

A Revised Adopt-a-River Programme: Stakeholder Input on the Institutional and Financial Frameworks with a Focus on an Implementation Strategy

Report to the
Water Research Commission

by

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EXECUTIVE SUMMARY

In 2006 the need to create awareness amongst all South Africans of our precious and scarce water resources was highlighted, along with suggestions to facilitate public participatory processes in their management (DWA, 2008). In response, some members of parliament volunteered to adopt a river and act as a patron for its management. These actions were taken to foster public participation and as a sign of commitment of government officials towards protecting and managing South African rivers (DWA, 2008). To formalise these actions, the minister requested that DWA develop and implement a suitable programme to house such a volunteer response to riverine management. This public and ministerial interest led to the initiation of the Adopt-a-River Programme (DWA, 2008).

The AaR Programme was initiated in 2008, with a phased approach to implementation; as a volunteer programme targeting pensioners, school pupils, industries, catchment forums, water user associations, municipalities, communities, etc. The spin-offs being water saving, skills development for youth, empowerment of the general public on Integrated Water Resources Management (IWRM), improvement of water quality and of the state of the rivers. The concept and thinking behind the project was sound and looked very promising.

The document produced by the Department of Water Affairs (DWA, 2009) entitled “*Adopt-a-River Programme Phase 2: Development of an Implementation Plan/ Institutional Aspects and Governance Structures*” provides extensive background, context and rationale around the need for the AaR Programme.

In 2010 the Deputy Minister of Water and Environmental Affairs selected the AaR Programme as one of the Department’s flagship programmes for job creation. The target groups shifted to unemployed women, youth and people living with disabilities.

Once this change was made, the programme moved from one driven by volunteerism towards one driven by monetary incentive. While the programme contribution on poverty relief was accepted, implementers across the country looked more at job creation than their contribution in water resource quality monitoring. Many of the objectives set out in Phase I and Phase II were achieved. However, there was a breakdown in the implementation phases of the programme.

In 2014 DWS made the decision to review the Adopt-a-River programme through a project managed via WRC. GroundTruth were requested (via WRC/DWS) to undertake the review and provide recommendations to DWS on a way forward for the programme.

This document builds on the review and redesign document prepared by the project team (Deliverable 2) and summarises the outcomes of a two-day stakeholder workshop held at the WRC offices in Pretoria on the (18-19 November 2015) to discuss the revision of the AaR Programme. The primary aim of the workshop was to understand and re-vision the AaR Programme, to redefine the key objectives and strategy (including re-vision of the institutional/governance framework as well as developing a funding framework and potential business case) towards developing a revised and sustainable AaR Programme.

The outcomes of the stakeholder review and redesign workshop can be summarised as follows:

- A detailed background of the AaR Programme was prepared by the project team and salient points presented to the stakeholders in the form a verbal presentation and a written workshop starter document. All background information was prepared as a written report for the WRC (see WRC K8/1109 Deliverable 2). This background/review document and the findings therein formed the basis of the topics to be covered at the stakeholder review and redesign workshop.

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- A vision and mission statement were developed for the revised AaR Programme in addition to a clarification/refinement of the scope and focus of the programme. The need for a new programme was discussed as well as the broad overall goals of the programme.
 - The institutional and governance framework for the programme was completely redesigned based on a review of the original framework and problems experienced with its implementation from 2009-2015. The new framework is more holistic – includes more sectors of society – and more clearly defines the linkages of each role-player. The roles and responsibilities of each stakeholder/role-player were similarly reviewed and discussed. Furthermore the framework was redesigned to have an innovative two prong approach (a governmental prong and public/private partnership prong). This approach is intended to limit risk (i.e. by having more than one implementing agency and organisation control the programme) and provide opportunities for more sectors of society to take part in the programme and includes scope for broader collaboration between government departments (specifically between DWS and DEA)
 - The institutional governance framework provided a basis for the review and redesign of the funding framework for the programme. The new funding framework similarly follows the two pronged approach, which in effect allows for multiple sources of funding to be used to carry the programme and better allow for long term sustainability. Business cases for both prongs of the funding framework are briefly discussed (EPWP Working for Water programme serves to illustrate a tested business case of the governmental prong, while the DUCT case study illustrates the use of mixed funding sources to operate a non-profit community benefit organisation).
 - A new communication framework is discussed which follows the institutional and governance framework.
 - Where the original programme design had limited means of assessing the success of the programme, provision has been made in the revised programme to use several indicators to measure success, (both biophysical and social) which will form a critical component of the reporting of the programme. These indicators are discussed.
 - A strong focus has been placed on training and capacity building within the revised programme with the provision of more opportunities for career pathing and a focus on the development of additional useful skills apart from first aid or snake handling. Training and skills development also follows the structure of the institutional and governance framework, whereby different skills, training and career pathing opportunities are provided for paid technical teams under the DEA Expanded Public Works Programme as opposed to the volunteer/monitoring teams under the management of the DWS and implementing NGOs. The involvement of schools will be a primary focus of the revised AaR and is emphasised.
 - The role of citizen science in the revised AaR is discussed with opportunities presented for the integration of the programme with other citizen science monitoring (to be carried out by monitoring teams and volunteers) as well as the continued pairing of the programme with the National Aquatic Ecstatus Health Monitoring Programme (NAEHMP) (to be carried out by technical teams – DWS). Case studies are discussed where volunteer, private public partnerships have been shown to be highly successful in adopting and caring for rivers, without the support of a national programme.
 - Lastly issues around logistics and implementation are discussed with suggestions for improved efficiency.

The specific components of the revised AaR Programme discussed in this report, reflect the collective views of the project team and the various stakeholders (see the attached attendance register in Appendix 1) that attended the national AaR review and redesign workshop. The document was circulated to all the stakeholders for additional comment before it was finalised and submitted to the WRC.

ACKNOWLEDGEMENTS

The project team wishes to thank the WRC and DWS for the funding of this project. The contributions made by the research manager and attendees of the Adopt-a-River Programme Review Workshop are gratefully acknowledged as are inputs and summaries from DWS on the current state of the AaR Programme. Dr Eureka Rosenberg is thanked especially for her contributions to the document. Those stakeholders that provided specific comments on this document are especially thanked for offering their time in order to provide valuable inputs which have added value to the overall product.

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CHAPTER 1: INTRODUCTION

This document serves to summarise the outcomes of a two-day stakeholder workshop to review and revision the Adopt-a-River Programme, as part of a WRC commissioned project K8/1109. The workshop (hosted at the WRC offices in Pretoria; 18 & 19 November 2015) was facilitated by GroundTruth in conjunction with Dr Eureta Rosenberg and WESSA. A list of attendees as well as the organisations/institutions represented at the workshop is provided in Appendix 1. Key role players at the workshop included Department of Water and Sanitation (Provincial and National level) and Catchment Management Agencies; Department of Environmental Affairs (National level); the corporate sector (e.g. ImproChem); and volunteer interest groups, such as Adopt Moreletaspruit.

The primary aim of the workshop was to understand the history of the AaR Programme and to redefine the key objectives and strategy (including re-vision of the institutional framework) towards developing a revised and sustainable AaR Programme. The workshop focused on the following key points developed in the brief received from the WRC and DWS as key outcomes of the review. These points are as follows:

1. Assess the successes and challenges of the AaR Programme since its launch, including its original goal;
2. Review the AaR Programme design framework, taking into consideration the goals and value adding;
3. Based on various models, develop an integrated institutional framework that will be critical to sustain the programme; including research, capacity building, marketing and communication strategies;
4. Develop a fundable business plan that will ensure national support of the programme by key stakeholders, particularly business.

During the workshop, a revised institutional framework was developed, which attempts to address shortfalls identified in the existing programme and seeks to clarify more effective practices. Only with effective implementation can a revised framework be evaluated. Guidance and recommendations for pilot scale implementation were discussed as part of the workshop and are included in this report.

CHAPTER 2: CLARIFYING THE VISION & OBJECTIVES OF THE AaR

The review of the AaR documentation found a lack of a clear focus for the AaR Programme as well as a lack in measurable/achievable targets that encompassed both environmental and social aspects. As such, the need to clarify the vision and objectives of the revised AaR Programme is of primary importance.

Some of the overarching ideas behind the revised AaR Programme would be for communities to learn together, un-learn together and achieve a deeper understanding of river health, with the equitable sharing of the full benefits and assets of healthy rivers. The AaR Programme should connect people and rivers. This should be one of the key roles of the AaR Programme co-ordinators – connecting communities, role players and various AaR initiatives. This type of initiative would help to build a common understanding and create an environment for accessible learning, where the entire community benefits from healthy rivers.

The AaR Programme should provide a platform for advocacy and recourse to act when a community feels that their rivers are being negatively impacted. This provides empowerment and creates opportunities for communities to be involved in the management of their precious water resources.

2.1 WHY THE NEED FOR A NEW AaR PROGRAMME

South Africa is a semi-arid and water scarce country, with an obvious need for a revised and functioning AaR Programme. Additionally, South Africa has a rapidly increasing population and a history of poor service delivery – especially for clean drinking water to rural communities (Centre for Environmental Rights, 2014). The need for water security, particularly in the face of global climate change and a multitude of anthropogenic impacts affecting our rivers, calls for a national and unified approach to protect our rivers, wetlands and broader catchments. All people can benefit from the added-value products of healthy rivers and can have access to clean water for basic human needs if South Africa's rivers are protected. This would require creating greater awareness around water resources and building capacity within the sector.

Currently, many of the programmes in place, including the original AaR Programme, are not sustainable. Many institutions within the water sector lack co-ordination and effective communication around freshwater resources. A contributing factor is that while institutions and government departments offer support to freshwater initiatives across the country, there is a general shortage of people actually “doing” physical work towards river health maintenance and rehabilitation/cleaning. More people are needed on the ground for waste removal, monitoring and rehabilitation in a local context. This could be achieved through a process of paying communities and individuals to perform various tasks, creating temporary jobs in the process (e.g. using the Expanded Public Works Programme (EPWP) as a model). However, monetary incentives can cause tensions, and community/individual involvement in the programme will depend on the flow of such monies (i.e. when payment ceases, so too will the involvement or work). This is in stark contrast to the spirit of volunteerism, originally at the core of the AaR Programme, which fostered involvement of interested people who are passionate and want to make a difference. In such instances of volunteerism, involvement in the programme continues without monetary incentives. Given these contrasting approaches to establishing action on the ground, there is no reason why the two approaches cannot

be incorporated into an integrated framework that allows for both models to work concurrently. Such an approach was discussed in detail at the stakeholder workshop and is presented in this deliverable.

Another key reason for a revised AaR Programme revolves around the value-chain of economy related to the AaR Programme and its potential in the country. In this regard an important question to consider is the following: Which people are benefiting from the river that might be considered in the “adoption” phase? Rivers provide freshwater which is critical to almost all industrial processes. However, it is evident that while many industries benefit from freshwater, few are actively involved in maintaining or protecting freshwater resources. The potential for greater industry-community involvement is great, and as yet, untapped. This is especially true in instances where communities reside in close proximity to industries and water sources. Several examples of this industry-community engagement being implemented in the country exist, for example AECI, Afripak, and Mondi.

Industry-community partnerships: A case study of the AECI and Emvelo Wise project

In 2011 the community of Folweni in the eThekweni Municipality of KwaZulu-Natal mobilised to take action to improve the quality of the Umbogintwini River. A group of approximately 120 unemployed community members came together (with assistance from Durban Solid Waste) volunteering to collect solid waste. The community recognising that the Umbogintwini River was seriously polluted and modified. The volunteers decided to formalise their group, naming themselves Emvelo Wise, and continued to work along the Umbogintwini River, collecting solid waste and clearing alien invasive plants from the riparian areas. Emvelo Wise continued with this work for four years, with no formal compensation.

At the same time, ImproChem, a subsidiary of AECI heard about the work that Emvelo Wise was doing and started investigating mechanisms to assist this volunteer group. ImproChem is a major company focused on the chemical treatment of water for use by industry. Therefore, ImproChem has a strong focus on clean rivers as a source of clean water.

Through the AECI Community Education and Development Trust funding has now been allocated to support the Emvelo Wise team. The Trust will be providing funding for broad aquatic ecology training for all volunteers as well as specific training for selected team members. Funding will also provide a small stipend, technical equipment, citizen science tools and project management support.

This interaction between a large private sector industry organisation and a community group shows the value of such partnerships for the community and the industry organisation. The community is gaining experience, training and a small stipend and the potential to build a sustainable income stream. ImproChem gains much cleaner water in the Umbogintwini River, reducing the cost of extracted water treatment.

2.2 WHAT DO WE WANT TO ACHIEVE WITH THE AaR PROGRAMME AND WHY: OBJECTIVES

In defining realistic goals for the AaR Programme, thought needs to be given to what targets are set and why. The original AaR documentation (DWA, 2008; 2009) included a number of good objectives and laid a sound theoretical foundation for the programme. However, the original objectives were never fully achieved owing to problems experienced during implementation phases, in conjunction with unforeseen gaps in the institutional framework, which manifested as organisational issues during the programme. Possible goals for the revised AaR Programme have been developed based on a

synthesis of previous AaR documentation and the incorporation of amendments made by the review team. The amended goals are as follows:

To ultimately protect and conserve South Africa's water resources through

1. Building communities that learn together, to achieve a deeper, common understanding of river health and to increased knowledge around the scientific process. Thereby connecting communities, role players and various AaR initiatives.
2. The active involvement of diverse communities in the improvement and protection of water resources
3. Awareness raising and the development of a catchment approach to water resources, using hands-on experiences and grass roots education that highlight the linkages between landscape and water resources from the source to the sea, including people and their dependency and impact on rivers
4. Identifying causes of river pollution and disturbance and engaging parties (through workshops or roundtable discussions) responsible for such pollution and disturbance, which ultimately results in decreased water availability
5. Provide a platform for advocacy and recourse, creating further opportunities for communities to be involved in the management of their water resources
6. Physically restoring, rehabilitating and monitoring water resources
7. Through various training programmes, build capacity and skills and develop career pathing opportunities and jobs in the water resources and environmental sector, especially within previously marginalised communities
8. A hybrid implementation model that allows for citizen involvement and volunteerism as well as the payment of trained technical workers

The reasons for these objectives are highlighted by **a)** the benefits of having clean healthy rivers and **b)** informed/educated South African communities, actively caring for and protecting their rivers. Such benefits include:

- Improved water quality and pollution free rivers
- Access to clean water
- Healthy communities
- Increase water availability
- Environmentally conscious, well informed/educated; water savvy communities
- Possibility of communities making a living by caring for water resources.

Through actively engaging with communities around water resources in the field as well as promoting ongoing awareness raising and education, it is possible to foster communities that are actively involved and engaged in the management of water resources in the country. Examples of where this has worked include the Mpophomeni Enviro Champs and the Umbogintwini Emvelo Wise River Care team, both in KwaZulu-Natal. The Emvelo Wise team have voluntarily cleared solid waste and alien plants from a stretch of the Umbogintwini River for the past four years, with no compensation.

Through a dedicated, focused and long-term implementation plan, in conjunction with a sound and innovative business model and a revised institutional framework the goals of the revised AaR Programme can be achieved successfully and can be sustained.

2.3 WHAT SERVICES COULD THE AaR PROGRAMME PROVIDE TO COMMUNITIES? AND VICE VERSA

The implementing agency(s) of the revised AaR Programme will need to consider the services it can provide to communities, and also what aspects communities could contribute to the programme itself.

What could communities potentially expect to gain from the AaR Programme?

- Education regarding water resources
- Ecological awareness
- Training in various river health and management aspects
- Possible employment with career pathing opportunities
- Increased access to cleaner, safer rivers for communities
- Through skills development and career pathing; the potential to generate sustainable incomes
- Improved human health

What could communities contribute to the AaR Programme?

- Community participation in the care and management of their local water resources through reduced water pollution and water wastage
- Developing a network of people interested in and caring for rivers
- To act as an early warning system for the detection of point source pollution and riverine impacts
- To act as a direct communication channel with municipalities and Catchment Management Agencies, Regional/Provincial, National water resource management authorities and to hold them accountable for the quality and quantity of water resources (See WRC Report K8/968/1, by Munnik et al, 2011 on the Potential of Civil Society Organisations in Monitoring and Improving Water Quality.)
- To support government in its custodianship of South Africa's water resources
- A citizen science contribution to a growing body of science understood from a grass-roots perspective

2.4 A SYNTHESISED VISION, MISSION STATEMENT, SCOPE AND FOCUS FOR THE REVISED AaR PROGRAMME

2.4.1 Vision

The new vision for the revised AaR Programme was independently determined by two separate groups of participants at the stakeholder workshop and can be summarised as:

“Healthy Rivers for All”

This vision encompasses the idea that rivers are assets for the nation and that water security is critical for the country and its populace. In order to protect rivers across the country civic, industrial,

private and public sector involvement is required. Furthermore it follows the premise that healthy rivers allow for a healthy nation.

2.4.2 Mission statement

The mission statement agreed upon at the stakeholder workshop is:

“To sustainably maintain, improve and protect river health for a healthy nation”

2.4.3 Scope

While no final consensus was reached as to whether the scope of the AaR Programme should include the “adoption” of wetlands and estuaries, it was agreed that through the adoption of a river there would be a natural tendency for features along its length, including wetlands and estuaries, to be included and considered.

Consensus was reached by the workshop participants that the scope of the revised AaR Programme should include **both healthy and impacted rivers** and that the programme should operate at a **national level**. In essence, the river is the starting point and the end point, but it **also encompasses the broader catchment**, highlighting the importance of connectivity in river systems. By encompassing the broader catchment, a very good opportunity is presented for a potential linkage/ partnership with the Department of Agriculture, Fisheries and Forestry (DAFF) Landcare programme.

2.4.4 Focus

The focus of the revised AaR Programme should encompass the following aspects:

- Learning together, unlearning¹ and achieving a deeper understanding of water resources
- Equity: i.e. individual and community access to the full benefits and assets of healthy rivers
- Connecting people and rivers
- Co-ordination including the connection of communities, role players and other initiatives
- Common understanding and accessible learning
- Advocacy and recourse to act
- Empowerment and opportunities created
- Healthy rivers

General comments recorded during the workshop session dealing with the vision and objectives of the revised AaR Programme emphasised the **need for strong coordination of the AaR Programme**

¹ By unlearning we refer to the process by which people overturn concepts that they previously believed to be true. Through field-work, dialogue and enquiry processes one may learn different facts about rivers and streams that over-turn the views we commonly hold. Water pollution, for example, is often perceived to be chemical or bacterial and yet nutrient loading may well be a more serious, longer-term threat. An “aha” moment following a meaningful learning experience that reveals a new or different meaning about a river is an example of how we may unlearn previously held ideas.

and its potential linkages with other programmes. The need to monitor and measure river health using specific definable criteria, the importance of river connectivity (upstream, downstream and broader catchment processes) and the need to adopt enabling approaches to promote learning were also highlighted.

The necessity to build a sense of dignity and pride in participating community members was highlighted. One of the key ways to do this would be through focused education and training within these communities, as reflected in the goals and objectives.

Strategic Adaptive Management (with reporting and auditing) was proposed as the governing process to guide the revised AaR Programme into the future; as rivers, communities and institutions are complex, adaptive systems. Furthermore, it was suggested that criteria be put in place to guide the decision making process around how resources should be directed within the programme.

An overwhelming consensus was that the introduction of stipends/money paid to targeted groups in the original programme had caused considerable tension and problems. As such, stipends, money and job creation were not raised as a primary focus of the revised AaR Programme; but rather the focus was on the use of a hybrid model that allows for volunteerism and paid technical teams.

CHAPTER 3: REVISED INSTITUTIONAL AND GOVERNANCE FRAMEWORK FOR THE AaR PROGRAMME

The document produced by the Department of Water Affairs (DWA, 2009) entitled “*Adopt-a-River Programme Phase 2: Development of an Implementation Plan/ Institutional Aspects and Governance Structures*” provides extensive background, context and rationale around the need for the AaR Programme. It also provides much information on the various support and governance structures suggested for use in the original AaR Programme. At this point the project team would like to refer the reader to this document as it provides the necessary foundation for this section. The DWA (2009) documentation is thorough, well thought out and accurate. This documentation, while being produced for the original AaR Programme (and not altogether followed/implemented) still has value in the revised AaR Programme presented here.

3.1 ORIGINAL FRAMEWORK

The DWA (2009) documentation represents an excellent theoretical framework, in addition to an outline of the roles and responsibilities for each component of the framework for the AaR Programme. The current project team advocates the vast majority of the content in this original documentation and will not attempt to restate it. Here, however, now five years down the line, it is evident that the original framework (Figure 1) broke down in several places, primarily during the implementation of the programme. The project team and stakeholders at the workshop focused on these breakdowns, and the outputs from these discussions will form the basis for this chapter.



Figure 1. The original framework for the AaR as set out by DWA (2009)

The original framework identified a national coordinator, responsible for managing regional coordinators who would, in turn, be responsible for guiding local group leaders who would coordinate volunteers.

It is evident from the original roles and responsibilities set out Table 1, that the national coordinator from Department of Water and Sanitation (DWS) was originally assigned the bulk of the responsibility of the programme. **These responsibilities would have been unreasonable for an individual who wasn't employed fulltime with the sole responsibility of managing the AaR Programme to handle.** As such it is likely that the original roles for the national coordinator were too ambitious and that this lead to inefficient co-ordination, contributing to the failure of the programme. The project team has reviewed the original roles and responsibilities put forward for stakeholders involved in the programme and a revised outline of roles and responsibilities has been proposed in this chapter.

Table 1. The original roles and responsibilities for various stakeholders and role players in the AaR Programme.

Adopt-a-River Programme Proposed Institutional Framework and Government Structure: Roles and Responsibilities allocated to Roleplayers at start-up and with progressive expansion							
Task / Responsibility	Start of Programme Implementation / Pilot Stage and when adopted rivers are far apart			Fully Functional Programme in certain catchments (or provinces or regions) A, B & C ⁺⁺ etc - only when economy of scale can be achieved			Remarks
	National Level Government Department	National Level Implementer /Coordinator ²	Local Parties	National Level Government Department	National Level Implementer /Coordinator	Intermediate Layer Coordinator ³	
Policy/law	*			*			
Awareness/marketing		*			*		
Communication/lobbying	□	*		□	*		
Project identification			*			*	
Project evaluation		*			*		
Identification of resource/expertise needs		*			*		
Procurement		*			*		
Information/Guidance		*			*		
Programme management		*			*		
Identify responsible institutions		*			*		
Ensure linkages to relevant national programmes	□	*		□	*		
Demarcation of boundaries		*			*		
Support		*			*		
Resource centre		*			*		
Standardise procedures		*			*		
Oversee experts		*			*		
Funding	*	*		*	*		
Prioritise funding		*			*		
Disburse government funding		*			*		
Education/training		*			*		
Project implementation			*			*	
Programme reporting	□	*		□	*		
Website/Database		*			*		
Monitoring/Sharing data		*			*		
Links to Regulation/enforcement	*			*			

3.2 REVISED FRAMEWORK

This section provides a summary of the outcomes of the stakeholder workshop sessions that were allocated to reviewing and revising of the original framework.

In revising the institutional and governance framework for the AaR Programme the original framework and documentation (DWA, 2009) in conjunction with the structures that exist for Expanded Public Works Programmes (EPWP's) were considered. The key considerations in the design of the revised framework, which were discussed and collectively agreed upon during the stakeholder workshop, include the revisiting and re-identification of the following aspects of the original framework:

- the primary custodians of the programme

- the primary implementers of the programme
- the key role-players, institutions and stakeholders that might contribute to the programme
- possible links to existing programmes (e.g. Natural Resource Management (NRM), EPWP; National Water Resource Strategy as well as the National Water Pricing Strategy)

A comment received after the workshop was that the DWS/DEA MoA (a document the project team does not have access to) be considered in order to turn the proposed institutional framework (Figure 2) into a reality.

The revised institutional and governance framework emanating from the stakeholder review workshop is presented in Figure 2.

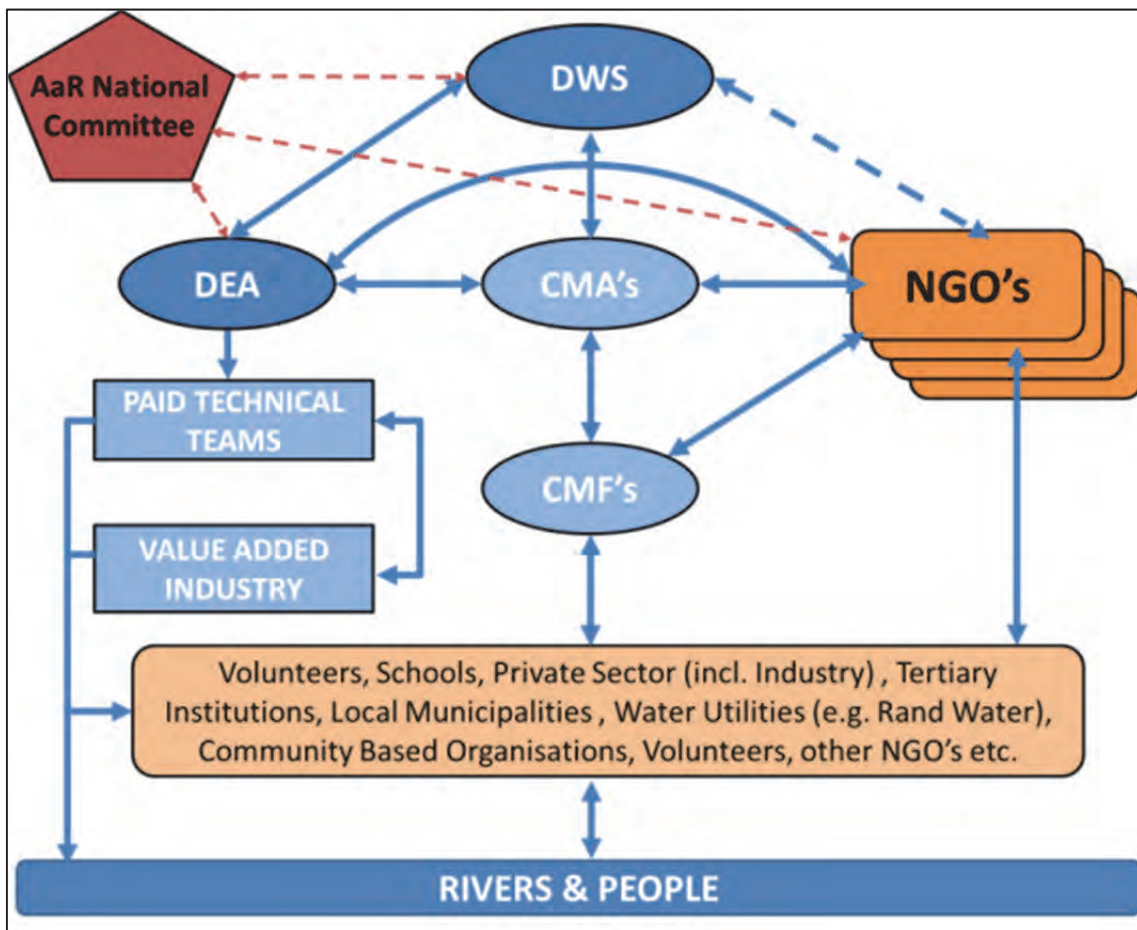


Figure 2. Revised institutional and governance framework as agreed in the stakeholder workshop.

3.2.1 Fundamental changes to the structure of the framework

The original model was primarily a top down approach where the majority of implementation efforts were dictated by the Department of Water and Sanitation (DWS) national and regional coordinators. During implementation local leaders and volunteers were largely disregarded. The focus shifted to regional coordinators and their management of paid workers. In contrast, the revised model incorporates the involvement of volunteers (in line with the original mandate and intended objectives of the programme) and also incorporates the involvement of paid workers. This model addresses the need for job creation opportunities in the country and fosters integration/collaboration between government departments and NGO.

Post workshop reviewer's comment: *There are excellent examples where this can be implemented without securing additional funding. DEA: NRM is currently funding aerial spraying of water weeds. This funding can be allocated to CBOs to contain waterweeds through annual and even 3 year contracts. The benefits are substantial as the waterweeds can be removed from the system so they don't further enrich the system, no chemicals especially no (non-targeted) aerial spraying. As the workers through CBOs will have longer term contracts other aspects of adopt a river can be addressed such as solid waste management, terrestrial invasive alien plant management and wetland and river bank restoration. This has the economic benefit of providing for a repeatable reliable income for programme participants. Waterweeds can merely be used as a platform to develop all this from. Again both the NWRS and National Water Pricing strategy make allowances for this.*

Furthermore, the revised model allows for a bottom up approach, recognising the impact and important role that volunteer groups on the ground provide to coordination efforts. This approach allows for a constructive feedback loop, where on the ground volunteers can provide useful information to local and regional authorities as well as the implementing agencies (e.g. the Non-Governmental organisations (NGOs), Catchment Management Agencies (CMAs) and Catchment Management Fora (CMFs)).

Therefore the revised institutional/governance framework has a two pronged approach to the adoption of rivers, providing a measure of contingency should one of the prongs face managerial, financial, or technical difficulties at any stage. The two prongs can broadly be described as follows:

- 1) The coordination of paid technical teams operating throughout the country by the Department of Environmental Affairs (DEA). This prong is focused on job creation, training, poverty alleviation and the physical restoration, cleaning and monitoring of rivers. Chapters 6 and 8 (Training and Capacity Building and Logistics and Implementation, respectively) specifically address the logistics and involvement of the DEA in this prong.

Post workshop reviewer's comment: *Although National NGOs have a role to play, capacity of the CBOs should be built which could evolve into a "payments for watershed" services scheme and take Adopt a River and DEA's Working for Rivers initiative to the ultimate.*

- 2) The coordination of regional CMAs and CMFs by multiple NGOs (acting as implementing agents) under the guidance of the national DWS coordinator. The NGOs will take the lead in this prong under the guidance of the DWS coordinator and the national committee. There will be communication between the NGOs and the DWS coordinator, however, the main thrust of communication between the NGOs and the DWS will be through the CMA and CMF mechanism. This prong is primarily focused on fostering the involvement of volunteers, community members, public-private partnerships, professional bodies, local municipalities, community based organisations, schools and other interested and affected parties in the adoption and care of rivers.

In summary, the most apparent difference between the original and revised framework is the inclusion of all stakeholders in the model and the clarification of linkages between the various stakeholder groups. The various NGOs would act in different regions/provinces that they are familiar with, with groups and communities where they have already established links. The NGOs, as implementing agencies, will need to form multiple partnerships with volunteer groups, local municipalities, parastatals, private sector groups, industry, professional bodies and communities in order to effectively manage the adoption of rivers. The key institutions, role-players and stakeholders identified in the stakeholder workshop, as well as their link to the institutional/governance framework, are presented in more detail in Tables 2 and 3.

With the revised framework it is critical that the NGOs coordinate their activities with the regional CMAs and CMFs as well as the DEA, not only to ensure a direct channel of support from national government, but also to ensure that the correct channels of communication and reporting are maintained. Coordination of activities by the implementing NGOs together with the DEA will allow for the dovetailing of technical work (i.e. clearing of alien vegetation, solid waste removal, etc.) to be carried out in areas identified by communities, volunteer groups, municipalities, etc. For example, as DEA technical teams clear aliens, the AaR monitoring indicators will tell if the river health and biodiversity are being restored, in addition to monitoring the number of employed persons. In that way, the programmes supplement each other.

Table 2. Stakeholders in the revised AaR Programme

	Divisions/Departments/Individual Agencies	Programmes/Focus areas	Mandate/Mission/Vision
National Government	Department of Water and Sanitation (DWS)	National Aquatic Ecosystem Health Monitoring Programme (NAEHMP)	National water quality monitoring programmes
	Catchment Management Authorities (CMA's)	National Water Security	Drought intervention projects
	Department of Environmental Affairs (DEA)	Compiling Catchment Management Strategies	Water Resource Management, Water Charge collection, licensing, water authorisation
	Department of Basic Education (DBE)	Expanded Public Works Programmes (EPWP) Working for Water	Clearing alien invasive plants from catchments, employment, value added industries, community engagement and upliftment
	Department of Agriculture Forestry and Fisheries (DAFF)	Expanded Public Works Programmes (EPWP) Working for Wetlands	Working for Wetlands, restoring and rehabilitating wetlands, clearing aliens, employment opportunities, value added industries, community engagement and upliftment
	Department of Science & Technology (DST)	Schools	Training, river health is part of the curriculum
Local Government	Department of Agriculture Forestry and Fisheries (DAFF)	LandCare Programmes	Community based and government supported approach to the sustainable management and use of agricultural natural resources, optimise productivity and sustainability of natural resources
	Department of Science & Technology (DST)	Centre of Invasive Biology, Freshwater research funding	Funding of monitoring tools
Provincial Government	All	Back to Basics	To provide clean drinking water, sanitation, electricity, shelter, waste removal and roads
	City of Cape Town City of Joburg	Observatory Improvement District (OBSID) and other ID's Pick it up	Developing a safer cleaner, smarter, public space Solid waste clean up
Parastatals	All	Provincial conservation agencies	Monitoring, conservation, tourism
	Western Cape Mpumalanga	Cape Nature Mpumalanga Tourism and Parks Authority (MTPA)	Nature Conservation Promote tourism and nature conservation, promote sustainable utilisation of resources
	South African National Biodiversity Institute (SANBI)	Freshwater Programme	Developing community of practice, promoting citizen science, monitoring, research
	Waterboards	Rand Water, Umgeni Water etc.	Implementing agent responsible for monitoring and supply
	South African Weather Service (SAMS)	Stations across the country	Environmental data collation/monitoring, research and development
	Water Research Commission (WRC)	Numerous research projects (Green Youth Indaba)	Research and development, dissemination of information
	South African National Parks (SANPARKS; EZEVELO)	Freshwater divisions	Mobilising and supporting youth to get involved with environmental issues
	South African Earth Observatory Network (SAEON)	Freshwater and environmental monitoring	Monitoring and research
	National Research Foundation (NRF)	Funding numerous research projects	Research and Monitoring Funding research, monitoring, promoting information dissemination
	Non-Governmental Organisations (NGO's)	Duzi uMgeni Conservation Trust (DUCT)	River walks, solid waste removal, water quality monitoring
Wildlife and Environment Society of Southern Africa (WESSA)		Water Programme, Schools Programme, Biodiversity programme, Environmental Governance	Initiates and supports high impact environmental and conservation projects to promote public participation in caring for the earth
AWARD		RESILIMO	Promoting sustainability, wise water use, biodiversity stewardship, management and governance.
Conservation South Africa		Umzimvubu Catchment Partnership Programme (UCPP)	Conservation, sustainable restoration and maintenance of catchment area, economic development, job creation, flow of benefits from goods and services to people and nature
Endangered Wildlife Trust (EWT)		Biodiversity & Business, Conservation Science, Source to Sea, Threatened Amphibians	Conserving threatened species and ecosystems in southern Africa to the benefit of all people
Environmental Monitoring Group (EMG)		Water and Climate Change programme	Building resilience, global warming mitigation. Work with communities and people. Research, facilitation, policy analysis, solidarity building and creativity.
Envelo-Wise		Have adopted a local river	120 community members involved in river clean-ups and clearing of invasive plants
African Women's Development Fund		Women in Leadership Training Programme (WLTIP)	Empower young girls and women to play an active role in climate change mitigation as well as develop sustainable skills for economic security
Conservancies		Several throughout the country	Conservation protection and monitoring
Green Matter		Implementing agent of the Biodiversity Human Capital Development Strategy	Supports the development of a robust green economy, capacity building, skills development, advocacy, research
WWF		Stewardship Programmes and monitoring	Conduct river walks, monitoring, training and capacity building, funding of research
Freshwater Research Centre		Various research projects focused on freshwater systems	Research and Advocacy

	Divisions/Departments/Individual Agencies	Programmes/Focus areas	Mandate/Mission/Vision
Community-based Organisations	Catchment Management Fora (CMF) Volunteer groups	Open forums to discuss water related issues in local catchments, current projects and research and for strategic planning Numerous groups of volunteers across the country who focus on maintaining and restoring rivers (river clean-ups, monitoring)	Local management of rivers River clean-ups, river walks, citizen science, basic monitoring
Partnership Programmes	Federation of Southern African Fly fishers Local authorities Strategic water partnerships	Yellow Fish Working Group uMngeni Ecological Infrastructure Project (UEIP) Funding from NEPAD, convener of industry and private sector and NGO's around water issues	Ensuring that fish and the environment where fishing is conducted is protected by appropriate legislation, efficiently managed, maintained, sustainably utilised Partnership programme where stakeholders have signed an MOU to project intended to safeguard, rehabilitate and manage the ecological infrastructure within the uMngeni catchment Focused on addressing water issues and led by civil society
Private	GroundTruth Industries Development Bank of South Africa Private Waste Water Treatment Works Faith based organisations Environmental Assessment Practitioners (EAP) Rate payers associations "Friends of" groups Civil Society Partnerships	Environmental Consulting Company focused on freshwater Mining industries (Chamber of mines) Agriculture (Forestry) (e.g. SAPPI, MONDI) Agriculture (Sugar cane, wine farms) Green Fund Various housing/lifestyle estates Focuses on water, environment, climate change Many across the country Many across the country - represent residents Many across the country - represent volunteers and interested parties Many across the country - represent volunteers and interested parties	Implementing citizen science, professional consulting regarding rivers/aquatic assessments, biodiversity, wetlands, engineering solutions Biomonitoring reporting, Corporate Social Investment and Responsibilities Biomonitoring reporting, Corporate Social Investment and Responsibilities Biomonitoring reporting, Corporate Social Investment and Responsibilities Research and implementation funding around environmental solutions/innovations Treatment and monitoring Capacity building, creating awareness, working with communities Working with development, helping to guide developers with legislation regarding environmental impacts, requirements of monitoring, advocacy, monitoring and reporting Numerous issues including holding municipalities accountable Widespread focus Widespread focus
International	ICLEI International Water Management Institute (IWM) River Commissions UNESCO United Nations (UN)	International association of cities, local and metropolitan governments to promote sustainability Numerous research projects in Africa and Asia Several - ORASECOM, OKACOM, LIMCOM International Water and Food Security, UN-Water	Use foreign funding to work closely with municipalities, local governments and communities with various agendas focusing on cities (diversity, efficiency, low carbon use, sustainability, resilience) Provide evidence based solutions to sustainably manage water and land resources for food security, people livelihoods and the environment International commissions established to oversee/manage transboundary water resources (biomonitoring, information dissemination, research, social engagement) Promote and mobilise for education, building intercultural understanding through protection of heritage sites, pursuing scientific cooperation, protecting freedom of expression Inter-agency coordination for all freshwater related issues, including sanitation, Management, monitoring, facilitating synergies and joint efforts
Tertiary Institutions	Universities and Colleges	Various research groups (e.g. Unilever water research institute)	Training, research, reporting, advocacy, toxicity testing, green drop
Professional Bodies	Southern African Society for Aquatic Scientists (SASAqS) Water Institute of South Africa (WISA)	Society that organises conferences, newsletters Young Water Professionals and other key focuses	Advocacy, research, information dissemination Catchment management, co-ordination, information dissemination, training, raising awareness
Communities	Everywhere	Interested members of the communities located near freshwater systems	End-users, eyes and ears on the ground - can hold municipalities accountable

Table 3. Stakeholders and their roles in the revised AaR Programme

Roles to be accommodated in a governance structure/institutional framework for the revised Adopt-a-River Programme	Department Water & Sanitation			Department of Environmental Affairs			AaR Committee		NGO	Community-based Organisations	Partnership Programmes	Private
	National	Provincial	Regional	Local	National	Provincial	Regional	Local				
Custodian of the Adopt-a-River Programme												
Facilitate implementation of AaR programme												
Implementation Agency												
Auditing of the Adopt-a-River Programme												
Provide strategic guidance to the Adopt-a-River Programme												
Report to National Government												
Mobilise, coordinate and support Adopt-a-River expertise/resources												
Ensure linkages to relevant National Programmes												
Administer Adopt-a-River Programme												
Monitoring indicators of success												
Implement policies to conserve and manage water resources												
Inputs into operational design of Adopt-a-River Programme												
Mobilise and support Adopt-a-River task teams												
Mobilise and involve role-players at local level to implement the AaR Programme												
Provide adequate budget to sustain programme												
Ensure sustainable practices by riparian users who affect water resources												
Identify and coordinate local clean-up, rehabilitation and restoration initiatives												
Support capacity building and knowledge sharing initiatives at local level												
Consultations in development of publicity and training materials												
Develop programme publicity materials												
Develop programme training materials												
Implement training programmes for AaR programme												
Disseminate information about the programme												
Maintain communication channels between stakeholders, in accordance with national guidelines												
Provide contact point and follow-up mechanisms for queries												
Database maintenance												
Responding to enquiries regarding participation												
Provide advocacy support for communities												
Identify sources of funding for awareness, training, monitoring, river clean-ups and rehabilitation												
Marketing toward fund raising												
Find patrons for the programme at senior level												

3.2.2 AaR National Committee

Both the original AaR Programme documentation and the proposal from DEA for a Working-for-Rivers programme (MTEF BID 2013/2014) (see Appendix 3 for excerpts) recommended a management steering committee be put in place to govern the AaR Programme. DEA originally suggested that the committee consist of the following personnel:

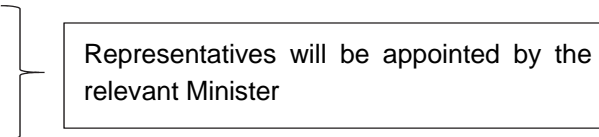
- at least one representative from the Chief Directorate: Natural Resource Management Programmes to represent the DEA
- an account manager or representative from Treasury
- at least one representative from the Working for Wetlands Programme

In light of the proposals put forward by the DEA and the DWS for such a committee to be established, we suggest that a National AaR Committee (see Figure 2) be formed to govern the AaR Programme and provide a level of objectivity and inclusivity in the review process. The main function of the Committee would include the participation in strategic planning which would provide oversight and direction to the revised AaR Programme on a regular basis.

This Committee would also be responsible for auditing the financials and the implementation of the AaR Programme, reviewing progress reports and signing off on all major AaR Programme payments. As such the committee would need to meet on a regular basis (at least biannually, possibly quarterly). Meetings could be electronic or telephonic to reduce costs.

However, in addition to the above recommendation by the DEA, the Committee should include the AaR Programme National Coordinator from DWS, a representative from the NGOs involved in the AaR Programme and a representative from the CMAs. The representative from the NGO sector could be elected by the participating NGOs to serve as a representative on the National AaR Committee for a specified period of time, after which time a new representative could be elected. For the CMAs a single person can be selected to represent all the CMAs. This person could also change from time to time, as determined by the CMAs.

In summary, the AaR National Committee should consist of:

- a representative from the DEA
 - a representative from the DWS
 - a representative from Treasury
 - a representative from the implementing NGOs
 - a representative from the Catchment Management Agencies
 - a representative from the Working for Wetlands programme
- 
- Representatives will be appointed by the relevant Minister

3.2.3 DWS – National AaR coordination

Workshop participants decided that the (DWS) should remain the primary custodian of the AaR Programme, given their history with the programme, experience with implementation/ co-ordination and their role as the national department responsible for water resources.

However, at a National level, the DWS coordination of the AaR Programme should be managed by a single individual, whose full time job it is to meet the requirements of the AaR Programme. This point was made very clearly in the original documentation prepared by the DWA (2009). This responsibility should not lie with an individual who has a number of other responsibilities within DWS in addition to the AaR Programme. It is imperative that the candidate selected for this position exhibit strong leadership and project management skills as well as a drive and passion for the AaR Programme. The specific roles and responsibilities of all stakeholders in the revised institutional/governance framework are detailed in Table 3.

In general the DWS national coordinator will provide oversight to the AaR Programme. This will involve reporting to government directly, assessing statistics of the programme, communicating and coordinating with the DEA, CMAs and the implementing NGOs. Other responsibilities will include co-ordinating marketing campaigns, facilitating meetings with implementing NGOs.

3.2.4 Multiple NGOs – Implementing agents (volunteer/monitoring team coordination)

Multiple NGOs operating across the country will provide the foundation for the implementation of the AaR Programme. The original DWS documentation pointed to regional co-ordinators (also DWS employees) to implement the programme. However, the idea to rather use multiple NGOs with support from CMAs, CMFs and regional DWS offices to implement the programme arose from the fact that NGOs have a closer connection and established/existing links with communities located in the areas they work. The NGOs generally have a greater capacity to engage with communities and volunteer groups on the ground and are better equipped to provide training and capacity building opportunities to these groups. The NGOs operating across the country will need to be closely coordinated by the DWS national coordinator and under the mandate of the AaR Programme; they will be governed by the National AaR Committee (CMAs can act as a coordinating/reporting platform mechanism).

NGOs will need to coordinate closely with the DEA to enable overlap between operations conducted by DEA technical teams (e.g. waterweed removal – see previous post workshop reviewer’s comment) and volunteer monitoring groups/communities in specific areas. Partnerships between the NGOs and local authorities and governments in the form of local municipalities, CMAs and CMFs will be critical as a support structure for logistics and the flow of finances from the government.

It is necessary to emphasise that by using multiple NGOs, the success of the programme in different regions will not be solely dependent on the national coordinator, or on primary sources of funding emanating from the treasury. Instead such an approach will allow for a bottom up approach, where volunteer groups already in existence, Community Based Organisations (CBOs), industry and other interested and affected parties can coordinate with their local NGOs to adopt rivers in their locales and include the adoption of rivers into already existing projects and initiatives. Furthermore the NGOs will be in a position to receive funds from additional sources (e.g. crowd source funding, donations, international aid programmes) to conduct projects within the scope of the AaR Programme. NGOs can also organise and host fund-raising events (e.g. conferences, auctions).

3.2.5 CMAs and CMFs – Local and regional coordination

The Catchment Management Agencies (CMAs) and Catchment Management Fora (CMFs) will play critical and central roles in the revised AaR Programme. The CMAs (essentially regional DWS offices) will function at the regional and local level and act as the primary channel of communication between the DWS national coordinator, DEA and the implementing NGOs, reporting directly to these organisations. Furthermore they will have to work closely with the implementing NGOs to provide

logistical support where possible, and to coordinate efforts. Communication, coordination and support will be the key roles of the CMAs, however they will not be responsible for actually implementing the AaR Programme – this task will be handled by the NGOs who will implement and coordinate all activities and interact with the private and public sectors as well as the communities on the ground.

Should a community or volunteer monitoring group become aware of a non-compliant industry, they would be able to feed this information to their implementing NGO, who would in turn feed the information to the relevant CMA. The CMA would then take the issue up with the DWS, on behalf of that community.

The CMFs as community based organisations meet and discuss water related issues at a local scale. CMFs have knowledge of the specific water related issues in catchments. They also have links with communities as well as interested and affected parties in the catchment. Their roles as facilitators and support structures in the catchments will be critical to the success of the AaR. CMFs will need to work closely with the implementing NGOs and the regional CMAs in order to coordinate activities and cooperate in joint efforts. The CMFs will report to the CMAs according to existing reporting structures and they will also communicate directly with implementing NGOs as well as public and private groups on the ground. The CMFs will act as the voice of the public and private groups (including for example communities, local municipalities, CBOs, tertiary institutions and professional bodies). Dissemination of information from the CMAs and the NGOs will also take place through the CMFs.

Coordination of efforts and the identification of activities needed on the ground, specifically the need for technical teams to assist in clearing of vegetation, solid waste removal, etc. will be raised by the CMFs and reported to the CMAs who will then coordinate with the DEA and arrange overlap/joint efforts where possible.

Where possible CMFs can assist with implementation – however this will need to be guided and coordinated with the implementing NGOs. Requests from public/private/industry sectors to be involved with the AaR Programme should go through the CMFs or directly to the relevant implementing NGO for record keeping purposes.

3.2.6 DEA – EPWP / Technical team coordination

The value of the two pronged approach to the institutional / governance framework is that the DEA can operate and manage a programme akin to the EPWP “Working for” programmes in conjunction and collaboration with the broader “volunteer” (monitoring teams) prong of the AaR Programme managed and implemented by the NGOs. The DEA’s involvement in the AaR Programme would be overseen by the DWS national coordinator but all strategic planning, financial audits; reviews would be done collaboratively through the National AaR Committee to ensure inclusivity and objectivity. It must be pointed out that the oversight by DWS national coordinator does not suggest that they will give directive to how DEA should operate and manage their programme.

Post workshop reviewer’s comment: *What have been referred to as “monitoring teams” in this document should possibly still be called volunteer teams, as the word “monitoring” implies the that the numerous volunteer activities will be reduced to only the physical monitoring of certain parameters of the streams/rivers, which should not be the case.*

The actual structure and framework for the DEA’s involvement in the programme dovetails very closely to the “Working-for Rivers” programme proposed by the DEA (Medium Term Expenditure Framework (MTEF) Bid proposal – MTEF BID 2013/2014) (see Appendix 3). The project team has

tried as far as possible to integrate aspects of this bid into the revised AaR Programme presented here. Separate funding can be applied for by the DEA, as specified in the bid (MTEF BID 2013/2014) (Appendix 3), for co-ordinating and managing paid technical teams across the country (as per EPWP projects). Details for the administrative arrangements, reporting, governance, medium to long term sustainability/funding are provided in the MTEF BID 2013/2014 (Appendix 3). Chapters 6 and 8 of this document highlight the specific roles, training requirements and activities we foresee the DEA (technical teams) undertaking in the revised AaR Programme. The original budget proposed in the MTEF BID 2013/2014 (Appendix 3) for the “Working for Rivers” Programme may need to be revised in light of the revised AaR Programme and funds required to support the second prong of the framework (volunteer, public private participation/monitoring teams).

As indicated in the DEA MTEF BID 2013/2014 (Appendix 3) the governance of the DEA’s involvement in the AaR Programme will be handled and overseen by a national committee (the National AaR Committee). The DEA will also need to communicate closely with the DWS national coordinator, the CMAs, and the implementing NGOs to ensure effective groundwork and to collaborate on efforts where possible. The CMFs in conjunction with volunteer groups and communities on the ground will be able to assist in the identification of key water related issues and specific localities where the DEA and the technical teams could assist – thereby playing a supporting role in prioritising and optimising efforts.

Post workshop reviewer’s comment: *One should also refer to the DEA/DWS MoA*

As evidenced by the success of other EPWP programmes in South Africa, various opportunities exist for value added industries to emerge from work in and around rivers (e.g. alien vegetation used to produce furniture/wood products, small scale enterprises using goods and services from rivers and riparian areas). These value added industries could feed back to supporting paid technical teams and / or uplifting communities through improving livelihoods. It is important to highlight the necessity of a holistic approach to training and education within the new model for the EPWP technical teams, which will further enhance the ability to provide further opportunities both inside and outside of the programme.

3.2.7 Volunteer activities through the activities of monitoring teams

Participation by the private sector, CBOs, communities and schools is considered to fall under the activities of monitoring teams – formerly considered as volunteer groups.

Participation by the private sector, CBOs, communities, volunteers and schools was largely ignored during the implementation of the AaR Programme from 2010-2015. The degree to which such involvement could sustain and contribute to the success of the AaR Programme was greatly downplayed. Even though an ethos of volunteerism and public participation was at the heart of the original design for the AaR Programme, there was no direct or easy way for such volunteer based initiatives to become a part of the larger AaR Programme and no roles and responsibilities had been assigned to these potential groups. Furthermore such groups/initiatives felt excluded from the AaR Programme as the focus shifted towards paid workers and job creation. This led to several separate public/private groups becoming established and carrying out their own independent activities, while other groups were left having no sense of direction, involvement or ownership in the AaR Programme.

The revised AaR Programme accommodates a bottom up approach which recognises the importance of these public/private initiatives and allows for established groups (and new groups) to become part of the larger AaR Programme with a more directed long term vision and coordinated actions, which will be managed by multiple regional NGOs and the DWS national coordinator.

The public/private sector groups (indicated in Figure 2 and Table 2) arguably form the most important link in the institutional framework and are critical to the long term sustainability of the programme. In this regard, it will be critical to organise and develop local capacity of CBOs as they deal directly with communities and will therefore be a support to the implementing NGOs. Should either the DEA or DWS/NGO/CMF/CMA prong of the framework face difficulties, lose momentum and collapse, the public/private initiatives together with the multiple NGOs can continue caring for and adopting rivers, thereby enabling the long term continuation of the programme without direct input from the DEA or the DWS, should this occur.

CHAPTER 4: SUSTAINABLE BUSINESS MODEL AND FUNDING FRAMEWORK FOR THE AaR PROGRAMME

Key to the success and long term sustainability of any programme is a comprehensive funding framework and a sound business model. As part of the review and redesign of the AaR Programme, the business case and funding model were re-evaluated and revised during the stakeholder workshop.

For the revised AaR Programme sources of funding should ideally be varied (i.e. range from government budget allocations, the business sector, to international donor funding to personal donations from citizens). The AaR Programme should be cleverly incentivised and marketed to maintain public interest. This section deals with these aspects of the revised AaR Programme. The new funding framework is presented below in Figure 3.

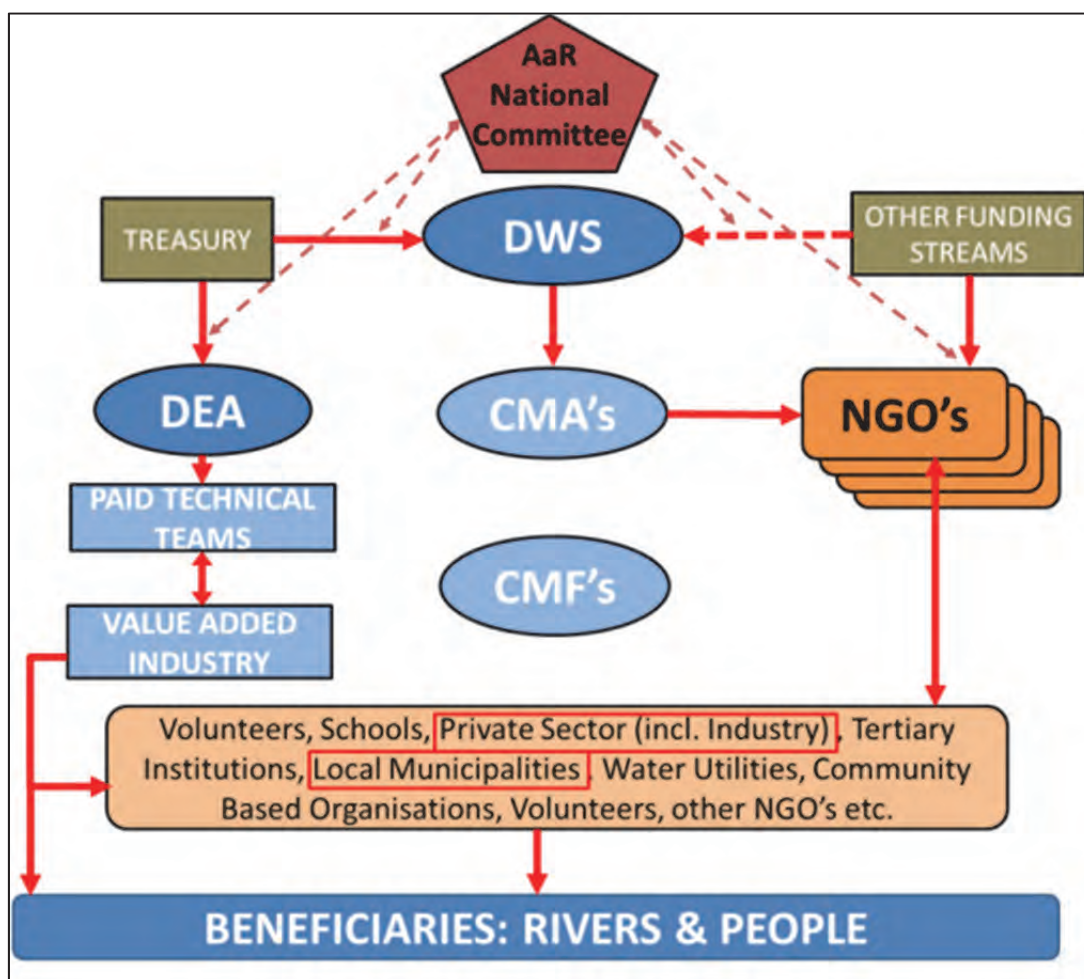


Figure 3. Funding framework proposed for the revised AaR Programme. Thick red arrows indicate the directional flow of monies, thick dashed arrows represent possible flows and thin red dashed lines indicate control over sign-off of payments.

4.1 FUNDING FRAMEWORK

The National AaR Committee (consisting of an accounts manager or representative from treasury) will be responsible for signing off on all payments and movement of monies in the programme from all primary and secondary funding sources and also the flow of monies to the implementing NGOs, DEA and CMAs.

This process of the National AaR Committee having to sign off on payments and funding applications will ensure that funds are regularly reviewed and audited and that joint objective decisions are made regarding spending in the programme. In turn this will promote transparency with regards to finances.

4.1.1 Paid technical teams vs. monitoring teams

4.1.1.1 Paid technical teams

The revised funding model shows two main money flow paths. The first being that of money provided by treasury to the DEA to cover the costs associated with the paid technical teams and EPWP like processes.

Likely costs associated with the technical teams include:

- Payment of stipends
- Safety equipment (gumboots, personal protective equipment)
- Technical equipment (brush cutters, herbicides, chainsaws, etc.)
- Career pathing opportunities through training programmes (basic and advanced) on water related issues, capacity development through mentorship programmes and possible career streaming.
- Transport costs
- Coordination and management costs
- Initiating and investing in value added industries

The MTEF BID 2013/2014 (Appendix 3) produced by the DEA provides further details of costs likely to be incurred in the management of the DEA EPWP processes, with estimated budgets and governance of finances for a “Working for Rivers” Programme. In essence the DEA EPWP programme “Working for Water” represents a tried and tested business case which reflects one branch/arm of the new funding model proposed for the AaR Programme (see Figure 4 below, and Figure 3). For more information on the Working for Water programme see the government website <https://www.environment.gov.za/projectsprogrammes/wfw> and <https://sites.google.com/site/wfwplanning/Home>.

Post workshop reviewer’s comment: *It is important to consider a payments-for-watershed-services type model using CBOs as service providers. The DEA land user incentives programme has shown that this can be done. **The procurement models will however need further development!***

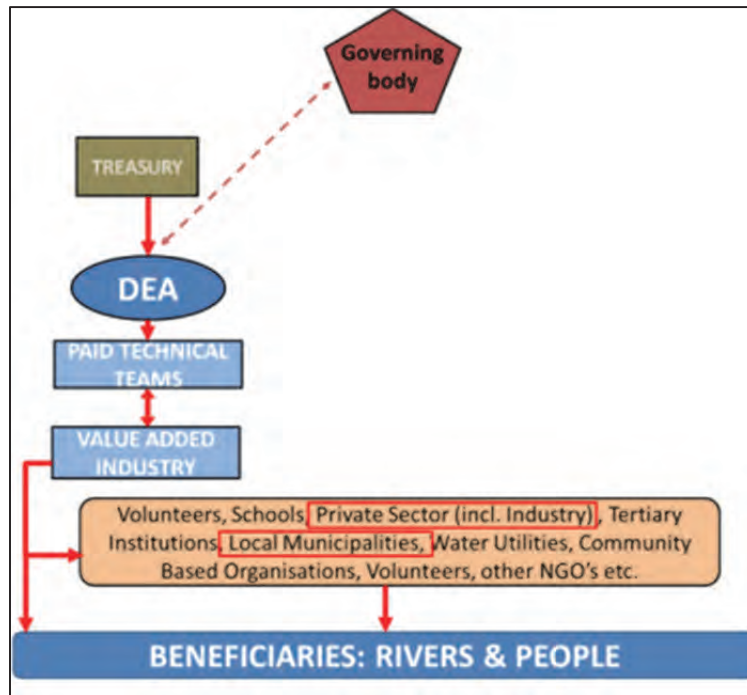


Figure 4. Branch of the new funding model for the revised AaR Programme which is currently used by the Expanded Public Works Programme Working for Water.

4.1.1.2 Monitoring teams

The second flow path is that of money provided by treasury to DWS (and by association the CMAs and the implementing NGOs) to assist in the coordination, management and support of the public-private partnership initiatives and the monitoring teams (including covering costs for career pathing opportunities, training courses and the provision of safety equipment). The flow of funding in this stream can and should be augmented by other secondary sources of funding such as fundraisers, international donations; crowd sourced funding and public private partnerships.

Costs associated with the monitoring teams and the public-private initiatives will be similar to that of the technical teams but will exclude the payment of stipends and the costs associated with acquiring technical equipment. Some costs may be incurred providing specific groups with citizen science tools (e.g. clarity tubes and transparent velocity-head rods/planks and miniSASS kits). Additionally nominal stipends may be paid to specific volunteers/community members who show interest, complete training and go on to become “trainers of trainers”. Bursary support may also be considered for those who wish to pursue further career pathing opportunities.

4.1.2 Flow of funds

The flow of funding (indicated by thick red arrows in Figure 3) will be primarily from treasury to both the DEA and the DWS, under the regulation of the AaR National Committee. From the DEA, funding will be managed under the Natural Resource Management Programmes. Payments to members of these teams will be made in the form of stipends at the standard EPWP rates. Regional DEA coordinators will be responsible for negotiating with the DWS National Coordinator and NGOs to set up training events for teams and also to purchase equipment. All expenditure and purchase orders over the value of R5000.00 will need to be approved by the National AaR Committee. Purchases under this value will also need to be authorised, possibly at the CMA level, to ensure transparency and accountability within the revised AaR Programme. Should value added industries (manufacturing

and sales of wood products, etc.) emanate from the EPWP-like programme managed by the DEA, funds from these industries could be fed back to the paid technical teams, or into communities as a means of upliftment and creating career/livelihood opportunities. Alternatively the funds could be ploughed back into the DEA in order to ensure its growth and viability.

Post workshop reviewer's comment: *A procurement model in line with the PFMA must be developed. DEA's Guidelines for the Appointment of Implementing Agents can be considered as the approach could be applicable. In this case though it will have to happen within specific catchments/rivers.*

Money from treasury received by the DWS will be directed to the regional CMAs which will then be directed to support and co-fund efforts by the implementing NGOs in the region. Multiple NGOs could also be sub contracted by DWS directly to implement the programme. Funding cannot be directed to CMFs as technically they are not legal entities. The implementing NGOs will be responsible for distributing monies to public/private/volunteer initiatives and also for providing financial support to monitoring teams (logistics, training, etc.).

NGOs and, to a degree, the DWS are positioned to receive another important primary stream of funding in the form of international donor funding as well as numerous secondary streams of funding. Both of these sources of funding, especially the secondary sources, were largely untapped during the implementation of the AaR Programme since 2010. These sources of funding are dealt with in more detail in this chapter.

During 2010-2015 funding was provided predominantly by treasury and remained within government departments (national and regional), barring payments of stipends. The main risks associated with relying solely on funding from treasury is that with economic downturns, expenditure cuts, etc. funding from one year to the next can vary greatly. This would directly hamper the success/progress of the programme. Furthermore, with money being used only to pay stipends, no opportunities for value added industries, career pathing opportunities and/or public-private initiatives were fostered. Government was paying large amounts of money each year (see WRC AaR K8/1109 Deliverable 2, 2015) with little evidence of that money making lasting impacts or changes in the rivers and communities to which it was directed. Clever incentives, varied funding sources, opportunities for career pathing and focused skills development as well as the use of biophysical and physical indicators to gauge the success of the programme are therefore required.

Additional funding may be received by the implementing NGOs from the private sector (certain industries wanting to invest money into Corporate Social Investment (CSI) and Corporate Social Responsibility (CSR) programmes) and also from local municipalities that have budget allocations to community upliftment projects or environmental issues.

4.2 FUNDING SOURCES

4.2.1 Primary sources

Primary sources of funding include, amongst others:

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- A DWS trading account
 - Water utilities such as Rand Water, Umgeni Water, etc.
 - International donor funding, co-funding or sponsorships (e.g. FetWater, USAID, GIZ)
 - Partnerships with the banking industry

Primary sources of funding include international donor funding (e.g. USAID, GIZ), sponsorships, co funding from other countries or international industry partners. Possibilities exist for mechanisms to be put in place that would allow for a percentage of funds generated by increasing water tariffs to be used for water conservation in a programme such as the AaR Programme. In essence this would be a DWS trading account, whereby monies generated will be ring fenced. Opportunities also exist for partnerships with banks to be established. For example a blue affinity account or an “Adopt a River account” could be established with FNB or Standard Bank (both use the colour blue in their logos and advertising) whereby ordinary citizens can choose to donate a small percentage of purchases made on their credit cards to the AaR Programme or other water related issues/programmes. A blue affinity account may also receive direct funding from banks. Such partnerships could provide useful marketing avenues for both the AaR Programme and the banks themselves. This could take a similar form to the Nedbank “Green Affinity” Account. It should be pointed out that it is an assumption that banks and other profit driven potential funders understand the Insurance Value for ecosystems – this may not be the case.

4.2.2 Secondary sources

Secondary sources of funding include, amongst others, the following possibilities:

- Links to private sector industries
- Water utilities’ funding
- Services Sector Education and Training Authority (SETA) funding
- Personal donations
- Fund raising initiatives from CMFs and CMAs
- Local municipalities
- Radio drive initiatives
- Crowdfunding (sometimes referred to as crowd-sourcing and may be very effective)
- Money derived from additional value added industries

Funding arrangements with private sector industries can be established through Corporate Social Responsibilities (CSR) and or Corporate Social Investment (CSI). Funding through CSI tends to be more short term in nature, while CSR tends to be longer-term in nature. Corporate Social Responsibility managers will need to be encouraged to direct money from CSI and CSR towards environmental issues. If it is a CSR initiative then B-BBEE points may be the allure or carbon credit² could be used as incentive.

² A carbon tax has been proposed for South Africa (see National Treasury, ‘Carbon Tax Policy Paper: Reducing Greenhouse Gas Emissions and Facilitating the Transition to a Green Economy’ (May 2013). Available at: <http://www.treasury.gov.za/public%20comments/Carbon%20Tax%20Policy%20Paper%202013.pdf>) and it is likely that a

Secondary funding could be sourced through the Services Sector Education and Training Authority (SETA). Such funds would be directed towards training and capacity building like career pathing; which could be used to assist both the monitoring teams and paid technical teams.

Implementing NGOs could establish accounts in order to accommodate donations from ordinary citizens and industries. Similarly, local CMFs and even CMAs could organise and host fund raising/awareness raising events/roadshows to garner local support and buy-in. An effective means of fundraising (specifically engaging industries and corporates at a local scale) is through the use of radio drives. Radio drives are fund raising events hosted on local radio stations. Information is provided on air about the project and the need/reason for funding after which lines are kept open for companies/industries/members of the public to pledge and pay money to the programme. Pledges are announced on air and companies that have made a pledge challenge other companies or industries to pledge more. This approach generates a competitive environment where industries and companies try to out-do each other and in the process assist in helping charities or projects generate funds, whilst earning tax rebates on charitable donations.

CapeTalk radio station in the Western Cape is well known for hosting radiothons/radio drives and promoting charity and social events. CapeTalk hosted a Radiothon for the Fire Relief Fund which raised over R1.25 million for the City of Cape Town fire services when fires on Table Mountain were threatening homes and lives in early 2015. Similarly the Cape Talk Birthday Build radio drive generated R1.12 million for Habitat for Humanity

Crowdfunding is a fairly recent global phenomenon which is essentially an alternative finance system that has emerged outside of the traditional financial system, largely via the internet (see for example www.kickstarter.com). It is the equivalent of a fan-based internet fund raising campaign. Projects are initiated and proposed online, where a large number of individuals and groups can choose to support the idea and pledge relatively small sums of money. A moderating organisation then brings the parties together to launch the idea or project. Since their launch in 2009 “Kickstarter” report that over 10 million people have backed a project generating over \$2.2 billion and that they have successfully funded almost 100 000 projects. In 2013 the crowdfunding industry raised over \$5.1 billion worldwide.

Post workshop reviewer’s comment: *A resource economics study is needed to cost the value of AaR/Citizen Science role in relation to the South African GDP as this will be needed to help justify why we are asking for support from government and international funders*

The EPWP through the DEA has successfully piloted and launched several value added industries, namely the “Eco-furniture” programme which produced eco-coffins and eco-desks, chess sets, memorial benches, walking sticks and biomass from alien invasive plants cleared from catchment areas for building materials. These programmes aim to provide employment (18 factories have been proposed with an estimated 160 jobs created per factory), career pathing opportunities and skills, whilst providing products that are needed by schools and the public.

4.2.3 Who is responsible for sourcing funding?

DWS should work in partnership with NGOs to secure additional funds through secondary sources,, while the National AaR Committee and the DWS national coordinator would be responsible for

carbon trading will be implemented where industries can participate in certain projects to offset carbon taxes that will be imposed (see report on Carbon Trading in South Africa: Trading offsets against the proposed carbon tax, 2014) – available at <http://www.sagreenfund.org.za/wordpress/wp-content/uploads/2015/04/Carbon-Trading-in-SA.pdf>

securing funds from government/treasury, as well as international funds. The revised framework accommodates the possibility for both the DEA and the DWS National Coordinator to apply for separate funds from treasury to be used for different aspects of the programme. For instance the DEA can apply for funds in a manner similar to that presented in MTEF BID 2013/2014 (Appendix 3) (to carry out the EPWP type activities conducted by the technical teams), while the DWS national coordinator can apply for funds to assist the monitoring teams and public/private initiatives, with the support from the CMAs and the implementing NGOs.

4.3 MARKETING

As the lead agency for the programme DWS would carry the key responsibility for marketing the programme, however marketing could be done in a partnership manner. Two aspects of marketing that have large financial implications are that of incentivising the programme and also relaunching the programme. These aspects are discussed below, while other issues related to marketing are covered in Chapter 5: Communication Framework.

Post workshop reviewer's comment: <i>The revised AaR could be included in the DWS (and subsidiaries) strategic plan</i>
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4.3.1 Incentivising the AaR Programme

It is critical that the new AaR Programme be cleverly incentivised and marketed. Incentives could include acknowledgment of participation and activities in various media, publicity events, providing training and skills development and issuing certificates after training has been completed. An additional incentive structure could be achieved through partnering with mobile companies (e.g. Vodacom/MTN) whereby the mobile companies sponsor air-time to those individuals/champions in communities that get involved with the volunteer/monitoring teams. Mobile companies and other industries could also provide short term capital investment for 2 years, with a view to developing sustainable funding through the establishment of initiatives (e.g. annual fund raisers, value added industries, enviropreneurship opportunities), after which they withdraw.

DUCT have partnered with the N3 Toll Concession (N3TC) and Green Trust to support the EnviroChamps Programme. In this partnership N3TC sponsor air time to individuals from the surrounding communities selected to be EnviroChamps (local champions who monitor sewer manholes and conduct environmental activities with youth clubs). The champions report the location of surcharging manholes to local authorities and they also record the number of days the manholes surcharge. In this model the surcharging manholes can be dealt with rapidly and efficiently – thereby reducing impacts to local communities, streams, wetlands and water sources, while the EnviroChamps benefit from the airtime. See http://www.duct.org.za/files/DUCT%20Story.pdf for more information.
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4.3.2 Relaunch of the AaR

A relaunch of the AaR Programme with the development of a new national logo (possibly through a competition) as well as strong marketing will be required to build national interest from all groups. Various forms of media appropriate to the marketing communication strategy should be used, especially short adverts/infomercials on television and radio. DWS should partner with the NGOs and

possibly outsource marketing of the programme to private industries in the business sector who are trained professionals with knowledge of marketing products.

Post workshop reviewer's comment: *It will be necessary to have a full understanding of DWS's capability (and shortfalls) in terms of marketing the revised AaR Programme.*

4.4 SUSTAINABILITY

The project has identified four major areas that need to be focused on in the revised AaR Programme in order to ensure long-term sustainability. These focus areas are:

- Securing long term funding especially through water utilities and trading account
- Reporting on measures/ indicators of success, which clearly display social and environmental benefit
- Continued targeted marketing and incentivising
- Education & capacity building

Long term funding will be essential to the financial sustainability of the project. Government, while being the largest contributor of funds should not be wholly relied upon. The development of the blue affinity account or a trading account and partnership with water utilities such as Rand Water will therefore be critical. Emphasis should also be placed on developing private sector partnerships to obtain funds through CSR, CSI or carbon credits. Marketing strategies should also be aimed at targeting international sponsorship and funding. This may require the NGOs or DWS employing someone in a full time position to try and secure international funds for the programme.

The AaR Programme will only be sustainable if all funders, the general public, government and other interested parties alike, can see through evidence based reporting, that the programme is having an impact and making a difference in both the rivers themselves and the communities that rely on them. Reporting generated from the programme should be tailored to present the trends in social and biophysical indicators as set out in Chapters 5 and 9. Realistic time frames for measuring the success of the programme should also be derived.

The public and private sectors including volunteers and community members will likely only participate in the revised programme if the correct incentives are in place. The incentives may differ for the various groups (e.g. publicity/recognition might be most important for volunteers, while tax rebates and carbon offsets would be most important for industries) and would not necessarily be monetary in nature but they all, nevertheless, need to be cleverly marketed. Success stories should be published, case studies where the AaR Programme is successfully implemented should be showcased in newsletters, television, radio and a large degree of positive publicity should be maintained. Branding and relaunching the programme may be critical to marketing strategies.

The sustainability of the AaR will depend on the forms of education and capacity building that all partners are able to participate in. In this regard one option is that of the 5-day Enviro-Eds Course (SAQA NQF Level 5 accredited training) that could provide an important overview where river health becomes the theme of the training. Other more specific training in river ecology (non-accredited at this stage) would be offered supported by the short skills programme in Enviro-Practices. A "change" project approach to the training will enable participants to change their work-place situation and

include insights and commitments learnt from and applied through the training. There are also other affordable training and capacity building options available, such as a two day training or workshop on the introduction to aquatic ecology, etc. For further information on capacity building and education, please refer to Chapter 6 of this document.

4.1 DUCT BUSINESS CASE STUDY

This brief case study serves to highlight how a non-profit community benefit organisation, viz. DUCT, can remain financially sustainable even though it relies on mixed funding sources and not wholly on funding from Government/treasury. The case study in effect represents a functioning example of a branch of the revised funding model and institutional framework of the AaR Programme (see Figure 5 below).

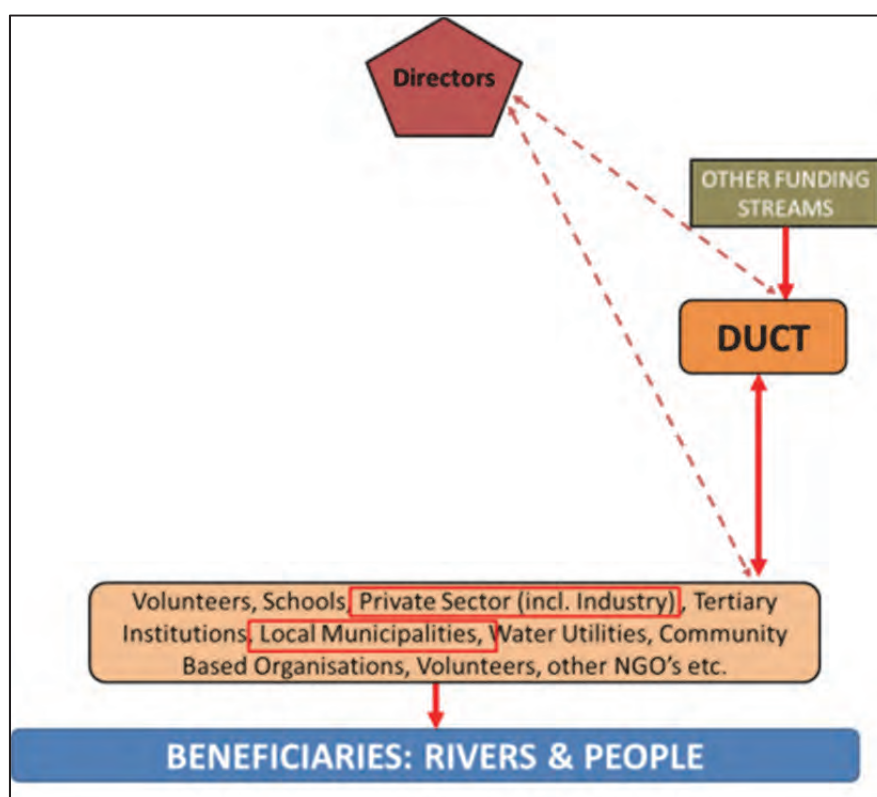


Figure 5. Branch of the new funding model for the revised AaR Programme which is currently used by the non-profit community benefit organisation Duzi uMngeni Conservation Trust (DUCT).

CASE STUDY – DUCT: A POWERFUL FORCE FOR RIVER CARE

The Duzi-uMngeni Conservation Trust (DUCT) is a non-profit public benefit organisation founded to champion the health of the uMsunduzi and uMngeni Rivers in KwaZulu-Natal. For ten years DUCT has worked on:

- Improving water quality through lobbying for improvements to the sewage infrastructure and the operation and maintenance of that infrastructure in Pietermaritzburg and Durban;
- Reducing solid waste in the rivers by lobbying for better waste management and by collecting and removing much of the waste that ends up in the rivers;
- Reducing industrial pollution by providing an early warning system and assisting with monitoring;
- Removing and controlling invasive alien vegetation both terrestrial and aquatic, using physical,

chemical and biological control methods;

- Increasing flow in rivers through lobbying for the implementation of the environmental flow provisions in the Water Act of 1998;
- Education and public awareness through media campaigns, community drama, and long term work with eco-clubs in schools;
- Better regulation of sand mining through building relationships with the responsible authorities, and through on the ground monitoring;
- Improving land care and reducing soil erosion through the training and employment of erosion control teams;
- Investing in valley communities with typically between 100 and 200 people employed in various aspects of DUCT's environmental work, from alien plant control to erosion protection, mountain bike trail building and litter removal;
- Reducing the incidence of Bilharzia through locating the most affected areas and then developing education, testing and treatment campaigns.

HOW DOES DUCT WORK?

DUCT has a Board of Directors, a management team, patrons, partners, sponsors and members.

Management team: DUCT's management team includes a general manager, a financial manager, administration manager, field managers and co-ordinators for various DUCT projects such as River Care Teams and Enviro Champs.

Patrons: DUCT is supported by several patrons, all highly respected local community members who have made, and continue to make, major contributions to conservation in KwaZulu-Natal and beyond. DUCT patrons include two senior iNkosi (traditional leaders), the chairman of the Dusi Canoe Marathon, a well-respected professor and until his recent death, Dr Ian Player.

Partners and sponsors: Since 2006 DUCT has been supported by and worked in partnership with many people and organisations. These include local businesses, schools, canoe clubs, conservancies, universities, Rotary clubs and municipalities. A full listing of these organisations year by year can be found on the website www.duct.org.za.

Members: DUCT members with voting rights are individuals who have made a positive and selfless contribution to the rehabilitation of the Dusi and uMngeni Rivers, as well as to conservation and environmental education in general. Members contribute to DUCT by donating either time or money towards the DUCT mission. There are about 80 members and their names are listed on the DUCT website.

FINANCIAL INCOME/EXPENDITURE STRUCTURE

Long-term funding (primary):

KwaZulu-Natal Canoe Union (KNCU) levy – senior paddlers pay a levy to be part of the union (which organises events throughout the year), a portion of which is directed to DUCT

Annual Dusi Canoe Marathon Charity batch input (both the Dusi canoe marathon Charity Batch and the KNCU levy amounted to 2 million rand over a seven year period from 2006-2013)

Durban Green Corridor (DGC) Project funding – an initiative of the **eThekweni Municipality** and the Dusi UMngeni Conservation Trust (**DUCT**) supported by the Department of Water Affairs,

environmental, business and sports associations. Its aim is to build a grassroots partnership of the people of **eThekwini** to rehabilitate the natural environment of the **Mngeni basin** and to create jobs and grow the regional economy through sport, recreation and tourism development.

Medium to long-term funding (secondary):

Lottery funding for River Care Teams (15 million rand over three years)

Receive general donations from citizens

Donations in kind made by many DUCT members in terms of offering time and expertise to contribute to savings

Favourable rental on DUCT premises made possible by members and patrons

Several Public Private Partnerships:

- WWF Nedbank Green Trust
- Dusi 2 Coast race
- Hulamin (private engineering firm)
- N3TC (N3 Toll road concession)
- Talbot and Talbot (Private water quality laboratory)
- eThekwini municipality
- Umgungundlovu municipality
- City of Choice Pietermaritzburg, Msunduzi.
- Independent Development Trust (IDT)

Short-term funding (secondary):

Other project income from 2010-2013 increased from R 100 000-R 500 000 (more projects are in the pipeline)

Trail runs and benefit races

Running training courses and awareness/education courses

Expenses:

Office expenses

Depreciation and insurance

Finance and bank charges

Accounting fees (amounted to ZAR1.7 million over seven year period) – despite the new Companies Act providing that non-profit companies, such as DUCT do not have to conduct full audits of financial statements, DUCT has in its revised Memorandum of Incorporation provided for full continued annual financial audits for the sake of transparency and accountability – this builds confidence in members and donors as to how finances are handled.

CHAPTER 5: COMMUNICATION FRAMEWORK

Two streams (or stems) of communication were identified. The first is communication within and between implementation agencies within the revised institutional framework (see Chapter 3). The second is the need for a communication with volunteer groups; the general public; the private sector and interested and affected parties that do not interact with the project directly.

5.1 COMMUNICATION WITHIN AND BETWEEN IMPLEMENTING AGENCIES

There are a number of recommendations for communication within the implementing agencies. The first is that there should be a customised and unique Memorandum of Understanding (MoU) between all implementing agencies, defining all roles and responsibilities. In this MoU each implementing agency will identify an AaR Programme champions (therefore: DWS, DEA, CMA and the NGO Group). This person's sole responsibility would be AaR communication, reporting and co-ordination for that institution. This should be position-based, and not dependent on a person. The position should be designed within the organisation that should the position become vacant, it is easily refilled (e.g. generic email addresses and social media accounts for the position, not the person, etc.). The "Champions" should have quarterly meetings to discuss the programme and any developments within the programme. There could also be channels of communication that allows for ad hoc communication between quarters. These meetings could be virtual (Skype, telecom, etc.) or face-to-face. These "Champions" will also be responsible for a very strong component of communication within their department or sector. These individuals need to have very good social skills, with a strong understanding of their roles.

A point to remember is that in any form of communication there is a risk that an excessive emphasis on branding and portrayal can override the bottom up approach where people can develop and build an affinity to a localised approach. This must be considered in the further development of a communication strategy.

5.2 COMMUNICATION WITH THE PUBLIC

Communication relates not only to how the AaR Programme communicates with the public (citizens, volunteers, industry and the private sector) but also how the public communicates with the AaR Programme. It is vital to realise that this communication process needs to be in both directions. The implementing agencies will use both active and passive communication to reach the general public. This will develop a dual strategy of marketing the AaR Programme at a national and local level, while at the same time building relationships within communities.

- **Active communication:**

- Annual report which will package results for the year. Results will include the number of projects, success stories, monitoring teams, employees and stories of change. The annual report could be launched at an annual symposium.
- Annual Symposium with a strong media presence, hosted for all stakeholders to highlight success stories, scientific water quality improvements or outstanding issues and provincial feedback. This symposium could be hosted in a different province annually.
- Traditional media will also be an important form of active communication. This includes print, television and radio media. Radio media should especially be highlighted as an important

communication and fundraising tool. Radio is especially important in rural communities and communities with low literacy rates.

- Road shows to rural communities are a potential active communication strategy to raise awareness about the programme. One of the focuses of the road shows will be to look at the polluters of catchments (i.e. in rural, peri-urban and urban catchments). Rural and peri-urban catchments may be targeted where soil erosion is suspected to be from keeping excessive livestock numbers. The overall aim of the roadshow would be to generate more interest in the programme, create awareness around the possibility of becoming involved on a broader scale within the provinces.

- **Passive communication:**

- A webpage housed on the DWS website and administered by the DWS. This page will link to the citizen science data, RQIS (River health/NEMP data for adopted rivers) as well as social data (number of technical and monitoring teams, success stories, jobs and other indicators of success). This website will potentially be housed under the new DWS Information Technology hub as a dashboard.
- A quarterly newsletter and ad hoc pamphlets that the DWS Champion will drive, with feedback from champions at the CMFs.
- Various social media tools such as Facebook, Twitter and Instagram.

Monitoring groups will be able to communicate with the various implementing agencies through the NGOs and the CMF. A civil society group or members of the public that would like to join the programme would have to register their local project with the local CMF or a local NGO that is involved in the AaR Programme. Information regarding the CMF and NGOs that are involved in the AaR Programme should be widely publicised through the systems discussed above. During the workshop it is suggested that a disclaimer form would be an important part of the process for new groups to become involved in the AaR Programme. There was also some discussion around the need for a formal agreement between the implementing agency and the community groups when a new AaR Project is started by a community group, particularly where industry, land owners and CBOs are involved. However, it is essential to ensure that the complexity of creating a volunteer AaR Project does not limit involvement by volunteers.

An area of concern: if the AaR Programme is housed within the DWS, all media correspondence and communication about the programme will need to be channelled through the DWS media department. Therefore, any NGO, civil society group or public-private initiative that wanted to publicise their activities would need the DWS media department to authorise a formal press release. This process is likely to slow down communication and possibly inhibit active communication. Media opportunities are often unforeseen or unplanned, and happen spontaneously. The issue of all media being channelled through the DWS media department will need to be resolved at National level.

CHAPTER 6: TRAINING AND CAPACITY BUILDING

In terms of training and capacity building the goal (as highlighted in Chapter 2) are to:

1. Building communities that learn together, to achieve a deeper, common understanding of river health and to increased knowledge around the scientific process. Thereby connecting communities, role players and various AaR initiatives.
3. Awareness raising and the development of a catchment approach to water resources, using hands-on experiences and grass roots education that highlight the linkages between landscape and water resources from the source to the sea, including people and their dependency and impact on rivers.
7. Through various training programmes, build capacity and skills and develop career pathing opportunities and jobs in the water resources and environmental sector, especially within previously marginalised communities.

This is particular relevant within previously marginalised communities, empowering and developing them through knowledge and skills acquisition.

With adequate training participants can increase their knowledge and understanding of the scientific process, gain deeper understanding of water resources and issues of local importance, strengthen their attitudes toward their natural environment, and promote public sector accountability.

Volunteers are provided not only with basic skills such as health and safety, snake handling, etc., but also the type of skills training (e.g. aquatic ecology, invasive alien species management) that could set them onto a sustainable career path, e.g. NQF accredited training. Furthermore, an opportunity could be provided through the revised AaR Programme to provide volunteers with a better understanding of the science underlying the water quality issues they are faced with and those prevalent across the country. In this regard citizen science training could enable them to collect data that will be useful to authorities for river health and water quality monitoring and possibly as a support tool for making more informed management decisions (Munnick et al, 2011).

Training and capacity development that focuses on engaging with volunteers and paid workers at a level that stimulates whole process learning has added benefits. This training could lead to further job opportunities (such as commercial alien invasive removals – as per land transfer requirements, if you are trained as a trainer you can teach, SASS accreditation, municipal jobs, tour guide for plants, auditing alien invasive plants, as well as the transfer of knowledge to other community members).

The technical teams will also require training on various aspects of river care and river health. As these teams will be managed under the EPWP prong of the revised institutional framework, they will be trained through the existing structures of the EPWP programme (e.g. Working for Water, and Working for Wetlands). As such we do not deal with the details of the training framework for the technical teams in this document. However, this does not preclude the possibility of training overlap between the technical and monitoring teams.

6.1 DEVELOP A TRAINING FRAMEWORK

South Africa has various training programmes relating to aquatic ecology and some of these are designed specifically for citizen scientists. The AaR Programme should develop a specific training programme that will cater for the specific needs of its patrons i.e. “Volunteers” (monitoring teams), “Paid workers” (technical teams) and school learners. The recommended training programme should include different levels of learning from a basic level to an advanced level as presented in Figure 6 below.

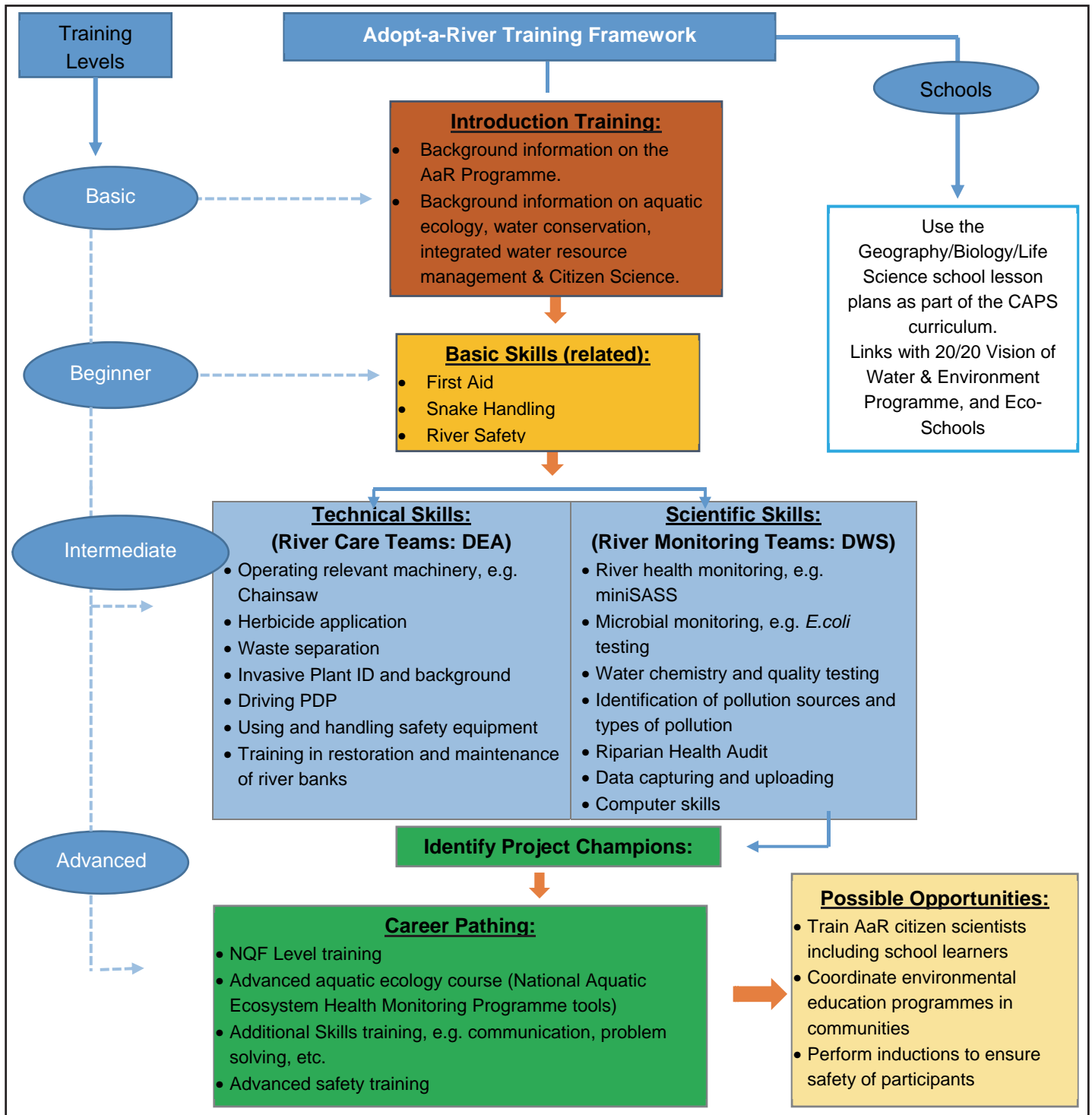


Figure 6. Proposed training framework for the AaR Programme

The proposed training framework is arranged according to different levels of skills required to carry out the Citizen Science and technical work for the AaR Programme, the levels range from basic to advanced level.

A potential schools training programme would need to be separate and should follow CAPS and links with other existing programmes i.e. Eco-Schools and 20/20 VfWEP (Vision for Water and Environmental Programme).

It should be noted that the below section provides a broad overview of a training framework that can be provided, this section should not limit monitoring teams in the activities that they can carry out to improve river health. Additional activities could include components such as eco-tourism, bird counts and so on.

6.1.1 Basic Training

Some of the key objectives of AaR Programme are to provide training that will help participants gain an understanding of the need to protect their water resources. The understanding of the value of water resource protection can be achieved through a properly structured training programme.

The training starts at a basic level which provides fundamental information on water resource management in South Africa, introductory information to aquatic ecology, water issues in South Africa, relevant water laws and the role of Adopt-a-River Programme in South Africa and its direct impact on the country's river systems and its citizens. The aim of this basic training level is to generate a broader understanding in aquatic ecology and the management of water resources.

6.1.2 Beginners Training

The beginners' level focuses on providing participants with safety skills and knowledge on the dangers of working in rivers and how to minimize or avoid such dangers. Other safety aspects may include the use of dangerous equipment such as tree felling machinery or the application of herbicides. This specific component will be covered in more details under intermediate and advanced training where they will be more relevant. The following safety topics will be covered under the Beginners Training component:

- Level 1 First Aid training
- How to respond to dangerous animals, e.g. when coming across a snake or crocodile.
- How to respond to snake bite, bee and wasp stings.
- River safety
- Health and hygiene and the use of Personal Protective Equipment (PPE)

6.1.3 Intermediate Training

The intermediate level focuses on specialized training requirements categorized into technical skills and monitoring skills.

6.1.3.1 *Technical skills:*

These skills will be provided to “Technical Teams” (previously referred to as paid workers) who will be working under the EPWP component, which falls under the mandate of DEA. The programme will focus on the activities listed below:

- Clearing of waste and invasive alien plants
- Restoration and management of river banks
- Monitoring and containing the spread of invasive aquatic weeds and riparian plants.

To perform the above duties the participating “technical teams” need to be equipped with the following skills and specific training:

- Identification of invasive alien plants
- Operation of machinery such as chainsaw, brush cutter, etc. and user safety
- Waste separation and safety
- Mixing and application of herbicides and user safety
- Construction of structures to stabilize river banks, e.g. gabions
- Tractor driving skills

6.1.3.2 *Water monitoring skills:*

The monitoring skills will be provided to participants who will be responsible for the monitoring of river conditions. These duties will be performed by the “monitoring teams” (previously referred to as volunteers) who will be coordinated by the Department of Water and Sanitation and their responsibilities will include, amongst others:

- Monitoring water quality and river health
- Monitoring and assessing riparian ecosystems
- Identifying direct and indirect pollution sources
- Reporting pollution to relevant representative.
- Assessing water user compliance

Although not specifically stated, this does not preclude the possibility of technical teams undertaking similar water monitoring activities. The monitoring that the technical teams should be doing will be framed within EPWP and should coincide with national monitoring programmes (e.g. RHP).

Monitoring teams will also be involved in other volunteer activities, over and above those listed here. To perform the above duties the participants “monitoring teams” need to be equipped with the following skills, knowledge and training:

- Measuring water quality using citizen science tools such as water clarity tube, *E.coli* swabs, pH litmus paper, etc.
- Assessing and monitoring river health using miniSASS a biomonitoring tool

-
- Assessing and monitoring riparian ecosystems using the Riparian Health Audit tool for citizen scientists
 - Have knowledge about different types of pollution and their sources
 - Have knowledge about water user compliance laws
 - The importance and value data collection and data collection and handling ethics

6.1.4 Advanced Training

As stated in Chapter 2, one of the key objectives of revised AaR Programme is to provide training that will build capacity and skills and develop career pathing opportunities and jobs in the water resources and environmental sector, especially within previously marginalised communities. One of the ways to achieve this is to identify potential project champions during the intermediate training level who will progress to the advanced training level. During advanced training they will receive training that will set them on a career path and enable them to emerge as graduates/professionals.

The advanced training level will provide rigorous training in specialist skills. This would hopefully provide an opportunity for community members to develop career paths using the skills obtained. Examples of the types of career paths include entrepreneur opportunities in eco-furniture, specialist botanical tour guiding and waste-trepreneur opportunities. The duties of the project champions include:

- Facilitate AaR awareness programmes for schools and community members
- Ensure quality control of data collection during water monitoring
- Lead the monitoring teams on site
- Promote public awareness of river health and broader environmental issues facing communities
- Coordinate and capture monitoring data
- Ensure safety of monitoring teams on site

To fulfil the roles listed above, the following skills and training should be provided for project champions:

- NQF accredited courses on aquatic ecology and other water related topics
- Project management, data collection and reporting
- Environmental Educators training
- Advanced water safety and first Aid
- Computer skills for reporting to implementing agencies

At the end of each training level the participants should be provided with certificates to acknowledge their attendance.

6.1.5 Training for Schools

The training programme for schools should be incorporated within the existing school programmes in collaboration with the Department of Basic Education. Current school programmes include (but are not limited to):

- CAPS curriculum
- 20/20 Vision for Water and Environment Programme (VfWEP)
- Eco-schools

Programmes such as VfWEP and Eco-Schools, through its various action projects and activities, strive to ensure, that water and environmental education is achieved at the basic educational level.

There are a number of entry points for schools to take part in the AaR Programme. Schools that are already associated with environmental programmes (such as Eco-Schools) may be able to incorporate AaR activities into their current programme. Other schools may already have working relationships with an NGO that becomes one of the implementing agents of the AaR Programme, creating an opportunity to dovetail two programmes.

However, schools that have not previously been involved in environmental activities and might wish to get involved should submit a proposal, in agreement with the Department of Basic Education (DBE), to either their local CMA, regional DWS office or a local NGO implementing the AaR Programme. The proposal should provide a motivation for their intention to adopt a river and should stipulate their proposed activities. It is recommended that the schools work through the DWS as the DWS already has a strong water programme within schools, including the annual miniSASS competition hosted in conjunction with the WRC and the Young Water Professionals annual conference.

To encourage and support schools DEA, DWS and DBE should fund school's environmental clubs, support competitions that will encourage schools to participate, encourage partnerships between private and public schools and fund school excursions by providing or subsidizing transport and providing learning materials and tools.

6.2 DEVELOP TRAINING MATERIALS AND RESOURCES

The AaR Programme should develop and put together a training resource tool box specific to the AaR Programme training needs (see the Orange-Senqu River Learning Box in Figure 5 below). In this way, the AaR Programme is able to present a branded training tool that speaks to the needs of the AaR Programme and would allow citizens to immediately identify and understand what the AaR Programme is about. Such a tool box would also standardize the training requirements for the AaR Programme across the country.



Figure 7. An Example of a Citizen Science educational material and tool kit

The River Health Programme, established by DWAF, developed appropriate assessment tools for use by aquatic and terrestrial scientists. However, these tools are inappropriate for non-scientists (i.e. most volunteers). The protocol for assessing the health of a river using aquatic invertebrates (SASS) was simplified for use by non-scientists (miniSASS). It was recommended that similar simplifications be undertaken for the protocols used to assess fish health, water quality, riparian vegetation, and the geomorphological state of a river (DWA, 2009)

The WRC is currently funding the development of a suite of citizen science tools (refer to a list below) for testing water quality, river health, riparian vegetation and geomorphological state of a river. These tools are simplified and designed specifically for citizen scientists. Furthermore some of these tools have already been tested by citizen scientists and are available for use. It is recommended that these tools form part of the AaR Programme resource tool box including information guides designed for the AaR Programme. Furthermore, the WRC project is also developing school lesson plans to assist teachers in planning lessons related to aquatic ecosystems. Some Citizen Science tools previously and currently being developed by the WRC include:

- miniSASS
- Clarity tube
- Transparent Velocity Head Rod
- Riparian Health Index
- Weather Station Citizen Science tool (including rain gauges and wind pressure plates)

CHAPTER 7: THE ROLE OF CITIZEN SCIENCE IN THE AaR PROGRAMME

Citizen Science is scientific research conducted by non-scientist volunteers of all ages, professions, backgrounds, and skills (often across broad geographic areas) to engage non-scientists in a variety of tasks, but most commonly data collection. Examples of data collected by citizen science programmes include water quality parameters, invertebrates and birds amongst others.

7.1 HOW CAN CITIZEN SCIENCE BENEFIT THE AaR PROGRAMME AND THE CITIZENS INVOLVED IN THE AaR PROGRAMME?

- Opportunity to create public awareness and create a broader understanding of the role of the AaR Programme
- Valuable data collected by citizen scientists given the proper training and materials
- Achieve most of the key objectives of the AaR Programme i.e. public awareness, capacity building and education
- Enhancing science literacy in the public domain and perhaps achieving greater consensus on science-based policies.
- Attract and spark the interest of youth in the field of science generally and aquatic science specifically
- Increase knowledge and understanding of the aquatic science processes
- Participants can access initial results and see how their data are being used, which has been found to encourage continued involvement with CS projects
- DWS does not have capacity to sample all river systems in the country, through citizen science work the citizens will be able to collect useful data for rivers not falling under DWS monitoring plan.

7.2 CITIZEN SCIENCE IN SOUTH AFRICA

With climate change, the ability of ecosystems to buffer human society and biodiversity from the worst of its effects is a priceless global asset, but one with which we have been too careless. Ecosystems and biodiversity face serious challenges now, at the time we need them most. Ecosystem-based adaptation to climate change is the simplest, most cost-effective, and wisest approach to climate adaptation that any country can make. South Africa has embraced this challenge. Yet we need to know that our actions to protect and increase the resilience of ecosystems are actually working to safeguard ecological services and biodiversity.

We are delighted to say that South Africa has a wealth of talent in its civil society for identifying, monitoring and conserving our biodiversity. Our “citizen scientists” are justly becoming famous on the world stage for their participation in excellent species atlases, wildflower conservation schemes, and projects on Red Data species population trends.

Volunteerism is well-developed in South Africa, and we estimate that for every rand (or dollar) of public money invested in projects, volunteers themselves invest a further twenty. The participation of these “citizen scientists” in biodiversity work is a huge national asset. It helps build public awareness and passion for biodiversity, and recognition of how our policies and practices strengthen or undermine biodiversity conservation. However, three major unmet needs remain to be tackled. First, volunteerism for biodiversity programmes has so far been concentrated among South Africa’s middle and upper classes. For many of the country’s people, life is a struggle and it is simply not feasible to offer up time and money without recompense. So at the same time that the country’s dreadful inequalities of wealth and opportunity are being addressed, we need to develop innovative ways of inspiring and involving a wider spectrum of South Africans in biodiversity monitoring.

Protea Atlas Project

Through the involvement of ordinary South Africans, the Protea Atlas Project has created a pool of enthusiastic volunteers that has contributed to other biodiversity projects such as CREW, iSpot (za.ispot.org.uk) and the Virtual Museum. It has also provided the ingredients needed for effective environmental modelling, planning, policy and management in South Africa. The spin-offs of this are far reaching, with financial and employment benefits for rural communities, farmers, reserve managers, researchers, tourism and the cut-flower trade.

Southern African Bird Atlas Project

Since 1987, the Southern African Bird Atlas Projects (SABAP1 and SABAP2) have involved members of the public in collecting data on bird distributions in South Africa, Lesotho and Swaziland.

Southern African Butterfly Conservation Assessment Project

Southern African Butterfly Conservation Assessment project (sabca.adu.org.za) is an excellent example of citizen scientists helping to track environmental change and climate vulnerability in South Africa. Through SABCA, members of the public contributed about 350,000 important butterfly records via four main routes: private collections, field surveys, an online Virtual Museum and butterfly census weeks. Through SABCA, members have established a successful online photographic identification service and well-supported Facebook and blogging sites. These have opened up new avenues for a broader spectrum of South Africans to become interested and involved in biodiversity monitoring.

CREW

The Custodians of Rare and Endangered Wildflowers (CREW) programme of the Botanical Society of South Africa (BotSoc) and SANBI involves volunteers in the monitoring and conservation of threatened plant populations. Volunteers are local people from regions identified in SANBI’s

bioregional plans as critically threatened areas in need of conservation. CREW volunteers operate in groups, with each group having a champion who liaises with the programme's co-ordination team.

Barnard and de Villiers, 2012

Although none of the Citizen Science projects listed above are water related, they are certainly well established projects coordinated by citizens.

Post workshop reviewer's comment: *It will be critical to learn from and collaborate with developers of other successful Citizen Science projects. Those developers with experience may have solved issues arising with, for example, the AaR and associated databases.*

7.2.1 Adopt Moreletaspruit forum and “Fiends of” groups in Pretoria, Gauteng

Adopted the Moreletaspruit in Pretoria, Gauteng. Their activities include, removal of solid waste, testing and monitoring water quality and river health using Citizen Science tools i.e. miniSASS, identifying and reporting sources of pollution, reporting Invasive alien plants to Working for Water Programme.

7.2.2 The Duzi Umgeni Conservation Trust in Howick, KZN

A group of community members in Mpophomeni and Shiyabazali informal settlements working with communities to protect the Umgeni catchment by creating awareness through street theatre, coordinating environmental clubs in their areas, educating school children about protecting the Umgeni catchment, clearing invasive alien plants along river banks and instream, using Citizen Science tools to hold authorities accountable for waste water discharge quality and monitoring impacts along the river by conducting monthly river walks (river walks could be conducted on a monthly basis but that would be dependent on the monitoring teams availability).

7.2.3 Emvelo Wise

The community of Umbogintwini took the initiative to adopt and protect their local river by clearing solid waste and removing invasive alien plants from the riparian zone of the river. The volunteers making up the Emvelo Wise team are all previously disadvantaged individuals who have been working on maintaining the river system with little to no compensation for the past four years.

The above are a few examples of successful Citizen Science projects focusing on water resources and there is a great opportunity for the AaR Programme to expand on Citizen Science projects focusing on water management and conservation.

Citizen scientists help build the picture of the state of biodiversity that are used to influence recommendations to government about conservation policy and actions. Ultimately, this improves the quality of life for all South Africans by improving the health of the environment. In other words, citizen scientists are ambassadors for biodiversity: science by the people is science for the people (Barnard and de Villiers; 2012).

Citizen science in no way should replace scientific research conducted at tertiary education establishments or research commissions/institutions. Rather it should act as a supplement to such research to make it more accessible and easier to understand.

CHAPTER 8: IMPLEMENTATION AND LOGISTICS OF THE AaR PROJECTS

Based on the revised framework it is clear that the AaR Programme will have different types of groups/organisations operating under the same AaR Programme umbrella. Each of these groups will have different niches and thus different approaches to the implementation of their particular AaR projects. Four major groups have been identified and their implementation approaches are discussed below.

Adopt-a-River Programme: The overarching programme that will be implemented by various groups through individual and smaller Adopt-a-River Projects. Therefore there will be multiple AaR Projects, which together for the AaR Programme.

8.1 MONITORING TEAMS

The revised institutional framework (Figure 2) suggests the appointment of multiple NGOs as the implementing agents of the AaR Programme. They will coordinate the individual AaR projects and take action on the ground, with the support of CMAs and CMFs, with all interested and affected parties in the public and private sectors. They will give guidance to and coordinate activities of local and regional government. Their interaction with numerous organisations and volunteer programmes will require careful planning and implementation. The successful planning and implementation of the activities of the monitoring teams/AaR projects will directly contribute to the overall success of the AaR Programme.

8.1.1 Implementation process and logistics

The monitoring teams (previously referred to as “volunteers”) wishing to adopt a river should follow a registration process to legitimise their project. The NGOs acting as implementing agents will need to keep track of the AaR projects implemented in the areas or regions they serve. A registration process is recommended as a way to assist the NGOs to build and manage a database of all the AaR projects. This will enable them to keep records, to manage the projects effectively and monitor their progress. A suggestion was to possibly create a web-based database that can be accessed by a range of stakeholders and NGOs involved in the AaR Programme.

The following information should be submitted to the implementing NGO in a form of a proposal:

- The name of the project
- Name of the river, length and location of the river to be adopted
- The reason for adoption
- Number of people involved
- Implementation plan, proposed activities and how the NGOs could assist

The monitoring teams will be offered training, assistance with transport needs (if required), field equipment (monitoring tools) Personal Protection Equipment (PPE) and ablution facilities if needed.

One of the key objectives of AaR Programme is to building communities that learn together, to achieve a deeper, common understanding of river health and to increased knowledge around the scientific process. This will create an ethos of volunteerism amongst citizens. To achieve this the AaR Programme needs to create enabling environments where volunteers are treated with respect and feel valued.

Individual volunteers who show potential and enthusiasm can be identified as project champions and will be launched into a career path where they could be exposed to opportunities to better their careers. An advanced training programme designed for project champions is discussed in Chapter 6. The project champions can play a significant role within the AaR Programme. They could lead the monitoring teams, offer environmental education to school groups, promote environmental awareness within their communities and coordinate the monitoring data collected by volunteers. They could be the main point of contact for volunteering teams and bridge the communication between the volunteering teams and NGOs, municipalities, Ward councillors, Chiefs, CMAs, etc.

8.2 TECHNICAL TEAMS

The technical teams operate under the DEA mandate. Their appointments, training, payment of stipends will be managed under the EPWP programme in partnership with local municipalities.

8.3 SCHOOL GROUPS

The schools will follow the implementation procedure similar to the volunteering groups. However they should consult the DBE before registering their projects. It is recommended under Chapter 6 that the DEB be involved and be in agreement with DEA and DWA with regards to the involvement of schools in the AaR Programme. The Training process for schools is discussed under Chapter 7 “develop training process for schools”

8.4 UNIVERSITY GROUP

Universities have a mandate from the Department of Higher Education (DHE) to establish community engagement and enrichment projects. Implementation procedures to be adopted by universities should follow the DHE's protocol.

CHAPTER 9: INDICATORS OF SUCCESS AND REPORTING REQUIREMENTS

During the initial evaluation of the AaR Programme, very little information was obtained regarding how the original AaR Programme was going to be monitored in order to determine success. A range of materials related to the monitoring of rivers were prepared and published.

During the AaR Review Workshop held in November 2015 one of the key breakaway sessions focused on what the revised AaR Programme would want to achieve in terms of monitoring success as well as what indicators could be used to evaluate success.

The indicators proposed are based on the amended goals as set out in Chapter 2 of this document, and listed below:

1. Building communities that learn together, to achieve a deeper, common understanding of river health and to increased knowledge around the scientific process. Thereby connecting communities, role players and various AaR initiatives.
2. The active involvement of diverse communities in the improvement and protection of water resources
3. Awareness raising and the development of a catchment approach to water resources, using hands-on experiences and grass roots education that highlight the linkages between landscape and water resources from the source to the sea, including people and their dependency and impact on rivers
4. Identifying causes of river pollution and disturbance and engaging parties (through workshops or roundtable discussions) responsible for such pollution and disturbance, which ultimately results in decreased water availability
5. Provide a platform for advocacy and recourse, creating further opportunities for communities to be involved in the management of their water resources
6. Physically restoring, rehabilitating and monitoring water resources
7. Through various training programmes, build capacity and skills and develop career pathing opportunities and jobs in the water resources and environmental sector, especially within previously marginalised communities
8. A hybrid implementation model that allows for citizen involvement and volunteerism as well as the payment of trained technical workers

A number of overall indicators were also suggested. However, a thought-provoking outcome of the workshop was the concept that not only should the health of rivers and associated ecosystems be monitored to indicate project success, but the progress of social change within and between communities and their water sources should also be assessed for indicators of project success. In this context, social change refers to alterations in the behaviour patterns and cultural values and norms around water and water use within the community. The concept of not only having biophysical characteristics measured, but also social change components was received with excitement at the novelty of the approach.

A starting point for the evaluation of the success of the AaR Programme will be to define what it means for a river to be adopted. Furthermore, the following would need to be established as measures of success of the programme:

- Has a river been adopted, both generally within South Africa, and specifically within strategic (or priority) catchments. During the workshop this was considered to be a fundamental assessment of success. This indicator would be made up of a range of components to assess whether a river has indeed been adopted or not. One would need to consider the extent of the river that needs to be 'adopted', before it can truly be considered as 'adopted'. The level of custodianship (how many individuals or institutions, and for what length of time) would also need to be considered when determining if a river has truly been adopted. This information could then be further expanded to include information such as the percentage of rivers adopted and the percentage of the total river length in the country that has been adopted. At the end of each financial year its suggested that NGOs calculate the total number/percentage of new rivers adopted during that financial year.
- Have adopted rivers been "walked"? A river walk is where the river is walked from source to sea (or confluence) to determine that particular river's current state, looking at riparian health, river health, pollution sources, abstraction points. etc. The walking of an adopted river would hopefully develop a deeper understanding of the issues that the particular river and community is facing, while at the same time presenting an opportunity for awareness raising and training. This evaluation could be further expanded to include information on how regularly the river is walked.
- Has there been an increase in the benefits and possible activities that have benefited the community associated with the river? This will require baseline information to be collected before the programme starts to provide a reference point for comparisons.
- Has the number of Blue Drop/Green Drop status indicators increased?
- Has there been an increase or decline in the number of clinic/hospital records related to water borne diseases? This component links to and would subject to involvement with the Department of Health.
- Has the number of non-compliant activities occurring on and around the river been reduced? This will require baseline information to be collected before the programme starts to provide a reference point for comparisons.
- Number of ongoing enterprises on adopted rivers? This will require baseline information to be collected before the programme starts to provide a reference point for comparisons.

The collection of baseline information could be incorporated as part of project initiation when various rivers are earmarked for adoption.

Social change within communities would be more difficult to measure, as the assessment would need to gauge social perceptions before an AaR project started within a community. However, it is not only a matter of perceptions, but also of the degree of shared understanding of issues; agreement to act together; formation of new relationships and new collaborations; sense and scope of identification with and responsibility for river; levels of participation in meaningful change activities; joint re-formulation of issues based on action and reflection; etc. The kind of change envisaged is probably not shifting people's perceptions from theirs to yours and measuring the change. The evaluation should note what is involved in joint / social learning and deep transformation in values and practices across institutions and cultures and track these changes accordingly.

For this reason there would need to be evaluations before, during and after river adoption. This might pose some challenges, as programme evaluators may not know where rivers are going to be adopted by volunteer communities and will therefore be unable to gauge social status before projects being. A

solution to this challenge could be creating a flagging mechanism that alerts project evaluators or coordinators of a desire to start a project. Before the volunteers begin, the assessment could be done. Also the assessment need not be onerous. However, the DEA/EPWP component of the project may provide an opportunity for this work to be done. This is due to the fact that more planning and preparation will go into selection of the communities where rivers will be adopted.

It is recognised that measurement plays an important role in tracking project outcomes. Non-measurable factors such as dignity, empathy, passion, commitment, kindness, care and vigour, however, are crucial to create an enabling environment (Centre for Environmental Education, 2016) for the AaR to be successful.

Biophysical indicators would include both qualitative and quantitative assessments to answer questions such as:

- Does the river now meet RQO's?
- Has SASS5 or miniSASS been done, and has the biological component improved?
- What is the microbial status of the river before and after adoption?
- Are the reserve requirements being met?
- Has the riparian zone health been assessed (either IHI or citizen science tool)?
- To what extent was the CBO involved in monitoring?

An interesting issue around the use of indicators of success was the issue of “perverse indicators”, where there are unintentional outcomes when objectives are trying to be met. An example of this might be where the objective is to reduce the number of surcharging manholes. Initially, this may drop from 20 to 10 manholes surcharging, and then drop further to zero manholes surcharging. Once the zero mark is reached, they cannot reduce the number any further. If the objective is to reduce the number of surcharging manholes to zero, that is then a measureable number to attain.

An additional concern was that of potential constraints to achieving the objectives that were outside the control of those trying to achieve the objective. For example, if the objective is to host a river walk, the community must be able to access the riparian zone and the river to carry out the walk. If distance to the river or river accessibility were an issue, the objective should not be scored negatively.

The above must be considered when the final objectives for the revised AaR Programme are finalised. It is recommended that a further workshop be hosted once agreement on implementation is reached. This workshop should focus on choosing and refining the indicators of success, as well as the time frames for monitoring and evaluation. Many of the indicators that may be selected will depend on the drivers of unhealthy rivers. Some of these drivers are presented in Appendix 2.

CHAPTER 10: SUMMARY & RECOMMENDATIONS

10.1 SUMMARY

The broader WRC project K8/1109, encompasses a review of the AaR Programme from its inception in 2009 to present (Deliverable 1), as well as a starter document highlighting the major issues identified by the project team for discussion and redesign at a stakeholder workshop (Deliverable 2). This report (Deliverables 3 and 4) presents the outcomes of the stakeholder workshop with a revised institutional framework and business model for the AaR Programme, in addition to recommendations for the implementation of the AaR Programme.

At the crux of the programme is the need for strong coordination, collaboration, partnerships and communication.

The stakeholder and revision input highlighted the fact that the AaR Programme required a clear definition of the mission statement, vision, scope and focus areas. The revised institutional framework consists of a two pronged approach that accommodates the DEA in the form of an “EPWP-like” programme operating simultaneously with a programme, implemented by multiple NGOs that encompass the involvement of interested communities, volunteer groups, public private sector, CBOs, and municipalities, amongst others. A national AaR Committee (consisting of representatives from DEA, DWS, NGOs, Treasury and the Chief Directorate) is suggested to oversee the AaR Programme and approve all major financial decisions, providing consensus on the management and overall direction of the programme. The DWS retain an oversight role in the programme, with a DWS national coordinator employed full time to oversee the AaR Programme as their sole responsibility. The DWS will also provide key support structures for implementation of the programme and various aspects of the DEA and NGOs – this in the form of CMAs, CMFs and regional DWS offices. The revised institutional framework enables the project to return to an ethos of volunteerism, whilst fostering job creation, community upliftment and career pathing opportunities through various training programmes, engagement with schools and the DEA paid technical teams.

The two pronged approach also provides a level of contingency to the programme, whereby if one arm of the programme faces difficulty it will not necessarily lead to the failure of the programme or the inability of it to continue to function. The institutional framework also promotes and fosters the development of the programme through a bottom-up approach, where small scale volunteer/school/industry initiatives are encouraged and can be coordinated/given direction/be a part of a broader programme.

In this regard the revised funding and business model of the programme also has built-in contingency in that the DEA prong is funded using an entirely different approach to that of the NGO prong. Possibilities of numerous sources of funding (including some new innovative options) have also been incorporated into the model, to prevent national government from being the main funder of the programme and to ensure long terms financial sustainability. Depending on the uptake of the revised programme and agreement on the aspects to be included in a pilot stage implementation, only then can a comprehensive and realistic costing be undertaken.

Closely related to the long-term sustainability of the programme and continued investment (foreign or local) into it, is the need for transparency, accountability and appropriate measurement of the success of the program. The revised AaR Programme includes specific indicators of success (biophysical and social) that need to be incorporated into annual reporting/audits/reviews of the programme. Detailed recommendations have been provided for communication channels, marketing, logistics and implementation as well as the role of citizen science.

10.2 RECOMMENDATIONS

The revised AaR Programme would still needs to be approved by Government. As such it would be premature to provide meaningful estimations of timeframes required to achieve objectives of the revised AaR Programme in this document. Rather such estimations of timeframes and budgets/costs would need to be finalised in a stakeholder inception workshop, with a member of treasury present to provide advice/guidance – post the acceptance of the revised AaR Programme strategy outlined in this document.

Additionally, should the revised AaR Programme be approved by Government, it is highly recommended that as part of the inception stage **an all-inclusive stakeholder workshop be hosted during which the following aspects can be collectively resolved**. Ideally the DWS National Coordinator and the National AaR Committee would have been appointed before this workshop.

- The selection of specific sites for implementing the revised AaR Programme in a pilot stage
- Identification of NGO's located near the selected sites that would be willing to act as implementing agents as well as CMAs, CMFs and regional DWS offices that would act as support structures
- Identification of communities, volunteer groups, private, public sector businesses/initiatives that might be willing to participate as monitoring teams
- Agreement on a procurement model in line with Public Funds Management Act (PFMA) – National Treasury
- The delegation and agreement upon certain tasks, communication channels, reporting, etc. as per the revised AaR Programme (this document)
- Initiating marketing strategies and resolve the issue DWS control over marketing should the AaR Programme be housed in the DWS
- Timeframes for certain objectives to be achieved
- The formulation of a realistic budget proposal including risks and mitigation measures
- The agreement upon indicators of success to be used as well as reporting requirements and timeframes
- Involvement with the DBE and schools
- Consensus as to the DEA prong and initial tasks to be undertaken (size of teams, organisation, logistics, etc.)
- Agreement as to how the NGO's will coordinate and communicate amongst themselves and
- Establish standardised reporting mechanisms

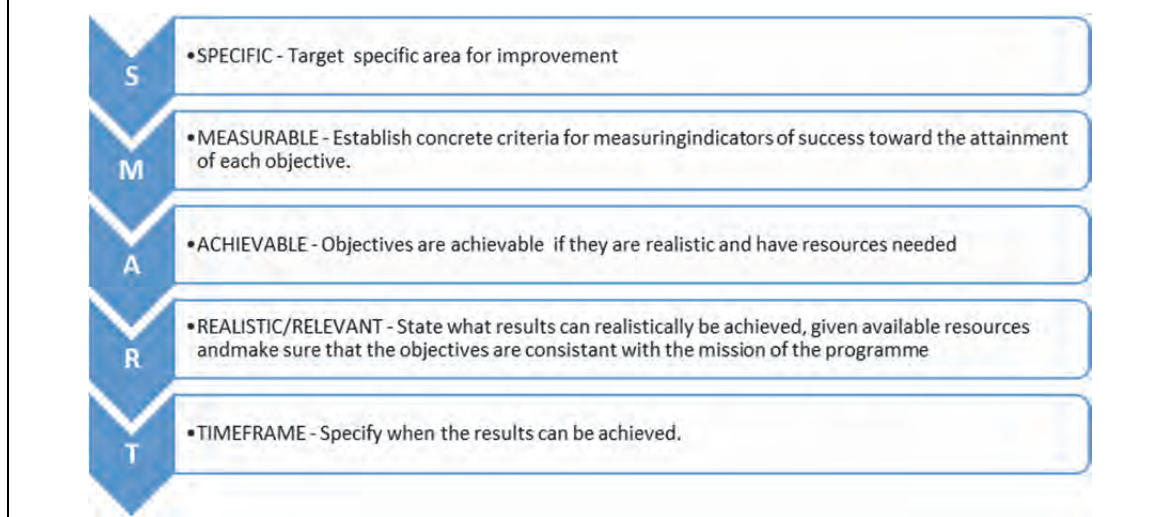
It is recommended that during the workshop the objectives set out for the revised AaR Programme be individually considered in terms of the S.M.A.R.T criteria (see below for more information).

SMART is a "memory aid" acronym (Specific, Measurable, Achievable, Realistic, Timeframes) giving a criteria to guide the setting of objectives for project management. SMART goals can be used as a simple framework for defining and managing goals and objectives for the AaR Programme.

The current AaR Programme did not achieve its objectives largely due to the programme failing to measure its progress and success, not having enough resources in place to implement the programme and provide volunteers with meaningful and valuable training. The programme also lacked the timeframes specifying when the results would be achieved.

A key part of its value is that SMART prompts people to proactively consider and define goals and objectives as they set them. This reduces the risk of creating a vague or unclear goal that are unlikely to be achieved.

In light of this it is recommended that the SMART framework be integrated in the management of the AaR programme as a guideline to assist with achieving its objectives.



Following this workshop, the members of the proposed National AaR Committee would need to be appointed and the initial implementing agencies to participate in the pilot stage approached. This should not prohibit additional implementing agencies from joining the AaR Programme at a later stage. A Memorandum of Understanding (MoU) between stakeholders would need to be formulated and signed. The registration process for monitoring teams and volunteers would then need to be finalised and made operational. At this point marketing and relaunching of the AaR Programme would need to be undertaken using various media (discussed in Chapters 4 and 5). Schools within the proximity of the selected sites (for piloting the revised AaR Programme) could then be approached to determine if they would like to be involved in the pilot stage after which they can submit their motivations. Training and teaching materials would need to be prepared, followed by logistical arrangements.

This document in and of itself provides recommendations for the further implementation of the Programme and should by no means limit ideas for implementation of the revised AaR Programme that might arise or be suggested by NGOs and other partners.

10.3 KEY POINTS TO CONSIDER GOING FORWARD

- The appointment of the DWS National Coordinator is critical – a motivated, enthusiastic, well organized and dedicated individual is required for this position.
- Volunteer, private and industry initiatives for river adoption should be encouraged to form and conduct activities in the interim until the revised AaR Programme is relaunched so as not to prevent a bottom-up approach. Such initiatives can at a later stage be absorbed into the broader Programme and given more direct coordination and support.
- The momentum to promote the AaR and freshwater awareness/citizen science should not be lost. Long delays will result in the project being ignored from budgets and strategic planning
- The national drought disaster provides the ideal platform and timing to announce the relaunching of the Programme as means of mitigation
- In light of the drought in the country the AaR can be used to highlight the importance of water resources management in the country and emphasise the need for a collaborative effort to mitigate water related impacts and community development/upliftment
- The project should stay true to the mission statement and the objectives, hijacking of the Programme to promote political agendas or campaigns will be detrimental to the overall effectiveness of the Programme

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APPENDIX 1: AaR REVIEW AND REDESIGN STAKEHOLDER WORKSHOP – LIST OF ATTENDEES AFFILIATIONS AND WORKSHOP PROCEEDINGS .

Adopt-a-River Programme: Stakeholder Review Workshop Agenda

Date: 18-19 November 2015

Time: 08:30

Venue: WRC offices (Pula and Nokeng Meeting Rooms; Marumati Building), 419, 18th Avenue, corner Fredericka Street, Rietfontein, Pretoria

DAY 1

TIME	PROCESS	RESPONSIBLE PARTY
08h30	Registration with tea / coffee	
09h00-09h10	Welcome	Bonani Madikizela(WRC) and Rachalet Cronje (DWS)
09h10-09h45	Facilitated introductions: Who I am and my interest in AaR (1 min each)	Everyone led by Eureta Rosenberg
09h50-10h00	Rationale for the review and workshop objectives	Mark Graham (GroundTruth)
10h00-10h05	Questions of clarification on purpose and introduction of process	Eureta Rosenberg (facilitator)
10h05-10h30	Review of the Adopt a River Programme, its strengths and successes, issues and challenges (interactive)	Presented by Mark Graham, chaired by Eureta Rosenberg
10h30-11h00	TEA/COFFEE BREAK	
11h00-11h45	Review of Adopt a River (continued)	Presented by Mark Graham, chaired by Eureta Rosenberg
11h45-13h00	Map out the landscape of river role players and what they do; identify the gaps and the opportunities in this landscape for a programme like AaR	Everyone, led by Eureta Rosenberg
13h00-13h40	LUNCH BREAK	
13h40-14h40	Discuss the vision, focus and scope for the required river programme and whether it needs rebranding	Everyone, led by Eureta Rosenberg
14h40-15h00	COFFEE BREAK	

15h00-15h45	Agree on the vision, focus and scope for the required river programme and whether it needs rebranding	Everyone, led by Eureka Rosenberg
15h45-16h00	Summary, thanks and outline of Day 2	Eureka Rosenberg
16h00	Departure	

DAY 2

TIME	PROCESS	RESPONSIBLE PARTY
08h00-08h30	Re-cap outcomes of Day 1 and task for Day 2; sharing any overnight ideas	Eureka Rosenberg with inputs from everyone
08h30-09h30	Consensus on vision, objectives Monitoring: Choose indicators for success	Everyone, led by Eureka Rosenberg
09h30-10h30	Proposed options for the institutional arrangement and broad business model: small groups make the case for each and follow a ritual dissent process to either strengthen or abandon proposals	Everyone, led by Eureka Rosenberg (Group work followed by plenary)
10h30-11h00	TEA/COFFEE BREAK	
11h00-12h30	Continued: Proposed options for the institutional arrangement and broad business model: small groups make the case for each and follow a ritual dissent process to either strengthen or abandon proposals	Everyone, led by Eureka Rosenberg (Group work followed by plenary)
12h30-13h00	LUNCH BREAK	
13h00-14h00	Small group work: Branding and Communication Small group work: Business Model refinement	Group work with GroundTruth rapporteurs
14h00-14h30	Report-backs and discussion	Group leaders and everyone
14h30-15h00	TEA/COFFEE BREAK	
15h00-15h45	Consolidation, identification of outstanding tasks and concluding on the way forward	Eureka Rosenberg
15h45-16h00	Thanks and departure	Mark Graham (GroundTruth)

Adopt-a-River: Stakeholder Review Workshop
 Attendance register - Day 1: 18 November 2015

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Adopt-a-River: Stakeholder Review Workshop
 Attendance register - Day 2: 19 November 2015

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APPENDIX 2: DRIVERS OF UNHEALTHY RIVERS

Driver	Best Action	Involved parties
Agricultural Run-off	<p>Create awareness around retailing and agricultural practice</p> <p>Restoring buffer and riparian zones</p> <p>Introduction of new technologies</p> <p>Marketing (creating new incentives through marketing of agricultural products)</p>	<p>Farmers</p> <p>CMFs</p> <p>Affected parties and local communities</p> <p>Water User Associations</p> <p>Private sector companies (suppliers)</p> <p>Retailers</p> <p>Consumers</p> <p>Extension officers and stewardship offices</p> <p>Agricultural unions</p> <p>Conservancies</p> <p>Municipalities and city councils</p>
Urban / storm water runoff	<p>SUDS (Industrial design technologies)</p> <p>Create awareness and education campaigns</p> <p>Enforcement of compliance</p> <p>Greening finance with regard to compliance</p>	<p>Municipalities and city councils</p> <p>Urban/town planners</p> <p>Residents & rate payers</p> <p>Developers (construction companies/builders)</p> <p>Finance institutions & Insurance industry</p>
Industrial discharge (mines & other)	<p>Citizen reporting</p> <p>Compliance monitoring</p> <p>Industrial design best practice (efficiency, optimisation and cleaner production)</p> <p>Integrated reporting</p>	<p>Industry associations</p> <p>Industries and companies self-regulate</p> <p>Blue Scorpions, Green Scorpions and Government officials</p> <p>Shareholders</p>
WWTW and sewerage treatment networks failing	<p>Compliance monitoring</p> <p>Citizen reporting</p> <p>Enforcement of compliance</p> <p>Maintenance and rehabilitation of the sewerage network</p> <p>reduce response time to spillage</p> <p>User education</p> <p>Ring-fencing of budget (accountability for expenditure by municipal managers)</p> <p>Enough necessary skilled staff in place</p> <p>Participate in IDP process</p> <p>Design specifications (planning for future capacity, power and filtration requirements)</p> <p>Monitor water quality on out-flow</p>	<p>Municipalities and Municipal Managers</p> <p>Blue Scorpions, Green Scorpions and Government officials</p> <p>Treasury and Auditor General</p> <p>Schools</p> <p>General Public</p> <p>DWS (involved in new Water Discharge Charge System)</p> <p>CMFs</p> <p>Citizen science monitoring</p> <p>Co-operative Governance and Traditional Affairs (COGTA)</p>

	<p>Implementation of WDCS Reporting on municipal performance (relative to discharge) GreenDrop compliance</p>	
<p>Lack of adequate sanitation</p>	<p>In addition to the Sewerage actions (above) Innovation of sanitation (newest industrial design options) Planners taking on new technologies</p>	<p>South Africa Local Government Association (SALGA) Research communities (CSIR/DST/WRC) Private sector Communities NGOs at international and national level Department of Human Settlements Developers (construction companies/builders) Spatial planners within provincial departments</p>
<p>Solid waste management (Dumping litter and lack of management)</p>	<p>Proper management of solid waste (contracts with community and municipalities is important) Recycling Education and awareness raising aimed at construction companies, marketers, the general public and schools Enforcement around illegal waste dumping Advocacy around products and packaging Research and technology for mines and other companies (including recycling in big industry) Financial incentives for recycling</p>	<p>Municipalities Communities Residents, rate payers and schools Manufacturers, wholesalers and retailers Recycling companies NGOs (such as wildlands) Marketers Mining companies and other big business Department of Environmental Affairs City planners (accessible waste disposal for communities)</p>
<p>Aquatic alien and / or invasives (Flora)</p>	<p>General public awareness and education Extraction and harvesting (check on legislation and categories) Training Compliance in terms of bio-security Address root causes of nutrient loads and eutrophication Biological and chemical control</p>	<p>DEA (Conservation authorities and "Working for" programmes) Department of Water and Sanitation Municipalities and city parks Green/horticultural industry Conservancies Private land owners South African National Biodiversity Institute International and national travellers Department of Agriculture, Forestry and Fisheries Research communities (CSIR/DST/WRC) Water User Associations and Water Boards</p>

Catchment/Riparian alien and/or invasive Flora	Coordinate and collaborate with existing programmes (e.g. "Working for" programmes) Involvement of AaR in riparian areas and the broader catchment Training for "Working for" programmes at AaR Clearing in the riparian zone Expand range of products made using harvested/removed wood Create awareness Enforce compliance	Private companies and small industry "Working for" personnel Entrepreneurs
Land clearing (Agriculture)		Agricultural extension officers Farmers CMFs for communal farmers Affected parties and local communities Water User Association Agricultural Unions Conservancies Municipalities Cooperative Governance and Traditional Affairs (COGTA) Department of Rural Development
Land clearing (Development)	Create awareness Enforce compliance	Green Scorpions City planners Developers (construction companies/builders)
Construction in a riparian zone	Create awareness Enforce compliance	Green Scorpions City planners Developers (construction companies/builders)
Flow modification/transfers (including regulation)	Advocating for reserve studies to be conducted and RQO's to be set Compliance with international water agreements Noting abstractions (watchdog function) Monitoring hydropower regulations and compliance Enforcement of bylaws / legal tools and interventions / innovations Accessing and sharing information and reporting Advocacy for sustainable water supply	Department of Water and Sanitation Water users themselves River basin organisations (RBO – e.g. ORASECOM, RESILIM) CMFs ESKOM NGOs Legal entities

Cross-cutting Responses to Drivers and Groups to Involve

Groups	Actions
CMFs Legal entities Recreational users All spheres of Government General public Civil Society	Education and Awareness raising Advocacy Accessing and sharing information Participate in IDP process Enforcement of by-laws /legal tools and interventions Water use efficiency Water conservation and demand management Training and capacity building with support Empowerment Creating work and other opportunities Sustainable livelihoods (career pathing)

APPENDIX 3: EXCERPTS FROM THE “2013 MEDIUM TERM EXPENDITURE FRAMEWORK (MTEF): CONSOLIDATED BID PROPOSAL FOR PROGRAMME 4: REGIONAL IMPLEMENTATION AND SUPPORT”

1. PURPOSE

To request approval to bid for funding of Working for Rivers which is an unfunded programme implemented under the Watershed Services Partnership between The Department of Environmental Affairs (DEA) and the Department of Water Affairs (DWA).

2. BACKGROUND AND DISCUSSION

The submission is aimed at securing funding for the development and implementation of the Working for Rivers programme to enhance the work done by Working for Water, Working on Fire, Working for Land and Working for Wetlands with a focus on the riparian and wetland zones in priority catchments across South Africa. The focus areas and purpose of the programme are shown below.

- Clearing waste from river banks to improve water quality
- Invasive alien plants cleared from river banks and wetlands to improve water security by increasing dry season flows, improving the rivers ability to absorb floods, improving local access and minimize erosion due to a lack of basil cover under dense invasive tree stands.
- Restoration and maintenance of river banks and wetlands to enhance natural filtration resulting in improved water quality.
- Monitoring and containing the spread of water weeds, removing the biomass from the system to prevent damage to water purification, distribution and reticulation infrastructure and improving light penetration of water bodies which enhances water quality.

2.1.1 Programme description

Integrated water resource management is a corner stone of the approach to water resources management in South Africa and as required by the National Water Act,1998 (Act 36 of 1998). Integration has to happen in several different dimensions, e.g. integration of the different components of the hydrological system (surface water, groundwater, estuaries, and wetlands) and integration between water resource quality, statutory, economic, and social, objectives when making decisions about resource utilization.

The Deputy Minister of Water and Environmental Affairs used Adopt-a-River (AaR) programme as the flagship project to get stakeholders involved in managing their own water resources as well as creating jobs opportunities that will help to ensure capacity building, poverty alleviation and sustainable management of our water resources. The programme have been launched and implemented in 2010.

AaR is aimed to put together in a sustainable manner the objectives of aquatic ecosystem health, economic growth, human health and co-dependent land and water use principles. Human behaviour lies at the hub of most, if not all, of these aspects and will be treated as the key success factors in sustainability of the programme.

AaR was developed as a “voluntary” programme that targeted pensioners, school pupils, industries, catchment forums, water user associations, municipalities, etc., but as a job creating programme the target is on unemployed women, youth and people with disabilities.

The programme has shown that more work needs to be done than just picking up debris from the banks of the rivers; rehabilitation of degraded rivers should be the next step. It has however some challenges. These include the following:

- Funding for sustaining the programme is a challenge. People are volunteering in the rivers expecting to receive some stipends from the Department.
- The Department has the responsibility of giving basic trainings to all the people who are involved in AaR and to provide them with protective clothing and also basic working tools. Due to lack of funds, most of the volunteers did not receive the mentioned matters.
- Intensive awareness should be done to communities to minimizing dumping of waste loads to the environment, which affects the water resources.
- Cooperation from Local Governments and involvement of other stakeholders.
- Lack of access to basic services both water and sanitation lead to people using the rivers for their daily needs, thus polluting the water; e.g. doing laundry at the river and also defecating on the river banks.
- Sewage spills is one of the biggest challenges because of waste water infrastructure malfunctions.

Although the Working for Rivers programme cannot address all the challenges of AaR it can make a very significant contribution to improving the state of our rivers. It was therefore decided to integrate the programme with the Natural Resource Management Programmes of the Department of Environmental Affairs. This submission will not address any further requests for funding for the Working for Water programme but will focus on Working for Rivers through the Working for Wetlands Programme in some priority catchments specifically in order to address the scope of the agreement between the Departments of Environment and Water Affairs. Unlike Working for Water it will focus more on short term improvements in water resources. Working for Water focus on reducing and containing the spread of invasive alien plants and land degradation over a longer term. Working for Rivers will focus on areas that will have immediate impacts in terms of water quality, quantity and sedimentation. In the MoA between DWA and DEA it was agreed that DEA will implement projects focusing on the improvement of the following watershed services:

1.1 Improve Flows

- 1.1.1 Decrease Flood/high flows;
- 1.1.2 Improve Low Flows;
- 1.1.3 Improve yield from existing and new water infrastructure, and
- 1.1.4 Improve the Ecological Reserve, through the restoration and improvement of land management practices and the control of invasive alien plants.

1.2 Minimize Sediments

- 1.2.1 Minimize siltation of rivers, dams and other infrastructure through restoration, improvement of land management practices and the control of invasive alien plants.

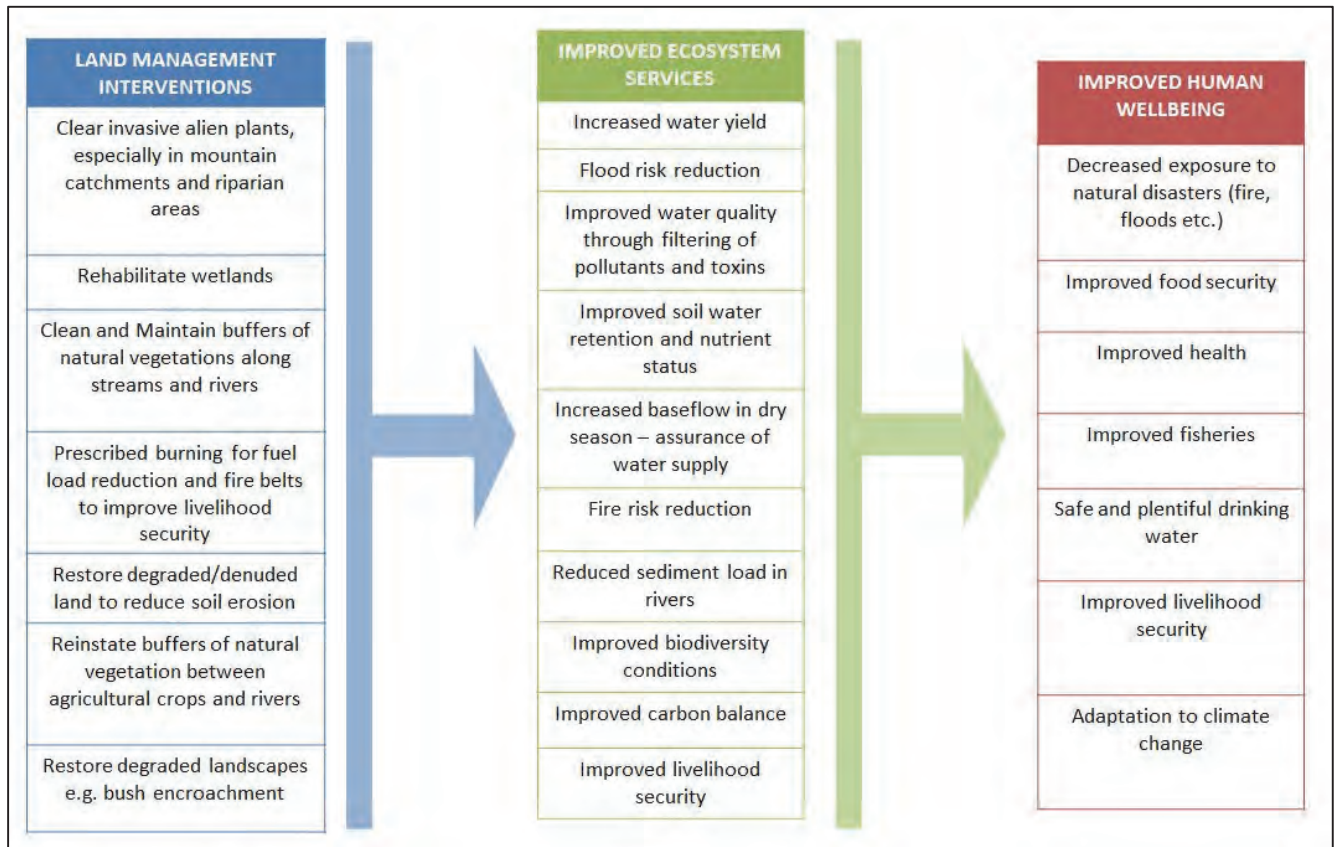
1.3 Optimize Water quality

- 1.3.1 Optimizing water quality to minimize purification costs;
- 1.3.2 Minimize waterweeds, and

1.3.3 Optimize water quality in areas where water is extracted from rivers in order to minimize health risks through restoration, improvement of land management practices and the control of invasive alien plants.

The Chief Directorate: Natural Resource Management Programmes (*Working for Programmes*) in Department of Environmental Affairs has, in conjunction with the Department, identified a very important growth node, namely the restoration of degraded uplands, wetlands and flood plains to combat siltation, improving access to natural flows and the ecological reserve. This growth node is an extension of the work done to date and experience gained through Working for Water, Working for Wetlands, *Working for Land*, specifically the restoration of Sub-Tropical Thicket and the Umzimvubu catchment in the Eastern Cape. This effort has to be scaled-up to a country-wide level. This is because of the close link between restoration, maintaining and enhancing the continued productive potential of the land, and the ecological functioning of natural systems. Chart 1 shows the flow of benefits in terms of investments in ecosystem services (with the emphasis on watershed services in the case of Working for Rivers).

Chart 1: Flow of benefits related to ecosystem services from improved land management practices.



It is also vital for water management, as recent research has shown in terms of erosion and siltation. It is therefore a key element in making dams work for longer by reducing silt loads. In essence this implies restoring the land's natural soil and water retention capacity

It is estimated that the annual sedimentation rate is 0,28%, which does not seem significant at first glance, but translates to about 109 million m³ of reservoir storage capacity each year. This is as a result of the estimated sediment production of 169million ton a year (Table 3). It translates to the forgone capacity of about one Impofo dam or two and a half Roodeplaats each year. The opportunity cost of this loss is estimated to be between R600mil and R3.5billion per year. This sediment originates from the estimated 3.6million ha of degraded land.

The catchments most affected by siltation are the Fish to Tsitsikamma, Gouritz, Upper and Lower Orange, Lower Vaal, Mzimvubu to Keiskamma, Olifants/Doorn, and Usutu to Mhlathuze. The catchments with the biggest challenges in terms of utilizable water are shown in Figure 1.

If the catchments are then prioritized according to the above a preliminary assessment of activities needed and geographical focus areas can be identified for Working for Rivers.

Although once a river has been adopted by the Working for Rivers programme all four activities will be implemented but the focus would be on the more important issues of river health for that specific river.

2.1.7 IMPLICATIONS

2.1.7.1 PERSONNEL

Provision has been made in the budgets for implementers to employ dedicated staff for the oversight and monitoring of the project. The oversight role played by staff from DEA and DWA will be absorbed into their current job descriptions. It is therefore a case of optimizing the functions of staff members in the two departments to ensure improved management efficiency. An account manager within the DEA will oversee compliance to DEA policies by the implementing agent.

2.1.7.2 Community Beneficiation

The programme will be run through longer term employment contracts between community based organisation and SANBI to ensure improved livelihood security for local beneficiaries. This will not only ensure that the beneficiaries are more secured but also the management of waterweeds which tend to invade very fast during the growing season. The beneficiaries will engage in a number of activities as listed in 2.1.1 above.

2.1.7.3 Reporting

- Natural Resource Management (NRM) will provide the reporting formats to relevant implementers.
- Financial reports will be given on a monthly basis while interim reports may be requested when necessary.
- Training and social development KPI's and narrative report to be submitted by the 5th of each month.
- A quarterly Expanded Public Works Programme report as set out against the template that shall be provided by DEA on behalf of DWA.
- KPI's form the basis to assess implementer and partner performance and delivery.
- Record-keeping and database maintenance will be done by using the NRM – WIMS management database.
- On a quarterly basis CD: NRM will submit copies of KPI's with deliverables in terms of the KPI report with copies of all supporting documents to DWA. This must be signed off by the programme manager of Working for Rivers and Working for Wetlands.”

2.1.7.4 Medium to Long term Sustainability

To ensure medium to long term sustainability of the programme the following actions will be taken to operationalize the programme:

- Mainstream Working for Rivers and Wetlands in Strategic Infrastructure Programmes (SIPS) and Water Resources Strategy as the Upper End of the Water Value Chain.
- Secure funding through the MTEF (EPWP & Mainstream) and Water Trading Account to establish Working for Rivers (Adopt a River) Projects.

-
- Adopt a community based approach to the appointment of service providers/operational entities for Working for Rivers (Adopt a River) projects and align with DEA Natural Resource Management Programmes especially Working for Wetlands.
 - Procure their services and build their capacity to implement and optimize/maximize employment through Adopt a River

2.1.7.5 Institutional and Administrative Arrangements

DWA and DEA have agreed to collaborate in the implementation of NRM Programmes in priority catchments and land under the control of DWA and to provide work and training for beneficiaries under DEA's NRM programmes. This agreement was signed by the respective parties DWA and DEA on the 12th June 2012 and 29th March 2012 respectively.

It was agreed that the following institutional arrangements will be put in place to ensure value for money and efficient implementation of the partnership:

- At the end of every calendar year Working for Wetlands will submit an annual plan of operations for the next financial year starting on 1 April of each year to CD: NRM in DEA, based on agreed budgets between DWA and the chief directorate.
- Working for Wetlands (as implementing entity) will submit claims as normally for payment to **(DEA)** using BAS codes on a monthly basis,
- The programme will keep copies of all claims with the relevant supporting documents .
- On a quarterly basis CD: NRM will submit copies of KPI's with deliverables in terms of the KPI report with copies of all supporting documents to DWA. This must be signed off by the programme manager of Working for Rivers and Working for Wetlands.
- CD: NRM will complete (BAS General Journal section marked CR (credit) with the BAS allocations that the CD have allocated on a monthly basis with the amount on the CR (credit).
- CD: NRM engagement with DWA Water Resource Planning on an ongoing basis to effectively engage with water reconciliation strategies and the impacts of IAP's.
- CD: NRM will engage with DWA on an ongoing basis to quantify other "watershed" activities as part of water resource management activities.
- CD: NRM through Working for Wetlands will engage with regional catchment forums to ensure NRM activities especially WfR form part of identified water resource management activities.

2.1.7.6 Programme Governance

The programme will be governed by a management committee under the auspices of the Directorate: Integrated Water Resource Management Support. The committee will consist of a minimum of one representative from the Directorate, who will also act as chair person.

- At least one representative from the Chief Directorate: Natural Resource Management Programmes will represent DEA on the committee. This account manager (the person who assess progress report and recommend payments to the implementing agent) must always attend the management committee meeting.
- At least one representative from the Working for Wetlands programme, who will be implementing Working for Rivers within SANBI must present all reports to the management committee.
- Before reports are accepted and payments processed the management committee must sign off on it.
- This means that the committee must meet on a quarterly basis to assess progress.

As mentioned above the programme will focus on four broad activities. These are:

Activity 1: Clearing waste from river banks to improve water quality

Activity 2: Invasive alien plants cleared from river banks and wetlands to improve water security by increasing dry season flows, improving the rivers ability to absorb floods, improving local access and minimize erosion due to a lack of basil cover under dense invasive tree stands.

Activity 3: Restoration and maintenance of river banks and wetlands to enhance natural filtration resulting in improved water quality.

Activity 4: Monitoring and containing the spread of water weeds, removing the biomass from the system to prevent damage to water purification, distribution and reticulation infrastructure and improving light penetration of water bodies which enhances water quality.