

NATURAL RESOURCE MANAGEMENT: MAVIVANE TRANSFORMATIVE RIVERINE MANAGEMENT PROGRAMME CLOSE-OUT REPORT

20 FEBRUARY 2023

1. PROJECT BACKGROUND

The C40 Climate Finance Facility (CFF) afforded the KwaDukuza Municipality an opportunity to present a project that focuses on riverine management and climate action. The municipality selected the 'KwaDukuza Climate Change Resilience' project which is in its initial stages of planning. The C40 CFF provided the technical and financial support to KwaDukuza, through the knowledge exchange held in June 2020 which mobilized other member municipalities of the Central KwaZulu Natal Climate Change Compact (KZNCCC) with similar projects to participate in co-designing and refining the KwaDukuza proposal into a technically feasible, manageable and operational project proposal.

Emanating from this, the C40 CFF has continued providing technical support to KwaDukuza Municipality to develop a bankable project concept for a riverine programme to seek funding for the implementation of the project, and it is envisaged that the project will be upscaled to various river systems within KwaDukuza Municipality. KwaDukuza Municipality selected the Mavivane River as a pilot for a riverine programme.

The Mavivane Transformative Riverine Management Project is aimed at building Municipal climate change adaptation and climate-resilient communities. The desirable outcomes of the project are as follows:

- Improved ecosystem goods and services utilizing a community-based approach,
- A scalable and impactful project,
- Resilience to vulnerable communities,
- Contribution to sustainable local economic development

The municipality recognizes ecological infrastructure and prioritizes its value in not only providing ecosystem goods and services but as municipal ecological infrastructure. To this end, the Executive Committee (EXCO) endorsed and supported the Mavivane Transformative riverine management programme during the meeting (C 908) that convened on the 09th December 2020. The Mavivane Transformative Riverine Management Project is being implemented in the efforts of building climate change adaptation and climate-resilient communities.

The municipality took an opportunity presented by the KwaZulu-Natal Department of Economic Development, Tourism & Environmental Affairs and submitted the Mavivane TRMP. Fortunately, the municipality received 2nd place in the KZN EDTEA 2021/22 Natural Resource Management Municipality Competition (NRM 2021/22). The Mavivane Transformative Riverine Management Programme demonstrates the important ecological, social, and economic benefits of rehabilitating river catchments as it displays the role they play in

shielding the municipality, vulnerable citizens and businesses from escalating disaster risks and costs associated with climate change.

2. PROJECT LOCALITY

The Mavivane River is a second-order stream with one main artery being Nyonyiyanzi stream and a variety of unnamed tributaries found downstream where it passes the central business district of KwaDukuza. The river is strategically located with varying topography and it runs its course through areas of different land uses, namely residential (informal and formal), commercial and industrial. The river is 6.4 kilometers long and flows through Ward 16 and 19 and joins the Mbozamo River, which forms part of the Umvoti catchment. The Mavivane River is dynamic and resilient as it encounters development pressures that result in pollution, alien invasive species infestation. Compounding the problem is pollution and degradation resulting from the aging stormwater and sewer infrastructure as well as the impacts of climate change. These factors negatively affect the river's ability to provide ecological goods and services, causing streamflow imbalance, flooding and therefore reducing its water quality and quantity. The project implementation plan (as attached to this document as annexure 1) is phased out as follows:

- WARD 16:** Phase 1- commencing from Nyonyiyanzi informal settlement to Glenhills
Phase 2- commencing from Glenhills to Central Business District
- WARD 19:** Phase 3- commencing from Central Business District to Industrial
Phase 4 - commencing from Industrial to Mbozamo River Confluence



Figure 1: Mavivane River Phase 1 to 4

3. DISCUSSION

In terms of Council Resolution C132/2022 Dated 24/02/2022 the municipality was able to allow the Municipal Manager to sign acceptance of prize and to sign the Memorandum of Understanding (MoU) that has been entered into between the Department of Economic Development, Tourism & Environmental Affairs and the Municipality signed 9th and 10th March 2022 respectively. The prize money to the value of R1, 700 000.00 was transferred to the municipality 14 March 2022, which is a conditional grant that must be used to enhance the performance of the municipality in implementation natural resource projects which was/were focal point(s) of the competition.

3.1. Recruitment Process

The municipality appointed a project manager Zenature Environmental Consultants to provide technical assistance during the implementation of the project. The Mavivane TRMP created 500 green job opportunities as per the condition of the Natural Resource Management Grant and the employment opportunity breakdown is 5 coordinators, 20 team leaders and 475 general workers. Recruitment was undertaken by ward 16 and 19 councillors.

POSITION	NO OF BENEFICIARIES	REQUIREMENTS	JOB DESCRIPTION/ RESPONSIBILITY	DURATION (TOTAL)
INTERNS	5	<ul style="list-style-type: none"> • Graduate in Administration/ Environmental Management/ Community Development/ Finance Management • Computer literate (Ms Word & Excel) • 1x certified copy of diploma/ degree each • 1x certified copy of ID each • Bank statements/Proof of account each 	<ul style="list-style-type: none"> • Administrative related duties of the project (attendance register capturing; report writing; record keeping etc) • Responsible for daily supervision • Report to project manager 	3 months

TEAM LEADERS	20	<ul style="list-style-type: none"> • 1x certified copy of ID each • Bank statements/Proof of account each 	<ul style="list-style-type: none"> • Responsible for daily supervision, herbicide administration etc • Alien invasive clearance • Solid waste & garden waste sorting/clearance • Report to interns and project manager 	17 days
GENERAL WORKER	475	<ul style="list-style-type: none"> • 1x certified copy of ID each • Bank statements/Proof of account each 	<ul style="list-style-type: none"> • Alien invasive clearance • Solid waste & garden waste sorting/clearance • Report to interns and project manager 	17 days

Personnel recruited as interns were not qualified as per requirements and ward councillors could not source the relevant talent as requested. This changed the allocation of **5 interns to 5 coordinators**. Temporary Appointment contracts of beneficiaries were drawn as submitted by Ward Councillors with preference given to persons who have not benefited/worked for EPWP. Remuneration per day was as follows:

- Coordinators: R 200.00 per day worked excluding weekends and public holidays
- Team Leaders: R 180.00 per day worked excluding weekends and public holidays
- General Worker: R 150.00 per day worked excluding weekends and public holidays

During the implementation, **501** opportunities were created however 3 participants absconded leaving the programme with a total of **498** participants.

Target Beneficiaries + breakdown per designated group.	GROUP ALLOCATION	BENEFICIARY TARGET	ACTUAL NUMBERS	COMMENTS
	Youth	275	332	The youth would have been 335 however 3 absconded
	People above 35 years	225	166	
	Total beneficiaries	500	498	501 opportunities were created
	Further Breakdown			

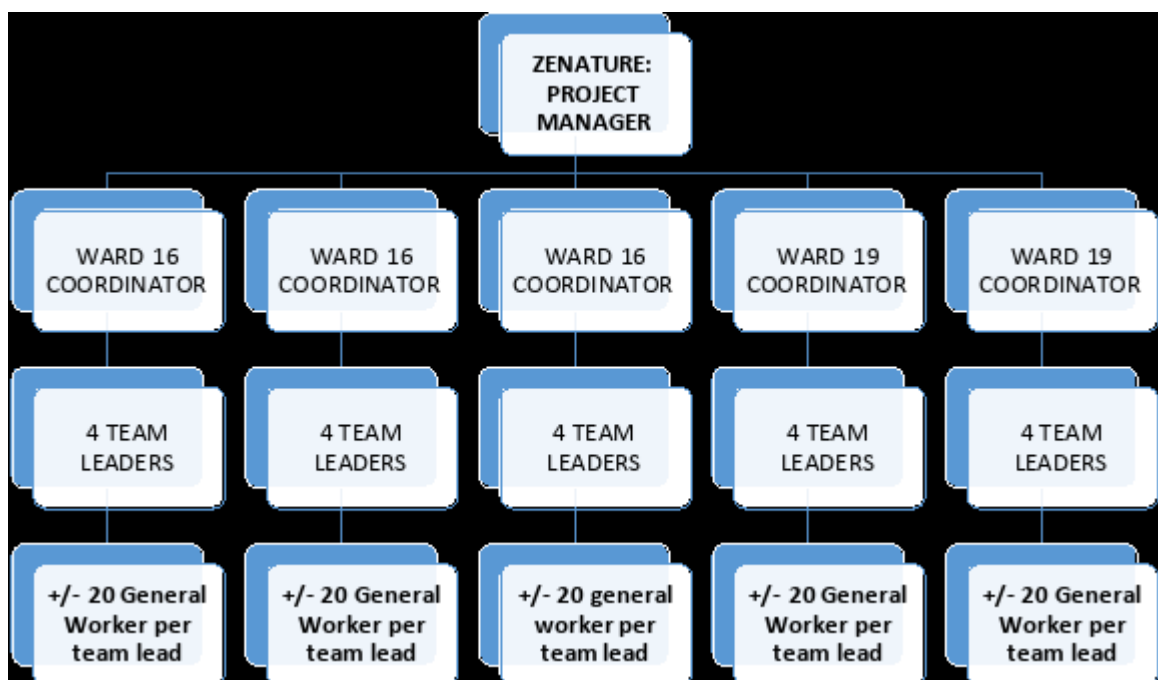
	Women Youth	151	208	
	Male Youth	124	127	
	People above 35 years Women	124	112	
	People above 35 years Men	101	54	

It must be further noted that there was a shortfall encountered in Ward 16 of 16 persons as a result of people leaving the programme. With the aim to reaping the full benefits of the programme, both for employment and environmental opportunities an additional 15 persons were appointed to join the ward 19 team, in order to allow for the revisiting of phase 1 and 2 areas for follow up of invasive alien plant control.

3.2. Procurement Process

Despite the massive challenges brought by the procurement of equipment and tools due to the quantity required, Supply Chain Management was able to devise a strategy to break down the procurement process into manageable portions which some goods and services were procured from either Close Quotes, internal Three Quote System and some goods were procured within KDM existing tenders which were all delivered in time for implementation.

3.3. Team allocations



3.4. Education, Training and Induction

A two-day capacity building workshop, coordinated and facilitated by KwaDukuza, was undertaken and was supported by different stakeholders based on their key mandates. The training was provided as follows:

Training Offered	Stakeholder
EPWP Induction and Contracts:	KDM EPWP & Dept. of Public Works
Climate Change and Weather Early Warning Systems:	EDTEA
Pollution and Waste Management:	EDTEA and KDM WASTE
Alien Invasive Clearance:	EDTEA
Herbicide Application:	NRM: DFFE
Health and Safety/ First Aid:	Zenature Environmental Consultants

Furthermore, on site-training continued during implementation such that a team of 5 people was chosen to identify invasive alien species and indigenous trees so that the correct invasive plants were cleared and to ensure that no indigenous plants were accidentally cut during operations.

3.5. Breakdown Per Month

The project implementation duration was a total of 3 months, where the teams were required to remove solid waste and invasive alien plants from riverine areas and implement erosion bolsters where required. Flood debris was removed from key infrastructure such as bridges and tree planting was undertaken in Ward 19. **Phase 1 and 2** was undertaken by the Ward 16 team and **Phase 3 and 4** was undertaken by the Ward 19 team. It must also be noted that the project has covered feeder tributaries to Mavivane River which bring even more benefits to the catchment. The total area of alien plant species cleared is 32.18 hectares within the 6.4 kilometres stretch of the river. A total of 13 tons (which is equivalent 12000kg) of solid waste were eradicated from illegal dumpsites as well as within the community and the stream.

The breakdown per month is tabled below:

Month 1	Month 2 Ward 16	Month 3 Ward 19
<ul style="list-style-type: none"> Project Manager Appointment-Zenature. Recruitment via Ward 16 and 19 Councillors Procurement of tools and resources. 	<ul style="list-style-type: none"> Training, Induction and Contracts 20 October 2022 -21 October 2022. Training and Induction undertaken by EDTEA, KDM Waste Management, Zenature, Department of Forestry Fisheries and the Environment (DFFE), 	<ul style="list-style-type: none"> Training, Induction and Contracts 17-18 November 2022. Training and Induction undertaken by EDTEA, KDM Waste Management, Zenature, Department of Forestry Fisheries

<ul style="list-style-type: none"> • Inception Report (alien plant species and waste hot spots identification). • Appointment of 5 Coordinators Ward 16 and 19: 3 months 5 October 2022 to 31 December 2022 (working 21 days per month). • Secured a donation for herbicide from the Department of Forestry Fisheries and the Environment. 	<ul style="list-style-type: none"> • Department of Public Works, KDM EPWP. • Phase 1 and 2 launched by Her Worship the Mayor Cllr. L. Nhaca on the 24 October 2022. • 17.76 hectares on site alien species cleared rolled out by Zenature with the Ward 16 team. • 5 tons of solid waste cleared and collected. • Duration 17 days in total from 20 October 2022-11 November 2022. • Additional procurement for consumable goods such as gloves and heavy duty refuse bags 	<ul style="list-style-type: none"> • and the Environment (DFFE), Department of Public Works, KDM EPWP. • Phase 3 and 4 launched by Her Worship the Mayor Cllr. L. Nhaca on the 24 October 2022. • 14.58 hectares on site alien species cleared rolled out by Zenature with the Ward 16 team. • 8 tons of solid waste cleared and collected. • Duration 17 days in total from 17 November 2022 to 9 December 2022. • Project onsite implementation ended 9 December 2022.
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3.6. Waste and Invasive Plant Species Eradicated

Project Phase	Area in Hectares cleared	Type of waste	Tons of waste Amount collected
Phase 1 & 2 (block 1-6 on the map) Ward 16	17,75 Hectares	Plastic packets, tins, bottles, glass, cardboard, nappies, old electrical equipment, medical waste	5 tons
Phase 3 & 4 (block 7-8 on the map) Ward 19	14.43 Hectares	Plastic packets, tins, bottles, glass, cardboard, nappies, old electrical equipment, medical waste	8 tons
Total project total	32 Hectares cleared		13 tons

Common name	Scientific name	NEM:BA Category	Treatment type	Herbicide used
Lantana	<i>Lantana camara</i>	Cat. 1b	Cut stump	Need follow-up spray
Giant reed	<i>Pennisetum purpureum</i>	Cat. 1b	Slash & Cut stump	Need follow-up spray
Brazilian pepper	<i>Schinus terebinthifolius</i>	Cat. 1b	Cut stump	Kaput gel applied
Bonga–Bonga	<i>Solanum mauritianum</i>	Cat. 1b	Cut stump	Kaput gel applied
Syringa	<i>Melia azedarach</i>	Cat. 1b	Ring barking & Cut stump	Kaput gel applied
Chromolaena	<i>Chromolaena odorata</i>	Cat. 1b	Slash & cut stump	Need to follow-up spray



Picture 1: Kaput gel applied to some smaller shrubs including Bonga–Bonga



Picture 2: Syringa cut down and herbicide applied; Chromolaena was slashed and sprayed



Picture 3: Brazilian Pepper cut, stumped and painted with herbicide.



Picture 4: Edges of the river slashed and hand-pulled of invasive plants.



Picture 5: Flood-debris inhibiting river flow under bridge



Picture 6: Debris was removed as part of alien plant control teams and water is flowing.



Picture 7: Giant-reed (*Pennisetum purpureum*) slashed along the high-points of the river banks.



Picture 8: Alien vegetation and waste removed.



Picture 9: Treated giant-reed



Picture 10: Sample of Untreated Giant-Reed



Picture 11: Sample of 200 indigenous trees planted



Picture 12: Sample of 200 indigenous trees planted

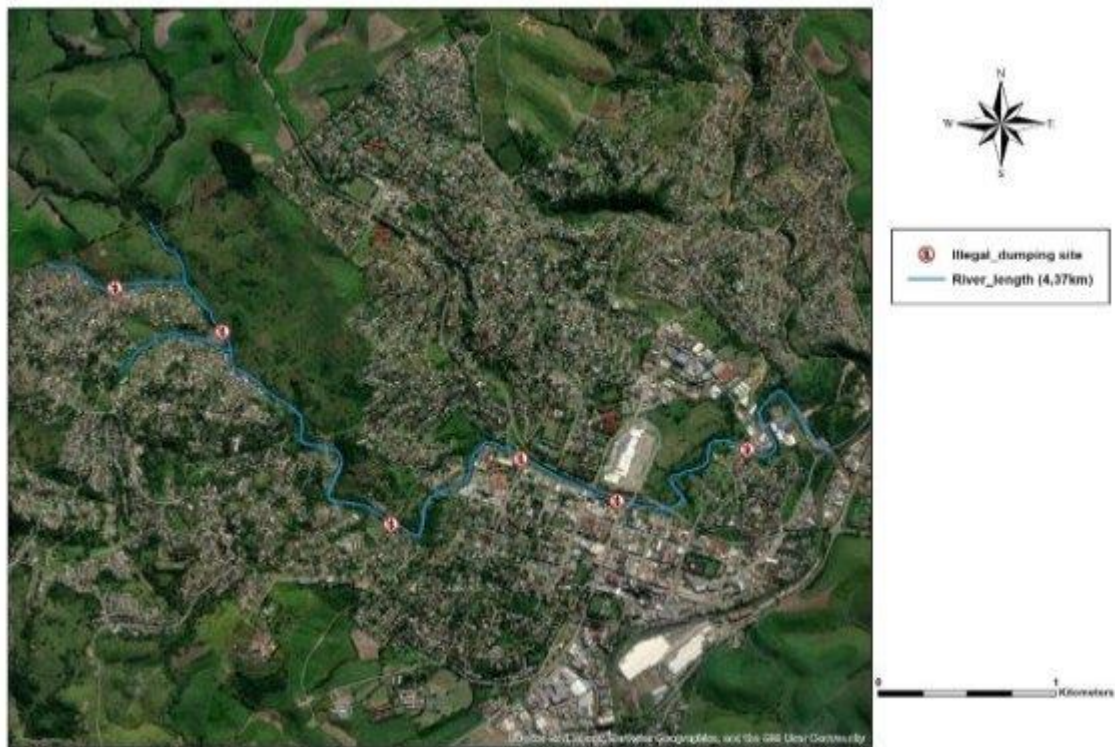


Figure 3: Mavivane River Phase 1 to 4 including tributaries waste hot spots



Picture 13: Waste covered by vegetation and soil.



Picture 14: Waste loaded into municipal skips.

	
<p>Picture 15: Medical waste was even cleaned up from the river bank in the second project stage</p>	<p>Picture 16: Waste during the second stage of the project included medical waste and nappies.</p>

3.7. Additional Support

- The technical training and induction provided could have costed approximately R250 000 or more for the two days however through partnerships with the Department of Public Works, EDTEA, and the DFFE it was offered at no cost to the municipality.
- The DFFE also provided herbicide with an estimated value of R120 000.00 which reduced costs to the municipality and provided 300 trees.
- The Department of Water and Sanitation through the KwaDukuza Environmental Forum and the Lower Umvoti Catchment Forum provided the municipality with additional gumboots, safety gloves, sanitizers, face marks and plastic bin bag.

3.8. Budget Expenditure

Budget expenditure in relation to the MAVIVANE TRMP is as follows.

<ul style="list-style-type: none"> • <i>Deliverables for each Item listed on Cost Scheduled provided by Municipality</i> 	<p>DEPARTMENT'S GRANT CONTRIBUTION</p> <p>R 1 700 000.00</p>	<p>DEPARTMENT'S GRANT EXPENDITURE</p>	<p>MUNICIPALITY'S CONTRIBUTION</p> <p>R 307 340.00</p>	<p>MUNICIPALITY'S EXPENDITURE</p>
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<i>Item/s covered by Municipal contribution*</i>				
Item	Budget Allocation	Budget Spent	Budget Allocation	Budget Spent
Personal Protect Equipment	R 307 580.00	R 117 601.90	- R 7 390.00	R 89 095.00
Staffing / Personnel	R 1 260 600.00	R 1 326 450.00	-	-
Tools / Equipment	R 131 820.00	-	-	R 95 399.00
Skills Development *	-	-	R 82 350.00	-
Resources *	-	R 60 961.30	R 17 600.00	R 75 250.30
Project Coordinator/Manager *	-		R 200 000.00	R 199 525.00
Total	R 1 700 000.00	R 1 505 013.20	R 307 340.00	R 459 269.30
BALANCE		R 194 986. 80		

3.9. Challenges

Whilst the objectives of the project were successfully implemented, however, there were a number of challenges encountered during the execution of the project, as identified below:

- The duration of the project was short, the implementation timeframe afforded was 3 months. Thus planning for the project was tightly squeezed and as a result some items such as health and safety, were not fully implemented.
- Real time monitoring and evaluation on grant spending, this was mainly attributed to tight squeeze of the project duration and therefore rushed planning for procurement of the correct quantities and type of resources spending was reactive instead of proactive.
- Challenges related to training and Health and Safety requirements as per the required legislations, these challenges were notable on site due to their necessity. Sufficient time was needed for training of the site works daily; this was not always achieved due

to the targets required, workers were therefore capacitated as they proceeded with the work.

- A high number of beneficiaries appointed (500) for the project, the number of targeted beneficiaries for the project was extensively high and this posed a great challenge in the execution of the work required. It was difficult to manage the group on site and to ensure that all members fully participated on site leaving other team members to carry the load.

3.10. Legacy of project

- All bridges within the catchment that were affected by the April/May 2022 Floods have been cleared and the river is flowing uninhibited
- A total of 200 trees were planted to stabilise the river banks.
- There is an estimated R 176 671.50 remaining budget from the grant and the municipality would like to invest on a waste boom on one of the hotspot to trap the waste in order to remove floating waste from the surface of water and minimise waste induced flooding during flood events.

4. Recommendations

Recommendations for future project were assessed under three project categories: (i) Project planning and timing (ii) procurement (iii) Human resources and training.

Project category	Problem	Recommendation
Project planning	The timescale and/or duration of the project was very short (30 days) but the amount of labour stipulated for the project was high (500 people). This inevitably put pressure on the procurement, human resources and operations management of the project.	Future projects aim to use smaller teams of around 20 people each - but these teams should work for longer in the project area.
Procurement	It was difficult to assess all (i.e. 100 %) the materials required for the project before the project inception. This included a budget to purchase extra bags for litter.	Future projects should have a 1-2% contingency for purchasing unforeseen items.
Human resources	The project budget did not cater for a qualified and experience health and safety or first aiders personal to be stationed permanently on site.	Provide a training budget of health and safety and first aiders on site - including a First Aid Kit.
	The supervisors of the teams were not trained and were chosen without experience. This denied qualified	Supervisors should be hired independently by the municipality and be chosen

	people the chance (and experience) to work in this space and receive attention from Zenature staff.	from a database of already proven workers.
Operations	Because the duration of the project was short - industry protocols for clearing invasive plants was not properly followed. This included follow-up treatments to the species which were cleared initially by the participants of the project.	A longer time-scale would allow the follow-up treatments to be undertaken; but alternatively, follow-ups could be budgeted for in smaller-type projects which work on the river for say 10 days and occur at 3-months intervals.
	Some of the stockpiles of the waste was not collected immediately by the municipality	This can be resolved by communications and planning with the municipal waste department.
	Areas that were cleared during project have already been used for dumping sites	It is suggested that municipal form an illegal dumping task team to police this activity. This would include a partnership between law enforcement, parks and other stakeholders. There is no point in spending money on cleaning up the river and then not form a task team to focus on the compliance of illegal dumping.
Financial Aid	The scope of the Mavivane TRMP is bigger than the part that was implemented in this phase	There is a need for more budget/ funds that will be sufficient to ensure that there is long- term environmental sustainability of the programme.

5. Conclusion

In conclusion, Riverine Management offers significant opportunities to create jobs and new enterprises in the green economy. The rivers are complex socio-ecological systems therefore addressing riverine condition and associated risk requires a multi-faceted, transversal, multi-actor, long-term process. The Mavivane River is medium sized stream which has given the municipality a wealth of knowledge in implementation of transformative riverine management programmes restoring the natural resource, protecting infrastructure, creating job opportunities thus creating resilience to climate related risks within the community. The leadership towards implementation of the transformative riverine management within the municipality both at a political and administrative level for both provincial and local spheres and partnerships with all stakeholders involved has shown that the minimal investment made has made a huge impact over a short period. KDM has a central role to

play in championing and coordinating a transformative riverine governance approach as a mechanism for unlocking and leveraging the required response to climate change adaptation and creating resilience for its citizens.