size
Ivanhoe Farming (John Campbell)	Nature Reserve	In perpetuity (99 years)	824 hectares
Brigadoon Farm (Russel Watson)	Biodiversity Agreement	5 years	1600 hectares
			2424 hectares

The stewardship agreements for Ivanhoe Farm were signed by the landowner and submitted to the Ezemvelo Board for approval in September 2013. Almost 2 years later, the declaration agreement was finally signed by the KZN MEC and formally proclaimed on 9 October 2015, as per Government Gazette No. 1522, Vol 9. The name of the Nature Reserve is uMngeni Plateau Nature Reserve, and directly adjoins the state-owned Umgeni Vlei Reserve, regarded by many as the source of the uMngeni River.

WWF assessed several other properties (a total of 27 privately owned properties) for Water Balance and Biodiversity Stewardship potential during the project period. The map below highlights the properties identified and landowners engaged. The sites containing the yellow stars are the sites WWF has worked with closely during the project period, two of which are the Biodiversity Stewardship Agreements listed above. Much time was also invested into 3 other properties, all in close proximity to the source of the uMngeni River and the Ezemvelo-owned Umgeni Vlei Nature Reserve, namely Lake Lyndhurst, Wakefield and Sheardown. Site Assessments were conducted and biodiversity stewardship option suitability determined. Rangeland condition assessments were also conducted on these 3 properties, which is a time-consuming process and provides expertise which landowners can normally not access easily (i.e. the Department of Agriculture has a long waiting list of sites wanting these assessments but prioritized stewardship sites above others). IAP density field mapping was conducted on these properties and Water Balance + stewardship agreements and were drafted and negotiated through a number of landowner meetings.

In the case of Lake Lyndhurst the process was so advanced that all that was pending was a final signature from the Lot Owners Association to proceed with initiating the Water Balance clearing and a signature needed on the Biodiversity Stewardship Nature Reserve declaration agreement, so that the declaration process could be affected. Furthermore, WWF spent funds training the Lake Lyndhurst staff in safe herbicide application methods, in anticipation of the soon to be begin clearing. However, at this point the Lot Owners Association, influenced by a very skeptical retired judge and fellow lot owner, decided to not to proceed and withdrew from the process completely. These were unfortunately disappointing cases but do reflect the reality on the ground, that it is not always an easy sell getting landowners to enter into legal agreements and in explains in part, why only 2 biodiversity stewardship agreements were concluded during the project timeframe.

Biodiversity stewardship agreements have also been discussed with the landowners of the other properties where Water Balance clearing took place, namely Old Furth and Zuvuya. Both landowners were initially open to considering it, but later expressed some reservations and the delays &

complications in the Water Balance clearing on both properties unfortunately compromised the likelihood that these landowners will pursue a stewardship agreement.

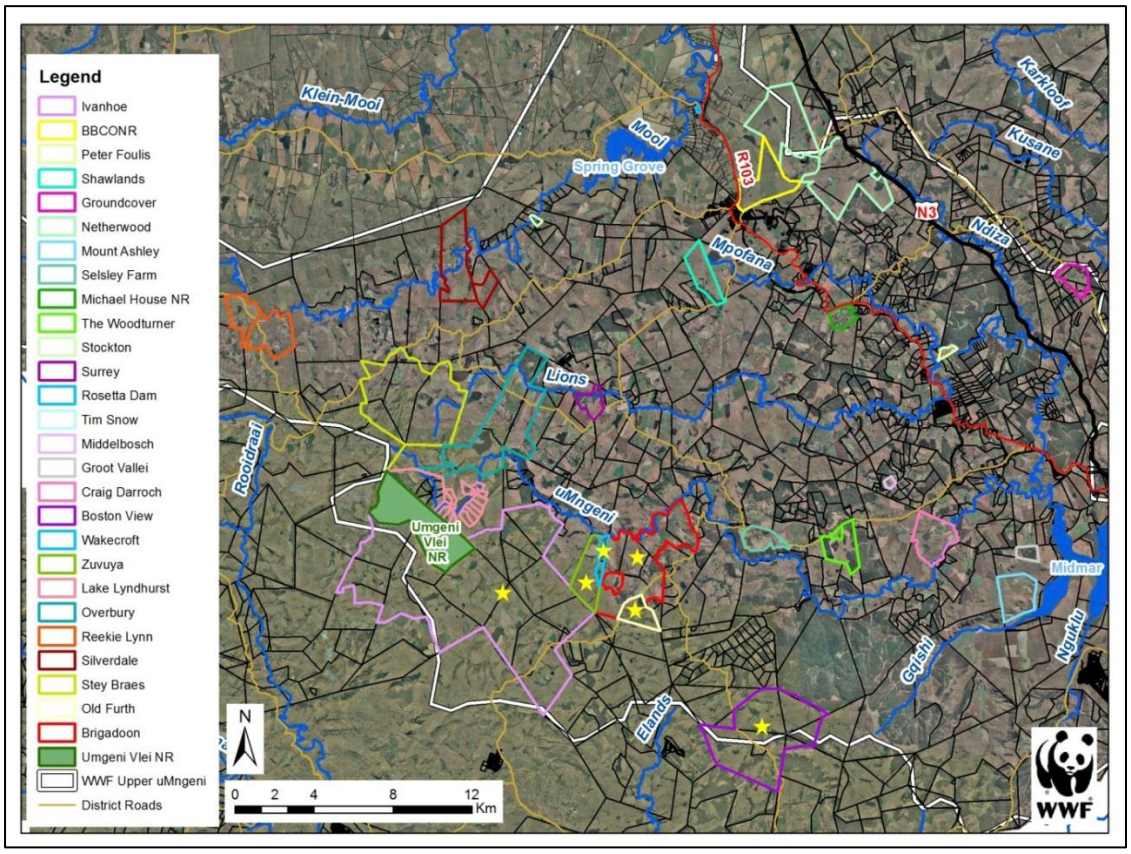


Figure 2: Properties identified for Biodiversity Stewardship and Water Balance potential.

2.4 Successes and Challenges of long term and short term impacts

2.4.1 Project Successes:

- Project targets were achieved and exceeded for the WWF Water Balance implementation. An additional 40 condensed hectares were cleared during the project timeframe.
- Water Balance clearing was implemented on 6 properties in a nationally significant river catchment and important water source area, contributing to approximately 300 000 kiloliters of water retained in the catchment. This is equivalent to the average daily water use of 1200 households or the water held in 120 Olympic sized swimming pools.
- The Biodiversity Stewardship target of 1000-2000ha was achieved and succeeded with 2424 hectares secured through formal stewardship agreements.
- Two protected area management plans and three site specific rangeland/rangeland management plans developed for participating landowners.
- 3 contractors were appointed to undertake Water Balance clearing, creating employment for 68 previously disadvantaged people.
- 2 landowners entered into Biodiversity Stewardship Agreements with the potential of an additional two participating in the near future (namely Zuvuya and Old Furth).
- The successful proclamation of the uMngeni Plateau Nature Reserve effectively doubles the footprint of the adjoining Umgeni Vlei protected area and therefore significantly increases

the size of the area under protection in a species-rich landscape directly around the headwaters of the famous uMngeni River containing good condition, high value wetlands and grasslands. This proclamation has also provided long-term security for the hydrologically important source and headwaters of the mighty uMngeni River which provides some 4 million people with water and underpins the economy of the 2 largest cities in KZN and their surrounds, namely eThekwini (Durban) and Pietermaritzburg. The uMngeni Plateau NR declaration also adds value to South Africa's most recently declared RAMSAR site (namely Umgeni Vlei NR), extending the protected habitat for the Critically Endangered Wattled Crane and other important wetland or water dependent bird species.

2.4.2 Challenges:

- Sourcing of competent and experienced contractors to manage WWF Water Balance contracts was more of a challenge than expected. Suitable contractors had to have prior experience in clearing at scale and have the ability provide accurate quotes and clearing time frames and reliable monthly reporting. In addition they needed to have the capacity to appoint teams to carry out clearing activities and have the right equipment for clearing and transportation.
- It took considerable time to find the 'perfect match' in terms of identifying sites that qualified for both Biodiversity Stewardship status and Water Balance potential. Selection of suitable sites also depended on landowner willingness to enter into both Water Balance and Biodiversity Stewardship Agreements. Water Balance criteria included: area requiring clearing had to be largely riparian and located on a property was high conservation value, IAP species had to be largely woody species such as wattle, gum and pine that use large volumes of water, not only herbaceous species such as bugweed and bramble.
- WWF's internal contract development & legal processes are lengthy given the strict good project governance measures in place and legal capacity within WWF is limited. In some cases this delayed planned contract implementation for Water Balance clearing by three to 6 months. Further delays occurred where contract amendments had to be made to allow for additional budget for clearing or where additional hectares needed to be added to contracts.
- It was difficult to source expertise that was able to accurately map and calculate IAP densities on the properties selected for Water Balance clearing. WWF could only find one suitable service provider for this work (namely CT Enviro Consultants).
- Significant delays in the pace of clearing activities were experienced at Old Furth farm, where the landowner opted to the do the clearing himself with his own labour instead of opting for a contractor with a large clearing team to do the work for him. These delays have led to the clearing targets for that property not being achieved.
- Another major challenge was experienced with the contractor appointed to clear Brigadoon, Wakecroft and Zuvuya, namely Branneca CC. This contactor was appointed on the understanding that WWF made a contract 'offer' (based on APO calculations) rather than accepting a quote from the contactor. This was because the contactor did not have the experience in accurately quoting for clearing at scale. This led to 'unforeseen' costs arising (as these were not identified in the APO) and the need to make amendments to contacts awarded. This led to significant delays in implementation of clearing activities.

3. Project Component reporting

3.1 Component 1: *Better understanding of the Upper uMngeni Context.*

A comprehensive 57 page report providing a thorough overview of the natural capital and catchment stewardship opportunities in the Upper uMngeni was developed for this project and was completed in January 2013. Drawing on data sources from Ezemvelo KZN Wildlife, fellow NGO's and private consultants, the report provided a more detailed assessment of the catchment and surrounding landscape than originally intended with this deliverable. This report describes the value of the Upper uMngeni Catchment from a hydrological, economic and ecological perspective, and interrogates the conservation importance of the areas through assessing available conservation planning products. The report highlighted key areas suitable for stewardship and mapped other conservation initiatives present in the landscape. This scoping exercise was important in enabling the project coordinator to better plan for site selection and landowner engagement for both Water Balance and Biodiversity Stewardship and was a valuable exercise in deepening WWF's understanding of the priorities and challenges in the catchment as well as what other work has been done or is currently underway by other stakeholders and organisations so that synergies can be found.

3.2 Component 2: *Key areas in preferred sub-catchments selected for IAP clearing, with mapping and metrics confirmed.*

Key areas for potential Water Balance clearing were identified and listed in the technical report mentioned above. Figure 2 and table 5 highlights the properties finally selected for Water Balance clearing, namely; Zuvuya, Brigadoon, Old Furth, Ivanhoe, Old Furth and Boston View farm.

The metrics used to determine the costings of Water Balance implementation includes the WWF Water Balance Annual Plan of operation tool, originally developed by Working for Water. This tool reliably calculates and measures full costs of clearing teams, person days required and progress made against a customized clearing schedule.

Herbicide quantities are calculated using a WWF 'in house' Herbicide Calculator. The use of herbicides is measured throughout the project based on reports supplied by the contractor which summarize monthly records of herbicide use. These reports are sent to Working for Water for record keeping and auditing against the approved herbicide assistance request forms developed for each clearing site.

3.3 Component 3: *Prioritized parts of selected sub-catchments cleared (including use of herbicides according to relevant legal and best practice guidelines).*

Table 6 below provides a summary of Water Balance work completed to date.

Site	Ivanhoe (Poort area)	Ivanhoe (UPNR)	Brigadoon & Wakecroft	Old Furth	Zuvuya	Boston View	Total (%) complete
Target (Has)	*20.35*	*17.32*	*58.9*	*20.5*	*20.85*	*7.85*	
Initial	20.35	17.32	55	12.5	17	7.85	90%
FU 1	20.35	17.32				7.85	31.5%
FU 2	20.35						15%

The required follow up treatments have been delayed (hence lower treatment completion percentages) due to delays caused by having to amend contracts to allow for larger clearing budgets than originally planned. This is a result of inaccuracies with mapped IAP densities and in field verification. This is discussed in section 4.1 below.

Amendments to contracts included adjusting time frames to allow for the completion of the required follow up treatments. All contracts are planned for completion as per the dates reflected in table 5 above.

Information regarding the use of herbicides and the protocols followed for this is provided in section 7 of this report.

3.4 Component 4: *Biodiversity stewardship agreements secured with selected landowners for selected farms. Legal input obtained to engage Dept. of Land Affairs (Deeds registry) for the title deed endorsement process related to biodiversity stewardship agreements*

Biodiversity Stewardship agreements have been secured for the two properties as described in section 2.3.4 above. The Notarial Agreement securing the Umgeni Plateau Nature Reserve on Ivanhoe farm was signed by the landowner on the 9th of September 2013 and concluded (signed off by the designated MEC and proclaimed in via a Government Gazette Notice on the 9th of October 2015.

The Biodiversity Agreement on Brigadoon farm was signed by the landowner on the 28th of September 2015. This Agreement has been forwarded to the acting manager of the KZN Biodiversity Stewardship Programme for signing by the Ezemvelo Board Chairman.

WWF originally appointed a legal practitioner, Louis Smith of Marais Muller Yekiso Inc. to address deliverable 4.3 of the project proposal. Mr. Smith was requested to engage with the KZN Provincial Deeds Department to investigate how to streamline the process of endorsing property title deeds

against biodiversity stewardship restrictions for Nature Reserves. Louis Smith has been used extensively in the Western Cape to provide legal expertise to Cape Nature for the Biodiversity Stewardship Programme.

Due to lack of delivery by Mr. Smith, WWF cancelled instructions with this firm and made a second appointment, Mr. John Christie a Notary from J Leslie Smith & Co. Prior to this appointment, WWF approached the KZN Biodiversity Stewardship Manager to discuss the possibility of reviewing the original Terms of Reference to check relevance of this work and to add value to this appointment. The revised Terms of Reference included the following work:

- Engagement with the KZN Registrar of Deeds or relevant staff of this office to determine a clear process to be followed for successful endorsement of title deeds, using the Blue Crane Nature Reserve as a real example and to document this process for sharing with other stakeholders.
- Assessment of the notarial deed template (Section 23[3] of the National Environmental Management: Protected Areas Act) to check for its legal status in terms of the formatting used, the suitability of content and the requirements for proper furnishing and submission of such documents for processing.
- Investigate the possibility and feasibility of creating a single notarial deed agreement with one Power of Attorney for multiple landowner sites (e.g. Zululand Rhino Reserve).
- Investigate the practicality (cost and time saving measures as well as legality) of a single notarial deed agreement when processed through the MEC's office and;
- Investigate the practicality of this when carrying out the registration against property title deeds.

Most of the above tasks have been delivered to WWF and have been captured in a report detailing the findings. Mr. Christie has committed to continuing 'walking' the Blue Crane Nature Reserve documentation through the title deed endorsement process. When complete, Mr. Christie will provide WWF and Ezemvelo with the findings.

3.5 Component 5: *Sound and well-developed South African protocols and requirements for Invasive Alien Plant clearing implemented, thus more than achieving the requirements for the Herbicide Management Plan* (note: the requirements for the Herbicide Management Plan are met through the activities and products for Component 3).

A Herbicide Management Plan was developed as required by the World Banks Pest Management Safeguard policy in September 2013 and was implemented on the first Water Balance clearing site (Ivanhoe farm). Annual monitoring reports were submitted annually to CEPF providing details on herbicide usage in December 2013 and December 2014 with no recorded incidents related to environmental health and human safety during the project period.

4. Lessons learned

4.1 Lessons learned – project design

- It was useful to spend the time and resources compiling the Upper uMngeni Catchment overview report (as described in 3.1) and conducting a proper scoping exercise exploring opportunities for project implementation. This deepened the Project Co-ordinator's understanding of the conservation values and contextual information in the catchment and allowed for more informed decision making regarding site selection.

- The tools that WWF uses to calculate expected costs and clearing rates (referred to as the APO/Annual Plan of Operation) are relatively reliable and an improvement of tools developed by the Government's Working For Water Programme. However there have been a few contracts where clearing costs incurred have differed from the anticipated costs calculated by the APO, leading to increased costs and slower clearing rates. These instances have been recorded and fed back to the developers of these tools which will assist during future revision of the APO tool.

- The accuracy in mapping the correct densities of IAP's to be cleared is very important as the data is inserted into the APO determining the clearing rate and costs mentioned above. Some inaccuracies were picked up on the work mapped by a consultant (who had the best expertise known to WWF at the time) which led to budget shortfalls, seeing as the invasion densities determine the APO costing outputs. This ultimately led to amendments being required for the contracts awarded for clearing on Brigadoon & Wakecroft, Zuvuya, and Old Furth. This explains the delays in achieving completed follow up treatments listed in table 6 (section 3.3) above and the contract amendment process was a time-consuming one and created set-backs of up to 3 months.

4.2 Lessons learned – project implementation

There are many more lessons learnt related to project implementation than mentioned below but these are some of the most important ones, specific to the nature of this project:

- The WWF Water Balance model which allows for the landowner to carry out clearing activities has proven to be less successful than the model of appointing an independent implementing agent to carry out clearing. Lower success rates can be attributed to landowners having to focus on other management activities on the property with Water Balance clearing being less of a priority from time to time compared to the daily pressing priorities of stock and crop production and labour management. Similar cases have been reported on in other Water Balance nodes across the country. Landowners can also seldom spare a large team of labour to work exclusively on clearing activities, and so generally only allocate a few individuals when they can spare them, which reduces the ability of the landowner to keep up with the clearing schedule and timeframes.

- Ideally Water Balance work should only be implemented at least 2 years after stewardship negotiations have been initiated on properties. There is the risk of landowners pulling out or changing their mind regarding a stewardship commitment, which can happen after some Water Balance investment has already occurred on the property. This is a waste of time and resources when trying to implement 2 interventions (namely biodiversity stewardship and Water Balance) concurrently. Preferably only after the final Stewardship declaration agreements have been signed and the new protected areas publisized in a Government Gazette should the Water Balance investment be initiated as a reward for this level of commitment.

- The idea of using Water Balance seemed an attractive incentive for encouraging landowners to participate in Biodiversity Stewardship and WWF anticipated much uptake by landowners in order to benefit from the "free alien clearing" offering. In reality some landowners still had not made up their minds regarding participation in the Stewardship Programme at the end of the project. This is largely due to the negative view many famers have of the local conservation authority – Ezemvelo (due to historic poorly managed conflict resolution and a legacy of clashes between the farming and conservation communities) and landowners being unwilling to enter into any agreements with Ezemvelo

- Negotiating Biodiversity Stewardship agreements on sites with multiple landowners is difficult. The management of contract negotiation is cumbersome and a challenge when there is a difference in opinion between landowners. Inevitably this leads to lengthy and costly negotiations making it difficult to discern if landowners will collaborate and commit to stewardship. This was the case when dealing with the Lake Lyndhurst Landowners Association where after almost two years and tremendous effort on WWF's part, the association declined to participate. Conservation gains seem to be made much quicker when dealing with single landowner sites.

5. Additional Funding

Table 7: additional funding from other sources utilized to achieve project objectives

Donor	Type of Funding*	Amount	Notes
Nedbank (local commercial bank)	A	R 1 784 938.00	This funding was made available through the WWF Water Balance Programme. The funds were spent solely on all the direct clearing costs for each property, which involved securing suitable contractors with their own labour team to implement Water Balance Clearing contracts on various properties and re-imbursing 1 landowner directly who chose to implement the clearing work himself for the first few months without a contractor's assistance.
Working for Water/WfW (Department of Environmental Affairs)	A	R 230, 400.00	While this was not a cash donation, this is the total value of herbicides supplied for project use. WWF has a MoU with W f W to supply herbicides to WWF for IAP clearing on Water Balance sites.

A *Project co-financing (Other donors or your organization contribute to the direct costs of this project)*

6. Project sustainability/ replicability

Water Balance investment:

Regarding replicability, this project area is one of four priority nodes/catchments in South Africa where the WWF Water Balance Programme is implementing this approach to clearing IAP's. WWF has attracted funding from three large corporates to implement this approach, namely Nedbank, Woolworths and Sonae Novo Board. The replicability of this approach, with regards to implementing at scale, is however dependant on investment from corporates willing to balance their operational water use in this way.

The question of sustainability is raised post investment within these nodes, specifically regarding the maintenance of node sites that have been cleared. This is a challenge that is difficult to address. WWF's approach in foreseeing and addressing this risk has been to develop legally binding agreements with participating landowners, committing landowners to implement rehabilitation measures and to keep cleared areas free from re-infestation. Besides this, landowners are usually mindful of the increased value of property that is cleared of IAP's and will make sure that re infestation does not happen, knowing how expensive it is to have to clear IAP's that have been allowed to grow large and dense again. In addition areas cleared provide opportunities for improved operational use (e.g. more grazing land).

WWF has been working closely with Working for Water to ensure a coordinated approach to clearing in the Upper uMngeni catchment and will continue to do so to ensure sites previously cleared through the Water Balance investment will be monitored and maintained with the assistance of WfW clearing teams. The intention is for the Water Balance sites to become part of Working for Water's planning process to ensure further follow-up treatments in the future.

WWF also secured an agreement with Working for Water (WfW) through which WfW provide herbicide to landowners or contractors for use on identified sites. This was provided at no cost. As stated above (section 5 – additional funding), this is a large cost saving, which landowners are unlikely to be willing to carry on their own without this sort of assistance. The herbicide assistance aspect of the Water Balance programme has allowed for larger areas to be cleared with corporate funding and has put landowners in a much better position to maintain areas cleared.

Biodiversity Stewardship gains:

As reported during the project period, uncertainty and capacity issues faced by the KZN Biodiversity Stewardship Programme, continues to be the main sustainability issue. There is real risk of the lack of post-declaration support to sites that are a part of the KZN Biodiversity Stewardship Programme, particularly once CEPF funding periods have ended.

WWF have thus had preliminary internal discussions to explore the possibility of WWF-SA's own Land and Biodiversity Stewardship Programme contributing the provision of management support to Biodiversity Stewardship sites secured through this grant. In addition WWF plan to utilize the funds

generated from exchange gains from this grant to 'cement' the stewardship conservation gains made during the project period.

7. Safe guard policy assessment

The risks associated with this project are largely centered around the environmental management practices associated with WWF Water Balance clearing activities. No social safeguard issues were identified or encountered during the implementation of this project.

The environmental risks identified during the project period include:

- The procurement and use of safe herbicide types.
- The safe storage of such herbicides.
- The correct and safe application of these herbicides in field.

The following measures were put in place during the project period to address the identified risks:

WWF established a **Memorandum of Understanding (MoU) with Working for Water** allowing for the provision of **licensed herbicides** specifically for WWF Water Balance work at specified sites. These herbicides were only released to appointed contractors on verification and **approval of a site clearing plan** (supplied by WWF), detailing the IAP types, age groups and densities as well as the exact quantities of herbicides required for use at each site. Herbicide quantities were calculated using a refined herbicide 'calculator', originally designed by Working for Water and refined by WWF staff. The MoU requires that regular reports are supplied to the Department of Environmental Affairs, detailing the use of herbicide (quantity) which is measured against condensed hectares cleared for each identified species at each site.

Furthermore, all WWF Water Balance agreements stipulate contractors must follow the guidelines in WWF's own herbicide policy regarding the correct use and storage of herbicide, which is based on the South African government's Department of Environmental Affairs Working for Water herbicide policy.

In addition CEPF ensured potential risks were safeguarded by requesting detailed herbicide management plan reports on an annual basis. In 2013, a representative of the World Bank visited the project to assess the potential risks associated with the use of herbicides. The assessment allayed the concerns previously held by the World Bank after reviewing the processes followed by WWF regarding procurement, safe storage and use of herbicides for the project.

In order to ensure the safe use and application of herbicides in field, all contractors appointed by WWF were required to send staff for accredited, expert training.

Table 8: Training provided to contractor staff during project implementation

Training Provider	Number of people trained	Discipline	Training days
New Africa Skills Training	8	Herbicide mixing and application	6
New Africa Skills Training	6	Health and Safety	8
Husqvarna (Pinetown)	4	Chainsaw operation	2
Rencor First Aid	6	First Aid level 2 – basic medical care until professional help arrives	3
	24		19

In addition, in field monitoring and evaluation visits were conducted at regular intervals by the project coordinator and annually by WWF staff to ensure mixing stations were properly designated, that herbicide applicators were wearing full personal protective clothing and that herbicide was applied using prescribed methods.