A FRAMEWORK FOR IMPLEMENTING THE **TRANSFORMATIVE RIVERINE MANAGEMENT PROGRAMME** IN ETHEKWINI

Building climate resilience and economic recovery in an eastern-seaboard city

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EXECUTIVE SUMMARY OF THE TRMP IMPLEMENTATION FRAMEWORK

Introduction

The C40 City Finance Facility has actively supported eThekwini Municipality in developing the TRMP for the past four years. The TRMP is a ten to fifteen-year programme of investing in the city's rivers as a core component of transformative adaptation that will help to mitigate the impacts of climate change (including increased flood events, such as those of April and May 2022), upscale job creation and skills development, and build stronger communities and implementation partnerships. The work done thus far has included a Business Case based on Cost Benefit Analysis and is supported by a suite of research studies see ttps://www.c40cff.org/knowledge-library/resources-from-durban.

In the week of the 11th of April 2022 Durban (and other parts of KwaZulu-Natal) experienced its third major flood in ten years. This time, rainfall volumes of up to 450mm were experienced in parts of Durban over three days. Over 429 people lost their lives, 50 people are still unaccounted for and as many as 47 000 people were displaced. The damage estimates are still being measured but initial estimates place the figure between R17 billion[1] and R25billion. Two weeks later, the rain thrashed down again, with two suburbs of Durban receiving rainfall of 250mm, and other areas between 80 – 120mm. It is clear that extreme rainfall events are becoming more frequent and more intense, and this is consistent with climate projections for the region.

Could the extent of the loss and damage have been prevented? Early indications from post-flood analyses are indicating that if the riverine corridors coming into and running throughout the eThekwini Municipal Area were operating as functional ecosystems, and were clear of alien invasive plants and solid waste, then as much as 90% of the damage could have been avoided[2]. Both the Transformative Riverine Management Programme (TRMP) Business Case analysis and the assessment of the recent floods draws a direct line of cause and effect between dysfunctional riverine systems, clogged by Alien Invasive Plants (AIP), and damage to the environment, society and the local economy, as well as the Municipality's service delivery mandate. A further line of cause and effect can be drawn between climate change impacts and increased number and severity of extreme rainfall events. A comprehensive, collaborative, systematic and ongoing riverine clearing and rehabilitation programme is therefore a critical component of the Municipality's climate adaptation response, and its mandate to safeguard people, place and the environment.

The Transformative Riverine Management Programme (TRMP), modelled on the City's Sihlanzimvelo project, has been in the process of development for some years already as a proactive intervention to reduce flooding and infrastructure damage through appropriate management of riverine ecosystems. The concept is premised on communities being employed to, amongst other tasks, remove litter and invasive alien plants which would otherwise contribute to culvert blockages. By these actions, ecosystems function better providing services like resilience to erosion and reducing flooding, whilst jobs are created in communities where they are desperately needed. The Business

[1] https://www.timeslive.co.za/news/south-africa/2022-04-25-flood-updates-r17bn-thats-the-estimated-cost-of-kzn-floods-damage/

[2] Geoff Tooley, eThekwini Municipality, Coastal Stormwater and Catchment Management Department. See Appendix 8 reports and https://youtu.be/jZS11eLIe6E

Case[3] for upscaling such work, proved that investment by the eThekwini Municipality in the rehabilitation of waterways yielded convincing returns in the form of cost savings (e.g. through avoided flood damage to culverts and road infrastructure) and broader job creation and societal benefits. This analysis was determined prior to the floods, and the case has been strengthened by the flood-related damage statistics that are beginning to emerge. The TRMP is an excellent opportunity to address environmental, social and economic challenges facing eThekwini through the City's Community- Ecosystem-based Adaptation (CEBA) approach within its Durban Climate Change Strategy. It will also go a long way to improving service delivery, and creating jobs. The priority now is to upscale such work, as one component of a much broader city response that is needed to reduce the type of devastation seen in April 2022.

The TRMP Implementation Framework

This Implementation Framework takes the work previously done closer to implementation by providing a set of tools to form the basis on which a detailed implementation operational plan can be developed. The tools are described in the different chapters that make up this report. Most of the chapters have a supporting dynamic tool attached in the appendix. In addition, the appendix accommodates additional useful information such as presentations made recently providing critical insights into the flood damage causation. These tools address the following:

1. Chapter 1 provides an **introduction to the TRMP, as well as details on the methodology, structure and limitations of the Implementation Framework.**
2. Chapter 2 provides a **baseline that documents all existing work carried out on waterways in the eThekwini Municipal Area** that describes the type and scale of project, and locates these on a GIS mapping tool. This tool will enable strategic decision-making regarding where TRMP efforts should be deployed at any given time, for specific strategic reasons. A notable point made is that there is a wide variety and a large number of riverine management projects across eThekwini, which provide a sound foundation on which to build the TRMP along with the Municipality's existing Sihlanzimvelo Community Stream Cleaning Programme. The chapter also defines the potential partnership landscape. In addition to identifying the different projects, the baseline document presents insights into the TRMP from different perspectives provided by key stakeholders within the riverine management community.
3. While a detailed study was done in 2021 of the **legislative framework within which a TRMP must exist**, Chapter 3 provides a more specific focus, and makes some key extrapolations regarding the various policies, legislation and regulation at a national and local level. This chapter has aimed to draw attention to the ways in which existing legislation can be brought to support the TRMP implementation process. Some key points made include the following:
    - The law requires that municipalities (and other levels of government) deliver on, for example, safeguarding the right to an environment that is not harmful to their health or well-being including for future generations[4]; ensuring effective service delivery in respect of water security, stormwater provision; systematically clearing

[3] The Business Case for a Transformative River Management Programme was completed in January 2021 as part of technical support provided to eThekwini Municipality by the C40 Cities Finance Facility. See https://c40cff.org/knowledge-library/resources-from-durban

[4] Bill of Rights, S 24 of the Constitution (1996)

AIPs[5]. The Climate Change Bill requires municipalities to align with the national strategy, including spatially mapping the operation space of the metropolitan municipality, vulnerabilities, risks, and future communities that will be at risk of climate change. The TRMP is well placed to assist the Municipality to deliver on all these regulatory requirements, and others discussed in Chapter 3.

- South Africa law does allow municipalities to work on non-municipal owned land, where it is incidental to competency.
- South Africa law does allow municipalities to reallocate budget if it results in better service delivery as per the Integrated Development Plan (IDP).
- The legislation appears to support the development of partnerships between government and the public, and is already explicitly embodied in water management policy. Capitalising on existing partnerships and structures is key and there is a need to strengthen these aspects for the rollout of TRMP activities across the city, for shared responsibility and expanded impact.
- It will be an important aspect at each step of the development of the TRMP to understand the constraints, and capitalize on the opportunities, imposed by nuanced relationships between the three spheres of government, and the public and private sectors.

4. A **Theory of Change (ToC)** is described in Chapter 4, and is a product that was collaboratively developed with key stakeholders within the eThekwini riverine community. It aims to serve as a guide to the TRMP implementation framework that: holds the vision of the TRMP in clear focus; identifies opportunities for action; explores current and new innovations needed to reach the vision; and uncovers assumptions behind the pathways to change. The development of the ToC was based on responses to three key questions and answers:
    - What is wrong? (Increasing vulnerability of communities, riverine areas and infrastructure in Durban to increasing flood frequency and magnitude).
    - What is the outcome? (Potential damage to community livelihoods, wellbeing (including health) and infrastructure - grey and green - in Durban, increasing financial maintenance and repair costs, and diverting money from development).
    - What is causing the problem? (Climate change, urban catchment challenges, degraded ecosystems, Alien Invasive Plant infestation of catchments, solid waste management problems, poverty, unemployment, inadequate governance of complex, cross-sectoral risks).

    Three main domains of change were identified for the TRMP, with associated actions:
    1. Improved ecological infrastructure associated with riverine areas.
    2. Building Riverine partnerships and improved governance.
    3. Financing the TRMP and supporting the development of the Green Economy.
5. Chapter 5 identifies **four critical pathways along which the TRMP trajectory may proceed**. The main assumption is that the TRMP will evolve and expand over time as partners and resources are mobilised, beginning with what is already happening, and gradually expanding in scope and impact. It is noted that the pathways are not fixed in shape or timeframe, and

[5] National Environmental Management Biodiversity Act (NEMBA) (10 of 2004) + others regarding alien invasive plants removal.

activities associated with the pathways may overlap. The pathways take a realistic twenty-year view.

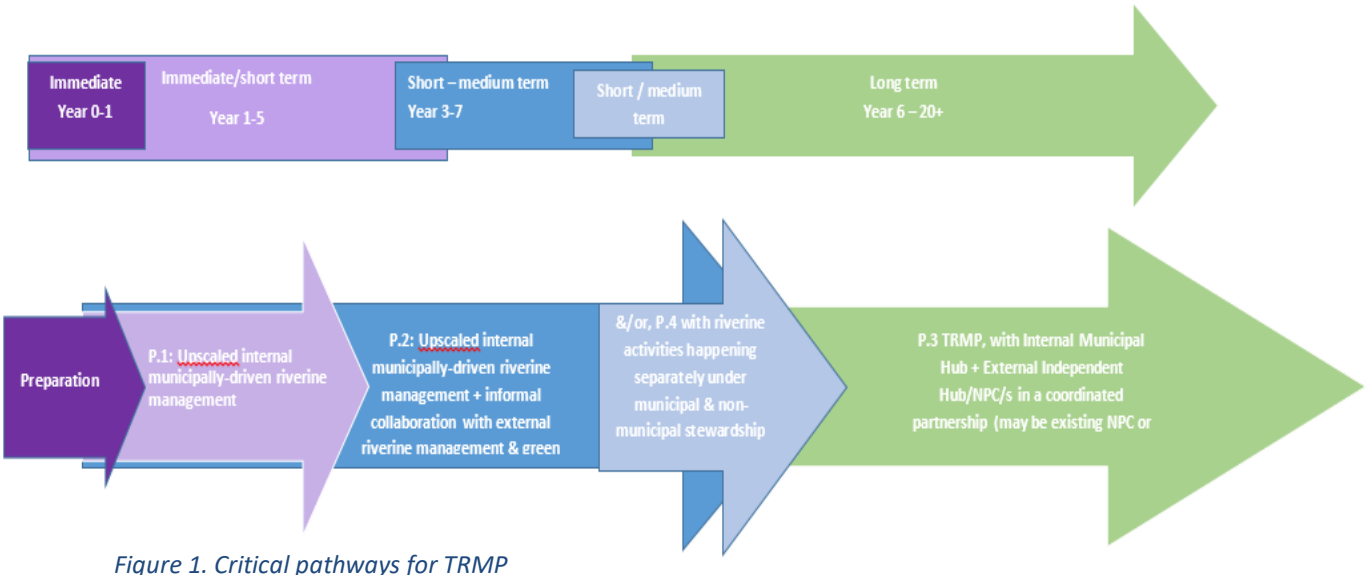

Figure 1. Critical pathways for TRMP

6. Chapter 6 presents a description of the **possible (and complex) institutional arrangement that might underpin the partnership-based TRMP**, wherein both municipal and non-governmental activators are engaged in common cause, in institutional vehicles that are responsible and accountable for driving, securing the resourcing for and monitoring the TRMP. It is noted that there are likely to be two "hubs":
    - An Internal Hub (IH) operating within the municipality, tasked with optimising the impacts of current and future activities of departmental mandates carried out in riverine areas.
    - An External Hub (EH) operating outside of the municipal system, coordinating and facilitating a collaborative programme of riverine rehabilitation carried out by agencies of the private sector and of civil society. This may be a single Non-Profit Company (NPC), or it may be multiple entities attached to specific localities and functions. It is likely that a specific task team/secretariat or implementing agent may support the mandate of the NPC/s in the administrative areas of fundraising and programme and financial management.
7. Chapter 7 presents a detailed but **broad-strokes implementation plan** that identifies what the likely actions are that will constitute the various phases of the TRMP, from:
    - A *Preparation Phase*, during which final research into catchments is finalised; buy-in is secured from municipal leadership; external stakeholders are mobilised into the process; seed funding is secured for the Initiation Phase; and a Stakeholder Forum is constituted.
    - An *Initiation Phase*, which focusses on what is already happening within the municipal system, across all relevant departments; and the establishment of an "internal hub" to facilitate and grow existing and planned efforts within riverine corridors; and ensure all necessary catchment-based research is integrated into the plan.
    - A *Bridging Phase* to lay the basis for full implementation, in which an "interim secretariat" is constituted to raise funds for the greater TRMP. If agreed to, a

framework for the "External Hub" is finalised and constituted through a TRMP Stakeholder Forum agreement on how best the various stakeholders can collaborate informally, as well as what form a more formalised relationship could take.

- An *Implementation Phase*, during which an evolving, coordinated, and collaborative transformation programme is formalised and implemented at a precinct- and catchment-based level across the eThekwini Municipal Area (EMA) and along cross-municipal catchments that impact the EMA.

8. Associated with the implementation plan, a **costing tool** is also presented in Chapter 7 and achieves two main outcomes.
    - Firstly, it provides detailed insight into what the multiple aspects are that make up the TRMP that will need to be costed over a ten year period. This will help strategic planners and project managers understand the likely costs. For the purposes of the tool, indicative figures have been included based on details drawn from the Business Case, from similar programmes, and from discussions with municipal rolepayers.
    - Secondly it provides a costing template that can be used to forecast costs (for fundraising and planning) and to track expenditure (for monitoring and accountability purposes).
9. The TRMP is an expensive and ambitious project which will require resourcing, both from within governmental systems and from funding agencies. Chapter 8 of this report presents a **selection of financing options relevant to the TRMP**, both from various levels of government as well as other financing and funding mechanisms both locally and internationally. Recommendations as to how to approach the various funds are made.
10. Chapter 9 presents a guideline as to how **Monitoring, Evaluation, Reflection and Learning (MERL)** would be best managed for this complex, innovative and long-term initiative. The assumption is that the final TRMP MERL should be designed to achieve multiple objectives. These include internal learning that builds the capacity of implementers and programme managers, informs internal strategies, and supports adaptive management of the programme; external learning that builds communities of practice and provides guidance to development partners and decision-makers; Strategy and development that informs which interventions or projects should continue, change or stop; accountability (to funders, partners and managers) of how funds have been spent and what impacts have been achieved; and communication to all stakeholders near and far. The chapter identifies key indicators that would be monitored, but it is noted that a specific and detailed MERL would need to be defined with all roleplayers once the TRMP Operational Plan is finalised.
11. The last chapter of this Implementation Framework makes **recommendations for the way forward**, including identifying the six broad actions that will lay the foundation of the TRMP. These are:
    - *Engage stakeholders inside and outside the Municipal system to share the concept, to secure support, and to set the basis of co-responsibility, collaboration and partnership. Both groupings will need to be mobilized separately and then together.*
    - *Establish an "Internal Hub" to begin the task of facilitating the impact value of the work that the municipality is already doing through the various departmental mandates.*
    - *Secure funding for the bridging and initiation phases of the TRMP.*
    - *Complete catchment profiling beyond the four that will be done by the end of 2022.*

- *Based on the above three activities, develop set of detailed operational plans that can be executed inside the Municipal system and on the outside in the rest of the eThekwini Municipal Area and along relevant catchments.*
- *Build the capacity for strategic planning, programme and project management, coordination, proposal preparation, and other skills, both for the Internal Hub and then the development of an External Hub.*

Conclusion

The partnership-based and collaborative TRMP represents a highly practical, innovative and valuable climate adaptation and mitigation intervention that will make a massive difference: to the people of eThekwini, to municipal governance practices, to the local economy, to the environment. It will raise the resilience of the region to climate change impacts. Finally it will stand as a model and an inspiration to other metros facing similar environmental threats. eThekwini will once again lead the way in developing innovative climate-related nature-based solutions to monumental and wide-spread challenges.

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Acronyms

AEN	Amanzi Ethu Nobunto
AfDB	African Development Bank
AIP	Alien Invasive Plant
BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BoD	Board of Directors
CER	Certified Emission Reductions
CFF	C40 Cities Finance Facility
CIFs	Climate Investment Funds
CSO	Civil Society Organisations
CSW	Cleansing and Solid Waste
CTCN	Climate Technology Centre and Network
DBSA	Development Bank of Southern Africa
DRR	Disaster risk reduction
DFFE	Department of Forestry, Fisheries and the Environment
DUCT	Dusi-uMngeni Conservation Trust
EE	Executing Entity
EH	External Hub
EI4WS	Ecological Infrastructure for Water Security Project
EMA	eThekwini Municipal Area
EPCPD	Environmental Planning & Climate Protection Department
EPWP	Expanded Public Works Programme
FSP	Full-sized Project
GFDRR	Global Facility for Disaster Reduction and Recovery
GCF	Global Climate Fund
GCT	Green Cities and Towns
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GEF SGP	GEF Small Grants Programme
GFD	Green Finance Desk
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

GCT	Green Cities and Towns
IDC	Industrial Development Corporation
IDP	Integrated Development Plan
IH	Internal Hub
IKI	International Climate Initiative
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Plan
KPI	Key Performance Indicator
KZNCA	KwaZulu-Natal Conservancies Association
LDCF	Least Developed Countries Fund
MOA	Memorandum of Agreement
M&E	Monitoring and Evaluation
MERL	Monitoring, Evaluation, Reflection and Learning
MFMA	Municipal Finance Management Act
MSP	Medium-sized Project
MT	Management Team
MTREF	Medium Term Revenue and Expenditure Framework
NBI	National Business Initiative
NDA	National Development Agency
NDP	National Development Plan
NEMA	National Environmental Management Act
NGO	Non-Governmental Organisation
NIE	National Implementing Entities
NPC	Non-Profit Company
NPO	Non-Profit Organisation
NRM	Environmental and Natural Resource Management
NWRS	National Water Resource Strategy
ODA	Official Development Assistance
ODCM	Organisational Development and Change Management
PEP	Presidential Employment Program
PES	Payment for Ecosystems Services
PPG	Project Preparation Grants
PMU	Project Management Unit

REIPPP	Renewable Independent Power Producer Programme
SANBI	South African National Biodiversity Institute
SCCF	Special Climate Change Fund
SIP	Strategic Implementing Partner
SRA	Special Ratings Area
SWPN	Strategic Water Partners Network
TOR	Terms of Reference
TRMP	Transformative Riverine management Programme
UIP	Urban Improvement Precinct
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WfW	Working for Water

GLOSSARY OF TERMS

Important Concepts used or indirectly referenced in this report.

The definitions below are, except where specified otherwise[6], summarised from:
IPCC, 2022: Annex II: Glossary [Möller, V, J.B.R. Matthews, R. van Diemen, C. Méndez, S. Semenov, J.S. Fuglestvedt, A. Reisinger (eds.)]. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

Term		Definition
Adaptation		In human systems, the process of adjustment to actual or expected climate and its effects, to avoid moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.
	Adaptation deficit	The gap between the current state of a system and a state that minimizes adverse impacts from existing climate conditions and variability.
	Adaptation limits	The change in climate where adaptation is unable to prevent damaging impacts and further risk. Soft limits occur when additional adaptation may be possible if constraints are able to be overcome. Hard limits occur when no additional adaptation is possible.
	Adaptation options	The array of strategies and measures that are available and appropriate for addressing adaptation.
	Community-based adaptation	Local, community-driven adaptation. Community-based adaptation focuses attention on empowering and promoting the adaptive capacity of communities.
	Ecosystem-based adaptation (EBA)	The use of ecosystem management activities to increase the resilience and reduce the vulnerability of people and ecosystems to climate change. See "Nature-based solutions".
	Incremental adaptation	Adaptation that maintains the essence and integrity of a system or process at a given scale. In some cases, incremental adaptation can accrue to result in transformational adaptation (see "Transformative adaptation"). Incremental adaptations to change in climate are understood as extensions of actions and behaviours that already reduce the losses or enhance the benefits of natural variations in extreme weather / climate events.
Adaptive capacity		The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

[6] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2022. Glossary. https://ipbes.net/glossary. Accessed 28 April 2022,

Adaptive management	A process of iteratively planning, implementing, and modifying strategies for managing resources in the face of uncertainty and change (also see "Governance").
Agroecology	The science and practice of applying ecological concepts, principles and knowledge to the study, design and management of sustainable agro-ecosystems. It includes the roles of human beings as a central organism in agroecology. Agroecology examines the roles and interactions among all relevant biophysical, technical and socioeconomic components of farming systems and their surrounding landscapes
Climate Change	A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.
Climate extreme	The occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variable.
Climate finance	Loosely applied to the financial resources devoted to addressing climate change by all public and private actors from global to local scales, including international financial flows to developing countries to assist them in addressing climate change. Climate finance aims to reduce net greenhouse gas emissions and/or to enhance adaptation and increase resilience to the impacts of current and projected climate change. Finance can come from private and public sources, channelled by various intermediaries, and is delivered by a range of instruments, including grants, concessional and non-concessional debt, and internal budget reallocations.
Climate justice	Justice that links development and human rights to achieve a human-centred approach to addressing climate change, safeguarding the rights of the most vulnerable people and sharing the burdens and benefits of climate change and its impacts equitably and fairly.
Climate resilient development	See “Pathways”
Ecological infrastructure	The natural or semi-natural structural elements of ecosystems and landscapes that are important in delivering ecosystem services. It is similar to 'green infrastructure', a term sometimes applied in a more urban context (IPBES, 2022).
Governance	The structures, processes, and actions through which private and public actors interact to address societal goals. This includes formal and informal institutions and the associated norms, rules, laws and procedures for deciding, managing, implementing and monitoring policies and measures at any geographic or political scale, from global to local
Adaptive governance	Adjusting to changing conditions, such as climate change, through governance interactions that seek to maintain a desired state in a social-ecological system.

Climate governance	The structures, processes, and actions through which private and public actors seek to mitigate and adapt to climate change.
Multilevel governance	A dispersion of governance across multiple levels of jurisdiction and decision-making, including, global, regional, national and local, as well as trans-regional and trans-national levels.
Just transitions (also see "Transition"	A set of principles, processes and practices that aim to ensure that no people, workers, places, sectors, countries or regions are left behind in the transition from a high-carbon to a low-carbon economy.
Monitoring and evaluation (M&E)	Mechanisms put in place to respectively monitor and evaluate efforts to reduce greenhouse gas emissions and/or adapt to the impacts of climate change with the aim of systematically identifying, characterizing and assessing progress over time.
Monitoring, evaluation, reflection and learning (MERL)	While monitoring and evaluation (M&E) is a systematic process of collecting and analysing data in order to assess the extent to which an intervention is achieving its desired goal, MERL does not assume that project activities can be planned in a linear sequence that leads to a desired outcome. A MERL framework requires a hybrid approach that combines the value of monitoring against indicators with reflective process monitoring and more open-ended processes for obtaining explanatory data and evaluative insights (Rosenberg et al. 2018, pg. 7).
Mitigation (of climate change)	A human intervention to reduce emissions or enhance the sinks of greenhouse gases.
Mitigation measures	In climate policy, mitigation measures are technologies, processes or practices that contribute to mitigation (e.g. renewable energy technologies, waste minimization processes, and public transport commuting practices).
Nature-based solutions	Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.
Path dependence	The generic situation where decisions, events, or outcomes at one point in time constrain adaptation, mitigation, or other actions or options at a later point in time.
Pathways	The temporal evolution of natural and/or human systems towards a future state. Pathway concepts range from sets of scenarios of potential futures to decision-making processes to achieve desirable societal goals.
Adaptation pathways	A series of adaptation choices involving trade-offs between short-term and long-term goals and values. These are processes of deliberation to identify solutions that are meaningful to people in the context of their daily lives and to avoid potential maladaptation.
Climate-resilient pathways	Iterative processes for managing change within complex systems in order to reduce disruptions and enhance opportunities associated with climate change.

	Climate-resilient development pathways (CRDPs)	Trajectories that strengthen sustainable development and efforts to eradicate poverty and reduce inequalities while promoting fair and cross-scalar adaptation to and resilience in a changing climate.
	Development pathways	Development pathways evolve as the result of the countless decisions being made and actions being taken at all levels of societal structure, as well due to the emergent dynamics within and between institutions, cultural norms, technological systems and other drivers of behavioural change.
Resilience		The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure.
Restoration		In environmental context, restoration involves human interventions to assist the recovery of an ecosystem that has been previously degraded, damaged or destroyed.
Risks (from Climate Change)		The potential for adverse consequences for human or ecological systems. In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change. In the latter, risks result from the potential for such responses not achieving the intended objectives, or from potential trade-offs with, or negative side-effects on, other societal objectives, such as the Sustainable Development Goals. Risks can arise (e.g.) from uncertainty in implementation, effectiveness or outcomes of climate policy, climate-related investments, technology development or adoption, and system transitions.
Risk assessment		The qualitative and/or quantitative scientific estimation of risks.
Risk management		Plans, actions, strategies or policies to reduce the likelihood and/or magnitude of adverse potential consequences, based on assessed or perceived risks.
Scenarios		A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces and relationships. Note that scenarios are neither predictions nor forecasts, but are used to provide a view of the implications of developments and actions. See also “Pathways”.
Transformation		A change in the fundamental attributes of natural and human systems.
Transformative/transformational adaptation		Adaptation that changes the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts.
Transformative change		A system-wide change that requires more than technological change through consideration of social and economic factors that, with technology, can bring about rapid change at scale.
Transition		The process of changing from one state or condition to another in a given period of time. Transition can occur in individuals, firms, cities, regions and nations, and can be based on incremental or transformative change.

1. INTRODUCTION & BACKGROUND

The C40 Cities Finance Facility (CFF), in partnership with eThekwini Municipality, completed an integrated Business Case for managing and transforming 7,400 km of eThekwini's watercourses to contribute to building the Municipality's resilience to climate change. Drawing on the successful results of ten years of implementing the Sihlanzimvelo Stream-Cleaning Programme in eThekwini as well as a number of NGO driven initiatives, the TRMP aims to expand riverine management across the whole municipality. Essentially the TRMP seeks to build a co-created collaborative and coordinated approach to building the effective functionality of the riverine corridors and catchments that are part of the eThekwini landscape. In this way, rivers and catchments are rehabilitated, protected and are enabled to deliver on valuable ecosystems services, so necessary to human and environmental wellbeing. The TRMP, if delivered at scale, has the potential to build resilience through climate risk response, infrastructure protection, ecosystems services enhancements, as well as support other benefits such as green, or circular, economy development, job creation and improvement of human wellbeing, among other positive impacts.

The development of the Transformative River Management Programme (TRMP) Implementation Framework is being used to motivate for the prioritization, expansion and funding of municipal and community-based river management in the eThekwini Municipal Area (EMA). The eThekwini Municipality is overseeing the development of an initial implementation plan. Real Consulting was appointed to lead this phase of the TRMP development[7].

The objective of developing a high-level TRMP Implementation Framework is to help eThekwini Municipality along with other key partners to understand: (a) the substantive work required to achieve this vision, and how this might be prioritised, sequenced and integrated, based on an understanding of what already exists; (b) the institutional arrangements, governance frameworks and stakeholder roles/responsibilities that will be needed to oversee, initiate, facilitate and implement work towards the vision; and (c) the resources (human and financial) that will be required to deliver on the TRMP vision. The TRMP, if delivered at scale, has the potential to build resilience through climate risk response, infrastructure protection, job creation, ecosystems services enhancements and improvement of human wellbeing, among other positive impacts.

What is the aim of the TRMP?

The TRMP is a bold multi-dimensional plan to transform all river corridors in eThekwini to build preparedness and resilience in the face of the Climate Crisis, and to support service delivery in some core municipal mandates. In recent years, Durban has seen multiple crises that can be linked back to dysfunctional waterways – from infrastructure damage to settlement flooding to massive sewer spills[8] into the ocean and beachfront. Most recently the Municipality has been devastated by a two massive flood events just weeks apart. The extent and severity of the crises impact critically on the socio-economic context of Durban as well as its liveability. The reasons for this untenable situation are multiple, from limited municipal budgets and professional capacity, to aging infrastructure to mass unmanaged urbanisation to extreme weather. Climate change predictions show an increase in

[7] http://realconsulting.co.za/

[8] The erosion damage which damages sewers is part of the cause of the sewer spills. The lack of active maintenance in the riverine space means that sewer blockages and surcharges run for days/months before being reported, found and unblocked. This could be linked back to an unmanaged urban riverine corridor

severe weather events, increasing the vulnerability of riverine ecosystems and habitation patterns in close proximity to these waterways.

There is clear evidence that this circumstance will only worsen if radical steps are not taken to address the challenge. The TRMP is one ambitious and catalytic project that could make a major difference. The objective of the framework is to develop a collaborative and coordinated, municipal- and catchment-wide waterway management programme, that brings together work carried out by the city, and by the private and civil society sectors in common cause to build the functionality of our waterways so that they are capable of providing critical ecosystems services.

Aside from environmental and crisis management benefits, there are multiple additional benefits to be derived from the TRMP. The programme is premised on small enterprise development and job creation – two core and critical concerns of a struggling economy, and a core commitment of both national and local government. While clearing waterways will generate huge waste aggregations, the aligning of the TRMP with Green Economy solutions enhances the opportunity to both manage that waste and, indeed, create value from it.

The recent flood disasters have provoked a reiteration of what people already know.

In an article commenting on the floods Professor Tshilidzi Marwala writes that the floods have, "Not been an isolated event. Over the last few months, southern Africa has had to weather extreme weather conditions, including cyclones, tropical storms and flooding. It is estimated that just this year alone and based on early estimates from Durban, almost 300[9] people have died in the region. As an Intergovernmental Panel on Climate Change (IPCC) report released this week appropriately states, "It's do or die"". He goes on to report on a study published in Scientific American, "that without coastal protection or adaptation, in other words, without decisive action, there will be an increase of 48% of the world's land area, 52% of the global population and 46% of global assets at risk of flooding by 2100. Additionally, 68% of the global coastal area flooded will be caused by tide and storm events, with 32% due to projected regional sea-level rise."[10]

Marwala's opinion is echoed by Professor Mike Muller (Wits School of Governance), who states, "Because of this growing risk [of extreme rainstorms] water managers have highlighted the importance of proper design, construction, maintenance and management of stormwater infrastructure, without which extreme rain will cause the kind of damage that we are seeing in KwaZulu-Natal"[11]. His colleague, Jasper Knight, research associate in climate change, agrees: "The devastating effects of the floods can be blamed on poor governance and infrastructure maintenance failures… SA's built infrastructure is not fit for purpose as it was constructed 50 or so years ago for conditions at that time. It does not adequately address 21st Century needs".[12]

Climate risk is a complex concept precisely because it is the consequence of very many interconnected drivers. Climate hazards are one component of risk (e.g. more frequent and severe storms) but someone/something is only at risk of experiencing damage/loss of livelihoods/loss of life if they are exposed to that hazard, and are vulnerable (e.g. do not have adequate capacity to adapt). We can argue that the TRMP will decrease the potential for damage from increased flood risk (i.e.

[9] This number has risen to close on 500 people dead and/or missing.

[10] https://www.dailymaverick.co.za/opinionista/2022-04-13-durban-floods-are-a-massive-wake-up-call-a-deadly-combination-of-climate-change-corruption-and-ineptitude/

[11] https://times-e-editions.pressreader.com/article/281547999436297

[12] Ibid

increase climate resilience) by influencing various components of risk such as managed waterways carrying water successfully without flooding.

The TRMP offers one practical solution, with its clearing waterways and preventing blockages in culverts and other drainage channels. In response to the recent floods, a number of preventative steps have been put forward to improve resilience to flooding, including:

- Protecting and maintaining, as well as augmenting ecological infrastructure along waterways.
- Managing water drainage from hard surfaces efficiently, as well as recognising that "It's also important to retain water in an urban catchment and delay runoff so as to build flexibility and resilience in our water system for extreme weather" (Driessen, 2022[13]) by using innovative solutions used in other circumstances such as building parks in water risk areas in the urban space to increase water retention and prevent damaging flooding.
- Improving forecasting and communicating information much more widely especially given the advances in technology in this field.
  Risk mapping is also increasingly easier to do with drone and other Technology.
- A critical resilience intervention is around information sharing, communication, education and awareness-building to ensure that all sectors of society are informed about climate change impacts and risk management from public officials to the public.

Driessen notes that "This type of approach requires interdisciplinary cooperation of water management, urban design and landscape planning." He way have expanded that list of potential participants to encompass many more roleplayers, discussed at length in this framework. Basically resilience to climate change impacts can only be a partnership strategy.

The above suggestions are all reflected in the TRMP, with its focus on rehabilitation – clearing waterways of AIPs and solid waste, rehabilitating river systems, including areas alongside waterways, collaboration with various roleplayers and stakeholders, and awareness building. The latest flood has again highlighted that about 70% of the blockage material of culverts is vegetation, mostly alien, and 30% solid waste. This highlights the importance of dealing with the rehabilitation of these waterways in both the removal of alien vegetation and solid waste. The Municipality's Sihlanzimvelo Programme has demonstrated this methodology successfully.

The TRMP is a potentially a ground-breaking concept, that can be implemented. In a city that really needs a radical intervention, eThekwini Municipality can lead the way. A coordinated, broad-based and transformative response to riverine management delivers many more, and also aggregates, benefits. It also allows for a carefully curated approach that builds on existing work done by the municipality and civil society and engages with the complexity of climate-related challenges. It has major potential to contribute to broadening the base of economic recovery post-disaster and post-COVID.

Apart from the direct riverine corridor management benefits that will derive from the intervention, the TRMP will demonstrate the power of a shared responsibility. The Sihlanzimvelo Programme and UIP-managed areas where waterways and infrastructure are diligently maintained, were much less damaged during recent floods and easier to repair. Both these programmes demonstrate the case

[13] https://www.dailymaverick.co.za/article/2022-04-20-kzn-floods-three-practical-steps-to-make-south-african-cities-more-flood-resilient/

for government-private sector-civil society collaboration. It is essential that all residents take part in maintaining their natural and lived environments – both at the individual level and at the level of local government.

Key principles underpinning the proposed TRMP

A number of key principles have been identified in the multiple studies, consultations and other engagements that have preceded the development of the TRMP Implementation Framework. These are listed as follows:

- Positive impact on climate resilience of eastern seaboard city is a key objective.
- All benefits must be embraced including improving the lived experience of all communities in eThekwini Municipality, including contributing to building economic resilience through skills and livelihoods development through job creation and enterprise development.
- The green, or circular, economy opportunities must be leveraged through alignment with the TRMP, thus maximising their ability to contribute to and make economic recovery more inclusive.
- Environmental benefits must be factored into the programme including ensuring improved water quality and security; improved pollution management in rivers, and on the beaches and the ocean; and improved biodiversity and enhanced ecosystems.
- Service delivery benefits must be leveraged, including improved efficiencies of municipal expenditure; improved and integrated governance; protection of local economic assets; and building a municipal – citizen partnership of shared responsibilities and collaboration regarding all aspects that affect wellbeing.
- The proposed TRMP plan must be inclusive, and developmental, building on existing work carried out by the municipality and by civil society on various land holdings.

Measurable benefits

Measurable benefits are environmental, economic, social and even political. Some of the impacts of the proposed TRMP include:

- The TRMP Business Case described how these benefits might be enhanced by implementing a city-wide TRMP (i.e. across various landscapes and not only on municipal land). The figures presented for this scenario were: R1,80-R3,40 return (municipal and societal benefits) for every R1 spent. The avoided expenditure of roads and stormwater systems was and is a powerful rationale behind the City's Sihlanzimvelo project.
- Waterway clearing reduces blockages in urban infrastructure, from roads and stormwater to water and sanitation systems, which have an avoided maintenance cost value, as well as protection of our natural assets so valuable to the tourism industry that is central to eThekwini's economy.
- Rehabilitating/managing land adjacent to rivers can potentially contribute to buffering flooding impacts for infrastructure, livelihoods and people. This is especially the case when we take a more systemic perspective and deal with waste, which creates blockages in the river systems.
- Increasing community livelihood/employment options also has a direct influence on risk by reducing the socio-economic vulnerability of those communities most at risk. This focuses more on the systemic aspects of vulnerability and risk (from a social perspective).
- Effective catchment management protects water resources used directly and indirectly by municipalities and communities.

- Effective catchment management reduces solid waste pollution and alien vegetation growth in riverine areas which reduces potential for clogging and blocking of weirs, culverts and bridges, and reduces pollution that finds its way to estuaries and the ocean.
- There will also be some mitigation benefits associated with healthy wetland/riverine ecosystems (e.g. through carbon sequestration).
- There are benefits to aquatic and terrestrial biodiversity through improved functionality of green infrastructure and related ecosystems.

What needs to happen in the short term?

To kickstart and sustain the TRMP, a number of activities must be initiated and then sustained throughout the life of the TRMP. Some activities are short term, and some can begin in the short term and sustain over the medium and long term.

- Key to this endeavour is to build a collaborative institutional arrangement that represents all stakeholders – from government, the private sector and civil society, in whatever forms are most appropriate. (See chapter 6).
- Secure financial and human resources to ensure the coordination and implementation of a city-wide programme, comprised of various different kinds of activities. The primary need is financial, with which human resources can be secured. There are multiple funding mechanisms that must be part of the implementation of the TRMP, from allocations of municipal budgets to large and small donor applications. (See chapter 8).
- In respect of what needs to be done where, when, and with whom, a strategic prioritisation exercise needs to be done based on an overall catchment analysis of the whole municipality. In this way catchments and / or sub catchments would be prioritised for more urgent intervention, based on various risk and opportunity factors.
- A catchment-by-catchment detailed prioritised operational plan needs to be developed. This process has begun with the Ohlanga Catchment, and will soon be done in three others (uMhlangane, Palmiet and uMhlatuzana catchments). This will provide the basis for strategic decisions that address whether to focus on rivers, catchments or across cathments.
- Maintain a powerful stakeholder engagement programme to sustain and expand collaboration. It is critical that the iNgonyama Trust as well as the individual and organised private sector and civil society is mobilised into the TRMP (See chapter 7).
- Ensure that the efforts of an eThekwini-based programme are aligned with similar interventions inside and outside of the municipal systems and the municipal area in order to aggregate impacts and build integrated catchment wide programmes, where catchments span areas beyond the municipal boundaries, and to share lessons. (See chapter 6).
- Develop an active communication strategy that operates laterally and vertically so that different units, departments and other line functions within the municipality are kept apprised and aligned to the TRMP, and so that stakeholders outside are similarly engaged, including other similar projects and programmes as well as agencies such as Catchment management Agencies. (See chapter 6).
- Communication is closely aligned to awareness building. In this regard, a concerted and resourced strategy needs also to feed a society-wide behaviour change objective through capacity development of various kinds of stakeholders – inside and outside the municipality. This could include cooperatives working on projects, schools, community groupings of any kind. (See chapter 7).

- Capacity development is also critical to the sustainability of an ongoing TRMP. Capacity is in short supply both within and outside the municipality for some of the core functions associated with managing multiple and disparate waterway management interventions. (See chapter 7).
- Ensure the development and maintenance of a sound knowledge management and learning system, that embraces:
    - Ongoing research about best and new good practices, dynamically fed into the TRMP coordination and implementation streams.
    - Updating of data about existing and on-boarded project to a geo-located database to be used as decision support material for new and revised interventions.
    - A dynamic monitoring, evaluation, reflection and learning (MERL) system that affects the coordination and implementation of the overall TRMP, and models how individual interventions can improve their outputs, and align them to a coordinated programme.
      (See chapter 9).

It has been said that a crisis can lay the seeds of opportunity. How we respond to this current crisis and others that have been and are still to come, is a challenge to create something better than what was there before.

Can we use the climate crisis in general and recent flood disasters to do business as unusual, to change how we organise, how we plan, how we resource, how we implement, and who we do it with?

What is the TRMP Implementation Framework?

This Implementation Framework has been actively co-created by a multi-disciplinary team from eThekwini's Environmental Planning and Climate Protection Department (EPCPD), eThekwini's Engineering Unit, the GIZ CFF unit within the City and a team put together by Real Consulting. In addition to the core team, the Business Case Steering Committee (BCSC) was kept updated and provided input at monthly meetings. Additional riverine stakeholders were engaged at various points along the journey, including at the Theory of Change and Strategic Planning workshops held. Finally,

as part of the baseline study exercise, a number of key informants from within the municipality (Engineering (EU) , Economic Development (EDU), Development Planning, and Environment and Management Unit (DPEM) and Parks, Recreation and Culture (PRC)) and from riverine management projects both inside eThekwini and beyond, were engaged in interview[14]s.

Once the Implementation Framework is mostly completed, there is further engagement to follow both at technical and leadership level. This is not the final piece, and will be developed as additional insights are mobilised.

Except for three of the combined "operational" team that developed the Implementation Framework, all members have had deep engagement with either conceptualising the TRMP or with previous TRMP studies.

Table 1. TRMP Implementation Framework Team

Team member	Organisation	Expertise
Shahid Solomon	CFF	TRMP/Climate change/Urban planning
Geoff Tooley	Engineering/Sihlanzimvelo	Engineering/infrastructure/riverine management/Catchment Management/ Coastal Stormwater and Catchment Management
Joanne Douwes	EPCPD	Environmental planning and sustainability
Sean O'Donoghue	EPCPD	Climate Protection/Environmental Planning
Mark Tomlinson	Engineering/Sihlanzimvelo	Engineering/infrastructure/riverine management/Catchment Management/ Coastal Stormwater and Catchment Management
Dominic Mitchell	Real Consulting	Development economics/Facilitation
Luci Coelho	Real Consulting	Environmental & socioeconomic development/research
Jonathan Carter	Cornerstone Economic Research	Economist/economic modelling/research
Alice McClure	University of Cape Town	Environmental Science/climate change/monitoring & evaluation
Brian Wright	UrbanMgt	Urban management/private sector engagement
Kate Pringle	Resilient Systems Institute	Environmental science/Water governance/climate change/monitoring & evaluation
Patrick Martel	University of KwaZulu-Natal	Environmental Science/climate change/stakeholder engagement/research/
Thembeka Mhlongo	Self-employed	Geography and Environmental Science/Stakeholder engagement
Lulu Pretorius	Self-employed	Environmental Management/Wetland ecology

[14] These engagements are documented in the Baseline attached as Appendix 2.1

The Terms of Reference (ToR) was the starting point of the development of this Implementation Framework, naming the objective of the assignment as being,

> *To produce a TRMP implementation phasing plan that will support the municipality to facilitate a phased, sequenced and appropriately resourced implementation programme plan that builds on existing municipal efforts, as well as integrates existing and new TRMP projects and initiatives, with identified short and long-term targets based on relevant indicators.*

Through the inception process[15], a number of key deliverables were agreed on associated with four Work Packages, including:

Table 2. Implementation Framework Scope of Work

Work Package	Outputs
WP1. Inception	Collaborate with the client to develop an agreed scope of investigation, outputs and timeframes
WP2. Baseline	Identify & produce database of existing & currently planned initiatives + projected outputs over 3-5 yrs, 10 yrs and 15 yrs.
	Scope Regulatory framework
	Scope donor landscape
	MERL framework conceptualised in principle
	Investigate & make recommendations on institutional options
WP3. Implementation Plan development	Develop a Theory of Change
	Identify Critical Pathways
	Develop Institutional Framework
	Develop a high-level Implementation framework with associated costings
WP4. Presentation Workshop	Share findings with Client team

Throughout the five month assignment, the teams met weekly to share findings, examine implications, explore options and refine the outputs in a journey that was marked by collaboration and co-creation. In the course of the journey, two workshops were convened. The first was a Theory of Change (TOC) workshop held on 9 February 2022 attended by the combined TRMP Team and a number of additional stakeholders.[16] Subsequently, and building on the ToC workshop, a strategic planning session was held on 11 February 2022[17]. The outcome of these sessions has guided the development of the Implementation Framework.

Structure of this report

This report consists a number of chapters each of which could stand alone as a mini-report. Almost all chapters have an appendix product. Most of the appendices are tools that can be used going forward.

[15] The inception report is included as Appendix 1.
[16] The Attendance Register is included as Appendix 1.2
[17] The Attendance Register is included as Appendix 3.2

Table 3. Chapter & Appendices list

Chapter	Associated Appendix
Chapter 1 Introduction & Background	Appendix 1 TRMP Inception Report Appendix 1.2 TRMP Strategic Planning Attendance Register
Chapter 2 Baseline: Existing Programmes & Projects	Appendix 2.1 TRMP Spreadsheet database of projects & interviews Appendix 2.2 TRMP Geospatial database *Both are interactive tools*
Chapter 3 Legislative Framework	-
Chapter 4 Theory of Change	Appendix 3.1_TOC process records Appendix 3.2 TRMP TOC Attendance Register
Chapter 5 Critical Pathways	Appendix 4 Detailed Pathway option descriptions
Institutional Options	Appendix 5.1 TRMP Institutional Governance graphic Appendix 5.2 TRMP AEN Institutional partner option Appendix 5.3 TRMP GC Institutional partner option
Costed Implementation Framework	Appendix 6.1 TRMP Detailed implementation database Appendix 6.2 TRMP Costing tool *(interactive tool)*
Resourcing Opportunities	Appendix 7 TRMP Resourcing Database *(interactive tool)*

2. EXISTING PROGRAMMES & PROJECTS: A BASELINE STUDY

This chapter is centred on the outputs of the Baseline Study and its associated methodological processes, which have also collectively informed the TRMP Implementation Framework. Real Consulting adopted a highly flexible and iterative approach, being shaped by inputs from the Client and other stakeholders. This approach was adjusted due to emerging data requirements. It is supported by a database that details the existing projects, the strategic interviews and a separate geospatial database locating the projects on a map.

2.1 Introduction

In a general sense, a baseline study would aim to identify the starting points for a project or programme, and represents the benchmark against which future progress is determined. This Baseline Study is a critical component of the TRMP Implementation Framework. This Study aims to capture the details of Durban's continuum of riverine management projects and their future aspirations, as well as the perspectives of strategic actors, in order to provide robust evidence to inform the formulation and development of the TRMP Implementation Framework. A structuring requirement of the TRMP Implementation Framework is that the outputs need to be high-level and strategic. Consequently, the Baseline Study was designed to capture project-level data and strategic insights, and in turn, was structured in such a way so as to effectively provide data that could subsequently be utilised, analysed and translated into the required high-level, strategic outputs of the Implementation Framework.

The Baseline Study is a central feature of Work Package 2 (WP2) of the TRMP Implementation Framework, and it has several objectives that need to be satisfied in order to achieve this overarching aim. The first objective was to capture data on the continuum of riverine management projects in Durban. The second objective was to collect strategic perspectives of key actors who are active participants within the City's riverine community or have strategic insights that are relevant to the formulation of the TRMP Implementation Framework. The third objective was to present these data in a meaningful way – in order the ensure that these data could be utilised as a detailed, robust evidence base for other work packages of the TRMP Implementation Framework (including the Theory of Change Workshop; Internal Strategic Workshop; and Pathways Development), as well as have utility in subsequent stages of the TRMP following the completion of the Implementation Framework.

2.2 The two outputs of the Baseline Study

Section 2.2 introduces the two main outputs from the Baseline Study, namely the Master Database and the Geospatial Database. The extensive Master Database has eight sections, as displayed in Table 4**Error! Reference source not found.**.

Table 4: The details of the Master Database

Section number	Section Title	Description
A	Project-focused interviews	18 interviews with people working on riverine management projects in Durban.
B	Strategic interviews	13 strategic interviews
C	Conservancy projects	Basic details of 13 projects/interventions that are led by conservancies within the eThekwini Municipality
D	Engineering focus group	Focus group interview with the Head and Deputy Heads of Engineering
E	Gary Cullen interview	Strategic interview with Gary Cullen – with a focus on institutional structures
F	Debra Roberts interview	Strategic interview with Dr Debra Roberts
G	Green Corridors interview	Group interview with Nick Swan and Gary Cullen to further understand Green Corridors
H	Amanzi Ethu Nobuntu interview	Interview with Faye Brownell to further understand Amanzi Ethu Nobuntu

As the TRMP Implementation Framework process progressed, there was the realisation that the utility of the Master Database could be enhanced by summarising and spatially depicting the information on riverine management projects in Durban. Consequently, a primary Geospatial Database was compiled as a by-product of the Master Database to illustrate the spatial locations of the river projects currently in the database (see). While the Master Database contains the information on existing riverine management projects to help understand the potential and possibilities for the TRMP (as gathered from interviews during Phase 1 of the Implementation Framework conceptualisation), the Geospatial Database contributes visual context to the Master Database by mapping the projects investigated during the above process. The Geospatial Database is essentially a summarised offshoot of the extensive Master Database. It is a tool that can be used at later stages in the TRMP and can be updated when further spatial data becomes available. The categories included in the Geospatial Database include the project name; description; location; extent; timeframes; start date; end date; objectives; activities; land tenure type; funding type; who manages the project; how activities are implemented; dominant land uses surrounding the project area; and contact details.

The remainder of this chapter unpacks the iterative process used to formulate and crystallise these outputs, which also fed into other Work Packages of the TRMP Implementation Framework.

2.3 The Methodology

Table 5 highlights the overall aim and objectives of the Baseline Study. The general purpose was to provide robust evidence to inform the formulation and development of the high-level TRMP Implementation Framework and generate a comprehensive database for various forthcoming TRMP activities.

Table 5: The aim and objectives of the Baseline Study

Research components	Description
The aim	To capture the details of Durban's continuum of riverine management projects and their future aspirations, as well as the perspectives of strategic actors
The objectives	1 - To capture data on the continuum of riverine management projects in Durban. 2 – To collect strategic perspectives of key actors who are active participants within the City's riverine community or have strategic insights that are relevant to the formulation of the TRMP Implementation Framework. 3 - To present these data in a meaningful way – in order the ensure that these data could be utilised as a detailed, robust evidence base for other work packages of the TRMP Implementation Framework, as well as have utility in subsequent stages of the TRMP following the completion of the Implementation Framework.

In order to achieve the aim and objectives of the Baseline Study, an appropriate research design was required. This included the establishment of a Master Database, coupled with the selection of suitable data collection instruments. The Real Consulting Team used two main data collection instruments, namely a document review and actor interviews. In terms of document review, members from the Real Consulting Team had access to valuable documents from the previous studies linked to the TRMP and individual project reports and academic literature. As the Covid-19 pandemic was prevalent during this study's timeframe, all interviews were conducted virtually using Microsoft Teams. Interviews were recorded and transcribed by the interviewees from the Real Consulting Team, and subsequently, summarised versions of responses were inputted into the Master Database. Members of the Real Consulting Team additionally reviewed the inputted data.

An overview of the steps undertaken to complete the Master Database within the Baseline Study are depicted in **Error! Reference source not found.**. Firstly, the Real Consulting Team developed broad categories for the TRMP Implementation Framework's Master Database, focusing on projects and strategic perspectives. Beginning with the project-focused interviews, these broad categories were unpacked into sub-categories, which ensured that detailed data could be captured (see Appendix 1 and 2 for more detailed information). Secondly, the project team populated the categories by using multiple sources, including grey literature (project reports, evaluations), academic literature (peer-reviewed literature), and analytical sources (e.g. previous C40-Cities Finance Facility funded work, research projects). Thirdly, a gap analysis was conducted to assess what data were still required on the various projects and a reflection on whether the sub-categories could be refined. This was used to inform the design of interview questions for both the project and strategic interviews. The fourth step was to interview the main project and strategic actors in order to populate the database.

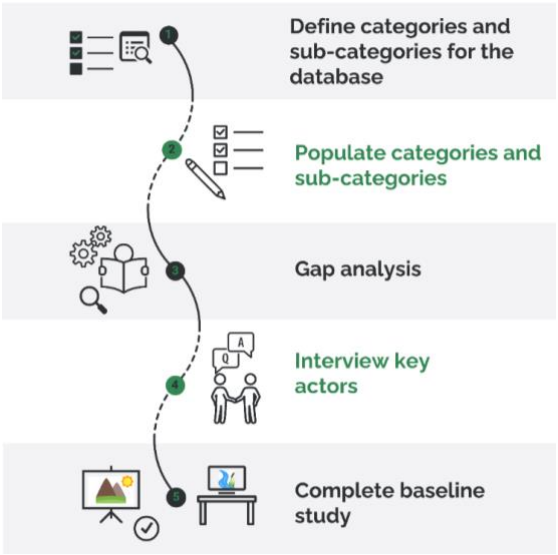

Figure 2: The steps undertaken to complete the Master Database

This also served as a form of ground-truthing for the data already filled in the baseline from the various sources. Overall, this approach ensured that a detailed, robust database was compiled from a project perspective, whilst the strategic perspectives of actors were captured. This database has been used to inform subsequent analyses undertaken by the Real Consulting Team.

The following subsections provide further details on the steps depicted in **Error! Reference source not found.**.

2.4 Project and Strategic Interviews

The Real Consulting Team identified relevant projects in eThekwini Municipality in collaboration with the Client, and individuals were identified for project-specific interviews using a form of purposive and snowball sampling. The Real Consulting Team requested access to GIS or spatial data related to the various projects during the interview process. Furthermore, the Real Consulting Team adopted a purposive sampling method to obtain strategic perspectives from actors identified in consultation with the Client.

The questions were organised against a number of categories as captured in the following graphic.

Figure 3. Interview question categories

Overall, 19 people from 16 projects were interviewed regarding their specific riverine-related projects. This sample represents a broader range of projects than those considered in previous TRMP-related work. The interviews followed a semi-structured format with open-ended questions for respondents and resulted in the collection of high quality, qualitative data. Table 6 shows the projects that have been included in Section A of the Master Database of the Baseline Study.

Table 6. The projects and respective interviewees included in Section A of the Master Database

Project Name	Name of person interviewed
Adopt a River	Janet Simpkins
Aller River Pilot Project	Luci Coelho and Paolo Candotti
Amanzi Ethu Nobuntu	Faye Brownell
Blue Port Project	Masha Ramsamooch and Wendy Dunn
Conservation Guardians - Shongweni	Greg Vogt
Forecast Early Warning System	Geoff Tooley
Green Corridors	Nick Swan
The Litterboom Project	Cameron Service
Palmiet Catchment Rehabilitation Project	Prof Cathy Sutherland and Dr Sean O'Donoghue
Piesangs Open Space	Zane Abdul
Riverhorse Valley Wetland Project	Geoff Tooley
Sibaya Conservation Trust	Brian Wright
Sihlanzimvelo Stream Cleaning Programme	Mark Tomlinson
Source to Sea	Nondumiso Dumakude
Umnini Wetland Rehabilitation Project	Mazwi Madlala
Wise Wayz Water Care	Ntswaki Ditlhale

Interviewees were asked various questions from the categories and sub-categories in Section A of the database[18].

In terms of the strategic interviews, seventeen people were identified by the Client in consultation with the Real Consulting Team (see Table 7). These people are active participants in Durban's riverine community and/or have strategic insights that are relevant to the formulation of the TRMP Implementation Framework and other strategic municipal processes. Interviewees were asked various questions from the categories and sub-categories appearing in the following graphic.

[18] See Appendix 3.1

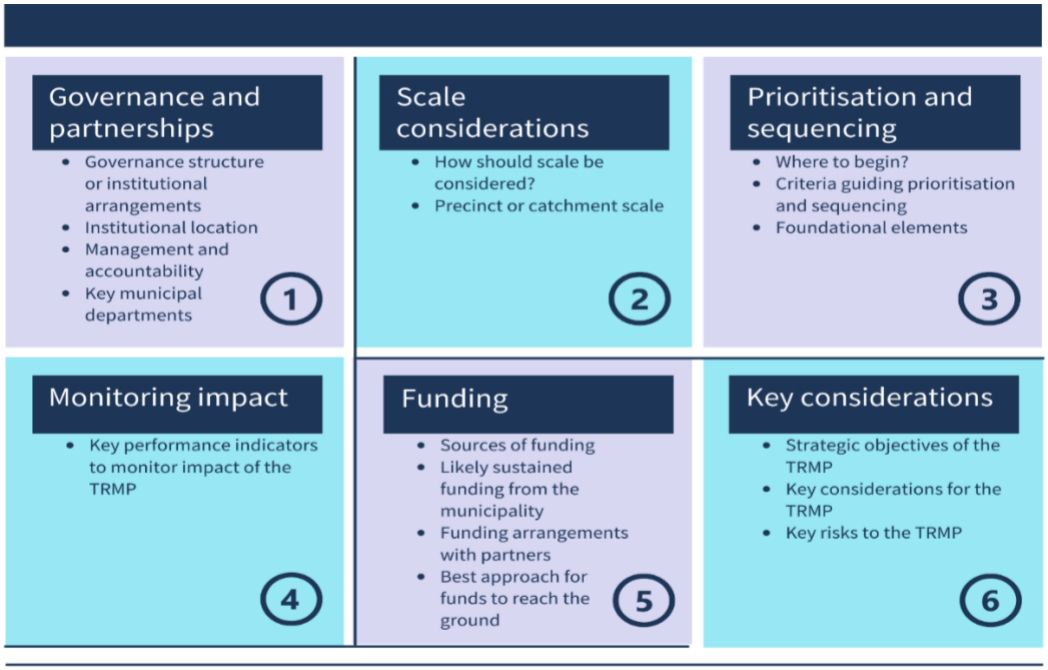

Figure 4. Categories and sub-categories for the strategic interviews

In terms of the method adopted for acquiring data from this group of people, a mix of both individual and group interviews were conducted, as well as a focus group. The results from these interviews appear in Sections B, D, E and F of the Master Database[19].

Table 7: Strategic actors collectively interviewed for the Baseline Study

Name	Organisation
Alex McNamara	National Business Initiative
Professor Cathy Sutherland	University of KwaZulu-Natal
Dr Debra Roberts	eThekwini Municipality
Faith Lawrence	International Water Stewardship Programme
Faye Brownell	Amanzi Ethu Nobuntu
Gary Cullen	eThekwini Municipality, Economic Development Unit
Geoff Tooley	eThekwini Municipality, Coastal Stormwater and Catchment Management Department, Engineering Unit
Greg Evans	eThekwini Municipality, Engineering Unit
Jo Douwes	eThekwini Municipality, Policy Implementation Branch, Environmental Planning and Climate Protection Department
Lea Derr	Natural Resources Stewardship Programme (NatuReS) / GIZ
Luci Coelho	Hillcrest Conservancy/eThekwini Conservancies Forum
Mark Tomlinson	eThekwini Municipality, Roads and Stormwater Maintenance, Engineering Unit
Paolo Candotti	Kloof Conservancy/eThekwini Conservancies Forum
Randeer Kasserchun	eThekwini Municipality, Coastal, Storm water & Catchment Management, Engineering Unit

[19] See Appendix 3.1

Dr Sean O'Donoghue	eThekwini Municipality, Climate Protection
Terry Stewart	eThekwini Municipality, Parks, Recreation and Culture
Thanda Zulu	eThekwini Municipality, Roads and Stormwater Maintenance, Engineering Unit

Real Consulting Team would like to thank Jo Douwes (eThekwini Municipality) and Paolo Candotti (eThekwini Municipality) for their assistance with data collection. In particular, the former collected data for Dr Debra Roberts' interview (Section F of the Master Database), whilst the latter circulated questions to conservancies throughout Durban and additionally compiled data on over ten conservancy projects in the city (Section C). Being driven by volunteers, these projects/interventions contribute to riverine management and the enhancement of environmental quality within Durban (see Table 8).

Table 8: List of the 13 Conservancy Projects documented in the Master Database

Project name	Project name
Everton Conservancy Trails	Molweni River Health Schools Project
Hillcrest Scout Hall ponds and stream bank wetland project	Msinsi Grassland Rehabilitation Project
Iphithi Nature Reserves	Nkutu River Project
Keep Molweni Clean Project	Ronaldskloof Stream Project
Mahlongwana River project	Shongweni - Sterkspruit
Mahlongwa River project	Umhlatuzana River
Memorial Park	

2.5 A snapshot of some of the results

Following the intensive data collection process, key patterns and trends from a project and strategic perspective were revealed through analysis by the Real Consulting Team. These were presented during the weekly client meetings, as well as during the Internal Strategic Workshop. Some of the insights from the project interviews are:

- There is a diverse continuum of projects in Durban, ranging from highly formalised partnerships between multiple actors to volunteerism. These projects occur across a range of land ownership categories.
- A range of systemic issues are experienced in Durban, which impact communities, water and the environment in the city
- There is a robust rationale for partnerships/collaboration between the state and non-state actors (holistic focus). This rationale becomes a necessity in the TRMP, where land ownership fundamentally structures who the partners are/should be
- Key lessons from projects
    - People can make or break projects – there is a need to include communities
    - A people-centred approach is required
        - To promote political traction
        - Job creation is an imperative

        - Recognise the different champions in Durban's riverine community (strong perception that some champions feel undervalued)
    - The TRMP means different things to different people
    - Projects navigate formal and informal structures
    - Partnerships should be based on good relationships and common goals, and structured by good governance.
- Key takeaways from projects for the TRMP
    - Critical to recognise project ownership when going forward
    - Build on existing projects
        - Project actors want to be involved in the TRMP
    - Aggregation of project impacts by working within and across catchments
    - Be cognizant of politics
    - Be aware of the time taken to build and maintain relations; project management and administration are chronically under-budgeted

Some of the critical insights captured in the strategic interviews include:

- There is a lack of consensus on the way forward for the TRMP
    - A continuum of institutional arrangements was suggested by actors
    - Lack of agreement on where the internal 'resource' should be located within the City
    - Given the partnership-based focus of the TRMP, there is a need for an external 'hub.'
- Consensus
    - Funding should flow outside of the state – rationale for an external entity (flexibility)
    - Coordination is required within geographic units
        - Both within and across catchments
    - There needed to be a separation of coordination/facilitation and implementation in the external 'hub'.
- The eThekwini Municipality will have multiple roles in the TRMP
    - Implementer and enforcer
    - Facilitator
    - Partner
- A meta-governance structure is required for governance within and across catchments.

2.6 Understandings relevant to the potential External Hub/s of the TRMP

Later in the TRMP Implementation Framework process, it became apparent that more data were required from entities external to the local government that have experience functioning as both coordinators and facilitators. Consequently, a group interview was conducted with Nick Swan (Green Corridors) and Gary Cullen (eThekwini Municipality) to capture Green Corridor's perspectives, whilst the Real Consulting Team interviewed Faye Brownell to gather further insights into Amanzi Ethu Nobuntu. Notes from these interviews appear in Sections G and H of the Master Database.

2.7 The Geospatial Database

A basic Geospatial Database was compiled as a by-product of the Master Database to illustrate the spatial locations of the river projects currently in the database. While the Master Database contains the information on existing river projects to help us understand the potential and possibilities for the TRMP (as gathered from interviews during Phase 1 of the Implementation Framework

conceptualisation), the Geospatial Database contributes visual context to the Master Interview Database by mapping the projects investigated during the above process[20].

Why is this database important?

The strengths of this database in the context of the TRMP, are that:

- It gives a succinct overview of where river projects are, or were, active.
- The database can be interrogated to show various aspects, such as active/dormant/historical projects; source of funding; land tenure types; land use; etc.
- Various layers can be added to the database to overlay water quality monitoring information, climate change projections, land use, SDF information, etc., with river projects.
- It gives an immediate overview of the areas in the City where no river projects are, or have ever been, implemented, and which may need to be prioritized.
- Eventually, aspects of the qualitative data (e.g. extent of rivers rehabilitated) required for the MERL (See Chapter 9) will be extractable from the Geospatial database.

Future management of the Geospatial Database

The Geospatial Database[21] is submitted as part of this Implementation Framework as an ArcMap mxd file with project layers containing summarised project information in the attribute table. It is a 'living' product which can be adapted, updated and/or expanded as needed. Ideally, the database will eventually be handed over to the coordinating entities who will be managing the TRMP, where further, or new, information on river projects can be collected, captured, updated and interrogated on a continuous basis. Further details on the Geospatial Database appear in the following table. The database contains summarised information for each project, which can be extracted and interrogated. The following fields are contained for each feature class:

[20] Ways will need to be considered to interface between this geospatial database and eThekwini Municipality's strong existing spatial database.
[21] This is included as Appendix 2.2. An explanatory video is attached as Appendix 2.3.

Table 9. Contents of the current version of the database

Categories	Sub-categories
Project name	
Description	
Location	
Extent	Resource (river/wetland)-constrained
	Catchment-wide
Timeframes	Current
	Dormant
	Completed
Start date	
End date	
Objectives	
Activities	Clearing invasive alien plants
	Wetland/River rehabilitation
	Waste removal/Solid waste management
	Revegetation
	Monitoring: River
	Monitoring: Water
	Monitoring: Sewage
	Monitoring: sand mining
	Monitoring: Other
	Research: Institution
	Research: Informal
	Improving riverine corridors
	Community engagement/awareness
	Enterprise development
	Capacity building
	Employment
	Erosion control
	Construction
Land tenure type	Private
	Provincial
	Municipal
	National
	Communal
	Informal

	Unknown
Funding type	Government - Local
	Government - Provincial
	Government - National
	State-owned entity
	Amanzi Ethu Blended Finance
	Grant/Donor
	Private sector
	Rates & Taxes
	University
	Mixed
Who manages the project?	Company/NPO/NPC
	Local Government programme
	Provincial Government Programme
	National Government Programme
	State-owned entity
	Partnership-based: Formal
	Partnership-based: Informal
How are activities implemented?	Contract-based
	MoU/MoA-based
	Partnerships
	Volunteers
	Other
Dominant land use surrounding project area	Agriculture
	Urban
	Peri-urban
	Rural
	Informal settlement
	Commercial
	Industrial
More information on the project	Contact person
	Contact details
	Date of data retrieval
	Notes

Sihlanzimvelo is given as an example of a project in the database below:

Table 10. Sihlanzimvelo database detail

Categories	Example
Project name	Sihlanzimvelo
Description	Preventative maintenance of watercourses by reducing debris that blocks stormwater drains and culverts, in order to protect built infrastructure; while creating employment through community cooperatives
Location	INK & Umlazi
Extent	Resource (river/wetland)-constrained
Timeframes	Current
Start date	2011
End date	Ongoing
Objectives	Reduction of debris that blocks stormwater drains and culverts Creating employment
Activities	Clearing invasive alien plants
	Waste removal/Solid waste management
	Enterprise development
	Capacity building
	Employment
Land tenure type	Municipal
Funding type	Government - Local
Who manages the project?	Local Government programme
How are activities implemented?	Contract-based
Dominant land use surrounding project area	Peri-urban
More information on the project	More project information in the Master Interview Database
Contact person	Mark Tomlinson
Contact details	Mark.Tomlinson@durban.gov.za
Date of data retrieval	2019
Notes	

Spatial information could not be retrieved for all the projects in the Master Database (the information for some projects might still become available within the next month). Therefore, only the following projects are currently included in the current version of the Geospatial Database:

- Sihlanzimvelo Stream Cleaning Programme
- Aller River Pilot Project
- Palmiet Catchment Rehabilitation Project
- Wise Wayz Water Care

- Riverhorse Wetland Rehabilitation Project
- Urban Improvement Precincts
- DUCT projects
- NRM projects
- The Litterboom Project

Spatial information is expected during May 2022 for the following projects:

- Adopt a River
- KwaMashu Bridge City Open Space project
- Nagle Amanzi Nobuntu Initiatives (Enviro Champs)
- Inanda Amanzi Nobuntu Initiatives (Enviro Champs)
- Inanda Aquatic Weeds Management
- Umgeni Water Working for Water project

What data can be retrieved from the Geospatial Database?

The following three screenshots show the kind of information embedded into the Geospatial Database. Figure X shows selected layers of data selected including the eThekwini boundary, litterboom project sites, Sihlanzimvelo programme sites, WWWC sampling sites, and others ticked. Figure x highlights the waterways that are part of Sihlanzimvelo. Figure x shows where the Urban Improvement Precincts are (marked in yellow).

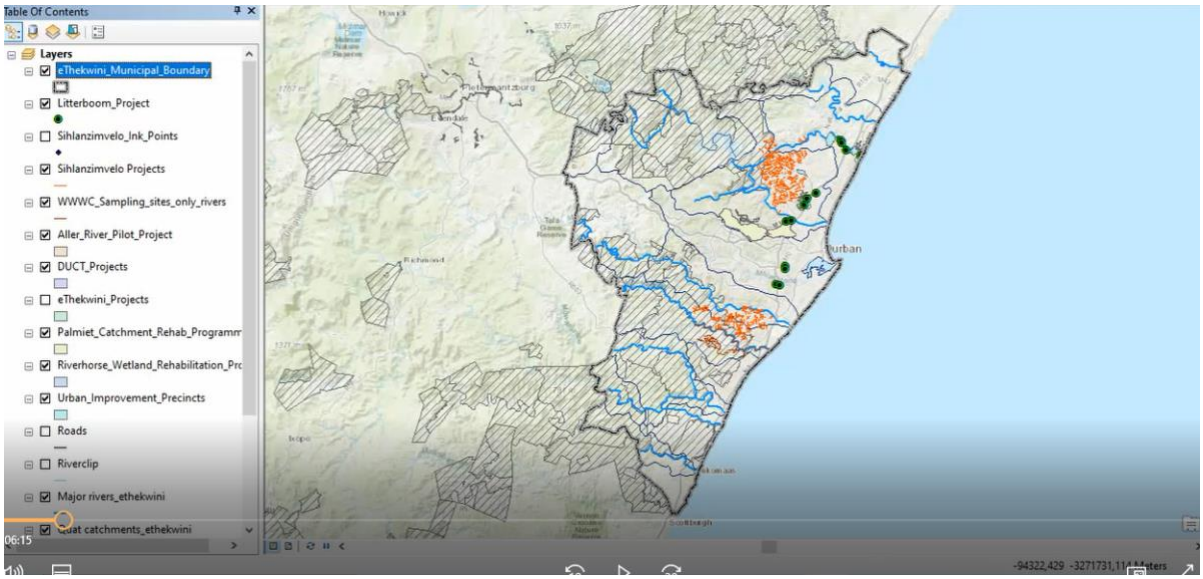

Figure 5. Indication of available layers of data

Figure 6. Data showing waterways that are part of Sihlanzimvelo

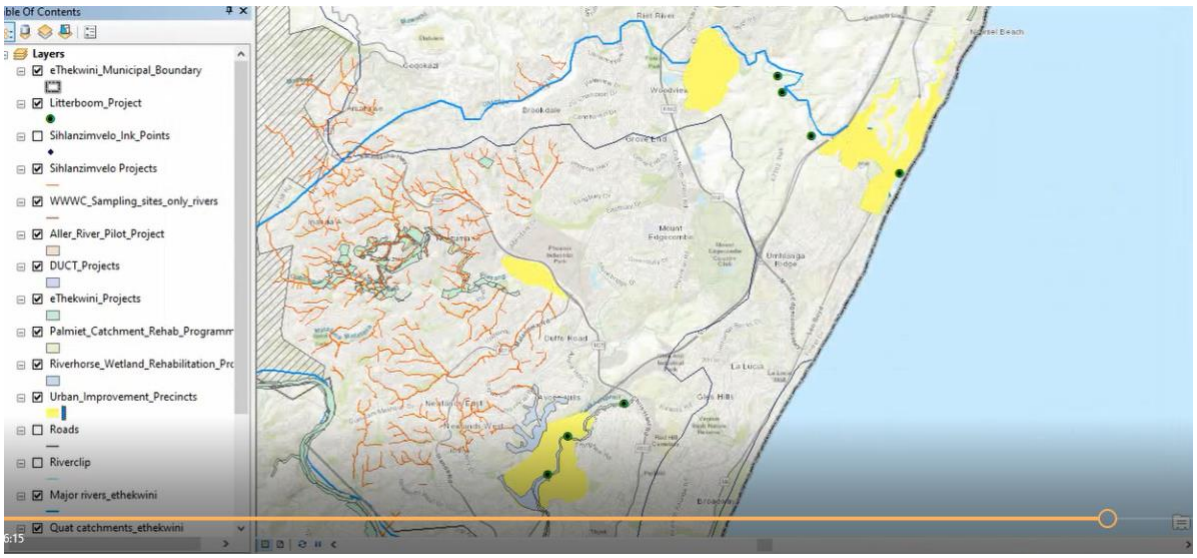

Figure 7. Data showing locations of the UIPs

3. LEGISLATIVE FRAMEWORK

This chapter draws from previous work done on assessing the regulatory framework[22] within which the TRMP must operate. An important emphasis in this chapter is to understand the legal framework both in respect of compliance with what is done, but also from the perspective that not doing certain actions can be an infringement of the law.

A Transformative River Management Programme aims, at its core, to transform how we engage with the rivers in our city: not only how we currently perceive our rivers, but also how we intervene to achieve maximum and multiple environmental, societal and economic benefits. Rivers are by nature expressions of the character of the surrounding catchment, but they are also connective ecosystems cutting across economic landscapes, tenure types, and land use arrangements. This compels us to steer away from once-off, local-scale interventions which can only achieve limited once-off or local scale success. We are obliged to approach our rivers in a holistic manner by building on and weaving together the 'seeds of transformation' currently taking place around rivers in Durban, in order to secure the core of the City's environmental and social identity on a transformative and much larger, strategic level. The law is essentially on the side of the implementation of a TRMP-type intervention.

It is already a multifaceted task to consider the governance arrangement required for such a holistic approach. An added layer of complexity comes in the form of the legislative framework into which river management is embedded. The regulatory landscape around river management has different implications for different land custodians and governance institutions. The National Water Act, for instance, focusses on the regulation of water abstraction, treatment and distribution, but loses sight of the interdependent water cycle. Municipalities have the regulatory mandate to manage water, wastewater and stormwater services in a manner which does not contravene their sphere of government while achieving outcomes such as the redress of historical imbalances (GroundTruth, 2020). There is thus a need to re-imagine the landscape of river management as a space where the multiple spheres of government, as well as business, civil society and traditional authorities, work together towards a common goal of shared value creation, equity and resilience (GroundTruth, 2020).

The aim of this chapter is to ensure that while crafting the TRMP Implementation Framework, we bring to the planning process key policies, legislation and regulations that must be considered in the conception of how to roll out the TRMP, both to ensure that the benefits of legislation are optimised, and that legislative regulation is not undermined to the detriment of the process.

In essence, the law requires that the environment be protected for the wellbeing of people. Various legislations either oblige governance mandates to take action to support environmental protection, or to take action to prevent environmental degradation. From both sides, interventions such as the TRMP represent an opportunity to achieve this protection and compliance.

The chapter should be read in conjunction with the full report prepared by GroundTruth in 2020.

[22] A full report on this was done in 2020 as part of the TRMP preparation research. The report was prepared by GroundTruth and is called *The Regulatory Framework and Implications for Partnership-Based River Management, based on lessons from key river partnership programmes.*

3.1 Summary of legislation

Key policies, legislation and regulations that are relevant to TRMP are listed in the following table.

Figure 8. Table of laws to support the TRMP

What it says or doesn't say	Why this matters?
Bill of Rights, S 24 of the Constitution (1996)	
▪ Everyone has the right (a) to an environment that is not harmful to their health or well-being and (b) to have the environment protected for the benefit of present and future generations. ▪ Assigns constitutional competence to municipalities with regard to potable water supply, domestic wastewater treatment (including discharge) stormwater management, municipal public works (infrastructure) and beaches.	▪ TRMP aims to protect a human right, which is currently being violated. ▪ Municipalities are required to provide these services and can carry out activities that are incidental to these competences.
Climate Change Bill (February 2022)	
▪ Climate change response Implementation Framework has programmes or measures that are related to adaptation (adjusting to respond to climatic stimulus and effects-expected or actual) and mitigation (interventions that reduce carbon release or enhance carbon sinks of greenhouse gases) in line with the constitutional mandate of the metropolitan municipality.	▪ The TRMP is a powerful adaptation programme in line with constitutional rights and responsibilities.
▪ To mainstream climate-resilient development, section 10 notes that all Government departments and state-owned enterprises will need to review the policies, strategies, legislation, regulations and plans falling within their jurisdictions to ensure full alignment with the National Climate Change Response within two years of the publication of this policy	▪ In one key area that impacts multiple others, the TRMP demonstrates how the eThekwini Municipality can align with the National Climate Response.
▪ Resilience to climate variability and climate change-related extreme weather events will be the basis for South Africa's future approach to disaster management.	▪ The TRMP is specifically focused on building climate change resilience.
▪ The climate change needs and response assessment must: spatially map the operation space of the metropolitan municipality, vulnerabilities, risks, and future communities that will be at risk of climate change. It must be based on the best available science and evidence information and identify and determine measures and mechanisms to manage and implement the required climate change response.	▪ This Bill requires the municipality to map environmental and social vulnerabilities to avoid disaster. A TRMP will assist in this process.
▪ Developing and implementing a wide range and mix of different types of mitigation approaches, policies, measures and actions that optimise the mitigation outcomes as well as job creation and other sustainable developmental benefits.	▪ The TRMP delivers on especially job creation and sustainable benefit aspects of this criterion..
National Water Act (NWA) (No.36 of 1998)	
▪ A framework for legislation for the water resources of South Africa- water equity and sustainability are principles. Under the act, the national government is mandated to protect,	▪ Central to the TRMP is the protection of water resources that flow into or within eThekwini Municipality.

conserve and control water resources for the benefit of all. Requirements for achieving this include: • Establishment of decentralized institutions (such as the CMA's and WUA) that enable meaningful participation in water management issues by local stakeholders including the local government with the communities and businesses.	
▪ Some of the principles of the Water Act include: • Economic and sustainable use of water promote. • Water resource, riparian and instream habitat protection and conservation. • Water use wastage prevention. • Helping manage water use and waterworks.	▪ This law *requires* the protection of waterways. The TRMP is a programme to implement the requirement.
Water Services Act (No. 108 of 1997)	
The act regulates delivery and access to water services- the municipality are placed as water services authorities that must ensure efficient, affordable, economical and sustainable access to water services. The act also complements conservation of water resources according to the NWA.	▪ Functional and clean river systems enable access to water by those not serviced by piped water. The TRMP would ensure this access.
National Environmental Management Biodiversity Act (NEMBA) (10 of 2004) + others regarding alien invasive plants	
Municipalities are required to have "invasive species, monitoring, control and eradication plans" in their IDPs.	▪ Legislation fully empowers and expects municipalities to remove alien invasive plants from all land including private land and reclaim the cost from landowners where necessary. ▪ Regulations requires the municipality to control some AIPs immediately.
Disaster Management Act (2002); Disaster Management Amendment Act (2015)	
▪ Provides the legislative framework for responding to natural disasters. ▪ Defines climate change: "means a change in the state of the climate that can be identified by changes in the variability of its properties and that persists for an extended period, typically decades or longer". ▪ Defines Adaptation as: "in relation to human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities and in relation to natural systems, the process of adjustment to actual climate and its effects". ▪ Requires municipalities (and municipal entities) to "identify and map risks, areas, ecosystems, communities and households that are exposed or vulnerable to physical and human-induced threats" and "provide measures and indicate how it will invest in disaster risk reduction and climate change adaptation, including ecosystem and community-based adaptation approaches".	▪ The disaster management legislation together with the annual Division of Revenue Act creates mechanisms for disbursement of funds in response to declared disasters. ▪ This legislation requires municipalities to implement programmes like Sihlanzimvelo that use community-based approaches to improve the effectiveness of ecosystems in climate change adaptation. ▪ The Climate Change Bill in its current form and the Disaster Management Act require the use of complementary monitoring systems and mapping of vulnerabilities, which are key activities in TRMP.
Municipal Systems Act 32 of 2000	

▪ To provide for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and ensure universal access to essential services that are affordable to all. ▪ Provides the framework for performance management and preparation of IDPs.	▪ Requires municipalities to ensure that all communities receive essential services, including water and sanitation as well as solid waste management solutions. Failure to provide these results in riverine corridor contamination, and increases pressure on water, sewer and other service systems. ▪ Puts IDP objectives at the centre of municipal performance measurement (not administrative units). ▪ Does not prevent municipalities from top slicing budgets to achieve these objectives.
The Municipal Structures Act (1998; 2000)	
This act was intended to provide for the establishment of municipalities and to divide powers and functions between the different categories of municipality in order to regulate the structures, internal systems of municipalities as well as their office-bearers.	▪ The Act inadvertently promotes siloisation. In order for the TRMP to be effected successfully, given the cross-cutting nature of climate change impacts and adaptive/mitigating responses, it will be necessary to create mechanisms to build cross-function collaboration. The TRMP addresses this issue.
Municipal Finance Management Act (56 of 2003)	
▪ Prescribes the supply chain management processes municipalities must follow. ▪ Payments can be made to NPOs subject to a MoA (S67) ▪ Defines the budget process.	▪ Procuring services can be cumbersome if municipal systems are weak. ▪ Procurement processes allow for functionality requirements to be defined – ensuring services are procured from capable service providers. ▪ Municipalities can enter into agreements with non-profits to provide services the municipality does not have the capacity to do. ▪ A process must be followed before funds approved in budget votes for 1 July – end June financial year. ▪ Does not prevent expenditure on non-municipal land, if on services incidental to municipal competences.
▪ According to Section 67 of the MFMA, when funds are to be transferred from the Municipality to a nongovernment organisation or body; the municipality must sustain and implement proper procedures and effective controls that are set up in Section 67(1). The municipality must be compliant to the control and regulatory measures set out in Section 67 and enforce them through an Accounting Officer in a contractual agreement between the two parties	▪ This important facility enables the municipality to contract entities to deliver on climate-wise activities in ways that fall outside of specific departmental mandates
Property Rates Act 6 (2004)	
Regulates the power of municipalities to impose rates on properties	Provides for the establishment of special rating areas and of entities to provide additional services in these geographic areas (driven by rate payers).

	Provides for different classes or categories of rates – some of which could be "earmarked for TRMP"
Local government: Municipal Planning and Performance Management Regulations (2001)	
▪ Municipal planning for regulations includes Integrated Development Planning: • The plan must identify an institutional framework which " must include an organogram" that addresses a municipalities transformational needs that are informed by programmes and strategies that were previously set out in Integrated Development Plans • It must also identify investment initiatives in the municipality. • And identify and development initiatives that are in the municipality such as economic, social, environmental and infrastructural development initiatives.	The potential of the TRMP to significantly reduce flood disaster such as experienced in eThekwini in April 2022 is apparent. For this reason it should be integrated into the IDP, and become a planned and budgeted line item.
Municipal Performance Regulations for Municipal Managers and Managers Directly Accountable to Municipal Managers (2006)	
▪ This was issued under the Municipal systems act (2000). Under the act, the municipality must report and monitor the performance of its KPI's. Under the act, the performance of senior managers (i.e. municipal managers and managers accountable to these municipal managers) must be aligned with the priorities that were outlined in the Integrated Development Plan.	This law requires that senior managers actually deliver on IDP plans. It places a key importance on the design of KPIs in such a way as to be able to hold managers specifically accountable. Climate change outcomes need to be integrated into performance management KPIs.
iNgonyama Trust Act 3KZ (1994)	
▪ Section 2(2) – "The Trust shall, in a manner not inconsistent with the provisions of this Act, be administered for the benefit, material welfare and social wellbeing of the members of the tribes and communities [of KwaZulu Natal] as contemplated in the KwaZulu Amakhosi and Iziphakanyiswa Act." ▪ The Zulu King is the sole trustee of the land and under the iNgonyama Trust Act, "the land is divided according to the clans under leadership to the King in terms of customary Law." ▪ "In the execution of his or her functions in terms of this section the iNgonyama shall not infringe upon any existing rights or interests."	Under the iNgonyama Trust Act, the land is not owned by the government, but is owned communally by clans according to each demarcated area. Even so, all iNgonyama Trust land falls within the jurisdiction of, and is subject to, national, provincial and local government regulations, including environmental and planning regulations. In respect of service delivery, the Municipality is still legally liable for provision.

3.2 Key framing of TRMP with regards to legislation

The municipal legislative framework and the accompanying regulations to these are vast and comprehensive. The aim of this document is not to exhaustively review these pieces of legislation, nor revisit the regulatory and legislative arguments made by GroundTruth, although important

pieces of information and insights from the study are recalled into this chapter. Rather, we aim here to distil and synthesize three main framings with regards to how the regulatory landscape can affect and shape the TRMP:

- The legislative foundations of the TRMP.
- Aspects of the regulatory landscape enabling the TRMP.
- Using the regulatory landscape to enforce TRMP activities.

3.2.1 Legislative foundations of the TRMP

There is a strong regulatory foundation in South Africa which supports the rationale of the TRMP in fundamental ways. Cascading down from the overarching Constitution on a national level to local municipality level, it is useful to leverage the ways in which policies, legislation and regulations can support the implementation of a programme such as the TRMP.

- Constitution:
    - Section 24 of the Constitution gives everyone the right to access sufficient water and municipalities are obliged to give effect to it.
    - A municipality can claim Constitutional competence regarding potable water supply, domestic wastewater treatment (including discharge) stormwater management, municipal public works (infrastructure) and beaches. Pollution control and the environment are competencies of national and provincial government whilst freshwater (quantity and quality) is a competency of national government.
- The relationship between the spheres of government can be used to support the TRMP:
    - Whilst local government must respect the distinctive powers and responsibilities of the other spheres of government, national and provincial government "*must support and strengthen the ability of municipalities to manage their own affairs*" (s154(1)).
    - The objectives for local governments (in Chapter 7 of the Constitution (s152)) provide a broad scope for local government to build partnership-based management structures to support the provision of services and promote sustainable development.
    - It seems that there are no primary municipal competencies allowing for TRMP activities, and to establish a legal right to conduct these activities the municipality will need to establish an incidental or else to have an existing provincial right assigned to it.

3.2.2 Aspects of the regulatory landscape enabling and enforcing TRMP-like activities

The legislative framework can support and enable the implementation of programmes like the TRMP that seek to enhance service delivery, the environmental context and citizen wellbeing, but it can also support enforcement where necessary.

Some of the enabling aspects of the regulatory landscape are:

Co-operative Governance:

Chapter 3 of the Constitution, which provides for the notion of co-operative governance. This co-operation must occur across the national, provincial and local spheres of government with the spheres being "distinctive, interdependent and interrelated"[23].

Disaster Legislation and Climate Change Bill

[23] https://justice.gov.za/legislation/constitution/chp03.html

The Disaster Management Amendment Act (2015, Amends the Disaster Management Act, 57 of 2002) requires all organs of state to conduct a disaster risk assessment for its functional area; identify and map risks, areas, ecosystems, and exposed/vulnerable communities, and households; provide measures on how to invest in disaster risk reduction and climate change adaptation, including ecosystem and community-based adaptation approaches; and develop early warning mechanisms and procedures for risks.

This can be used to motivate for the TRMP to be implemented by interpreting this legislation as requiring municipalities to have programmes like Sihlanzimvelo and Green Corridors in place, or at very least be strong motivations for funding for the programmes.

The restriction/opportunities offered by non-municipal land

There appears to be an impression that the municipality cannot work on non-municipal land. Although the municipality does not have the *legal right* to move onto private land, the Municipal Systems Act and Municipal Finance Management Act does not prevent a municipality from spending municipal budget to carry out activities on private land or outside of the municipal boundary. If work is done by the municipality on non-municipal land, the municipality will need to enter into an agreement with the landowner beforehand. This "non-prohibition" therefore allows the municipality to work on non-municipal land within the constraints of budget, or should special funds become available for this purpose.

The ability of the municipality to force landowners to do something falls under other legislation.

Incidental argument

Legally, this term applies to "something that occurs as a result of a consequence of something happening". In the context of the TRMP, the notion suggests that a regulation requiring an action by the municipality (such as clearing AIPs from a river bed) can be extended into an area not typically under municipal jurisdiction (such as privately-owned land) because it is incidental to protecting the functionality of the river.

The incidental argument can be used to carry out activities with regards to non-municipal mandates, but it is important that the arguments regarding incidental powers are not used to intrude on another sphere's power, but rather be seen as necessary to use to enable the municipality to carry out its duties.

Where necessary, the incidentals argument can be used to the municipality's benefit: "A municipality has the right to do anything reasonably necessary for, or incidental to, the effective performance of its functions and the exercise of its powers"[24]. The following pertains:

- The incidental power must be an indivisible element of the primary power and not constitute a power in its own right. These incidental powers must form a part of the primary power which is constitutionally granted to a sphere of government, and which cannot be usurped by any other sphere.
- The municipality would be exercising power in its own competence if the implementation of river management activities is incidental to the fulfilment of its primary functions (tourism, municipal public works, storm water management, water and sanitation, beaches, etc.).

[24] http://iwmp.environment.gov.za/municipal_systems_act/chapter3/section8

- Where an activity is not incidental to, but is related to the performance of a municipality's functions and is contained within Schedule 4 or 5, it is possible to argue that national or provincial government must, provided certain conditions are met, assign the administration of the matter to the municipality.

Based on the above, it follows that the Municipal Systems Act and Municipal Finance Management Act does not prevent a municipality from carrying out activities on private land, outside of the municipal boundary or where it can be considered as incidental to their primary competencies. Thus, where necessary or desirable, municipal departments can actually implement TRMP-type work on non-municipal land. Certainly engagement with landowners is key to the good practice of such a decision.

The incidental argument can be used to carry out activities with regards to non-municipal mandates, but it is important that the arguments regarding incidental powers are not used to intrude on another sphere's power, but rather be seen as necessary to use to enable the municipality to carry out its duties.

Partnerships:

The reluctance that the municipality may have – for any number of reasons – not to implement riverine management on private land, does strengthen the notion of working in partnerships. Capitalising on existing partnerships and structures is key and there is a need to strengthen these aspects for the rollout of TRMP activities across the city.

The explicit recognition of the need for more partnership-based approaches to the management of water resources is already explicitly embodied in water management policies, laws and regulations, such as the National Development Plan (NDP), the National Water Resource Strategy (NWRS), National Environmental Management Act (NEMA) and others.

Payments to non-profit organisation ("S67")

Section 67 of the Municipal Finance Management Act (MFMA) governs "funds transferred to organisations and bodies outside government"[25]. This is an important supplementary facility that enables municipalities to commission work that is outside of its capacity for any reason, but which supports service delivery or enhances the work of the municipality. To set this facility up, there must be a council resolution approving that the programme can be funded through this arrangement, and the amount to be funded[26]. A Memorandum of Agreement (MOA) - which is effectively a contract - is signed between the city and the implementing agency, such as a non-profit organisation (NPO). This agreement is signed by the Municipal Manager, as the accounting officer of the municipality[27]. Each MoA can be in place for three years and there is no legal limit to the number of times the MoA can be renewed, although it will need political approval at the end of each period. One NPO can receive funding from multiple different departments in the municipality and each department would have a separate MoA with the NPO[28]. One department can hold MoAs with multiple NPOs and multiple departments can agree to pool funding that is transferred to an NPO through a single MOA. That

[25] https://www.gov.za/sites/default/files/gcis_document/201409/a56-03.pdf
[26] This seems to be the biggest obstacle or area of unpredictability to putting these in place.
[27] The actual signing can be delegated.
[28] Green Corridors is an example of an NPO that has this arrangement with eThekwini municipality, and has multiple arrangements with different departments.

single MOA will be between the NPO and the department whose budget vote the funds are transferred from.

Further key points in relation to the use of this mechanism include:

- Using these arrangements is usually more cost effective than the alternative of the municipality taking on the work internally, and can be "sold" to council as a cost saving, and as an efficiency, but the greatest reason for supporting Section 67 arrangements is that they can be used to implement services the municipality does not have the capacity to do.
- The municipality can exercise close control over the funds transferred to the NPO through the MoA, into which strict accounting requirements can be embedded.
- Often, these agreements are the outcome of a long-term and trusted collaborations between city officials and external role players to achieve a common goal, where the MoA and associated financial arrangements were seen as the best way to achieve a common goal, through a close working relationship. The key factors are: trust, collaboration, mutual agreement.
- A Section 67-funded NPO can raise additional funding other than what is received from the municipality.
- While there is an assumption of close collaboration and mutual respect, the city cannot play a governance role in the NPO but can be an observer on the board, which role can be very active in protecting the interest of the municipality.

The Constitution and Bill of Rights

As noted above, the Constitution and Bill of Rights requires that TRMP-type activities be carried out to ensure that citizens enjoy the right (a) to an environment that is not harmful to their health or well-being and (b) to have the environment protected for the benefit of present and future generations. This gives force to decision-making at a municipal level to make sure that these rights are embedded in all decisions taken with respect to rehabilitating waterways.

Property Rates and Special Rating Areas

The Municipal Property Rates Act (12 of 2004) regulates the power of a municipality to impose rates on property. Amongst a range of things, the act governs how municipalities value properties and excludes certain properties from rating. There are two opportunities for the TRMP created by the property rates act, namely creating a special rating area (SRA), and earmarking a TRMP property rates surcharge[29].

An SRA is a "neighbourhood" where at least 51% of commercial owners and 66% of residential owners have requested and been awarded the responsibility of supplying and managing a range of services on behalf of the municipality to a defined geographic area. Through this arrangement, a group of property owners in an area vote to be part of a special rating area and agree to pay additional property rates. The rates are collected by the municipality paid to an entity (appointed by the ratepayers, such as an NPO or NPC) that manages the proceeds and delivers the services. Most SRAs are established to pay for additional security services and/or urban improvements.

In respect of TRMP-like interventions, an SRA could be established specifically to restore the ecological integrity of an area or include this activity in their mandate. eThekwini could leverage

[29] See funding chapter for more details.

relationships and coordinate ecological restoration projects with SRAs that encompass and/or neighbour waterways and wetlands and through this collaboration achieve substantial returns on minor to moderate financial contributions from the municipality. The NPO operating an SRA could use their collaboration with the municipality to raise additional funds to invest in ecological repair work.

Alien invasive plant (AIP) removal

As much as 60% of the undermining of riverine functionality is caused by AIP infestation[30]. Consequently this is and must be a large part of the activities of the TRMP. There is a strong regulatory framework surrounding AIPs, including:

- "Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species"[31] and therefore the owner of the land must *take immediate steps* to control them. This applies to municipalities as owners as much as to private individuals.
- NEMBA (76(2)) requires that all organs of state prepare "invasive species, monitoring, control and eradication plans". For municipalities, these must be part of the municipalities integrated development plans. Furthermore, municipalities have powers under Section 31A of the Environmental Conservation Act (73 of 1989) to require landowners to remove alien invasive plants and recover the costs of doing so from the landowner.

3.3 The role of partnerships to assist all spheres of government:

There is a need to implement and enforce the existing legislation, which has financial and human capacity constraints in all spheres of government. Through the TRMP, opportunities exist for achieving better water management through productive partnerships, and support government to implement and enforce.

For each intervention of the TRMP a dedicated effort must be made to understand and apply the nuanced relationship (the enabling opportunities and constraining potential) between:

- The three spheres of government (National, Provincial and Local) as different spheres are responsible for different aspects of water management.
- The public and private sectors. This includes the relationship between government, business, civil society and traditional authorities and communities.

3.4 Silos, budget votes and performance management

The "silo-isation" of work in the eThekwini has been seen as a constraint to achieving coordinated service delivery. Since cross-subsidisation from various departments is needed to make an integrated project (e.g. Sihlanzimvelo) achieve maximum potential, this could also be a barrier to achieving any of the pathways envisaged to achieve the TRMP. The lack of financial commitment to one resource (e.g. Sihlanzimvelo) to fulfil a number of departmental mandates is rooted in these departments being funded from different municipal 'votes', and moving funds from the budgets of one of these departments to another is very complicated. Departments are penalized for unspent budgets, and therefore putting a department's budgets in the hands of another department is a

[30] G.Tooley, personal communication.

[31] https://www.environment.co.za/weeds-invaders-alien-vegetation/alien-invasive-plants-list-for-south-africa.html

huge risk[32]. This anxiety around entrusting and sharing budgets in the City is an administrative barrier to achieving TRMP goals.

Furthermore, the budget 'Votes' are linked to the departmental mandates, budgets and KPIs, which can result in disjointed, uncoordinated activities which run the risk of rendering cross-cutting actions unproductive at worst and not optimised at best. However, it should be noted that the Municipal Performance Regulations for Municipal Managers and Managers Directly Accountable to Municipal Managers (2006) require municipalities to first ensure that performance measures enable achieving IDP priorities, before matters of measuring the performance of administrative units (or budget votes) are addressed. This suggests that the extent to which departmental budget sharing and KPIs get in the way of achieving outcomes is a function of decision-making processes during the budget process and the interpretation of legislation and regulations and is not a function of the regulations themselves. These barriers can therefore be overcome through committed and innovative interventions from high-level municipal administrative leadership. An example of this may be moving a 'top-slice' of the relevant municipal Votes to a coordinating mandate, department or other vehicle to carry out key activities. In this case, a top-slice would derive from taking a proportion of a range of relevant unit/department budgets and aggregating this for specific utility.

3.5 **Concluding comments**

This chapter has aimed to draw attention to the ways in which existing legislation can be brought to support the eThekwini TRMP implementation process. Some key points made include the following:

- The law requires that municipalities (and other levels of government) deliver on what the TRMP can result in.
- No law stops municipalities from working on non-municipal land, where it is incidental to competency.
- No legislation stops reallocation of budget if it results in better service delivery as per the IDP.
- The legislation appears to support the development of partnerships between government and the public, and is already explicitly embodied in water management policy. Capitalising on existing partnerships and structures is key and there is a need to strengthen these aspects for the rollout of TRMP activities across the city, for shared responsibility and expanded impact.
- It will be an important aspect at each step of the development of the TRMP to understand the constraints, and capitalize on the opportunities, imposed by nuanced relationship between the three spheres of government, and the public and private sectors.

[32] G. Tooley, Learning Lab #3, October 2019

4. THEORY OF CHANGE

As part of the development of the TRMP Implementation Framework, a Theory of Change (ToC) workshop was hosted on 9 February 2022. A Theory of Change is a conceptual map or causal model that describes how a group of people make sense of a problem and how they expect interventions to change the situation. This map or model defines the long-term goal and then maps backwards to uncover the preconditions and outcomes necessary for achieving the desired goal. Using this framework, interventions or actions that can lead to these outcomes or results are identified. Importantly, the ToC helps to make explicit the theory behind actions by fostering critical discussion and uncovering assumptions and strategies. It also aids in building a common, clear and systemic picture of an achievable and sustainable future.

The three core objectives of the TRMP ToC workshop were to:

1. Revisit the vision for a municipal-wide TRMP.
2. Identify opportunities for action and explore current and new innovations needed to reach the vision.
3. Uncover assumptions behind the pathways to change.

This report provides information from the ToC workshop. Section 2 includes a short overview of the workshop process and presents the iterated TRMP ToC (after processing and sense checking the information that was generated from the workshop). The rich information that was generated from various brainstorming sessions during the workshop is presented in Annex 1.

The Real Consulting team sincerely acknowledge and thank all workshop participants for sharing their knowledge.

4.1 Overview of the iterated TRMP ToC

The final ToC was the product of several engagements: a face-to-face workshop, and several online discussions. It also was premised on earlier iterations of the TRMP ToC deliberations.

4.1.1.1 Overview of the workshop process[33]

A half-day workshop was designed to explore several elements of the TRMP ToC, namely the overarching vision, the domains and pathways of change, as well as associated interventions, the proposed outcomes from different pathways to change, and the assumptions that underpin the change theory.

Leading up to the workshop, a draft TRMP ToC was developed using the vast amount of evidence that has been generated for the TRMP to date. In particular, the draft TRMP ToC drew heavily on the Theory of Change developed under the C40 Cities Climate Finance Facility (CFF ToC). Prior to the workshop, the draft TRMP ToC was circulated with colleagues from eThekwini Municipality and CFF, with whom Real Consulting is working to develop the Implementation Framework, and iterated twice based on feedback. This draft ToC was used as a launchpad for discussions at the workshop, which aimed to expand and deepen certain elements of the TRMP ToC with a slightly broader group of people.

[33] see Appendix 3.1 for workshop process and detail

The workshop included sessions to frame the day, after which several interactive brainstorming sessions were facilitated to enrich and deepen elements of the TRMP ToC. Participants separated themselves into two groups based on the domains of change in the draft ToC with which their interests, skills and/or experience most closely aligned. One group focused on the ecological infrastructure (group 1), one focused on finance and green economy (group 2), and both tackled aspects of governance and partnerships. Information was captured through note-taking during plenary and groupwork while key points emerging from groupwork brainstorming were captured on sticky notes and A0 sheets of paper. Brainstorming sessions were supported by reference material that was printed (see Appendix 3.1). This reference material included:

I. The draft TRMP ToC;
II. Information from interviews with representatives from ongoing projects and strategic individuals, which were undertaken as part of the development of the implementation Framework; and
III. The collective vision that was developed during the LIRA2030 project "transforming southern African cities in a changing climate".

The information that was generated during the workshop was sorted, processed and checked to generate the iterated TRMP ToC.

4.1.1.2 Iterated TRMP ToC

The ToC for the Transformative River Management Programme is a conceptual model that demonstrates how several interlinked actions fit together, to effect change towards a desired vision of municipal-wide river management. The ToC is intended as a guiding framework for more detailed thinking at various levels, and within or across various sectors and organisations.

The vision for eThekwini, in the future, is to be a climate-resilient and safe city with functional and well-managed riverine areas, and ecological infrastructure that is owned by and delivers equitable benefits to all communities.[34]

The TRMP will give effect to this vision through three interlinked *domains of change*[35]*:*

1. Improved ecological infrastructure, which strengthens and builds on ongoing projects that aim to enhance rivers and catchments in eThekwini. There is a need to focus on the catchment scale with rivers as the entry point, and to prioritise and plan where investment might happen over time.

2. Building partnerships and better governance, which strengthens and builds on the many ongoing knowledge platforms, stewardship programmes and citizen-state partnerships in eThekwini. New structures, partnerships and operations will also need to be set up at different scales to achieve the full transformative potential of the TRMP, which will include different stakeholders from government, private sector, civil society and iNgonyama Trust. Roles and responsibilities across these stakeholders should be clear.

3. Supporting TRMP finance and an associated green economy by securing municipal finance, attracting international climate finance, exploring opportunities associated with

[34] see Appendix 1, Section 2.1 for more information on the brainstorming associated with the vision/long-term goal

[35] see Appendix 1, Section 2.2 for more information on the brainstorming associated with the domains and pathways to change.

Corporate Social Investment (CSI) and the risk sector, and building green economy partnerships and activities associated with catchment management (see above).

Within each domain of change, a range of interventions are proposed, building on ongoing activities.

Improved ecological infrastructure

- Develop best practices and lessons learned from ongoing river management programmes.
- Design & implement river management interventions at priority sites in collaboration with partners including extension and upscaling of Sihlanzimvelo to all public land, strengthening existing river management programmes, and management of private and iNgonyama Trust land abutting rivers and streams.
- Work towards catchment scale activities over time.

Building partnerships and better governance

- Set up governance mechanisms, new structures, partnerships and operations for facilitation across government, iNgonyama Trust land, private sector, citizens, etc. at the scale of the municipal area at various scales, including explicit roles and responsibilities.
- Strengthen citizen-state relationships.
- Develop leadership, education, skills and capacity, champions and community mobilization programs associated with the TRMP (e.g. for river management).
- Support catchment communities (including precincts).
- Develop catchment management tools.
- Create/strengthen platforms for social learning.
- Engage politicians (e.g. through narratives).
- Link to ongoing water stewardship programmes.
- Link TRMP with ongoing government projects, planning and budgeting.

Supporting TRMP finance and a green economy

- Access international climate finance for river rehabilitation in eThekwini.
- Secure financial support from the eThekwini municipality.
- Create formal linkages with the National Business Initiative (NBI).
- Explore CSI opportunities.
- Engage risk sector (e.g. insurance companies).
- Maximise job creation in river management and associated green economy.
- Facilitate investment in river management across stakeholders.
- Link to precinct development and property values.

These interventions and activities are anticipated to lead to a variety of *outcomes*[36]. The outcomes from activities to improve ecological infrastructure are expected to be flood and climate resilient riverine corridors, changed perceptions regarding rivers (of politicians and citizens), cohesive catchment communities, as well as communities across eThekwini enjoying accessible, safe, clean and well-managed environments. Activities to build better governance and partnerships are anticipated to result in outcomes of greater geographically relevant coordination and partnerships that allow for resource flows and learning, and greater consciousness and political support to prioritise investments in rivers as key nexus points for broader systemic change. Outcomes from activities to support TRMP finance and a green economy are expected to be sustainable funding streams for TRMP-related activities, and new economic activities and livelihoods associated with the TRMP.

The outcomes and overall impact of the TRMP might be achieved via several pathways. These pathways, in turn, are underpinned by various causal and contextual *assumptions*. Causal assumptions relate to the causal linkages between components of the ToC, for example how the interventions will lead to the desired outcomes, and how the outcomes collectively, will lead to the vision. In contrast, contextual assumptions refer to the context or conditions in which the programme will take place. The causal and contextual assumptions identified for the TRMP ToC include the following[37]:

Causal assumptions:

- Improved river management and rehabilitation will enhance climate resilience of ecosystems, communities and infrastructure.
- Enhanced green spaces from river rehabilitation will be enjoyed by communities across eThekwini.
- Demonstrable benefits from TRMP activities will ensure political support and changed perceptions across communities in eThekwini.
- Building partnerships & governance will enable greater geographically relevant coordination and partnerships that allow for resource flows and learning.
- Managing and rehabilitating riverine corridors will create green spaces for socializing which enable social cohesion.
- Economic investment in the TRMP will reduce maintenance and damage repair costs of built infrastructure, thereby catalysing further financial investments.
- The scale of new economic activities from the TRMP is sufficient to contribute to diverse and sustainable livelihoods.

Contextual assumptions

- People will be interested in taking up opportunities associated with the TRMP.
- Government departments work towards fulfilling mandates.

[36] see Appendix 1, Section 2.3 for more information on the brainstorming associated with the outcomes
[37] See Appendix 1, Section 2.4 for more information on the brainstorming associated with the assumptions

- Resources will be available to support the development/maintenance of open spaces alongside rivers and streams.
- Resourced partnerships will be established and maintained.
- Upstream rivers will be cared for.
- There is a supportive institutional and political environment & political will.
- Capacity exists/will be built across stakeholders to effectively manage the TRMP into the future.
- Information presented in the Business Case report is sound.

In addition, *several critical gaps or needs*[38] were identified which might have bearing on some of the contextual assumptions. These gaps and needs have been grouped according to themes and are presented below.

Linking to (and strengthening) governance in eThekwini

- There is a need for everyone to understand the various roles associated with the TRMP including those related to enforcement, coordination and implementation.
- There is a need to recognise the institutional systemic capacity problems within the municipality. Can we build objectives of the TRMP into the Key Performance Indicators (KPIs) of relevant government staff?
- Effective coordination/partnerships are critical for the TRMP. Where will be the home of the TRMP? A shared/horizontal governance structure (e.g. Palmiet Catchment Rehabilitation Project Community of Innovators) has been useful but might not work in the case of TRMP. If it's too big, no one will own it.
- Links must be created as soon as possible across relevant departments (e.g. Department of Forestry, Fisheries, and Environment and the Department of Water Affairs) and with other land owners (e.g. iNgonyama Trust and private sector). How might wastewater fit in? Sewers are critical as a bigger, systemic issue.
- Quick changes are needed, but the state can't always do things quickly. Flexibility is also needed, which means that procurement should be taken out of the city and that intermediaries are important. A modular approach has been successful for Urban Improvement Precincts (UIPs) programme. There is a need to start and test things.
- Consideration should be given to who owns and manages the knowledge across the programme (including databases).
- Consideration should be given to who governs partnerships and how this is done. Is the state best placed to do this?

Working at the catchment scale

- A catchment focus (including the larger catchments extending beyond eThekwini) will be important to achieve transformative impact.

[38] These critical gaps or needs were recorded during conversations related to the pathways to domains and pathways to change (see Appendix 3.1, Section 2.2)

- Some people don't understand the concept of a river catchment, but everyone understands the concept of a river, which can be an entry point for thinking about larger, connected areas of lands associated with rivers.
- Spatialisation is important, particularly because it can help people make connections across scales.

Engaging with politics

- It is important to remember that politicians focus on employment imperatives.
- Explicit and specific narratives for the TRMP should be created, onto which various actors can "hook" (i.e. they actively find connection) and that increase the visibility/profile of rivers. These narratives could include *inter alia* the coastal tourism narrative, the everyday life of citizens connected to rivers, the river as a mechanism for transporting service delivery failures to the coastal zones (e.g. effluent and waste). Catchment narratives can thread various small-scale river stories together.
- The TRMP plans and objectives should align with plans and policies at various scales including *inter alia* the Nationally Determined Contributions (NDCs), the Climate Change Bill, the National Environmental Management Act (NEMA) and the National Development Plan (NDP).
- The idea of "politics" and "governance" should be shifted to include everyone (i.e. not just the state).

Prioritising/sequencing interventions

- It is important to decrease further ecosystem degradation.
- Perhaps there is a need to prioritise the three critical aspects/problems in each catchment. Do we need a system for weighting/prioritising areas and/or interventions?
- There is a need to better integrate a bottom-up perspective (including community voices and adding up benefits across landscapes)

4.1.2 Evidence to demonstrate that the outcomes and impacts are achievable

A brief review of the literature provided evidence of the likelihood of achieving the outcomes and impacts of the TRMP ToC along the different pathways. A summary of this evidence is set out below. A scoring of strong, moderate or weak evidence is provided based on this quick review. Much robust evidence exists (and is readily available) for those assumptions that have been scored with "strong evidence", some evidence exists for those assumptions that have been scored with "moderate evidence" and very little evidence exists (or is readily available) for those assumptions that have been scored with "weak evidence". [39]

This evidence should be interrogated in more detail and tested with catchment stakeholders as new information becomes available over time.

Will improved river management and rehabilitation enhance climate resilience of ecosystems? (Moderate evidence)

[39] This evidence was collated to interrogate the assumptions that were suggested for the TRMP ToC (see Appendix 3.1, Section 2.4)

A report published by the WWF in 2019 notes that "functioning floodplains and healthy wetlands reduce the risk of flooding for cities" (WWF, 2019), while Roberts et al. (2012) argue that the climate adaptation deficit of cities in the global South results from multiple factors including the "destruction of green infrastructure" (pg. 170). The Working Group II section of the sixth Assessment Report (AR6) of the Inter-Governmental Panel on Climate Change (IPCC) also lists "riverine flood impact reduction" as an adaptation measure with a "high climate resilient development contribution" (pg. 77) (Dodman et al., 2022). However, several studies note the importance of managing whole catchments or "river basins" to realise resilience such benefits (e.g. CCICED, 2021; WWF, 2019). This suggests that the approaches selected to manage and rehabilitate ecosystems, particularly the scale of these interventions, have implications on the resulting resilience of these ecosystems.

Will enhanced green spaces from river rehabilitation be enjoyed by communities across eThekwini: (Moderate evidence)

Racial segregation in South Africa during and after Apartheid, has influenced the extent of and access to green infrastructure, including parks and open spaces (Venter et al., 2020). According to Venter et al (2020), areas with White residents are on average 700 m closer to a public park than those with predominantly Black African, Indian and Coloured residents. The current Metropolitan Open Space System (MOSS) corridors are often buffers between different racial housing areas (Stewart *personal communication*, 2022). Undertaking river rehabilitation to provide more green spaces in these areas will go some way to addressing this inequality. However, it is unclear whether communities will use and enjoy these spaces even if they are available and accessible. The use of green spaces is influenced by preferences for these areas over other leisure spaces, community attachment, the associations with green spaces, and perceptions of safety in these areas (de La Barrera et al. 2016). A study on the perceptions of open spaces and safety in the Reservoir Hills area of eThekwini revealed that residents tend to perceive these areas as crime hotspots which provide refuge for potential criminals (Perry et al., 2008). Local evidence also suggests that many of the MOSS corridors either link areas of low income and high income with informal settlements, or were historical boundaries between residential areas. Criminals use many of these areas as escape routes or staging grounds but the degree to which these areas are used for criminal activity is dependent on locality and management of the area (Stewart *personal communication*, 2022). As such, residents are often resistant to increased open spaces in residential areas. However, there is conflicting evidence on the topic. While some studies concur that green spaces are perceived as crime hotspots (de La Barrera et al. 2015, Sreetheran et al. 2014), others argue that green infrastructure can reduce crime directly and indirectly because of its effect on outdoor activities and social cohesion (Kuo and Sullivan 2001, Weinstein et al. 2015). Perry et al (2008) highlight several planning and management techniques that can be used to reduce the incidence and fear of crime. These include addressing or removing factors such as inadequate policing/security, isolated and poorly lit areas, locations with places to hide and dilapidated or uncared for areas. Similar factors have emerged from eThekwini residents who noted that the presence of workers conducting river rehabilitation activities may discourage criminals (Tooley *personal communication*, 2022). The use and enjoyment of green spaces from river rehabilitation in eThekwini will likely depend on how these areas are managed. Several approaches for managing open spaces in an inclusive and integrated manner are being explored in eThekwini (e.g. pocket parks[40]).

[40] https://durbangreencorridor.co.za/community-gardens-pocket-parks

Will developing riverine corridors create green spaces for socializing which enable social cohesion? (Moderate evidence)

Numerous studies link contact with nature with outcomes of social cohesion (Weinstein et al. 2015, Venter et al. 2020, Groenewegen et al. 2012, de La Barrera et al. 2016). The presence of nature facilitates social experiences by providing spaces where people from different social groups, ethnicities and ages can interact (Weinstein et al. 2015, Groenewegen et al. 2012, de La Barrera et al. 2016). This tenet is supported by qualitative interviews and observational data that indicate that natural spaces in urban environments encourage social interactions (Sullivan et al. 2004). These community interactions create a common bond, drawing people together and enabling them to generate shared values and interest through joint action, which in turn creates a sense of community (Weinstein et al. 2015, de La Barrera et al. 2016). However, Lloyd et al (2016) note that it is not only the frequency of interactions that matter but also how meaningful they are. They argue that they need to be in-depth, with potential to create strong friendships, connections and cohesion. In addition, these social experiences are only enabled if natural environments are made accessible and if people spend time in them (Weinstein et al. 2015). The use of these spaces is strongly influenced by people's perceptions of these areas (de La Barrera et al. 2016). A recent study found that the perceived quality, views, and amount of time spent in nature were closely linked to more community cohesion (Weinstein et al. 2015). The perception of these areas can be enhanced through several planning and management techniques (Perry et al. 2008). As with the previous assumption, the use of eThekwini's green spaces with outcomes of social cohesion, will largely depend on how these areas are managed. Local evidence also suggests that segregation and inequalities, in income levels and opportunities, has influenced the perception of people on nature and nature-based activities. According to Stewart (*personal communication*, 2022), outdoor nature-based recreation activities have been associated with white communities, while undeveloped natural environments have been seen as representing a lack of access to infrastructure and services, or areas with agricultural potential and/or spiritual associations. According to his personal observations, this began to change, with an increase in black and brown people to recreational areas, particularly the younger generation. This indicates that further research is needed to understand how best to integrate a wide spectrum of communities into conservation and river management programs. Stewart (personal communication, 2022) also suggests that shifts in deeply entrenched contextual realities can only occur over generations.

Will demonstrable benefits from TRMP activities ensure political support and changed perceptions across communities in eThekwini (Moderate evidence)

Evidence from the behavioural change literature suggests that education can influence perceptions and practices. Early models, such as the information deficit model, assumed that one-way flows of information from experts to the public about a particular issue, may result in people changing their perceptions and beliefs and result in positive action (Abunyewah et al. 2020). While this might be true in some instances, the model does not adequately capture the relations between actions, knowledge, attitudes, and beliefs, as well as the social, physical or structural constraints that might make practices difficult to change. Stern et al. (2008) argue that education that is experiential and engages people's beliefs, values and identity may produce changes in attitudes which stimulate action by individuals. Similarly, Pahl-Wostl et al (2007) suggest that lack of knowledge or uncertainty can be tackled via a variety of participatory processes aimed at social learning. Social learning includes co-learning, which involves learning together, through for example, participatory projects

(Hakkarainen, et al. 2021). According to Medema et al 2014 p25) *learning can be viewed as a change, first in perceptions and then in behaviours*. Thus, projects that demonstrate the benefits of the TRMP are likely to be most effective in changing perceptions and garnering political support because these types of programmes are participatory and enable co-learning. Local evidence suggests that perceptions of natural areas and rivers might only shift if people have an emotional or other type of investment in such areas (Stewart *personal communication*, 2022), which also supports the argument for social learning activities, which explicitly engage emotion of participants.

Will building partnerships and improving governance enable greater geographically relevant coordination and partnerships that allow for resource flows and learning? (moderate evidence]

State-citizen partnerships are gaining prominence when considering how to deal with complex, issues that cut across scales but manifest differently at the local level (Hardy and Koontz, 2010; Pittock, 200). Martel and Sutherland (2019) note that "governance-beyond-the-state" has the potential to enhance communication across various stakeholders, build capacity and empower citizens to take part in decision processes. These authors suggest that this type of governance is a "learning experience" (pg. 359). However, the nature of partnerships that are established has a notable impact on the success of such governance mechanisms (Martel and Sutherland, 2019). Drawing on literature related to water governance, Margerum and Robinson (2015) note that "ongoing interaction requires a greater investment in network structures, time and resources to support a coordinated approach…" (pg. 55). Network governance involves multiple organizations and individuals representing a diversity of sectors working together to respond to current and emergent issues. The interactions between these diverse actors enables information flows and the deliberation of multiple and often conflicting views. Information flows and deliberation are both central elements of learning (Newig et al 2010). In addition, creating linkages and relationships aids in "joining up" the diverse array of human and financial resources (Keast et al. 2006).

Will economic investment in the TRMP reduce maintenance costs of built infrastructure, thereby catalysing further financial investments: (strong evidence).

There is a large body of evidence that suggests that investment in ecological infrastructure (green) can lengthen the life of built infrastructure (grey), thereby reducing costs. For example, degraded catchments result in increased soil erosion which may silt up downstream dams. In addition, several studies highlight that investing in ecological infrastructure options (such as forest protection or wetland restoration) may be more cost effective than investing in built infrastructure alternatives (such as new water filtration facilities) (Gartner et al.,2013). The business case that was developed specifically for the TRMP includes the information on the benefits and costs for TRMP on different types of land. According to this study:

- The estimated cost of implementing transformative riverine management on municipal land is R2.75 billion over 20 years, creating 2,846 job opportunities and resulting in avoided damage costs to municipal culverts of R920 million. Societal benefits to vulnerable riverine communities are estimated at between R2.3 billion and R4.7 billion, and coastal users will benefit by between R7 billion and R14.3 billion.
- To enable a basic level of riverine management by private landowners, eThekwini Municipality would need to spend R8.3 million per annum to enforce legislation and support / partner with riverine landowners and third-party funders. This public investment could unlock R106 million in private funding of riverine management each year and save the

municipality at least R27 million in avoided infrastructure damage costs. Broader benefits to riverine communities and coastal users amount to just over R113 million per annum.

- To enable a basic level of riverine management on Traditional Authority land, eThekwini Municipality would need to spend R4.8 million per annum to enforce legislation and support / partner with the iNgonyama Trust and third-party funders (i.e. government, donors). This public investment could unlock R102 million in third-party funding of riverine management each year and save the municipality at least R16 million in avoided infrastructure damage costs. Broader benefits to riverine communities and coastal users amount to over R107 million per annum.

The Business Case study therefore provides a compelling case for investing in river management and rehabilitation in eThekwini when considering the full range of municipal and societal benefits, including economic and social returns on investment. While investments in new built infrastructure have the potential to catalyse financial investments, it is fair to presume that investments in river management and rehabilitation that ensure existing built infrastructure performs as intended help to create, or at the least maintain, an environment that is conducive to economic activity which may attract financial investments (Carter *personal communication*, 2022).

Is the scale of new economic activities from the TRMP sufficient to contribute to diverse and sustainable livelihoods? (Weak evidence)

The TRMP business case (Mander et al., 2020) argues that there is "potential to create 9,181 jobs through over 1,000 community co-operatives in a city-wide TRMP. In addition, enterprise development in the green economy is possible through the productive use of organic biomass and litter collected from rivers (as well as solid waste collection in informal settlements to prevent it washing into rivers)" (pg. 36). According to the eThekwini Profile Analysis, District Development Model (Department of Cooperative Governance and Traditional Affairs, 2020), 18.7% of eThekwini's population was unemployed in 2020, which is ~745,690 people. While there is strong evidence that Sihlanzimvelo-like activities contribute to employment for some of the most vulnerable communities in eThekwini, more evidence is needed to understand the full range of societal benefits from the TRMP, particularly in terms of sustainable livelihoods and lifting people out of poverty. This aspect has been understudied relative to other benefits that have been explored while developing the TRMP.

4.1.3 Limitations of the TRMP ToC

The TRMP ToC process was initiated by generating a shared vision for the eThekwini Municipal Area. While the TRMP will contribute to this vision, it will not achieve the desired impact in isolation. To do so will require several other, important systemic issues to be tackled simultaneously.

The interactions between aging infrastructure, unmanaged urbanisation, inadequate waste management (and other inadequate services), Invasive Alien Plant (IAP) infestation and severe weather events create havoc in eThekwini, and will continue to do so if not addressed. The most topical of these issues relates to built/grey infrastructure and its associated impact on community wellbeing as well as on the economy of the city (e.g. tourism). Several recent news articles note that eThekwini is losing more than 50% of its potable water to leaks and failing infrastructure[41]. The

[41] https://www.dailymaverick.co.za/article/2021-10-18-ethekwini-metro-part-one-broken-pumps-faulty-valves-and-hundreds-of-leaks-a-day-durbans-ramshackle-water-supply/

clogged and surcharging sewer system effectively closed down the beachfront and ocean for the 2021 Christmas season and massive e.coli contamination of the uMngeni almost halted the annual Duzi marathon, causing illness amongst canoeists, surfers and other river and ocean-goers, notwithstanding the warnings. The media has noted the serious risks that such issues pose to the municipality's ecology and tourism[42]. Surcharging sewer systems have long expressed detritus, particularly in less formal areas where infrastructure and services are inadequate, resulting in sewer blockages. The historical designs that saw sewer lines following rivers has become a major problem that contributes to the contamination of these natural areas, which will worsen as flood events increase.

The TRMP has the potential to contribute to many benefits, and investment in ecological/green infrastructure will likely improve the likelihood of accessing finance for grey infrastructure. Potential also exists to elevate issues associated with failing built/grey infrastructure through TRMP activities, and to emphasise the need to solve these (e.g. reporting of leaks and discharging sewers is a practical way to address some of the issues). It is much easier to identify particular issues and put pressure on the municipal system to rectify these when they are in the "spotlight". Some of the ongoing riverine management programmes employ relevant data collection processes, which can also contribute evidence related to these issues. These considerations might generate support for the TRMP more broadly, and for its oversight to sit somewhere central in the Municipality, so that it has some leverage in these broader systemic issues. However, without addressing systemic issues such as failing grey infrastructure and inadequate services (e.g. access to housing), the potential of the TRMP will not be realised.

4.2 Final steps/recommendations

The TRMP is an incredibly complex programme, which should include many stakeholders who are likely to hold diverse (and often conflicting) values and interests. The interventions that are described in the ToC will need to be undertaken by a broad range of stakeholders across the landscape. In other words, a collective effort is needed to work towards the TRMP vision and one stakeholder group (e.g. eThekwini Municipality) cannot be held solely accountable for achieving this vision. As more of these stakeholders are engaged over time, the ToC should be updated to include a broader variety of perspectives and objectives. This is particularly important because the stakeholders who were present during the initial ToC workshop on 9 February represented a small group of like-minded individuals. Several important voices were missing/not in the room including *inter alia* iNgonyama Trust, private sector (though partially represented) and local communities, all of whom will play incredibly important roles in the TRMP. The conversations, connections and contestations that surface between stakeholders during the negotiation of a ToC, as different people work towards aligning motives and understandings, are arguably the most important outcome from a ToC process. Such multi-stakeholder, future-oriented, integrated and pathways-inspired processes align well with concepts of Climate Resilient Development (CRD), which are considered imperative in the IPCC AR6 Working Group II report on climate Impacts, Adaptation and Vulnerability[43].

The iterated version of the ToC can be used to guide planning for the TRMP into the future, particularly for considering various options associated with implementation, as well as the institutional structure that was proposed at the strategic meeting on 11 February (following the ToC

[42] https://www.ecr.co.za/news/news/ethekwini-e-coli-beach-closures-spark-tourism-concern/
[43] See Chapter 18 on Climate Resilient Development Pathways - https://www.ipcc.ch/report/ar6/wg2/.

workshop). The elements of the ToC provide an indication of the changes that the TRMP team might want or expect to see, and will therefore inform the development of the Monitoring, Evaluation, Reflection and Learning (MERL) plan. For example, targets and indicators associated with ecological infrastructure, partnerships and governance and TRMP finance can be suggested based on the desired changes within these three domains.

The Real Consulting team suggests revisiting the ToC frequently as new evidence and information comes to light, ideas are tested, and lessons are learned. The ToC can be a powerful tool to support reflection across stakeholders, particularly on causal assumptions and on the outcomes achieved.

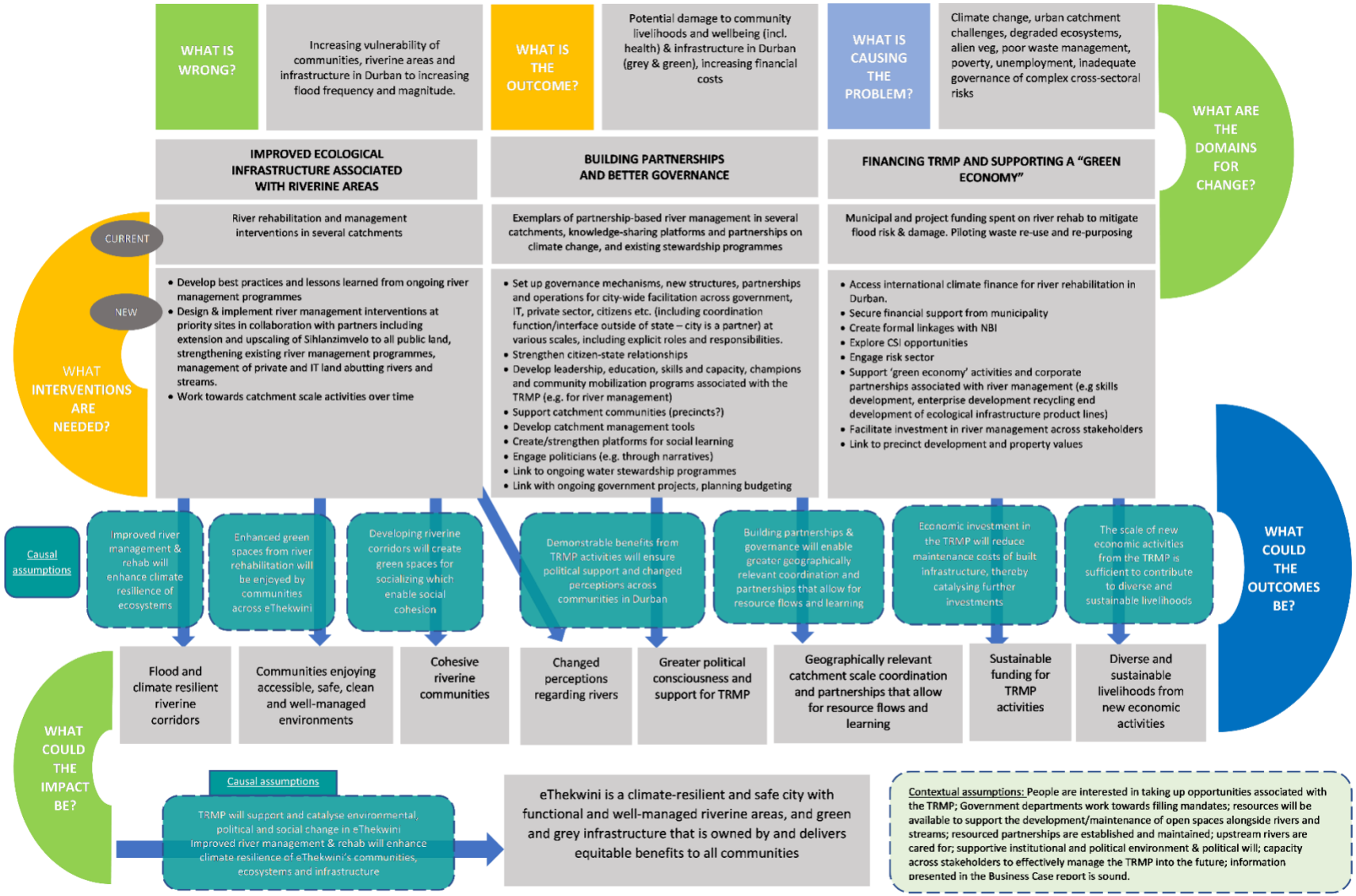

Figure 9. Iterated TRMP ToC (after ToC workshop)

5. CRITICAL PATHWAYS

This chapter represents a deep engagement that was held regarding defining critical pathways to implement the TRMP. Defining these pathways represents the starting point for the development of the Implementation Framework.

5.1 What are pathways?

The Intergovernmental Panel on Climate Change (IPCC) defines a pathway as, "The temporal evolution of natural and/or human systems towards a future state. Pathway concepts range from sets of quantitative and qualitative scenarios or narratives of potential futures to solution-oriented decision-making processes to achieve desirable societal goals. Pathway approaches typically focus on biophysical, techno-economic, and/or socio-behavioural trajectories and involve various dynamics, goals, and actors across different scales" (2022, p. 51)[44]. For the purposes of developing the TRMP Framework, the use of a pathway-based methodology, assisted the combined team to critically think through various possible temporal trajectories that the implementation of the highly complex TRMP could take, considering all possible implications of each option.

5.2 TRMP Pathway options

As described earlier in this report, the development of the TRMP Implementation Framework is being used to motivate for the prioritization, expansion and funding of community-based river management in the eThekwini Municipal Area. The eThekwini Municipality is currently overseeing the initiation of the TRMP process, which is and will be, a combination of programmes and projects that are being implemented by the municipality, mostly on municipal land, and by a range of other stakeholders on other land holdings. In developing this implementation framework, a number of possible pathways were explored to best result in creating the process that would culminate in a co-created vision of the TRMP:

> *eThekwini is a climate resilient and safe municipality, with functional and well-managed riverine areas, and green and grey infrastructure that is owned by, and delivers equitable benefits to all communities*[45].

It is important to note that in considering the possible range of pathways, the starting point must always begin with considering what is currently in place and then imagine how the current picture can be enhanced, over time. Each pathway has different assumptions. In addition to understanding the different pathway options individually, they can be seen as a series of pathways that could expand from one to the next. In the course of extensive deliberations on various possible pathways, as many as seven options were considered. The original seven pathways are summarised as follows:

[44] IPCC. (2022) Climate Change 2022: Impacts, Adaptation and Vulnerability. Retrieved from https://www.ipcc.ch/report/ar6/wg2/

[45] It is recommended that this vision for the TRMP be revisited with a larger stakeholder group in time at the point before the launch of this programme – possibly at the point of the External Stakeholder Forum event.

Table 11. Seven original TRMP Pathways

Pathway	Description
P.1: Internal	TRMP run entirely as an internal smaller municipal project, mainly expansion of Sihlanzimvelo, Green Corridor projects, Parks, Recreation and Culture programmes, other City river management work, aiming to cover all waterways on municipal land.
P.2: Internal plus	TRMP run as an internal more co-ordinated municipal project, mainly expansion of Sihlanzimvelo, Green Corridor projects, PRC programmes, other City river management work, aiming to cover all waterways on municipal land, in loose partnership with additional work carried out by specific, mobilised partners in various land holdings. Also, improved linkages across projects e.g. to enhance green economy potential. Wider stakeholder engagement, including strategic private sector, such as insurance sector.
P.3: TRMP + New indep NPC in a partnership	TRMP run as a co-produced & collaborative & coordinated programme, where a municipal hub driving municipal projects works with an independent NPC (similar to Green Corridors), according to an MOU. Two hubs: - one located within municipality to coordinate city programmes and manage necessary internal planning & engagement; - one located outside to coordinate external projects, & align with municipal projects
P.4: TRMP + catchment/cross municipal option NPC	TRMP run as a collaborative programme, where an ETM municipal hub driving municipal projects works collaboratively with an existing NPC, who would coordinate various scale projects on various land holdings along catchments across KZN, according to an MOU. Two hubs: - one located within municipality to coordinate city programmes and manage necessary internal planning & engagement; - one located outside to coordinate external projects, & align with municipal projects
P.5: TRMP, with Municipal Hub and Independent NPC working separately & parallel	TRMP run as a loose collaboration. A municipal hub driving municipal projects and an independent NPC coordinating efforts of a wide range on non-municipal projects. Both groupings working towards transformation of riverine corridors for the benefit of the municipality in parallel, but with no formalised partnership agreement in place.
P.6: TRMP + External Hub, both managed from the municipality	TRMP run as a municipality-led programme, where the municipality will manage and run various programmes and projects inside the municipality though line units/departmens as well as projects under the guidance of an appointed structure.
P.7: TRMP Combination (P.1-3 + elements of P.4)	TRMP run as a co-produced, collaborative and integrated programme, with its initial starting point being a current internally focussed intervention (P.1), then quickly building relationships with external existing riverine management projects run by private sector & civil society (P.2). In the meantime and over the required timeframe, a collaborative formalised partnership programme is developed addressing internal and external interventions (P.3). While this is happening, cross municipal boundaries can be forged along key catchments (elements of P.4). This holistic pathway includes a municipal hub driving municipal projects works with an existing independent NPC, according to an MOU. Two hubs: - one located within municipality to coordinate city programmes and manage necessary internal planning & engagement; - one located outside to coordinate external projects, & align with municipal projects

A further scrutiny of the seven pathways resulted in rationalising these down to four, and in doing so, it became clear that while each of the four pathways has a distinct set of assumptions that distinguishes it from the others, it is also clear that the four pathways could evolve one into the other over time. This insight is key to understanding the TRMP as a developing concept, subject as it is to multiple factors that affect implementation.

As will later be reported, the TRMP has significant implications, including resourcing in multiple aspects, management, relationship-building to name just the basics. It is critical to understand two key factors regarding the pathways:

1. The TRMP will be implemented in incremental scales over time.
2. The specifics of the TRMP pathways may change given contextual pressures of any kind.

The following table describes the four pathways in summary. Detailed descriptions are available for scrutiny in Appendix 4.

Table 12. Summary of final four pathways for the TRMP

Pathway options	Project concept	Project objective	Recommendations
P.1: Upscaled internal municipally-driven riverine management	Riverine management programme run entirely as an internal municipal project, comprised mainly of expansion of Sihlanzimvelo, Green Corridor projects, PRC programmes, other City river management work, aiming to cover all waterways on municipal land. Include & align green economy opportunities. Carried out under leadership of existing departmental managers, who would be responsible for upscaling.	Improve riverine corridors on municipal land for reduced negative impacts (flooding, health challenges, infrastructure degradation, etc) and increased positive impacts (better quality of life, job creation, enterprise development, circular economy optimisation, etc). Linked to specified objective/vision.	This pathway has value in as much as it builds on existing municipal programmes, on the assumption that every bit of effort towards riverine functionality is valuable. It is recommended that this pathway be implemented should other pathways not be viable for any reason. It could also be implemented in the short term, pending expansion into other pathways.
P.2: Upscaled internal municipally-driven riverine management + informal collaboration with external riverine management & green economy projects	Riverine Management Programme run as an internal municipal project, comprised mainly of expansion of Sihlanzimvelo, Green Corridor projects, PRC programmes, other City river management work, aiming to cover all waterways on municipal land (as in P.1), in loose partnership with additional work carried out by specific, mobilised partners in various land holdings. Increased internal coordination of municipal programmes & projects will lead to aggregation of impact and build efficiencies and shared responsibility, with improved outcomes.	Through informal shared responsibility and collaboration, improve riverine corridor management & functionality on municipal, private and IT land for reduced negative impacts (flooding, health challenges, infrastructure degradation, etc) and increased positive impacts (better quality of life, job creation, enterprise development, circular economy optimisation, etc). Linked to specified objective/vision and Theory of Change.	This pathway has value in as much as it builds on existing municipal programmes, and reaches out to other non-municipal projects for an expanded collaborative impact. It is recommended that this pathway be implemented should other pathways not be viable for any reason. It could also be implemented in the short term, pending expansion into other pathways.
P.3 TRMP, with Internal Municipal Hub + External Independent Hub/NPC in a coordinated partnership (may be existing NPC or new, or more than one)	TRMP run as a formalised co-produced & collaborative programme, where a municipal hub driving municipal projects works with one or more independent NPCs according to MOU agreement/s, specifying a common vision as per a co-created Theory of Change. Two sites of coordination & management: 1. Internal Hub located within municipality to coordinate city programmes/projects, & manage necessary internal planning & engagement; 2. External Hub located outside the municipal system, to coordinate external projects on non-municipal land holdings (private - industrial, residential; Ingonyama Trust/Cogta), & align with municipal projects inside ETM, but also build catchment-wide partnerships, as well as strong regional/national/global relationships. There are various ways in which an independent NPC could be constituted, from being part of an existing NPC, to being a new NPC or being more than one NPC. This pathway could be the outcome of evolving & expanding programme that begins with P.1 & P.4 & develops through increased intentional engagement to P.2, finally, as resources and capacity become available, evolves into P.3.	Broad-based Transformative Riverine Management Programme addressing all waterways in, and all catchments that affect, eThekwini, with multiple objectives, as per vision statement & Theory of Change: *eThekwini is a climate-resilient and safe city with functional and well-managed catchments and riverine areas, and green and grey infrastructure that is owned by and delivers equitable benefits to all communities*	This pathway is the ideal in respect of the objective of transformation with multiple beneficial impacts. If planned effectively, it could incorporate P.1 and P.2 and evolve into P.4
P.4: Riverine management programme with Municipal Hub and Independent NPC/s working separately, but in parallel, contributing to improved riverine corridor health but with no particular coordination and/or collaboration	Riverine management happening to an extent on various land holdings, championed by various stakeholders. This model reflects what is already happening *de facto* on the ground within eThekwini and along associated catchments, albeit in a no-coordinated manner. Both groupings working towards transformation of riverine corridors for the benefit of the municipality in parallel, but with no formalised partnership agreement in place. This pathway assumes that there would be an agency of some kind to take responsibility for driving a coordinated riverine programme outside of municipal systems, working on non-municipal land holdings. It is possible that this could evolve into a more formalised and co-ordinated situation (as in P.3) where a municipal hub/coordinating resource drives municipal projects and an independent NPC/s or informal agreement between implementing stakeholders coordinates efforts of a wide range of projects on non-municipal land.	Improvement of riverine corridor functionality in eThekwini, and along relevant catchments.	This pathway represents what is already happening to a degree, without an organised & intentional expansion of external projects. This pathway would require an agency of some kind to take responsibility for driving a coordinated riverine programme outside of municipal systems, working on non-municipal land holdings.

As discussed, the TRMP framework embraces the notion that the most likely trajectory begins where we find ourselves right now, and sees incremental expansion over time. The following schematic shows how this might look. The timeframes are indicative, and are likely to be different depending on what happens in the coming years.

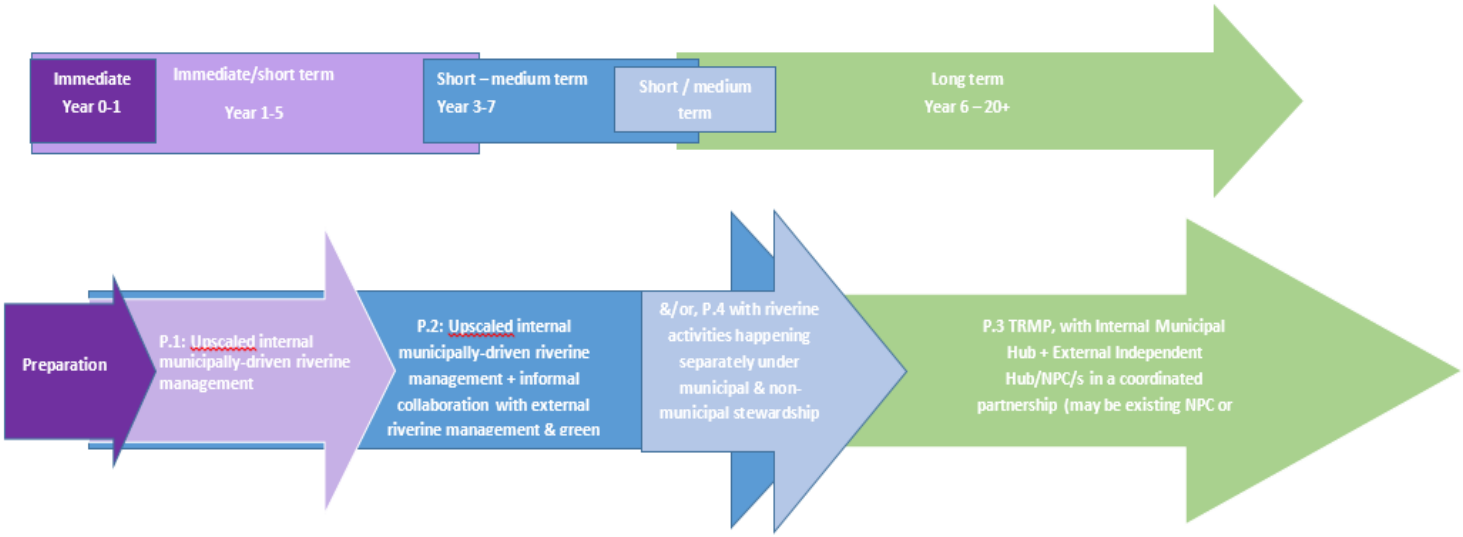

Figure 10. Critical pathways for the TRMP, with timeline

6. INSTITUTIONAL OPTIONS

This chapter addresses the all-important notion of the kind of institutional arrangement that can best serve the implementation of an integrated municipality- and catchment-wide TRMP.

Central to the transformative premise of the TRMP are the notions of partnership, collaboration and coordination. It is through these concepts that we can achieve the vision of "Scaling Out, Scaling Up, Scaling Deep" (Moore & Riddell, 2015). To realise these aspects of the vision, functional "leadership" is requires, meaning that systems and structures will be needed to build partnerships, facilitate collaboration and effect coordination. Following the pathway designing, the Implementation framework deliberations addressed the institutional arrangements that must underpin a municipal- and catchment-wide TRMP. The discussion captured in this chapter assumes the biggest version of the TRMP, i.e. Pathway 3, but it is noted that what is actually implemented may be a variation of this concept directly tied to the point along the evolution of the TRMP journey at any given point in time.

Simply, and at its full stage of development, the institutional arrangement is envisaged as a "pair" of structures, or hubs – one located within the municipal system and "one" located outside, but with municipal participation, to the degree possible. The institutional vehicle that is located outside of the municipality may be more than one structure. It may also begin as one form and then change over time as the TRMP becomes more resourced and formalised. The overall object of the external vehicle/s would be to build synergies of the multiple efforts that are already happening, promote new actions and align these with what the municipality is doing. The vehicle located inside the municipal system is seen as a small, capacitated and skilled team whose function is to *practically* help connect existing riverine management programmes within the various mandates of the different clusters, units and departments and maximise the benefits associated with these. The municipality is already doing a lot that contributes to riverine management through usual service delivery mandates, but this is largely carried out as separate and unconnected actions, which effectively reduces the potential impact for aggregation, collaboration, and efficiencies. In addition, this team would act as a practical champion the TRMP inside and outside the Municipal systems, sharing the work carried out, fielding and facilitating feedback and suggestions, engaging stakeholders and roleplayers outside of the eThekwini Municipal system, both locally and beyond.

By having these two "leadership" processes working together but focussed on different constituencies, the impact of the TRMP has its greatest chance of realising its potential to build resilience in ways that reduces the future impacts of floods and extreme rainfall events, which are likely to become more frequent with Climate Change. The effective management and implementation of a collaborative and coordinated TRMP has a significant contribution to make in this regard.

6.1 What will the coordinated and collaborative institutional arrangement achieve?

It is anticipated that together, the component partners within this collaborative arrangement would be established to:

- Facilitate and where possible, coordinate a range of interventions, both existing and proposed, inside and outside the municipal system.

- Consciously seek synergies between what is happening across mandates within municipal system, as part of normal service delivery, and the objectives of the TRMP, thus bringing a degree of co-ordination into the process.
- Consciously seek synergies between what is happening across different programmes and projects outside the municipal system but within the EMA and along relevant catchments, and bring these into alignment with the objectives of the TRMP, thus bringing a degree of co-ordination into the process, and building powerful networks of action.
- Formally, build the strategic relationship between what is happening inside and outside the municipal system, so that both groupings know what each other is doing, and plans new and expanded riverine management activities accordingly.
- Champion new interventions that support the objectives of the TRMP, inside and outside of the municipal system by combining expertise, seeking appropriate resourcing, and monitoring impacts.
- Work towards the financial resourcing of the TRMP – directly and with the assistance of expert support. The objective would be to seek funding and technical resourcing to expand existing programmes (e.g. Sihlanzimvelo inside the municipality or Adopt-a-river outside the municipality) both within the municipal budgeting systems and from other special government funds, as well as from other grants located outside government, such as the GCF or GEF and others. In some cases the institutional arrangement would make applications directly and manage funds received, through designated mechanisms and according to donor specifications. In other cases they would assist projects to seek funding, through providing technical support.
- Build a community of practice that is constantly dynamic, reflective and results-driven.
- The institutional arrangement will be governed[46] by an agreed set of values and principles, a clear purpose, as well as clear objectives and commitments that guide the collaboration, including formulations such as:
    - Values and principles that speak to:
        - Integrity in intent and action.
        - Resilient determination.
        - Mindful engagement.
        - Pragmatic in approach.
    - Purpose, which is basically to:
        - Work proactively and actively to protect and enhance the ecological health and value of eThekwini's rivers and catchments for the benefit of current and future generations, especially in the face of the Climate Crisis.
    - Objectives and commitment:
        - To add measurable value to stakeholders.
        - To be transformative in approach, methodology and action.
        - To be inclusive of all areas and all people.
        - To serve as an enabler to support and build capacity of on-ground implementers, wherever they are working.
        - To be outcomes- and performance-driven.

[46] These recommendations are tabled as such, noting that when institutional vehicles are formed, these aspects will be deliberated and constituted.

- To seek and enact collaboration, cooperation and synergy in achieving the vision of the TRMP.

6.2 **The Internal Hub (IH)**[47]

The IH will be a necessary component of the TRMP execution. It needs to receive high-level support, and it needs to build credibility within the municipal system. Given the recent flood catastrophe, it is clear that eThekwini must renew a much greater commitment to implementing measures to avoid the scale and kind of damage that has caused over R17billion in damage. While the Municipality has already developed a credible Climate Change Strategy, and has built a global reputation for innovative and serious responses, it is demonstrably not enough. If implemented as envisioned, the TRMP will contribute towards broader risk reduction measures. The floods proved that a great deal of the damage could have been avoided if river systems were better able to channel the rain water safely to the ocean.

The municipality is already implementing a wide range of activities in its normal course of duty, however, opportunity is lost by the lack of strategic collaboration across mandates. The appointment of a resource, placed in an authoritative location within the system would assist to facilitate linkages between different mandates in order to aggregate the impact. In addition to facilitating internal riverine management and associated activities, the IH would be a critical link between what is happening inside the municipal system and what is happening outside, within the EMA, along catchments affecting eThekwini and within the broader provincial, national and global riverine management and climate change community.

It is anticipated that an IH would be a small, capacitated office with two high-level staffers supported by some administrative capacity. It would be sufficiently resourced to carry out the following responsibilities and actions:

Table 13. IH Responsibilities and actions[48]

Responsibilities	Actions
Strategic planning and coordination	Set up new office with Objectives, staffing, KPIs, etc
	Develop strategic coordination plan (systems, collaboration & communication protocols, roles & responsibilities, KPIs, MERL, etc)
Alignment between clusters/units/ departments	Engage strategically selected HODs – those directly affected, including ODCM
	Engage HODs of priority[49], or relevant, units/departments.
	Engage Council
Develop detailed TRMP plan for internal municipal focus	Develop detailed Internal TRMP Implementation Framework, aligned to city management systems, processes & planning mechanisms (including budgeting) to support TRMP given its systemic benefits; define capacity requirements & capacity development programme
	Develop KPIs to assist relevant departments to align with the objectives of the TRMP through normal programmes.
Communication & alignment: intra-municipal	Develop & manage ongoing implementation of intra-municipal communication system

[47] The terminology of Internal Hub and External Hub are used as convenient descriptors, and may change to align with different perspectives.
[48] These responsibilities and actions are not exhaustive, but rather indicative.
[49] This can be broadened as different units/ departments become engaged over time.

Collaborative relationship management with extra-municipal TRMP roleplayers & stakeholders	Engage extra-municipal TRMP roleplayers & stakeholders. Convene & host multi-stakeholder *imbizo* at which rationale of TRMP is presented (possibly based on presentation made from visuals of April 22 floods) to government (including iNgonyama Trust), private sector (including insurance sector, multinationals - e.g. Toyota, Tongaat Hulett, UPIs, etc.), civil society (e.g. UKZN, NGOs, NPOs, Conservancies, etc.)
	Play supportive role to relevant forums that might be established to facilitate ongoing stakeholder engagement and interaction around the TRMP.
	Engage with provincial, national, regional, global riverine management & climate change roleplayers.
Communication & alignment: extra-municipal	Develop & manage ongoing implementation of extra-municipal communication system - eThekwini-wide, catchment wide, provincial, national, global
Fundraising	Identify opportunities for internal and external funding to support municipal TRMP activities & TRMP expansion in extra-municipal spaces; provide input to relevant stakeholders in the preparation and submission of proposals, as required.
Identify & commission appropriate research	Maintain & supplement research to support TRMP activities
Knowledge management	Maintain & update key data sets and information relevant to TRMP
Managing Reporting & MERL	Ongoing documentation & reporting & convening reflection events

6.3 **The External Hub/s**

The concept of an External Hub is more complex than that of the IH both in respect of function and form. Regarding the proposed function, it is assumed that in general it would mirror the function of the IH but outside of the municipal system. It is also possible that there may be more than one hub, and that the hub/s may be supported by some kind of administrative capacity. The following table represents the responsibilities and actions that may be ascribed to the External Hub/s.

Table 14. Responsibilities and Actions of the External Hub

Responsibility	**Actions**
Formalise extra-municipal TRMP activities into an agreed institutional framework.	Implement agreed legal form of External Hub (EH) (New NPC, GC, GC managing finance, AEN, PMU etc.)
	Define governance arrangements of EH
	Identify & mobilise Board of Directors for EH
	Identify & mobilise Management Team for EH - Coordinator - Fundraiser - administrator / knowledge manager
	Set up operational office for EH
Ongoing implementation of coordinated strategy	Development of strategic plan, with an associated detailed and informed operational plan
	Begin implementation of strategic plan, including coordination & Implementation of strategic interventions across all catchments
Coordination of intra- & extra-municipal TRMP	Develop & maintain working relationship with Municipal Internal TRMP Coordinating Resource (IH)
Ongoing fundraising[50]	Implement TRMP competitive funding mechanism (criteria, adjudication, etc)

[50] It is not foreseen that the role of this hub is to fundraise on behalf of other smaller entities. However, in instances where it makes sense to do this (e.g. for larger-scale funding that requires broader coordination) it might do this. In this way responsibility remains within the "member" organisations themselves.

	Initiate calls for proposals, where relevant
	Explore what additional support would be needed to secure and manage large-scale funding (eg GCF)
Ongoing stakeholder engagement of TRMP-type stakeholders & operators	Ongoing stakeholder engagement - Engage projects inside eThekwini, along relevant catchments, provincial, national, other TRMP-type projects
	Convene regular engagement events
	Ongoing of updating stakeholder database
Ongoing community capacity development & education on climate impacts on daily life, including technical (e.g. riverine management, project management, fundraising, fund management) and awareness building focuses (e.g. climate change causes & impacts, adaptation & mitigation activities)	Explore and implement relevant ways to build climate change capacity amongst a range of target groups, including environmental organisations, private sector structures, communities, schools, workplaces and other relevant groups.
	Develop capacity development strategy & plan, identify training providers & implement
Ongoing Research & knowledge management, including maintaining & updating various TRMP datasets	Ongoing research & updating of geo-database
Ongoing MERL	Develop reporting/MERL strategy & plan, & implement
Ongoing Communication	Develop communication strategy & plan, & implement

The complexity in respect of form is based on the fact that there is no existing precedent for this kind of collaboration. There is no existing *system* within which to locate a coordinating function operating in the municipal system or outside of it. Defining the institutional arrangement will require innovative thinking and flexibility, given the high gains possible. In addition to this, there are other complexities that need to be addressed in developing an appropriate institutional vehicle that can achieve a similar outcome outside of the municipal system, including the most appropriate institutional form and governance systems; whether it should be one or more structures; whether it should be set up to hold and dispense funds; to whom should it account; who should it represent; what should its remit be, and other issues.

In the course of deliberating about the function and form of the External Hub/s, various iterations were put forward for consideration. The final version will (just as with the IH) depend on a number of factors. For the purposes of guidance, the following options were discussed:

- Establishing one Non-Profit Company (NPC), that would comprise a Board of Directors (BoD) and a Management Team (MT). The former would be non-remunerated key stakeholders representing civil society and the private sector, both individual and organised, and would be responsible for oversight and strategic direction. The latter would be a team of paid skilled professionals who would carry out the work of strategic planning, coordination, networking, fundraising, monitoring, reporting and accounting.
- As above, but with the support of an administrative structure such as a Project Management Unit (PMU) who would take responsibility for sourcing, managing and accounting of funds. Such a unit could, for example, be established on a temporary basis for the duration and management of specific large-scale funding (e.g. through the GCF).
- As above with more than one hub. This may be appropriate for various reasons, including geographic differentiation, catchment or specific intervention particularities, and other reasons.

- Using an existing eThekwini-based NPC that already has staff, capacity and competency to carry out the functions of the proposed TRMP.
- Using an existing cross-municipal NPC that already has staff, capacity and competency to carry out the functions of the proposed TRMP.

6.4 Possible structure and relationship between internal and external institutional vehicles for the TRMP

The following schematic provides insight into how the institutional arrangement could look. It also highlights the complexity of relationships and functions that will need to be managed as part of this. The schematic is a deeply considered product, emerging from multiple engagements with all the relevant stakeholders, however, it is a suggested model, and is likely to be adjusted once the operational details of the TRMP are resolved.

It is also noted, that along with the need for the TRMP to be continually responsive and adaptive, it is likely that the institutional arrangement may change over time.

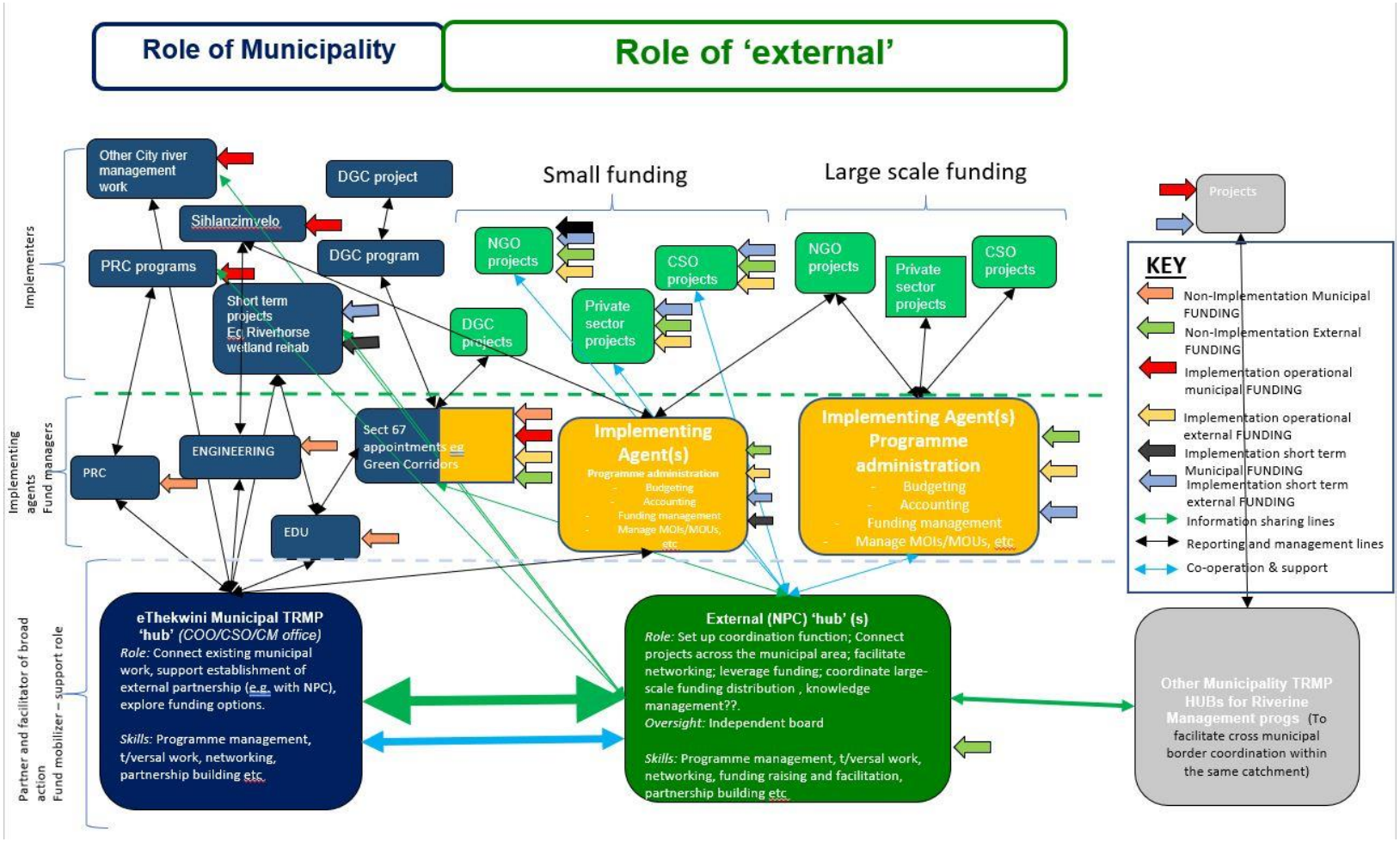

Figure 11. Forms, functions and relationships of TRMP institutional governance[51]

[51] This diagram is attached as Appendix 5.1

6.5 Institutional steering systems/options

Having described above why the TRMP needs to be "institutionalised" (i.e. made formal, responsible and accountable), during this process of developing the Institutional Framework, a number of options were considered for the External Hub/s[52]. These will still need to be deliberated on with the metro leadership and relevant municipal and external stakeholders as the process unfolds. The points below present some key issues that should be considered in defining the best options to follow. The model and the structure considered must be able to provide at least the following:

- High level independent steering and operational management.
- Level of maturity in terms of being established, registered, functional, track record (or equivalent credentials).
- Secured or access to funding streams: primary, secondary, ability to use additional independent funding.
- Staffing capacity, ability to on-board additional appropriately skilled person power.
- Geographical mandate and ability to operate across all land tenure varieties.
- The issue of providing co-ordination or implementation needs careful consideration.
- Alignment with Ethekwini Municipal systems and development strategies (e.g. IDPs)
- Capacities to effectively carry out some of the more technocratic functions inherent in the complex task of aggregating a range of disparate interventions, projects, programmes, stakeholders, and more.

[52] As part of a due diligence process, AEN and GC were interviewed as examples of cross-boundary and EMA-based entities. It is noted that AEN is still in a conception stage of development, while GC is mature already. The engagements provided critical insight into what kind of issues were important to note. The briefing notes for these engagements are included as Appendix 5.1 and 5.3.

7. COSTED TRMP IMPLEMENTATION FRAMEWORK

This chapter lies at the heart of this assignment. All other chapters support this one in various ways, and have played their part in crafting the shape of this TRMP Implementation Framework.

The chapter begins with a description of an intensively co-created high-level indicative implementation framework, based on the development of a set of critical pathways forged through extensive consultation with the expert teams from the City, the Client and Real Consulting, as well as other key stakeholders from within the TRMP "community". The Critical Pathways and Implementation Framework are also profoundly informed by the studies that have been commissioned as part of the deep preparation for the TRMP.

Having developed a framework with associated activities, the Real Consulting Team then prepared a cost estimate for this framework. This costing exercise evolved into the development of a dynamic costing tool, attached as Appendix 6.2.

7.1 Implementation framework

The assignment to develop a TRMP Implementation Framework on behalf of the Ethekwini Municipality and the GIZ CFF unit located within the municipality has resulted in the development of an overarching Implementation Framework. This framework elaborates activities, calculates broad costs and identifies responsible agents for the implementation of a progression from what is currently being implemented within and outside the municipal system, toward a well-co-ordinated and planned TRMP Framework encompassing land holdings under direct municipal management as well as lands under private or iNgonyama Trust management.

The notion of a progression of stages or "Critical Pathways" is central to the Implementation Framework and these can be summarised as: Preparation, Initiation, Bridging and Implementation.

Note: An Implementation Framework is a strategic or process-based framework and is not intended to be an operational plan detailing specific interventions per project, per catchment or per precinct, though the budgeting tool developed by Real Consulting is flexible and can be used for financial planning at a catchment or sub catchment level.

7.1.1 Assumptions and notes

This Implementation Framework is based on detailed consultations, workshops and other engagements over a period from November 2021 to April 2022. These have been between the consultants, the City team officials and a wide range of external stakeholders.

- What is developed is a framework, rather than a plan, and is therefore indicative rather than prescriptive, though it provides clear direction - a roadmap - for the implementation of a large-scale systemic TRMP programme, which given the recent flood disaster, is a necessary goal that the municipality should set as a preventative and disaster-readiness measure.
- The inclusion of timeframes and targets are also indicative. These will be adjusted as a result of internal consultations with Municipal leadership, and to a large extent will also be dependent on internal budget allocations and fundraising processes. For this reason the current report will not specify timeframes, though these are suggested in the budgeting tool for the Implementation Framework as a flexible parameter, which provides a 20-year perspective.

- Discussions within the Municipality will need to build sufficient commitment to champion a more coordinated internal municipal programme aligning the mandates of different units and departments.
- There will need to be initial funding to support initiation and bridging phases.
- UKZN (through Cathy Sutherland) has indicated its preparedness to assist with initial External stakeholder mobilisation as an interim measure towards a more formally managed forum.
- The implementation framework team has only received costing projections for the Sihlanzimvelo Stream-cleaning Programme, however there are obviously other units and departments carrying out TRMP linked work including Parks, Recreation and Culture, and the Economic Development Unit, as well as others as has been evidenced by the April 2022 flood disaster in Ethekwini. Details of activities and costings should be assembled into future planning processes.
- The notion of an interim secretariat has emerged as a recommended approach, (possibly funded by CFF, or possibly hosted as part of the CFF city team or other technical support fund) with the objective of supporting the preparation and initiation phases, specifically spearhead the initial fundraising process.

7.1.2 Schematic overview of phases/pathways

The key phases or pathways for the TRMP Implementation Framework are summarised in the diagram below. A key point to note is that the TRMP must be embraced as a highly flexible. The pathways are not linear in any way, and are indicative of the general phase/pathway descriptions. They are likely to overlap in various ways, and may even be at different points along the continuum in different catchments.

Table 15. Pathways to the full TRMP

Preparation phase	**Pathway 1** **Initiation Phase**	**Pathway 2** **Bridging Phase**	**Pathway 3** **Implementation phase**
Preparatory studies and planning.	Upscaled municipal TRMP with Internal coordination Hub and external fragmented initiatives	Upscaled internal TRMP with improved coordination and planning with external initiatives and green economy projects	TRMP with Internal Hub and External Hub/s or NPC in a close co-ordinated partnership
Immediate: Year 0-1	**Immediate-short-term Year 1-5**	**Short-medium term: Year 3-7**	**Long term: Year 6-20**

Note: The descriptions of the phase activities are presented as suggestions and must be verified and finalised once all stakeholders have had a chance to engage deeply with this Implementation Framework.

7.2 Preparation Phase

This phase refers to the status quo as at mid-2022 and the preparation period following this date.

7.2.1 Objective

The preparation phase is the opportunity to consolidate all previous work and studies and provide a compelling framework for the city to motivate internally, nationally and internationally for the long term implementation of TRMP.

7.2.2 Key characteristics

The preparation phase for the TRMP Implementation framework refers to the status quo where a number of highly relevant current and prior studies and plans critical to the rollout of the TRMP provide a rich medium to support the systemic growth and institutionalisation of TRMP in the Municipality. Key activities of this stage include:

- The engagement with Municipal internal stakeholders and leadership, to ensure buy-in and alignment.
- Engagement with external stakeholders active or working in the TRMP landscape is important
- The Sihlanzimvelo programme is likely to increase in scale and coexist alongside other TRMP initiatives within the Municipal system as well as those being implemented by private sector and civil society initiatives.
- Securing support and resources for the establishment of a municipal 'hub'

The following table shows the suggested key elements and activities of this preparatory phase.

Table 16.Key elements and activities

Focus area	Sub-activities	Responsible agent
Preparation research	BCA, Business case, Regulatory Framework, Municipal Capacity Development Plan	Completed by multiple experts
Preparation of high-level implementation Framework	Draft Implementation Framework	Real Consulting (done)
	Initial Costing Plan	
	Funding and resourcing recommendations	
	Baseline study identifying and geo-locating every TRMP initiative in Ethekwini	
	MERL Plan	
Internal & External Hubs	Define possible options of institutional form of collaboration between internal municipal coordinating resource and external coordinating resource , including various options of NPC formation, including roles & responsibilities	Real Consulting (done)
Preparation - Initial Stakeholder engagement	Engage senior municipal managers in a structured manner and engage political leadership in order to secure buy-in and /or commitment.	City Team (with some RC support)
	Engage other municipal stakeholders in a structured manner	
	Facilitate external stakeholder workshop and promote interaction with TRMP Stakeholder Forum (with UKZN) – nascent external forum	
	Engage key private sector and iNgonyama stakeholders[53]	

[53] It is essential that the activities listed are viewed flexibly. It may be that this activity could shift to the Initiation Phase.

Preparation research – AFD/Ciclia	Catchment analysis (additional 3 catchments) AFD tendering	Currently under a tender process
Fundraising	Find seed money to fund initiation & bridging phases for broader TRMP process	GIZ has indicated that they would assist with the submission of a GCF applicaton.

7.3 Pathway 1: Initiation Phase

This phase of the proposed TRMP is when resources are pulled together to get the process going, and to build the foundation of a collaborative riverine management programme. Funds will need to be sourced to facilitate this initiation.

7.3.1 Objective

The primary objective is to operationalise Pathway 1 and prepare the Municipality to champion and coordinate an integrated TRMP within the municipal system through existing clusters/unit/departments with increased levels of coordination and collaboration in order to maximise efficiencies and potential for greater impact on riverine management, and minimise potential disaster impacts. This is intended to enhance resilience to climate change disaster impacts, especially in light of the most recent catastrophic flood events of 2017, 2019 and 2022.This will assist greatly in building preparedness, disaster management, infrastructure protection, maintenance cost management, economic development as well as supporting green economy-based economic recovery. At a larger economic scale, a coordinated and integrated TRMP will protect eThekwini's key economic assets such as its tourist appeal and the port infrastructure, including dry port facilities, which underpin its investment potential.[54]

7.3.2 Key characteristics

Pathway 1 sees the establishment of an internal hub that initially champions the establishment of the TRMP within the Municipality. Initially, this Internal Hub could be in the form of the securing of one or two high-level, skilled and experienced professionals, available to support the GIZ commitment to package and submit a GCF application. An internal resource of this nature and function can assist to leverage significant funds to operationalise the TRMP. Without such a resource, the GCF opportunity could be compromised. This resource also then forms the basis of a longer term office within the municipality to ensure the continuance and expansion of the TRMP. Part of the mandate of the Internal Hub would be to champion the opportunity to bring all municipal Units into alignment around climate-wise governance and service delivery. This is a sensitively facilitated change management process with careful consultation of internal units and departments and corresponding engagements with political leadership.

The following table shows the key elements and activities of this initiation phase.

Note: The activities indicated for the various municipal clusters/units/departments are indicative of how these entities could participate in the proposed TRMP. It is by no means intended to be prescriptive, as the Real Consulting Team was not able to carry out due consultations across all units and departments.

[54] All here of these assets have been severely compromised by recent flooding (and by lack of preventative investment).

It is suggested that this be done as part of detailed operational planning. What is included below should be seen as initial thoughts to be used as the starting point for further discussions.

Table 17. Key elements and activities

Responsibility: Unit/Department	Focus area	Sub Activity
Municipal Internal Hub (IH) possibly located in MM Office	Strategic plan development for Municipal Internal Hub	Municipality to engage a skilled and experienced resource to support the initiation of the Internal Hub, including supporting funding applications.
		Assist with GCF application process
		Develop strategic plan for the Internal Hub (systems, collaboration & communication protocols, roles & responsibilities, KPIs, MERL, etc.)
		Develop governance arrangements/modes of working as there will need to be ongoing engagement across municipal sectors involved in implementing riverine management.
	Develop TRMP plan for internal municipal focus	Develop Internal TRMP implementation Framework, aligned to city management systems, processes & planning mechanisms (incl. budgeting) to support TRMP given its systemic benefits; define governance and working arrangements; define capacity requirements & capacity development programme if required.
		Assist with the development of KPIs in order for different departments to align with TRMP vision through normal programmes
	Alignment between clusters/units/departments	Engage all HODs from priority departments
		Engage Council
		Explore the possibility of convening senior & middle management + council *imbizo* at which rationale of TRMP is presented (based on recent presentations including visuals of April 2022 floods)
	Communication & alignment: intra-municipal	Develop and manage ongoing implementation of intra-municipal communication system
	Collaborative relationship management with extra-municipal TRMP roleplayers & stakeholders	Engage extra-municipal TRMP roleplayers & stakeholders. Convene & host multi-stakeholder *imbizo* at which rationale of TRMP is presented (based on presentation including visuals of April 22 floods) to govt (including iNgonyama Trust), private sector (including insurance sector, multinationals - e.g. Toyota, Tongaat Hulett, UPIs, etc.), civil society (e.g. UKZN, NGOs, NPOs, Conservancies, etc.)
		Play supportive role to TRMP Stakeholder Forum (with UKZN)
		Engage with provincial, national, regional, global riverine management & climate change roleplayers.
	Communication and alignment: extra municipal	Develop & manage ongoing implementation of extra-municipal communication system - eThekwini-wide, catchment wide, provincial, national, global

	Fundraising (with CFF)	Identify opportunities for external funding to support municipal TRMP activities & TRMP expansion in extra-municipal spaces; prepare & submit proposals.
	Identify & commission appropriate / necessary research	Maintain & supplement research to support TRMP activities
	Knowledge management	Maintain & update key data sets & information relevant to TRMP
	Managing Reporting and MERL (with ODCM department)	Ongoing documentation & reporting & convening reflection events
Engineering Unit Roads & Stormwater	Strategic planning	Finalise strategic plan for Sihlanzimvelo Programme expansion
	Site selection	Identify areas
	Procurement and contracting	Prepare contract /procurement arrangements
		Identify project management resources (outsourced)
		Identify coops/community enterprises in identified areas
	Capacity development	Coordinate with BSU re capacity development of these coops/SMMEs
	Implementation	Implementation
Parks, Recreation & Culture	Strategic plan to tie activities into TRMP programme	Identify key natural areas for AIP management to align with Sihlanzimvelo and TRMP
	Align KPIs and performance management to TRMP	Alignment of KPIs and performance management criteria at a dept level to align to the objectives of the TRMP
	Procurement and contracting	Secure AIP management coops/community enterprises/jobseekers
	Capacity development	Coordinate with BSU re capacity development of these coops/SMMEs
	Implementation	Implementation
Economic Development Unit	Align GC activities to TRMP	Develop a strategy that more directly aligns Green Corridor (& other) programmes to TRMP, especially working with other units/departments to optimise mutual efforts (e.g. Sihlanzimvelo litter collection)
	Finalise GC green economy products with KwaMashu Materials Beneficiation Centre (KMBC)	Finalise product development at KMBC (pavers, interlocking bricks, road repair material, bokashi)
		Develop enterprise development programme associated with KMBC products
		Develop marketing solution associated with KMBC products for SMMEs
	Expand GC Green Spaces programme	Expand Green Spaces programme to address more waterways in areas that they work - establish more SMMEs for AIP clearing, litter boom management & pocket park development, recycling); source & provide training (AIPs, waste sorting, recycling, etc.); Coordinate with BSU re capacity development of these coops/SMMEs.

		Expand Green Spaces programme to address more waterways in new areas aligned to Sihlanzimvelo expansion.
Business Support Unit	Develop TRMP training programme for coops and SMMEs	Strategise with all other departments involving SMMEs in activities that support the TRMP directly & indirectly as to the appropriate business skills support required to ensure sustainability of SMMEs/coops
		Ensure that there are sufficient resources on hand to deliver capacity development programme
		Implementation
Cleansing and Solid Waste	Develop and implement workable solutions for especially hotspots such as non-ratepaying areas and areas on the urban periphery, and especially in catchments	Develop a strategy that more directly aligns CSW programmes to TRMP, especially working with other units/departments to optimise mutual efforts (e.g. Sihlanzimvelo Programme litter collection; EDU/GC projects; human settlements informal settlement upgrades; etc.)
		Find ways to implement/support the implementation of localised recycling plants that result in community clean-ups of solid waste (e.g. GC road repair kits, paver & brick-making, nappy collection systems such as piloted by Aller Project - even recycling; Ocean Plastics plastic recycling, etc.)
		Improve black bag distribution challenges
Water and Sanitation	Develop & implement workable solutions to reduce sewer blockages, manhole surcharges & water pipe leaks for especially hotspots such as catchments	Develop a strategy that more directly aligns EWS programmes to TRMP, especially working with other units/departments to optimise mutual efforts (e.g. community education about sewer blockage causes, implementing programmes such as the Aller River Project's nappy collection system which aligned EWS, CSW and community champions, etc.)
	Promote community-based monitoring programmes & "barefoot" plumbers (in partnership if necessary) for checking for leaks, surcharges, and carrying out minor repairs, & educating citizens, etc.	Identify local coops/SMME's to carry out monitoring & minor repairs
		Coordinate with BSU re capacity development of these coops/SMMEs.
Human Settlements	Collaborate with iNgonyama Trust, DPEM, EWS, CSW and CPAS to develop and implement collaborative solutions that reduce vulnerability of informal settlements & peri-urban areas	Convene collaboration planning session with iNgonyama Trust, DPEM, EWS, CSW and CPAS to develop a strategic approach to improve conditions and regulation of informal settlements & peri-urban areas in respect of safety and wellbeing
		Consultation with vulnerable communities.
		Develop a strategy based on consultation
		Integrate strategy into planning cycles; & find funds to implement pilot projects
Community	Support education, material and psycho-social support for vulnerable	Community engagement & education in respect of climate change impacts

Participation and Action Support	people affected by disasters, in partnership with Health, & external partners	
	Mobilise partnerships (municipal depts, UKZN, NGOs, FBOs, others)	Identify municipal & partnership-based psycho-social support resources
		Integrate psych-social support response into disaster responses for crisis events
Development Planning, Environment & Management	LUMS awareness building - development legislation & approval systems; vulnerability risks, etc.	Develop LUMS/applications legislation awareness building campaign
	Lead on climate-wise information affecting all aspects of governance related to housing	Develop information kits & practical guidelines for use in informal settlements and in IT governed areas
	Innovative research & development in partnership with HS & other partners like UKZN, regarding housing methodologies for informal settlements & in IT governed areas	Implement pilot developments to prove innovating building processes that are regulated and regulatable, & that focus on safety.
	AIP management	Align with programmes based on updated database (already happening)
Fire & Emergency Services (FES)	Examine how climate change impacts Fire & Emergency Services systems and practices	Examine how climate change impacts Fire & Emergency Services systems & practices & make necessary adjustments

7.4 Pathway 2: Bridging Phase

7.4.1 Objective

The primary objective of the Bridging Phase which encompasses Pathway 2, is to consolidate a systemic and transformational approach to TRMP by expanding from an established internal municipal TRMP hub toward improved communication, collaboration and some co-ordination and resourcing of projects being managed outside the municipal system. These could be private sector, civil society, iNgonyama Trust or projects implemented by other spheres of government. The aim is to start a conscious and definite process to actively build a shared vision and approach for an eThekwini- and catchment-wide TRMP. This would include project coordination at the implementation level, at the funding level, at the capacity development level and also and the MERL level.

7.4.2 Key characteristics

Pathway 2 is characterised by transitional activities where an External Hub (or group of hubs) is established on a formal or less formal basis. This could see the start of the process where the current

stakeholder forum convened by UKZN begins being transformed toward a more formal body in the form of a registered NPC. Or where another External Hub solution is forged.

Note: this section is based on a number of assumptions, such as that the Municipality will play a central role in partnering with and supporting the establishment of the proposed External Hub (existing or new).

The following table shows the key elements and activities of this bridging phase.

Table 18. Key proposed elements and activities of the bridging phase

Responsibility/Unit/ Department/Driver	Focus area	Sub activity
Municipal Internal TRMP Hub	Sustain relationships with TRMP Stakeholder Forum & catchment/precinct forums	Develop framework for possible evolution of (UKZN) stakeholder forum into External Hub or convene new inclusive structure, including, roles and responsibilities of the Municipality and external stakeholders, how the forum will be convened, and what its focus will be.
	Ongoing funding support	Sustain engagements with potential funding support, as begun in the Initiation Phase.
Municipal Internal TRMP Hub Stakeholder Forum	Institutional form of External Hub	Identify the institutional form of the External Hub
	Establishment of external hub	Clarify strategic objectives of the EH; consider role of municipality (partnering and resourcing), consider existing/new entity and relevant partnering mechanism of appropriate. Stakeholder engagement – work with stakeholders to understand evolution of this, roles and responsibilities etc.
	Funding of EH	Scope options for initial establishment costs, consider longer-term funding role, then consider what arrangements might support this.
Stakeholder Forum & External Hub	External Hub strategic plan & funding initiation	Develop strategic Plan, Financial Plan & Operational Plan for External Hub
		Agree interim arrangements for funding management & project funding
		Identify & contract agent to draft funding applications (External Hub & Projects) – this may be carried out by project management unit (PMU) on behalf of EH
		Scope funding landscape & submit applications for: - External Hub operating costs
		Establish TRMP Fund, with access criteria, governance systems, accountability, etc.
		Initiate early co-ordination processes & MERL within forum
Stakeholder Forum & External Hub	Develop interim solution in case External Hub not approved	A different scope and scale of operation will need to be devised if the External Hub concept cannot be operationalised for any reason. It may be possible to expand the remit/mandate of the TRMP Stakeholder Forum & Interim Secretariat to carry out some of functions listed above

7.5 Pathway 3: Implementation Phase

This pathway represents the full TRMP: a collaborative, partnership based programme wherein programmes and projects managed inside and outside the municipal system are systematically building riverine corridor functionality over time.

Note: Again a disclaimer emphasizes that the activities listed are indicative and in no way should be understood as being prescriptive.

7.5.1 Objective

To establish the basis for a long-term TRMP implementation. Key to this is the establishment of a coordination mechanism with a representative oversight or steering body that may evolve from what has been put in place by this time, such as the Internal Hub and the External Hub. This pathway sees municipal and external TRMP activities strategically coordinated from a catchment planning level through to funding, capacity development and monitoring levels. The institutional mechanism/s in place should be able to support fundraising and disburse funds through appropriate channels and systems, but not be responsible for project implementation.

7.5.2 Key characteristics

This phase is characterised by collaboration between the Internal Hub and an established NPC or other legal entity, with capacity to receive and disburse funds, possibly supported by a capable PMU.

Options for the legal steering of this External Hub have been discussed but not finalised and these range from:

- Purpose-built and newly registered Non-profit Company (NPC).
- Using an existing entity to manage the financial aspects or even the PMU/secretariat remit.
- Using another cross-boundary entity to provide a legal form and possibly PMU/secretariat services.

Table 19.Key elements and activities

Drivers: Entity / stakeholder / roleplayer	Focus area	Actions
Internal Hub (IH) External Hub (EH) Stakeholder forum	Formalise extra-municipal TRMP activities into an agreed institutional framework.	Implement agreed legal form of External Hub, including governance arrangements
		Identify & mobilise Board of Directors for External Hub
		Identify & mobilise Management Team for External Hub - Coordinator - Fundraiser - administrator / knowledge manager
		Set up operational office for External Hub
EH Management Team, in partnership with Internal Hub	Ongoing implementation of coordinated strategy	Begin implementation of strategic plan, including coordination & Implementation of strategic interventions across all catchments;
	Facilitation of intra- & extra-municipal TRMP	Develop & maintain working relationship with Municipal Internal TRMP Internal Hub

	Ongoing fundraising	Implement TRMP competitive funding mechanism (criteria, adjudication, etc)
		Initiate calls for proposals
	Ongoing stakeholder engagement of TRMP-type stakeholders & operators	Convene regular engagement events
		Ongoing of updating stakeholder database
	Ongoing community capacity development & education on climate impacts on daily life	Develop capacity development strategy. Secure resourcing. Identify training agents. Implement.
	Ongoing Research & knowledge management, including maintaining & updating TRMP datasets	Ongoing research including updating of project and geospatial databases
	Ongoing MERL	Develop reporting/MERL strategy & plan, & implement
	Ongoing Communication	Develop communication strategy & plan, & implement
	Ongoing capacity development	Develop capacity development strategy & plan, & implement
	Ongoing stakeholder engagement	Ongoing stakeholder engagement - Engage projects inside eThekwini, along relevant catchments, provincial, national, other TRMP-type projects

7.6 **The Costing Model and Tool**

In the course of attempting to produce high-level costing for the Implementation Framework, The Real Consulting Team expanded the exercise to develop an interactive tool that could facilitate a number of outputs. Its initial use is to provide indicative cost estimate data for the accompanying high-level implementation framework, however, as a tool, it has multiple applications. As an interactive tool, it will require protected management. The tool is attached as Appendix 6.2.

The various applications for the costing tool include the following:

- The current usage, which is to calculate indicative costs for the establishment, bridging phase and initiation of the TRMP, with projections over 10 years. It is proposed that over a 10 year period, the possible investment could be in the region of R1, 55 billion (Approximately 9% of what the speculative value of the recent April floods cost).[55]
- Developing detailed and accurate cost estimates for the TRMP once accurate figures become available, based on detailed operational plans.
- A financial tracking and strategic decision-support tool for use in the implementation of the TRMP, both within the municipal system, under the management of the Internal Hub, and for projects that make up the extra-municipal contribution to the TRMP.
- A calculation tool for municipal budgeting for top-slicing or other allocation mechanisms.

[55] The numbers used in the indicative cost estimate are drawn from various sources including, Sihlanzimvelo, the Business Case carried out on the Ohlanga, discussions with departments, as well as from market-related figures. They therefore constitute a reasonably verifiable set of figures, but their currency is limited.

- A calculation tool for budgeting and fundraising applications, both to calculate budget requirements and to calculate co-funding, especially for the large fund applications which require this.

Note: This tool is indicative and the way it has been constructed allows for figures used to be verified at any point and adjusted.

7.6.1 Notes on the costing model and tool

The costing workbook (Appendix 6.2) is a tool based on a costing model, developed to estimate indicative costs of the Implementation Framework of the TRMP in eThekwini. The purpose of this tool is to enable and facilitate discussions about the resources required for the TRMP.

The results are totalled in two ways:

- By existing expenditures - or expenditures that are currently in the budget baseline plus new expenditures that are required - these are additions required to existing budget allocations.
- By municipal expenditures that will be funded from municipal resources (this includes existing expenditures and new expenditures that are needed) plus external costs (these include costs that will be funded by stakeholders external to the municipality).

The workbook contains a number of worksheets:

- Three summary sheets:
    - The “Main Summary” shows the total cost of each municipal unit or division involved in the TRMP.
    - The “Detailed Summary” shows the same totals and shows them disaggregated into Existing/New costs and Municipal/External costs. These two summary sheets are linked to other sheets in the model.
    - The third summary sheet is "Main Summary - Dynamic" which shows the summary total for three sheets (it is linked to those) and also has space to enter in total cost estimates for each division (as a single number).
- A worksheet for each division of the City that doe already or may contribute to the TRMP. These worksheets are all built on the same template. This section of the model includes a worksheet for the Municipal Internal TRMP Hub and (separately) a sheet for the TRMP External Hub/NPC. Each of these worksheets made up of three sections:
    - Personnel – where assumptions about the number and salaries of people required can be entered.
    - Operational costs – where assumptions about annual set up and operational costs are entered.
    - Projects – where assumptions about existing projects, the scaling up thereof and new projects can be entered
- A worksheet in which the cost of wetland rehabilitation projects can be estimated. This sheet uses the same template as that used for each division and uses cost estimates from the business case for the “Ohlanga Proto-Masterplan for Transformative Riverine Management

7.6.2 Costing the TRMP

The following table is extracted from the costing tool, and represents *indicative total costs* calculated over a seven year period. The data used to calculate these figures are a combination of researched figures, and reasonable assumptions. The detail is specified in the costing tool (Appendix 6.2). The table is included here as an indication. The model shows how activities from various priority departments could be included (only the Engineering Unit is included below through the Sihlanzimvelo Stream Cleaning Programmes).

Table 20. Total indicative cost of TRMP over 7 years

		Annual Cost										
Total Costs		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**Total 10 Years**
Responsibility: Unit/Department	**Tab Name**											
Total costs of existing and new activities		**R 56 579 195**	**R 140 068 139**	**R 147 083 204**	R 151 660 459	R 158 038 392	R 164 529 575	R171 110 758	R 177 691 941	R184 273 124	R190 854 307	R 1 541 889 094
Existing		R 45 819 825	R 48 110 816	R 50 401 808	R 52 692 799	R 54 983 790	R 57 274 781	R 59 565 773	R 61 856 764	R 64 147 755	R 66 438 746	R 561 292 856
New		R 10 759 370	R 91 957 323	R 96 681 397	R 98 967 660	R 103 054 602	R 107 254 794	R111 544 986	R 115 835 177	R120 125 369	R 124 415 561	R 980 596 238
Total costs of municipal and external funding		**R 56 579 195**	**R 140 068 139**	**R 147 083 204**	R 151 660 459	R 158 038 392	R 164 529 575	R 71 110 758	R 177 691 941	R 184 273 124	R 190 854 307	R 1 541 889 094
Municipal		R 53 252 585	R 136 575 199	R 142 777 661	R 148 073 322	R 154 295 292	R 160 630 513	R167 055 733	R 173 480 954	R 179 906 174	R 186 331 395	R 1 502 378 826
External		R 3 326 610	R 3 492 941	R 4 305 543	R 3 587 138	R 3 743 100	R 3 899 063	R 4 055 025	R 4 210 988	R 4 366 950	R 4 522 913	R 39 510 269
Municipal Internal Hub	IH	R 8 528 585	R 6 856 073	R 7 527 706	R 5 761 529	R 5 796 030	R 5 943 781	R 6 181 533	R 6 419 284	R 6 657 035	R 6 894 786	R 66 566 341
Engineering Unit Roads & Stormwater	Engineering	R 48 050 610	R 133 212 067	R 139 555 499	R 145 898 930	R 152 242 362	R 158 585 794	R 164 929 226	R 171 272 657	R177 616 089	R 183 959 521	R 1 475 322 754
Parks, Recreation & Culture	Parks	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Economic Development Unit	EDU	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Business Support Unit	BSU	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Cleansing and Solid Waste	CSW	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Water and Sanitation	WaterSan	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Human Settlements	HumSet	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Community Participation and Action Support	CPAS	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Development Planning, Environment and Management	DPEM	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
Disaster management	DisastMgt	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -
TRMP External Hub/NPC	EH	R 10 106 106	R 11 563 431	R 13 735 458	R 12 189 143	R 11 909 106	R 12 405 318	R12 901 531	R 13 397 744	R 13 893 956	R 14 390 169	R 126 491 963
Ohlanga	Ohlanga	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -	R -

8. RESOURCING OPPORTUNITIES

This chapter addresses the task of resourcing an integrated TRMP. It acknowledges that resourcing is a combination of sourcing funds and mobilising in-kind support of varying kinds. The funds are understood as budget line items derived through municipal allocations, ordinary or special, and through funds raised by a range of donors from small- to large-scale. An assumption is that collaboration, both inside and outside of the municipal system, is an important way of optimising impact from expenditure and effort, thus managing the resourcing needs responsibly.

8.1 Introduction

The Benefit-Cost Analysis and Business Case studies done in respect of the TRMP have proved the value and viability of this proposed intervention, summarised by the posit that every R1 invested in TRMP will yield R1.80-R3.40 in municipal and societal benefits. At an implementation phase, the successful scale-up of the TRMP to meet its stated vision[56] will require accessing resources from various sources, and of various kinds, not always fiscal. It will require the continued and expanded financing of programmes on the municipal budget; applying for funds and/or other resources available in national programmes; applying for funding from "climate funds" and other environmental funds and programmes; mobilising the private sector to contribute; and it will require collaborating and partnering with local and foreign role-players in order to expand the reach of the resilience building work of the proposed TRMP. Basically, there is a kaleidoscope of potential opportunities that must be drawn upon. The still-to-be-quantified scale of the cost of the recent floods that savaged eThekwini and other areas will likely have demonstrated beyond a shadow of a doubt the urgency of investing in preventative measures of all kinds.

The object of this report is to explore what resourcing opportunities are relevant and available to support an incremental roll-out of the TRMP as per the proposed Implementation Framework, of which this mini-report is a part. It is noted that there are multiple ways in which the TRMP can be resourced, including with funds, technical support, partnerships, and collaborations. The vision is always of the biggest picture, understanding that every action that results in improved waterways has value, and is an investment. It is understood that bringing a more coordinated and intentional focus to riverine rehabilitation in eThekwini (including along catchments that begin outside of the municipal boundaries) will begin with what is already happening both by mandated municipal units and departments, as well as by the multiple other role-players in the region.

Resourcing an incremental upscaling of the TRMP will require an imaginative and open-minded approach to what opportunities may be leveraged to the benefit of riverine health. There are funds that support research, training and job creation that can benefit the TRMP but may appear to have no direct connection to the TRMP. An example is the Jobs Fund in National Treasury, which will support incubation hubs which focus on a diverse range of subjects. Hypothetically speaking, there could be a project (like the KwaMashu Materials Beneficiation Centre) that is focused on materials engineering and product design based on recycling degraded plastics taken from a river or improving the design of river cleaning litter booms. Likewise, tapping into enterprise development programmes to support the green economy components of the TRMP is a stimulus to riverine transformation. Or, tapping into programmes such as

[56] The vision for eThekwini, in the future, is to be a climate-resilient and safe city with functional and well-managed riverine areas, and ecological infrastructure that is owned by and delivers equitable benefits to all communities (Theory of Change workshop report, 2022).

the DFFE/EPWP “working for” programmes, and the recently convened PEP project in eThekwini that will see thousands of youth engaged in environmental clearing and rehabilitation projects throughout eThekwini for five months will have a measurable impact.

This report is structured in a way that provides an overview of the resourcing opportunities and mechanisms that are available from various kinds of sources, both South African and international. The overview is supported by a detailed spreadsheet providing detail of each listed mechanism. Resources are collated according to the following types of mechanisms:

- Civil Society contributions.
- International Grant Funding (with a focus on climate change).
- Loan and equity financing.
- Municipal budgets.
- Performance-based investment instruments (Development Impact Bonds; also known as 'pay for performance' bonds, 'pay for success' bonds, social benefit bonds, green bonds, climate bonds, sustainability bonds).
- Private sector investment.
- Research funding.
- South African Funds that will support TRMP implementation.
- South African governmental employment programmes.
- Technical support.
- Water Funds (organizations that design financial and governance mechanisms around a common goal to contribute to water security through nature-based solutions and sustainable watershed management).
- Water Stewardship.

Some important considerations need to be factored into strategic efforts to access resources to support the proposed TRMP, including understanding the different funds, programmes and partnerships that could support TRMP; preparing for resourcing applications; and preparing an overview of proposed funding strategy.

Note: This report is supported by a spreadsheet that details the range of resourcing mechanisms and products, with relevant details as to how best to approach each one.

8.2 The different funds, programmes and partnerships that could support TRMP

The following opportunities exist for scaling up TRMP and its impacts:

- **Leveraging partnerships with non-municipal role players** active in eThekwini, such as Urban Improvement Precincts (UIPs), research institutions, NGOs and conservancies in the municipal area and adjacent to it, as well as corporate role-players that make Corporate Social Responsibility (CSR) investments. The municipality does not necessarily need to match or contribute its own resources into these activities but coordinating activities and partnering with them have the potential to yield substantial benefits to the TRMP programme.
- **Sustaining, expanding, and aligning existing programmes funded from the municipal budget**. Two key programmes of relevance are the Sihlanzimvelo river cleaning programme managed by the Engineering Unit and the Green Corridors programme largely financed by the Economic

Development Unit. These programmes offer direct value into transformative riverine management.

- **Accessing funding from national programmes that incentivise and reward job creation**. There are various Expanded Public Works Programmes (EPWP) and Presidential Employment Stimulus programmes that provide funding based on the number of work opportunities they create. These programmes fund thematic areas, some of which are relevant to TRMP.
- **Accessing funds from large donor funds** aimed to building resilience to climate change. The most well-known of these are the Global Climate Fund (GCF) and the Global Environmental Facility (GEF), but there are others. These, and other, donors offer funding for project implementation as well as technical support the city can use to build the technical capacity of staff to improve the city's resilience to climate change and/or mobilize funding for such programmes.

The resourcing of the eThekwini TRMP should aim to optimise all available opportunities. In this way, the transformative imperative of the TRMP can bear fruit as each opportunity reinforces and adds to the other. Many donors require co-funding, which can also be carefully packaged by leveraging partnership programmes[57].

8.3 Preparing for resourcing applications

The activities for which resourcing will be sought are complex and interconnected. Ensuring that there are resources and capacity on hand to prepare and finalise proposals to the specifications of "big" funders is important. This is a technical competency, taking large amounts of time of technically skilled people to write documents, complete forms and meet and negotiate with a range of people, including fund managers. In cases where prescriptive processes and multiple criteria and requirements need to be complied with, there are many grey areas and blurred lines, opening possible access opportunities. Understanding how to frame and package applications is key. Accessing funding increases if the following are embraced:

- Clear and specific messaging that:
    - The TRMP is designed to build resilience to climate change through promoting climate change adaptation with nature-based solutions using ecosystem rehabilitation and restoration.
    - The benefits are multiple and significant, ranging from flood mitigation, especially of vulnerable people, to grey infrastructure protection to pollution management, to economic development.
    - The proposed TRMP will build on work already being implemented by the eThekwini municipality and by other stakeholders from the private sector and civil society.
- Establishment and implementation of partnerships with multiple role-players – within eThekwini Municipality, within multi-municipal catchment-wide programmes and within aligned country-

[57] An important anecdote worth bearing in mind, is the Take Back our Rivers ARPP lead by the eThekwini Conservancies Forum. Its launch was enabled by a grant from eThekwini, the next phase was funded as a result of collaboration with researchers in education and social anthropology at Cambridge University. Subsequent support was facilitated through research into safe disposal of Absorbent Hygiene Products (disposable nappies and sanitary pads) for the National Absorbent Health Products Waste Task Team run by the National Department of Environmental Affairs, and funded through EDANA. This is a project about river cleaning – but funding was made available from various sources.

wide programmes. There are also opportunities for collaboration with programmes in other countries.

- Emphasis on livelihoods development (enterprise development and job creation) as a key mechanism through which projects are implemented, ensuring that the impact and benefits from this perspective is well-understood and quantified.
- Allocation of own resources to the cause, including quantification of these resources. This includes direct and "in-kind" resources (e.g., time of full-time employees).
- Demonstration of alignment of municipal objectives and the projects with national climate change and adaptation priorities and policies of South Africa.
- Demonstration of the scalability of projects, and their sustainability after the period for which external funding is provided.
- Operationalization with or through entities that have a track record in implementation and management of large-scale projects, with proven systems of accountability.

8.3.1 Overview of proposed funding strategy

The figure below is a simple illustration of a proposed funding strategy for the TRMP.

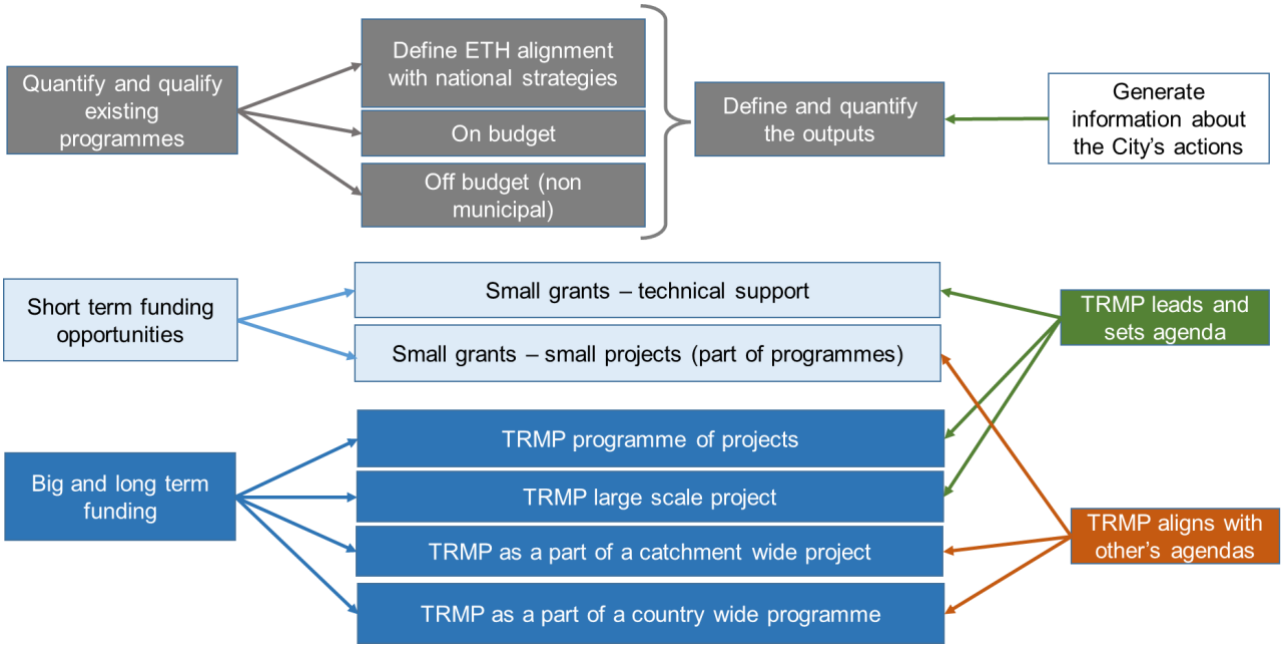

Figure 12. Proposed TRMP Funding Strategy

The blocks on the left can be described as the pillars of the strategy. The activities under each component should be ongoing, especially applying for an implementing small projects. The thrust of each pillar is described below.

Cutting across both types of opportunities are opportunities in which eThekwini sets and drives the agenda. For these, eThekwini defines the project based on its needs and priorities and seeks funding for its ideas. There are also many opportunities that eThekwini can tap into if it aligns itself with the agenda of other role players and designs project to fit the objectives to others.

Each pillar requires the time and energy of personnel that have the resources to collect data, consult and negotiate with stakeholders and funders and are given the time and space needed to write proposals, fill out application forms and respond to requests from donors. These people can be employed full time by the municipality or be part of a Non-Profit Company (NPC) specifically set up for this purpose.

8.3.2 Quantify and qualify on budget funding for TRMP programmes

Most donors require applicants to show co-funding when applying for funding. They also want evidence that the application for funding is aligned with existing national policies and strategies.

Therefore, one pillar of the strategy must be focused on quantifying and qualifying the municipality's investment in TRMP. This requires quantifying direct expenditures and in-kind contributions to TRMP programme and define and quantify the outputs as much as possible.

Show the alignment of these activities with IDP objectives (municipal strategies) and alignment of the IDP with national climate change strategies and national adaptation strategies and how existing funding contributes to these.

8.4 Short term funding opportunities.

These are opportunities for which the application process is short, the awards are relatively small and should be expended within two years. These should be accessed on an ongoing basis (over the long term, multiple short term funding opportunities should be accessed). Most of these awards are not larger than $300 000, although there are some that are larger.

There are two streams to look for –

- Technical and capacity building support and project preparation support. TRMP should use these funds to build the capacity of local organisations to apply for funding, manage funding and implement projects.
- Project funding to enable the TRMP to apply for opportunities for small projects that are part of a programme and/or funding for pilot projects.

The strategic objective of this stream is to (a) get money into projects fast which can (b) be used to demonstrate ability to implement and effectiveness of the interventions.

How this could work: To access small grant funding, the TRMP hub prepares a proposal for a project that contributes to TRMP objectives that is submitted to the International Climate Initiative (IKI) for a grant of up to EUR 200k for a project related to climate change and biodiversity. The funding would be disbursed and overseen by a German non-profit institution and transferred to a selected organisation to implement the project. The "contractual relationship" and reporting lines would be between Green Corridors and the German NPO. The TRMP hub provides technical guidance and advice from the side-lines.

8.5 Long term funding awards

There are a wide range of opportunities and the four streams proposed below are specific points on the spectrum of opportunities. These opportunities overlap and/or can support each other and are potential co-funding for each other. For these projects assume the proposal preparation, submission and review process takes at least two years and that funding is typically awarded over five to seven years. Funding awards will range from about $2million and can reach up to $30million. For the larger amounts, this is the total award and TRMP will get a portion of this.

- **TRMP programme of projects**: this is funding that is managed by an executing entity that makes awards to projects that align with an objective of the TRMP and are all implemented within eThekwini Municipality's boundaries. The executing entity is most likely to be a national organisation or entity like UNEP. Projects could be implemented by local NPOs/conservancies.
- **TRMP large scale project**: TRMP large scale project that is managed by a single entity (an accredited entity will play an oversight role), the scope of activities is likely to be narrow (e.g. just AIP removal that improves river functioning), but physical scale of impact is large.
- **TRMP projects that are part of catchment wide projects**: TRMP partners with other entities to apply for funding for a project that has catchment-wide impacts. The range of activities is narrow and impact is catchment-wide (e.g. AIP removal across the catchment, TRMP part is only AIP management in eThekwini Municipality).
- **TRMP projects that are part of a country wide programme**: a TRMP project/activity is part of a country wide programme that is led by a national department/entity. Such an option would be likely to fund a small component of the TRMP but being part of a country wide programme is valuable.

The figure below illustrates how the above strategy could be implemented over time, in line with the proposed institutional arrangements:

How this could work: For the first two categories of projects, eThekwini sets the agenda and determines the scope of these projects. All, or at least most, of the funding is spent on projects that are implemented in eThekwini, but eThekwini (or TRMP) does not necessarily have to play a leading role in managing the project as this could be done by a recognised or accredited entity such as DBSA or UNEP. For the second two categories, eThekwini (or TRMP) aligns itself and fits into an existing programme and/or a project developed by someone else.

The approach followed depends on the value of the grant sought and the donor requirement but could be as follows: TRMP organisation prepares a detailed proposal for scaling up aspects of the TRMP in consultation with eThekwini management. The proposal would be informed by and reference the feasibility studies already done, include a cost estimate of the resource requirements as well as detailed breakdown of existing funding for related activities including the time of City staff that support the programme, funding obtained through national programmes like EPWP and so on. The TRMP approach an accredited entity of the fund they want to approach to request their support in submitting the application to the fund (e.g. SANBI). If the nature of the project is aligned with the accredited entities work programme and personalities in the TRMP hub and the accredited entity do not clash, the accredited entity should support the application.

They will advise the TRMP hub on how to structure the institutional arrangements for project implementation and execution. This will most likely involve agreeing on an "executing entity", which would be an organisation like the DBSA or UNDP who will disburse funds and oversee project implementation. The accredited entity submits the proposal to the fund.

As much as entities like DBSA/UNDP may play the role of 'executing entity', the day to day management and oversight of implementation does not happen there. Therefore the hubs need to be appropriately resourced. A separate PMU or something similar, could play a specific support role for a specific time, associated with requirements of the 'executing entity'..

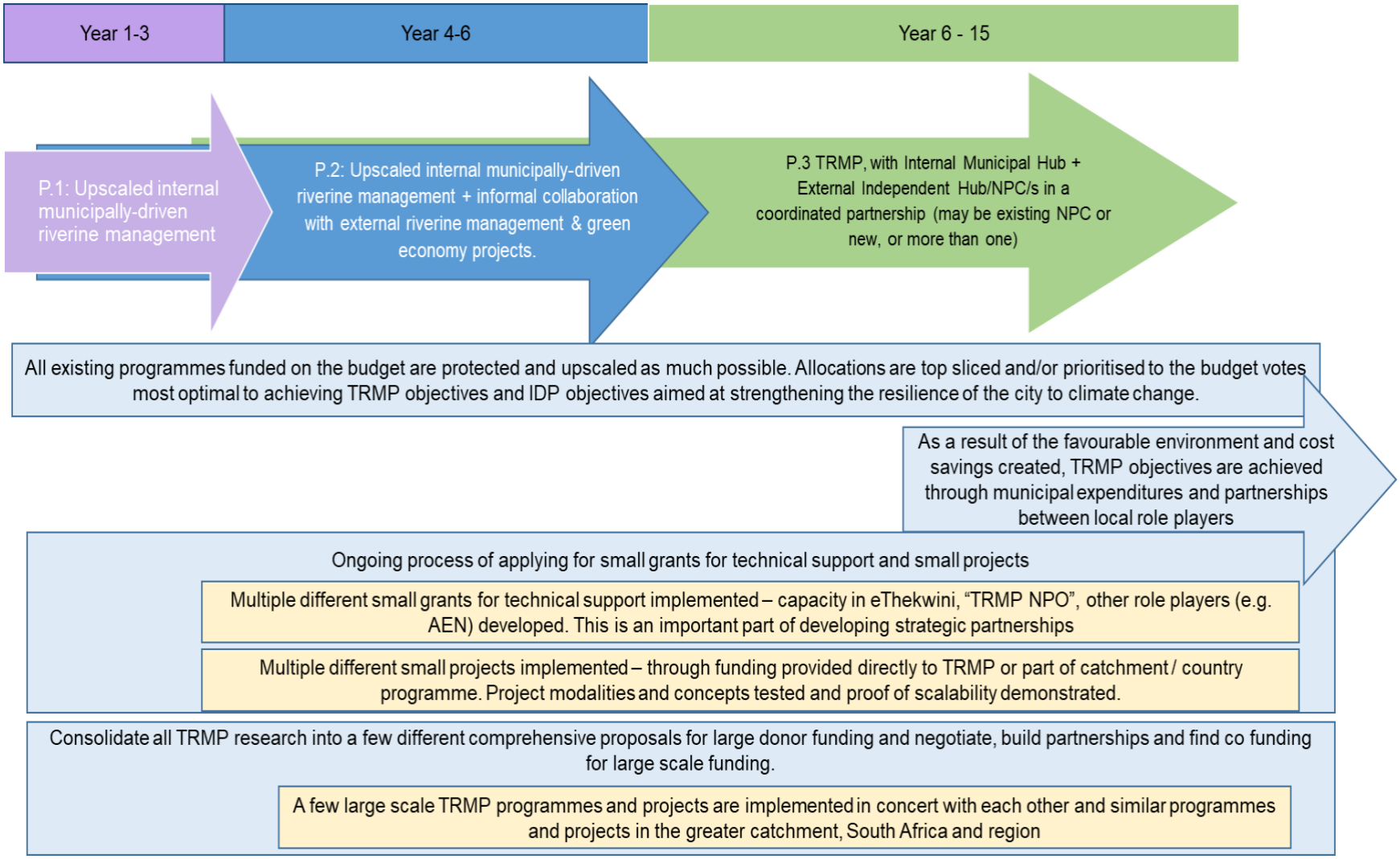

Figure 13. Possible TRMP funding strategy over time

8.6 **Summary of Opportunities to Access Resources for the TRMP**

The table below shows a snapshot of the information included in the Funding Spreadsheet in the Appendix, which contains extensive detail.

Table 21. Summary of resourcing mechanisms available to the TRMP

Mechanism	Source of resourcing
Municipal budget	Operational budget
	Capital budget
	Grant funding through partnerships
	Revenue from property levies
South African Funds that will support TRMP implementation	Green Fund
	The National Lotteries Commission
	WWF Nedbank Green Trust
South African governmental employment programmes	Social Employment Fund (under the Presidential Employment Programme)
	Expanded Public Works programmes
	Jobs Fund
	NRM ("Working for" programmes)
	Youth Environmental Service (YES) programme
	Groen Sebenza Programme
International Grant Funding (with a focus on climate change)	Green Climate Fund
	Global Environmental Facility
	Adaptation Fund
	IKI (International Climate Initiative): Thematic Selection grant
	IKI country calls (bilateral)
	IKI Medium grants
	IKI Small grants: International calls
Sources of technical support	IKI Small grants: Funding Institutions
	C40 Cities Finance Facility (CFF)
	Global Facility for Disaster Reduction and Recovery (GFDRR)
	develoPPP for jobs
Water Funds	The Nature Conservancy (TNC) Water Fund
	DBSA & KfW SADC Water Fund
Performance-based investment instruments	Climate and green bonds
	Sustainability bonds
	Pay for performance bonds
Water Stewardship	Alliance for Water Stewardship
Private sector investment	CSI/CSR funding
	Trust funding
Loan and equity financing	Loan financing
	Equity financing
Research funding	Water Research Commission
	National Research Foundation
	Local research institutions
	International research funding
Civil Society donations	Conservancy funds
	NGO sector
	Individual projects

8.7 Programmes Funded From the Municipal Budget

There are several key mechanisms through which the TRMP programmes are funded through the municipal budget.

8.7.1 Allocations to programmes on the municipal budget

Each year, municipalities go through a budget process during which they set out budget and revenue estimates over three years, in what is known as the medium-term expenditure and revenue framework. This a three-year expenditure framework, the first year of which becomes the approved annual budget, and the outer years are indicative allocations.

The Municipal Finance Management Act (MFMA) requires that the annual budget of a municipality must set out revenue and expenditure per "vote" of the municipality. It also requires a separate operational and capital budget. The eThekwini council approvals 12 separate budget votes when it approves the municipal budget. The budget votes are generally aligned with the organisational structure of the municipality and senior managers are responsible for ensuring programmes funded through a vote, or votes, they oversee are effectively implemented.

"Economic Development and Planning", "Community and Emergency Services" and "Human Settlements and Infrastructure" are Votes 7, 8 and 9 on the eThekwini budget. The department of "Parks, Recreation, Cemeteries and Culture" is a sub-vote of Vote 8. "Engineering", where the Sihlanzimvelo budget comes from is a sub-vote of Vote 9. The departments of Water and Sanitation are sub-votes of Vote 10 (Trading services).

The budget allocations to TRMP projects such as Sihlanzimvelo and the activities implemented by Green Corridors are a budget line or budget entry under their respective votes. Once the budget is approved by council, shifting funds between the budget votes requires the tabling of an adjustments budget and approval of council. An adjustments budget can be tabled at any time and there usually is a main adjustments budget tabled between November and January. Therefore, for instance, the managers of Sihlanzimvelo and Green Corridors are not able to shift voted funds from of these programmes to the other without approval of the council.

8.7.2 "Top-slicing" allocations

As mentioned above, when the municipal budget is tabled, allocations over three years are approved – the two outer years are indicative allocations. When the budget process begins, what were the two outer years in the previous year become the new annual budget and the second year of the Medium-Term Revenue and Expenditure Framework (MTREF). Typically, the second year of the MTREF is increased by a percentage value to become the new third year of the MTREF. At this point, this is known as the budget baseline.

Normally, negotiations and discussions during the budget process focus on the allocation of additions to the baseline. However, the municipality may recognise the strategic importance of an intervention that contributes to the mandates of other sections and that funds should be prioritised to that intervention. To make resources available the municipality may decide to 'top slice' allocations from certain budgets votes, or budget lines, and shift that money to the budget vote through which the strategic intervention is funded. This is often a more cost-effective way to achieve the mandate and overcomes challenges with coordination when resources are locked up in different silos.

For instance, to make funds available to scale up Sihlanzimvelo, there may be a decision to "top slice" resources from budget votes that benefit from clean rivers or have mandates associated with waterways, and allocate that top slice to the engineering budget so that it can be used to scale up Sihlanzimvelo, or a similar programme.

8.7.3 Transfers to non-profit organisations

Section 67 of the MFMA deals with "funds transferred to organisations and bodies outside government"[58], which allows municipalities to transfer funds to non-profit organisations (including non-profit companies), governed by a memorandum of agreement.

This arrangement is used to make transfers to Green Corridors for implementation of a number of programmes including TRMP-related projects. There are no hard and fast rules about what can be and cannot be funded through these arrangements, but there must be a council resolution approving both the amount and the programme to be funded through this arrangement.

An organisation receiving funds through a Section 67 arrangement with the municipality can raise additional funding to that which it receives from the municipality. In this way, it may evolve into something different from what it started as. The municipality cannot play a governance role in the implementing agency, however it can be an observer on a governing board, lending a degree of accountability to the arrangement.

This is a flexible mechanism that could technically be used to set up a new NPC, or support an existing institution, that, for example, serves the sole purpose of carrying out all the activities involved preparing proposals and applying for funds for the TRMP – such as preparing feasibility assessments, stakeholder engagements, writing proposals, consulting with entities accredited to large funding organisations and other project support activities.

8.7.4 Examples of municipal budgets allocated to TRMP-type activities

The TRMP activities funded through the municipal budget are shown in the list below, however only Sihlanzimvelo and Green Corridors receive ongoing funding from the municipal budget.

Sihlanzimvelo is funded off the operational budget of the engineering department. Due to its success its budget will be increased, partly funded through a top slicing of budgets from other departments. As discussed above, funds flow from the budget to cooperatives and through a tender to a project manager. Redundancy is built into the tender, so that programme implementation can be scaled up rapidly if additional funding is made available. The project manager is responsible for monitoring and reporting on the work of the cooperatives, who are paid by the municipality based on their performance.

Green Corridors is a non-profit organisation that receives grant funding from eThekwini Municipality Economic Development Unit and the eThekwini Transport Authority. Section 67 of the MFMA allows the municipality to make these transfers to the organisation, subject to a memorandum of understanding. Green Corridors was established to implement projects "which can help communities thrive in balance with the habitats around them. Programmes include improving green spaces through the removal of alien plants and litter, and clearing of these areas for multiple uses such as education, leisure and tourisms" (Green Corridors Annual Report, 2020).

[58] http://idc.treasury.gov.za/Documents/Policies/MFMA%202004%20Part%20I.pdf

Aller River Project (Phase 1), "received a generous grant of R600 000 from the eThekwini Municipality, as part of its commitment to Climate Change mitigation and responsible natural resource management"[59]. This was facilitated through a Section 67 process and a Memorandum of Agreement between the parties.

Wetland Rehabilitation in the uMhlangane River Catchment – was funded by the German Federal Ministry (BMZ) through a partnership between Bremen (Germany) and Durban under the "50 Municipal Climate Partnerships by 2015". This project involved a number of phases and complicated negotiations between the two cities and BMZ due to differences in budget cycles. However, funding was made available and, with much administrative pain, made its way from Germany and into projects on the ground. Under this project, the city employed contractors to level ridges into furrows to reactivate the wetland hydrology, entered into an MOA with Green Corridors for the employment of community members to remove alien vegetation from tributaries of the wetland and entered into an MOA with the Riverhorse Valley Business Management Association to employ community members to remove alien plants and plant indigenous plants within the level areas within the wetland.[60]. This was in addition to other funded projects that focused on new technologies for water quality monitoring.

Governmental programmes providing funds to municipalities. Examples of these are various EPWP programmes administered by different departments, which must comply with the EPWP guidelines issued by the Department of Public Works. At the core of these programmes are jobs created. Line departments can (and have) also accessed the 'Working on Ecosystems" programme from DFFE, as well as the newly launched Presidential Employment Stimulus Programme and Public Employment Programme (PEP) (funding EPWP type of projects). These provide funding for projects with job creation potential. See Section 8.8.1 for more information.

The Fire and Invasive Species Control Programme use the 'Igagasi Hotshots', from the nationally run Working on Fire programme to control Invasive Alien Plants in the municipality's open spaces. This programme is funded by the DFFE and implemented through a tender.

The following points are noted, referencing the way many municipal programmes are framed, and perceived[61]:

- Sihlanzimvelo is primarily an engineering project and led by that unit. Clearing the waterways of alien vegetation and solid waste is essential to ensuring the stormwater system operated and was less vulnerable to flooding, in an effort to protect roads infrastructure from damage and manage the maintenance effort. In this regard it has been a major success.
- Green Corridors is primarily an economic development project. Creating SMMEs to rehabilitate open spaces and create "pocket parks" especially in riverine areas, developing SMME tourism projects, as well as creating income generation opportunities through waste beneficiation supports livelihood development while also providing valuable ecosystems services.

[59] https://www.kloofconservancy.org.za/projects/take-back-our-rivers-project/
[60] https://skew.engagement-global.de/bremen-durban-south-africa.html
[61] This bears consideration, as it may help or hinder a programme or project.

- Green Corridors provides an example of an entity that is funded largely though a Section 67 arrangement with the eThekwini Municipality, but also gets support from external stakeholders who make direct financial contributions, and indirectly through sponsorships.
- It may be worth revisiting the framework agreement between the city and the Riverhorse Valley Business Management Association to see if there are lessons that can be learnt from this arrangement.

8.8 National Government Financing and Funding Options

This group of opportunities are national in origin and include both large scale and smaller opportunities. A number of them are effectively partnerships between government and fund donors or managers.

8.8.1 Programmes that fund job opportunities

National government runs a few programmes that eThekwini Municipality and/or organisations it partners with can access.

The Department of Forestry, Fisheries, and the Environment (DFFE) has the mandate to implement various Natural Resources Management projects and programmes. Among others, this comprise the so-called "Working for" programmes, as well as other programmes which can be relevant to the TRMP such as the Youth Environmental Service (YES) and Youth Jobs in Waste programmes and the Groen Sebenza Jobs Fund partnership project.

8.8.1.1 "Working for" programmes

The "Working for" programmes relevant to the TRMP include the

1. Working for Water (WfW), which aims to improve the integrity of natural resources by preventing new and emerging invasive alien plant problems and reducing the impact of existing priority invasive alien plants.
2. Working for Wetlands, which uses skills and capacity development, co-operative governance & partnerships, knowledge sharing and communication, education & public awareness to implement and ensure effective and sustainable wetland rehabilitation.
3. Working on Waste, which aims to protect environmental quality, create sustainable livelihoods through recycling of waste and the support of environmentally friendly waste disposal technology, and promote environmental education and awareness to communities.
4. Working on Ecosystems Programme, which aims to:
    - Improve watershed services through the restoration of watersheds.
    - Contribute to climate mitigation through the sequestration of carbon in the form of re-vegetating.
    - Contribute to adapting to the impacts of climate change and improving livelihood security by reducing the risk of natural disasters through the restoration of degraded habitats.
    - Unlock investments and operational resources for the improvement of ecosystem services.
    - Promote pro-poor economic development in rural areas.
5. Working for the Coast project, which implements projects which improves access to and along the coast, cleaning of the coasts, removal of invasive alien plants, rehabilitation of degraded areas, and monitoring and compliance.

An example of the Municipality accessing these programmes is already taking place in the Restoration Branch of the Environmental Planning and Climate Protection Department (EPCPD). This Branch manages a Working for Ecosystems programme which captures information about the number of workdays created. This is reported to the Department of Public Works and the city receives a financial reward for each workday created. This funding goes into the general revenue fund of the municipality.

8.8.1.2 The Youth Environmental Service (YES) and the Groen Sebenza Jobs Fund partnership project

These were initiated in response to the challenge of growing patterns in youth unemployment leading to major socio-economic challenges. The YES Programme involve unemployed young people in activities which provide environmental service that benefits the community, whilst also being provided with opportunities for personal development, accredited training and exit opportunities. The environmental services should meet a community need, fit within departmental objectives, and add value to the beneficiaries' development whilst providing employment, further training or self-employment by opening up business ventures as exit opportunities from the programme. Training should be conducted by a provider accredited by a Sector Education and Training Authority (SETA), Department of Education and Quality Council of Trade and Occupations (QCTO). The Youth Environmental Service is not a special employment programme or a training programme but includes service and skills development. The Groen Sebenza Programme, on the other hand, aims to grow a pool of young biodiversity professionals with the skills, confidence, and competence to secure full time jobs, enjoy meaningful careers and catalyse further job creation in the biodiversity sector. It promotes major skills development and job creation in mainly the biodiversity sector.

8.8.1.3 Expanded Public Works Programme (EPWP)

Under the Expanded Public Works Programme (EPWP), the municipality can earn an incentive for each work opportunity created in labour intensive programmes in specific (designated) sectors. To access the incentive, the municipality is required to report work opportunities using a methodology specified by the Department of Public Works. Under this incentive programme the municipality implements labour intensive projects and then later receives funding after it has reported the work opportunities created. eThekwini Municipality has experience of this facility.

8.8.1.4 The Presidential Employment Stimulus Programme and the Public Employment Programme

At the time of the research, the Presidential Employment Stimulus Programme was being accessed by the Municipality to fund EPWP-type of projects. These provide funding for projects with job creation potential. They are generally aligned with themes, so for example the Working for Water programme funds projects that create jobs removing alien invasive plants. The Public Employment Programme about to be operationalized in eThekwini will see thousands of unemployed individuals working mainly in ecosystem restoration for a period of five months in 2022. This work will be carried out in partnership with various organisations such as NGOs/NPOs (such as Green Corridors and Adopt-a-River) and conservancies through the KwaZulu-Natal Conservancies Association (KZNCA).

- A similar opportunity is available through the Social Employment Fund, which is a programme under Presidential Employment Programme. The Social Employment Fund is a new instrument to support social employment strategies. It is managed by the Industrial Development Corporation (IDC). The last applications for the SEF closed in December 2021.

Another funding window may open during the 2022/23 budget year. The emphasis of the SEF is creating work opportunities for unemployed people through various windows that serve the common good. Projects must be implemented by a Strategic Implementing Partner which are "any non-state organisation with a legally recognised form of registration"[62]. In addition, "A bid needs to be for a minimum of 1000 participants, with the proposed participation target reached within the first quarter of implementation. This can be implemented by a number of organisations who come together in one bid, but a Strategic Implementing Partner is needed for contracting purposes[63]." Successful applications should meet the following overarching criteria at a minimum:

- The work must serve the common good, which includes the following windows relevant to the TRMP:
    - Greening the environment.
    - Area based programmes that may include a cross cutting mix of initiatives.
- Work is part time.
- The work is labour intensive – 80% of costs must go to wage costs.
- Projects must be managed by experienced implementers, that:
    - Have the capacity to employ 1000 eligible participants at an average of 66 days per ordinary participant over 9 months.
    - Have a well-established monitoring and evaluation framework
    - Has annual financial statements for the last 2 years.

8.8.2 Green Fund

The Green Fund is housed in DFFE, but managed by DBSA. It is similar in nature to the international "Climate and other funds", but is presented here as it is a South African fund only open to South African entities.

[62] https://www.idc.co.za/sef/
[63] Ibid

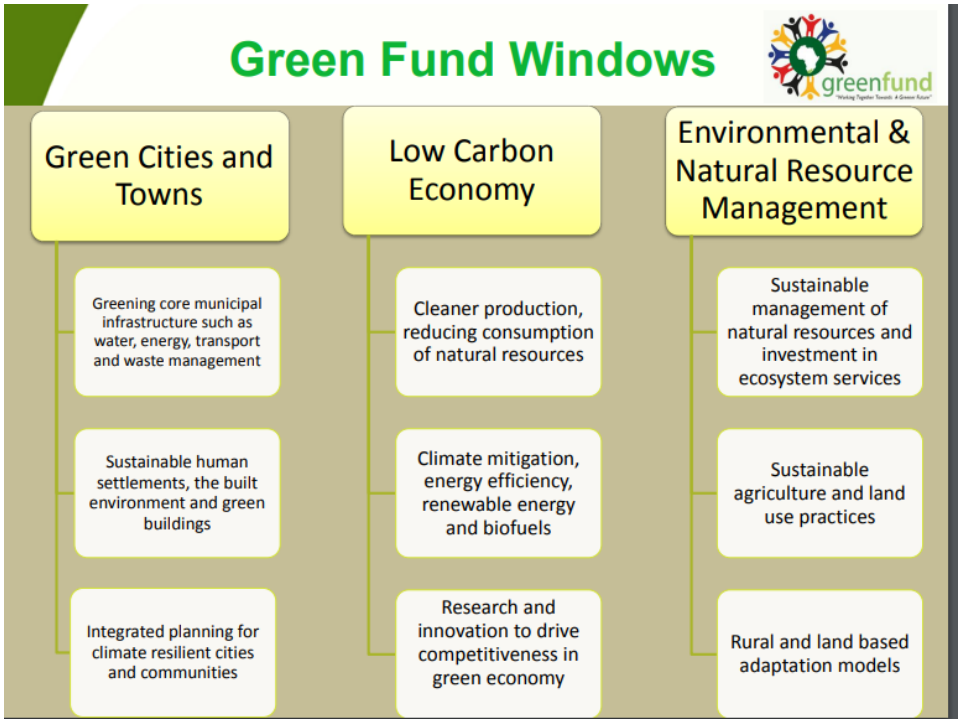

Figure 14. Green Fund Windows

The funding windows relevant to TRMP are:

- Green Cities and Towns (GCT).
- Environmental and Natural Resource Management (NRM).

The "ecosystem services" focal area under each is relevant. The GCT window is awarded to municipalities, municipal entities and enterprises on condition of support from a municipality. The NRM window is only open to non-governmental organisations. Examples of projects implemented in eThekwini are:

- Reforestation: To replicate and upscale the achievements of the on-going reforestation projects in eThekwini Municipality, which received just under R37 million (with eThekwini Municipality).
- Hammersdale Waste Beneficiation Centre, which received R29.6 million (with private company Use-It).

The eThekwini Reforestation Programme, in Buffelsdraai landfill, was funded through this window in its initial phases (it is now funded through a municipal budget line item). In the early phase, the project was co-funded by the Green Fund, eThekwini Municipality and DANIDA. Project partners include Environmental Planning and Climate Protection Department; Durban Solid Waste Department; Wildlands Conservation Trust; University of KwaZulu-Natal; African Conservation Trust.

The Hammarsdale Waste Beneficiation Centre was also funded by the Green Fund, but through the Green Cities and towns window.

8.8.3 National Lotteries Commission

The National Lotteries Commission describes itself as "the only National Regulator for lotteries and sports pools"[64]. It manages a large amount of money that is typically directed towards charities, arts and culture programmes as well as those in the sports and recreation sector. They do, however, have a category for Miscellaneous Purposes. This category fields applications from "non-profit organisations whose activities or projects fall outside the mandate of the Distributing Agencies for Arts, Culture and National Heritage, Charities, and Sport and Recreation[65]".

There is no public call for applications and therefore applicants may apply at any time. However, applicants are requested to ensure that there is a sufficient period between the submission of the application and the commencement of the project.

Aller River Project Phase 3 was funded by the National Lotteries Commission, which enabled the project to deepen its involvement in finding local solutions. This was from February 2018 to January 2019.

8.8.4 The Department of Trade, Industry and Competition (DTIC)

The DTIC was established after the merger of the Department of Trade and Industry and the Economic Development Department, and has the vision of a dynamic industrial, globally competitive South African economy characterised by meaningful economic transformation, inclusive growth and development, decent employment, and equity, built on the full potential of all citizens. It provides incentives to various enterprises, schemes, innovations, industries, and programmes to Broaden participation in the economy to strengthen economic development. These incentives, in relation to the TRMP, will be valuable to access when facilitating the establishment of SMMEs and research to develop technologies and markets for the circular economy.

8.9 Non-Governmental South African Funds

8.9.1 The Development Bank of SA (DBSA)

The DBSA is an African Development Finance Institution - a financial institution that provides risk capital for economic development projects on a non-commercial basis and plays a crucial role in financing private and public sector investments in developing countries, in the form of higher risk loans, equity positions, and guarantees - which is owned by the SA government. Their primary purpose is to deliver impactful development finance solutions that ignites transformative change. Their product solutions span all phases of the infrastructure development value chain from infrastructure planning and project preparation, across a range of investment financing and non-financing investments, to infrastructure implementation and delivery.

Palmiet Catchment Rehabilitation Project received grant funding on the back of a loan for hard infrastructure. In 2016 eThekwini entered into a 15-year loan agreement with the DBSA and the French Development Agency (AFD) for the Western and Northern Aqueducts project. This agreement was made possible through a grant contribution of R93m from Infrastructure Investment Programme for Southern Africa (IIPSA), funded by the EU and managed by DBSA. A portion of this grant (R5million)

[64] https://www.nlcsa.org.za/our-mandate/
[65] Ibid

The DBSA has seven focus areas:

- Local Government Support
- Energy
- Information and Communications Technology
- Transport
- Water and Sanitation
- Education
- Health

The DBSA focuses on climate change by sourcing funds to implement sustainable and environmentally friendly infrastructure solutions. They do so by being an accredited entity for the GEF and the GCF (see section 8.10.1). DBSA also manages the Green Fund (see section 8.8.2) on behalf of the DFFE. Furthermore, the DBSA, along with the DFFE, has set up Green Bonds, which is a unique, national fund that seeks to support green initiatives to assist South Africa's transition to a low carbon, resource-efficient and climate-resilient development path delivering high impact economic, environmental and social benefits. The DBSA also has a Climate Finance Facility which helps private companies with investments targeting infrastructure projects designed to mitigate the harsh change[66].

Apart from climate financing, the DBSA also work with local municipalities. The DBSA invest in the municipal debt market, through the support and expansion in debt maturities, enhancing secondary market liquidity, and encouraging innovation in lending instruments. The DBSA explores municipal infrastructure bonds, municipal bond underwriting, project finance and various contracting models as ways to encourage private investment in municipal infrastructure. A percentage of the DBSA profits is allocated towards a development subsidy in the form of grants and non-financial investments67.

The above may be relevant to the TRMP where infrastructure is involved, as is the case in Sihlanzimvelo.

[66] https://www.dbsa.org/article/role-development-finance-institutions-supporting-climate-change
[67] https://www.dbsa.org/sectors/local-government-support

8.9.2 The Private Sector

The private sector is an important resource that needs to be mobilised into supporting programmes like the TRMP. It is clear that degraded catchments, flood events, grey infrastructure damage and other impacts, even water security, that the TRMP aims to address affect the private sector in specific ways. The insurance sector, for example, has a strong vested interest in managing impacts of climate change related disasters. Of course, all business (large and small) should be seeing a clear link between the success of their operations and environmental threats.

Key stakeholders to engage with here are the NBI and SWPN[68], as well as other organisations that have worked closely within the water space with the private sector.

Precedent in eThekwini

In respect of riverine management, there is a limited precedent in eThekwini of private sector involvement. Two projects illustrate what has been done so far, but in both cases, private sector "partners" are not only local to eThekwini. AECI is a multinational with headquarters in Johannesburg, but a plant in eThekwini; EDANA is an international industry association, representing nonwovens and related industries. **Wise Wayz Water Care**, now known as PPP, which provided training and mentorship to volunteers to clean up a wetland was supported by the AECI. Initially a grant was provided up front to get the project up and running. AECI's annual contribution is paid out from the revenues of a trust held by the company. **Aller River Project (Phase 4)** of the project ran on a reduced budget and focused exclusively on solid waste and disposable nappies. Funding was provided by EDANA (the global organisation representing the non-woven industry). Phase 4 of project was completed at the end of March 2020 at which point the Municipality undertook to expand it further, but unfortunately the Covid

8.9.2.1 National Business Initiative

As an example of the above - the National Business Initiative (NBI) was established in 1995 with the view of mobilising the private sector into a broadly defined environmental protection mandate. This coalition is important to the TRMP in eThekwini (and wherever else similar programmes are implemented). The NBI describes itself as follows[69]:

The National Business Initiative (NBI) is a voluntary coalition of South African and multinational companies, working towards sustainable growth and development in South Africa and the shaping of a sustainable future through responsible business action, thereby demonstrating business action for sustainable growth.

One of their primary focus areas is environmental sustainability, within which they identify the following mandates of their work[70]:

- Revive the emphasis on the environment as a strategic priority for business;
- Build the capacity of our members to engage with environmental issues and to respond through effective management practices;
- Support a collective governance approach to addressing sustainability challenges that require multiple role-players to interact;
- Facilitate the implementation of collaborative projects and practical solutions in areas related to water, climate change, energy, waste, biodiversity and the green economy. The

[68] This structure does not provide funds and is described in more detail in the chapter on partnerships.
[69] https://www.nbi.org.za/
[70] Ibid

waste and biodiversity work areas are embryonic and currently predominantly implemented by providing support to other organisations working in the same area.

Within this focus area, NBI has identified as key the following sub-areas:

- Climate Change.
- Water.
- Energy.
- Offsets, biodiversity & waste.

The membership that have lent their support to NBI is wide-ranging, represents all sectors and includes South Africa's biggest corporates (such as Anglo American, Barlow World, de Beers, Aspen, Gridrod and many others), the insurance sector (Old Mutual, Discovery, Santam, Hollards, Momentum, Sanlam, etc.), the energy giants (Shell, Exxaro, Engen, etc), retailers (Woolworths, Spar, Clicks), all the major financial institutions (First National Bank, Deloittes, Nedbank, KPMG, etc), and a number of learning institutes (Stellenbosch University and the University of the Witwatersrand). The following infographic illustrates the NBI membership.

Figure 15. NBI membership

For the TRMP, the membership of NBI represents an important resource. These entities are already sensitised to the centrality of environmental integrity to their own interests. Recent flood damage in KwaZulu-Natal will underline this dramatically for especially the insurance and fuel supply value chains.

8.9.2.2 Urban Improvement Precincts (UIPs)[71]

Urban improvement precincts and management associations are set up to work against urban decay which negatively impacts on property values, businesses, investor confidence and quality of life. They are essentially special rating areas in which all property owners agree to pay a surcharge on their property rates. This surcharge is pooled and managed by an entity that manages the public spaces in a designated area. This management can include hard infrastructure (streetlights, etc) or

[71] See for an example https://umhlangauip.co.za/site/

green infrastructure (parks, conservancies, etc.). Precincts are set up for a variety of context-specific reasons, but generally happens in one of two ways:

3. There's a development framework that needs to be approved by the city, which becomes the precinct plan. This is very defined.
4. A community of residents or property owners of businesses may decide that they want to manage a defined area through an urban improvement precinct. A UIP of this nature will usually partner with the municipality.

The benefits of a UIP are that it is a sustainable funding mechanism with the financial responsibility equitably shared by precinct members. With UIP regulation governed by the Municipal Property Rates Act of 2004, all property owners within the UIP boundaries are compelled by the law to contribute. Being an independent and privately funded entity, means the UIP is directly answerable to its property owners, ensuring responsive service delivery. The UIPs are recognised by the municipality as an official 'service provider' to public areas, this status provides significant leverage in optimising municipal service delivery. Furthermore, the UIP actively participates in the Municipal Planning Forum to ensure that property owners' interests are brought to the fore at the planning phase of public area infrastructure. Importantly, the UIP experience gained from servicing public areas is fed-back into design phase of upgrades with the aim of ensuring functionality and aesthetic design which is cost effective to service and maintain. As a municipal-recognised legal entity through which issues of common interest and concerns can be addressed, the UIP is able to leverage costs and service levels with private sector service providers such as security, landscaping etc[72].

There are already a number of UIPs in Durban. The UIPs incorporating green infrastructure (whether it includes streams, parks, unused open spaces, or nature reserves) are doing so very successfully. Examples of these are the uMhlanga Urban Improvement Precinct, the Sibaya Precinct and the Bridge City precinct. In all of these, the UIP includes or borders a natural space, and the entities play an active role in implementing nature-based solutions – many in partnership with the Municipality. The Giba Gorge Special Ratings Area (SRA) is the first explicitly environmental SRA in Durban. There are challenges with SRAs, often partner and location specific. It is important to learn from past lessons of these various examples. Having noted that, these types of entities hold promise for the TRMP as a partnering mechanism with sustained funding. It is also an important opportunity to engage the private sector in riverine management.

8.10 International Funds

This group of funds are located internationally, and are typically large-scale, although some of them have smaller grant facilities within their ambits. Given that the driving focus of the TRMP is climate change adaptation and mitigation to build resilience, the most likely funds are those that have made this focus core to their mandates. The design of the TRMP is well-aligned to these climate fund opportunities.

[7272] https://umhlangauip.co.za/site/about/

8.10.1 Climate funds

This is a complex landscape, and the suite of opportunities is broad. There are many potential sources of funding for the TRMP from funds that are colloquially referred to as climate funds. "Climate funding" is provided for mitigation and adaption activities.

Mitigation refers to avoiding and reducing emissions of greenhouse gases. Adaptation refers to actions taken to change our behaviours and systems to protect them from the effects of climate change.

While both adaptation and mitigation strengthen our resilience (ability to respond) to climate change, adaptation activities build resilience from the short term - and can even be immediate - onwards whereas the resilience benefits of mitigation activities taken today will take a few years to be visible. So even though adaptation and resilience are closely associated with each other, some "climate" funds support mitigation activities only and others support adaptation activities only. Some are cross cutting and support both. To confuse matters more, some nature-based solutions are seen as both mitigation (trees capture carbon) and adaptation (strengthening indigenous forests mitigates the impact of flooding).

There are funds relevant to the TRMP that fund activities based on their environmental benefits. These activities are likely to have both adaptation and mitigation benefits, but the funding is provided in response to a different motivation (e.g. biodiversity preservation or environmental restoration). An important layer are the funds that support projects based on the number of jobs or work opportunities they create. The most relevant of these are South African public sector works programmes.

"Climate financing" generally refers to the raising of funds to be invested in mitigation that reduce emissions and carbon capture. TRMP activities do not *directly* meet the criteria of these opportunities, but interventions can be framed to present those criteria as part of a bundle of benefits. The terms "sustainability funding and financing" is another category or description of financing and these more likely refer to activities related to mitigation than they do building adaptation and resilience which is achieved through the kind of projects envisaged by TRMP.

The diversity of activities that fall under the TRMP means there are potential opportunities from funds that seek to fund activities that:

- Contribute to adaptation to climate change.
- Contribute to mitigation in the face of climate change.
- Preserve and protect ecosystems.
- Restore degraded ecosystems.
- Employ people and create work opportunities.
- Educate people in order to promote behaviour change in ways that reduces impacts that contribute to climate change.
- Do a few or all the above.

It is important to frame applications for funding in line with the interests of funders. As many of the TRMP have multiple benefits they have the potential to receive funding from multiple sources.

A feature of many funds – especially international funds - is that they require co-funding. The TRMP is well positioned to take advantage of this. Firstly, the point that is made above about their potential appeal to a variety of funders, or the potential to meet the funding criteria of multiple donors. This means that most individual TRMP projects can meet this co-funding requirement by

receiving funding from a variety of donors. Secondly, funding that is allocated to or currently being spent on related activities in the municipal, provincial and national budget all qualify as co-funding. So, for example, planned allocations on eThekwini's budget for Sihlanzimvelo can count as co-funding.

There are complex processes, *some of which are burdensome and involve long time frames, involved in applying for funding.* Submitting applications for funding typically require working through "National Designated Authorities" and/or "Accredited Entities" (or similar). National Development Agencies (NDA) are the national departments the funds interact with and have to approve of applications before they are submitted. Accredited entities are accredited by the funds to support and finalise applications before they are submitted. Each fund has its own process: some require the proposals to go through a few review and approval steps before award decisions are made, others involve shorter time frames. With some funds the process is affected depending on the size of the award. Any application requires a detailed proposal that explains and justifies the scientific and other objectives of the proposal, quantifies the climate rationale and includes a detailed and costed Implementation Framework.

There are many potential opportunities for funding the TRMP as it achieves many objectives.

The Global Climate Fund (GCF) and Global Environmental Facility (GEF) both require that the funds requested from these facilities are a small proportion of the total project costs. One can expect that the co-funding on a GEF project should be at least four times the funding that is sought. If that ratio is higher the chances of receiving funding are better. Officially, there are a range of different sources of funding that fit the description of "co-funding" including loan financing, funding from other "climate funds", in-kind resources (e.g. time of civil servants) and budgets allocated by government.

The TRMP aims to "protect and enhance the ecological health and value of eThekwini's rivers and catchments for the benefit of current and future generations." So, while the climate rationale for the TRMP is convincing enough to make this a "climate change" programme – e.g. that increased rainfall is exacerbating flooding – there are a variety of activities across multiple different sectors that can "protect and enhance the ecological health of rivers and catchments".

In looking for options for funding for the TRMP, the following lenses were applied:

- Funds that support both mitigation and adaptation – attention was directed towards adaptation activities.
- Always looked for funding for ecosystem-based adaptation and nature based solutions.
- If resilience or building resilience to climate change was a focal area it was reviewed.

Note: There is a lot of work under headings of cities, buildings, urban infrastructure which are too indirectly related to TRMP and thus did not form part of this review. Most of these focal areas relate to the energy efficiency of urban spaces and/or building hard infrastructure that is resilient to climate change. If ecosystems-based adaptation and nature-based solutions were focal topics then the funding opportunities could be expanded. These options should not be ruled out in specific situations and project identification.

8.10.1.1 Green Climate Fund

The Green Climate Fund (GCF) seeks to have an impact cross eight result areas, four of which are focused on mitigation and the other four on adaptation.

The TRMP aligns with the following adaptation results areas:

- Livelihoods of people and communities.
- Infrastructure and built environment.
- Ecosystems and ecosystem services.

The TRMP programme ticks the boxes for the GCF, but there a wide range of factors that affect whether applications will be successful. In respect of what is forms part of the programme to be funded, questions that need to be clearly answered are:

- How is climate change making this problem worse?
- Why is GCF the appropriate funder of the project?
- Why can't the municipality fund the project?

GCF will favour projects that can unlock private funding. Given of the amount of work involved in applying for GCF funds, the DBSA prefers to raise funding for programmes than for projects, i.e. scale is important. A typical application to GCF is for between $55m and $100m, which DBSA will at least match. The selection of the correct accredited entity is critical – for instance, DBSA likes to support applications with loan funding rather trying to find other sources of grants, which other entities may be better at doing.

Table 22. For and against a GCF application

Arguments in favour of approaching GCF	Arguments against approaching GCF
They like green infrastructure and ecosystem-based adaptation; TRMP aligns with many of the GCF results areas; existing research will help get the process started.	If the City carried out its mandates, enforced legislation that it should, would the project be necessary? The counter argument to this is that even if the City did deliver on its mandate, the TRMP provides a powerful climate resilience/adaptation benefit.

Thought needs to be given to which accredited entity to approach. The kind of projects they like to apply for, the kind of support they will give to prepare the proposal and their general interest in the topic – these all affect the likelihood of them starting the discussion.

The work already done on the TRMP to build the business case will work in the Municipality's favour and reduce the total time required to complete a proposal. However, even with the work done already, the quickest turn around for funding will be two years from the start of process. It can very easily take longer.

The application process is costly. The costs of the process and the likelihood of success needs to be weighed against the value of the likely award.

The data in the table below is taken from the GCF website where they list all the accredited entities. Only those entities who work in South Africa and who work on projects or programmes that are like the TRMP are included. The projected cost shows the total project cost, so this amount includes co-funding, which could be in the form of grants from other funds, funding off the municipal budget or loan finance.

Table 23. GCF Accredited agencies

Accredited Entity	Projected project cost	Roles that the entity is accredited to perform	Suitability for TRMP based on existing GCF projects
African Development Bank	Large $250m	Project management, grant award, loan, equity, guarantee	Weak – favour clean energy and low carbon development
Conservational International	USD 50m to USD 250	Project management, grant awards	Weak - ecosystem based adaptation with agriculture focus
GIZ	$50m - $250	Project management, grant awards	Medium – emission reductions, resilience through water resource management
DBSA	$250 m	Project management, grant award, loan, equity, guarantee	Weak – DBSA climate work programme has a strong clean energy focus
International Union for Conservation of Nature (IUCN)	$50m - $250m	Project management, grant award	Strong - they focus on ecosystem-based adaptation
SANBI	$10 to $ 50m	Project management, grant award	Good – SANBI GCF funding framework aligns with TRMP
UN Development Programme (UNDP)	$50m - $250m	Project management	Medium to good - does a lot of adaptation projects
United Nations Environment Programme (UNEP)	$10m - $50m	Project management, grant award	Medium to good - – has ecosystems based adaptation focus
WWF	$50 - $250m	Project management, grant award	Medium – strong ecosystem services focus, but limited projects

Note: The suitability is based on quick reading of the description of the projects and projects the accredited entities have worked on with the GCF. The DBSA have facilitated GCF funding for climate change mitigation (mostly related to clean energy) in South Africa.

SANBI is in the process of "working with stakeholders to develop a pipeline of projects proposals for submission to the GCF". Two (out of three) are relevant to and/or aligned with the TRMP:

- **Scaling up ecosystem-based approaches to managing climate- intensified disaster risks in vulnerable regions of South Africa**. On 29 October 2021, the SANBI application for project preparation funding was approved for this project. This has an anticipated grant value of $20m. "The proposed project will scale-up ecosystem-based approaches to buffer the impacts of climate-intensified extreme events and enhance the adaptive capacity of vulnerable communities."[73] EThekwini has the characteristics that make it a potential site for this project.
- **Ecosystem-based Adaptation for Water Security in South Africa**. The third concept note for this has been prepared. The project aims to secure and safeguard the resource base and strengthen water security in South Africa's Strategic Water Source Areas. SANBI is

[73] https://www.sanbi.org/biodiversity/science-into-policy-action/nie-adaptation-fund/green-climate-fund/

anticipating $30m in grant finance from the GCF. The project will be led by the DFFE and the Department of Water and Sanitation. The focus of this project is upstream of TRMP's areas of work, but there are potential data systems development and partnership synergies.

The funding landscape shifts quite regularly, and rules change with each replenishment cycle and what was written or experienced a few years may no longer hold. While on paper, any organisation in South Africa could approach any of the above accredited entities and request them to support submitting a proposal to the GCF, it seems from discussions with various role players that DFFE lays out the priorities for climate funding and local organisations need to align their proposals for funding with these priorities.

The figure below shows how the TRMP could access funding from the GCF:

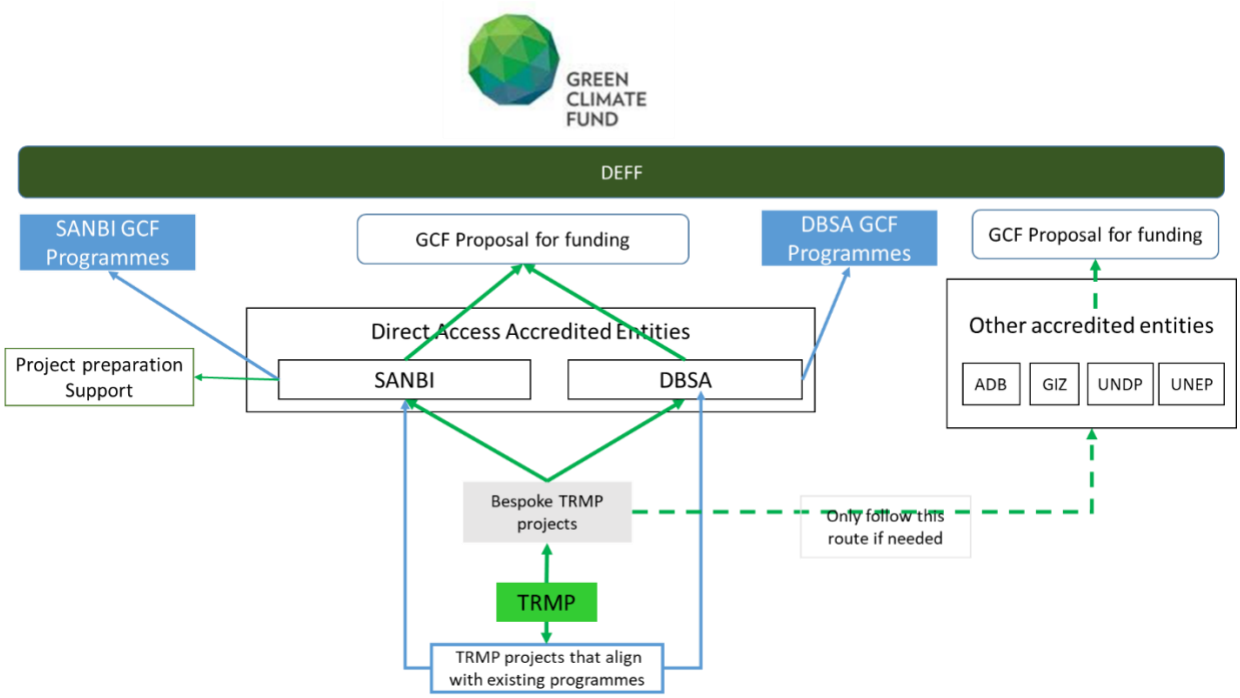

Figure 16. GCF application process

8.10.1.2 Global Environmental Facility

The Global Environmental Facility (GEF) operates in four-year funding cycles and is in the process of finalising the programming frameworks for GEF-8, which will span from July 2022 to June 2027. According to the GEF-8 Strategic Position Framework (January 2022)[74] GEF investments should lead to transformational change, as defined by the GEFs Scientific and Advisory Panel "the GEF should require that a transformative investment involves a pathway to durable change at a sufficient scale to deliver a step improvement in one or more global environmental benefits (GEBs)."

The seriousness of the Covid-19 pandemic is recognised in GEF-8 programme and the need to address factors "underlying the increasing number of zoonotic diseases", which includes "natural ecosystem degradation and destruction." While indirect, this represents an opportunity for TRMP-type interventions.

[74] https://www.thegef.org/council-meeting-documents/gef-8-strategic-positioning-framework-0

The GEF-8 strategy identifies cross cutting themes and levers which need to be integrated into planning. The seven cross-cutting themes are: gender responsive approaches, private sector engagement, nature-based solutions, circular economy development, resilience-building, environmental security, and behaviour change. All of these are relevant to TRMP, and some create specific opportunities for TRMP projects. In addition to these direct opportunities, the strategy also targets the following levers, especially useful for framing applications: governance and policies, financial leverage, innovation and learning, and multi-stakeholder dialogues.

Extracts of the descriptions of the goals and objectives of the five focal areas from the strategic position framework relevant to the TRMP are shown below[75].

Table 24. GEF goals and objectives of the five focal areas

Focal area	Objectives and direction according to GEF 8 planning
Biodiversity	GEF 8 goal for focal area: globally significant biodiversity conserved, sustainably used, and restored. Supported objectives: 1) to improve conservation, sustainable use, and restoration of natural ecosystems; 2) to effectively implement the Cartagena and Nagoya protocols; and, 3) to increase mobilization of domestic resources for biodiversity
Climate Change	Pillar one Investments in this area will harness the full potential of Nature-based Solutions
Land Degradation	This focal area focus on addressing land degradation in areas where agricultural, forestry and rangeland management practices underpin livelihoods of rural communities, smallholder farmers and pastoralists.
International Waters	Delivering ecosystem status changes in marine and freshwater systems, requires working at all scales, with a wide stakeholder group, in the public and private sectors and across the watershed from source-to-sea and beyond
Chemicals and Waste	Three objectives of the focal area are 1) creation, strengthening and supporting the enabling environment to transform the manufacture, use and sound management of chemicals and to eliminate waste and chemical pollution, 2) prevention of future build-up of hazardous chemicals and waste in the environment, and 3) elimination of hazardous chemicals and waste containing or that can emit hazardous chemicals from the environment.

The biodiversity focal area is most relevant to the TRMP and there are aspects of the Climate Change and Chemical and Waste focal areas that overlap with and/or are relevant to activities that are needed to achieve TRMP objectives.

In most cases, the GEF provides funding to support government projects and programmes. Government decides on the executing agency (which can be an NPC or private company). The project must be driven by the country, consistent with national priorities and support sustainable development. Projects must contribute to the objectives of multi-lateral environmental agreements and are aimed at tackling the drivers of environmental degradation in an integrated fashion. GEF financing is only provided for agreed incremental costs on measures that achieve global environmental benefits.

[75] Ibid

GEF supports four different modalities of projects. GEF's project financing for full-sized projects (FSP) is more than $2million and GEF provides up to $2 million for medium sized projects (MSP). GEF supports enabling activities for the preparation of national documents, which is not relevant to TRMP. Lastly it supports programs aimed at achieving global impact[76], which are led by development partners. Through the sustainable cities programme, UNEP and DBSA received $9 million in GEF funding for a project on lower carbon consuming infrastructure.

GEF provides Project Preparation Grants (PPG) funding to support the preparation of Medium-sized Project (MSP) and Full-sized Project (FSP) – funding ranges from $50 000 to $300 000 depending on the size of the project.

GEF Agencies create project proposals and then manage these projects on the ground. In so doing, they help eligible governments and Non-Governmental Organizations to develop, implement and execute their projects.

The projects listed in the table below are taken from the GEF database of projects. A filter was applied so that only projects carried out in South Africa were selected. This includes projects in which South Africa is one of a few countries where the project was implemented and includes a mix of completed and ongoing projects. If project documents were readily accessible through the links on the database these were scanned. The period from the proposal been received by GEF to approval for implementation for most projects is about two years. It is not known how much time was spent preparing the first submission to GEF.

The column on the right shows the contribution to total project costs from GEF and co-financing amounts (these need to be added to estimate the total project cost). Note that the co-financing amount is usually more than seven times the GEF grant.

Table 25. GEF-funded projects in South Africa

Agency	Relevant projects	GEF Grants
DBSA	Unlocking Biodiversity Benefits through Development Finance in Critical Catchments	GEF $7.2m, co-financing $48.6m
	Environmentally Sound Management and Disposal of PCBS (chemical waste).	GEF $8.3m, co-financing $56,4m
UNEP and DBSA	Building a resilient and resource-efficient Johannesburg: Increased access to urban services and improved quality of life.	GEF - UNDP $3.9m GEF -DBSA $4.1m Co-financing $124.4
UNEP	Support to the Orange-Senqu River Strategic Action Programme Implementation	GEF - $10.8m Co-financing $121m
	Project for Ecosystem Services (ProEcoServ)[77]	GEF $6.9 Co-Financing 19.6
	Development of Best Practices and Dissemination of Lessons Learned for Dealing with the Global Problem of Alien Species that Threaten Biological Diversity	GEF $750k Co-financing $3.98

[76]https://www.thegef.org/newsroom/blog/integrated-programming-global-environment-facility-learning-gef-6-iap-programs

[77] Project objective was: Reduced threats to globally important biodiversity through integrating the sustainable use of biological resources and ecosystem services into national decision making and development approaches

UN Industrial Development Organisation	Promoting Organic Waste-to-Energy and other Low-carbon Technologies in SMMEs Accelerating Biogas Market Development	GEF - $4.2m Co-financing $41.9m
	Greening the COP17 in Durban	GEF $1m Co-financing $1.35
UNDP	Mainstreaming Biodiversity into Land Use Regulation and Management at the Municipal Scale	GEF $8.2 Co-financing $50.6
	Reducing Disaster Risks from Wildfire Hazards Associated with Climate Change	GEF $3.5 Co-financing $30.9
	Conservation and Sustainable Use of Biodiversity on the South African Wild Coast[78]	GEF $6.5 Co-financing $24.3
World Bank	Development, Empowerment and Conservation in the Greater St Lucia Wetland Park and Surrounding Region	GEF $9m Co-financing $12.7

Projects were deemed relevant if they included activities that could in some way contribute to achieving TRMP objectives. This contribution should be evident in the name of many of the projects. Where this is not the case, projects were selected because one or more of the following was an element of the project, which are relevant to the TRMP:

- Research and data collection and/or development data reporting systems on the status of river and wetland health.
- Planning and/or building planning capacity to mainstream biodiversity preservation into regulatory and planning systems.
- Empowering local communities to protect biodiversity.

There are a variety of elements to the existing TRMP projects and there is an aspect or element to all the projects in the above table that can be leveraged to positively impact on the restoration of riverine ecologies.

There is a diversity of co-financing arrangements including loan financing, grant funding from other climate funds or similar, time (salaries) of officials working in government departments, operational budgets. It appears that planned budgets for Sihlanzimvelo could qualify as co-financing.

The project Ecological Infrastructure for Water Security Project (EI4WS)[79], which is being implemented in the uMngeni River catchment and leading to the establishment of an non-profit company that could be a model for an entity that manages aspects of the TRMP going forward, is part of the project "Unlocking Biodiversity Benefits through Development Finance in Critical Catchment" in the table above[80].

The figure below provides a simplified overview of the opportunities for accessing funding from the GEF.

[78] Included because it deals with developing protected areas on communal land
[79] https://www.sanbi.org/job/ecological-infrastructure-for-water-security-project/
[80] Note that EPWP and budget allocations to the national department are used as co-financing

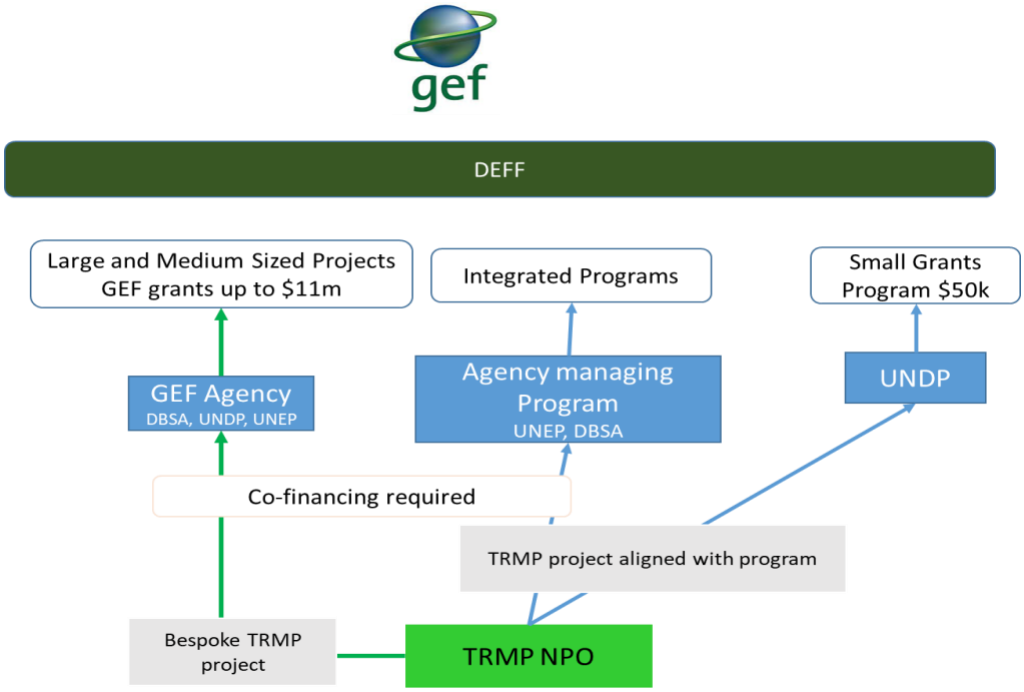

Figure 17. GEF application process

Least Developed Countries Fund and Special Climate Change Fund

The Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF) are managed by the GEF. The is LCDF "the only facility exclusively dedicated to helping these countries adapt to new climate realities" and the SCCF's "main goal is to facilitate the creation of strong, climate-resilient economies and communities by helping countries address a range of barriers".

The project on reducing disaster risks from fire shown in the above table is funded from the SCCF. No projects in South Africa have been funded through the LCDF. It is not clear if there is any benefit for eThekwini to approach these funds differently to how it would approach the GEF.

GEF Small Grants Programme

According to the GEF website[81] the GEF Small Grants Programme (GEF SGP) is implemented by the United Nations Development Programme (UNDP) and provides financial and technical support to communities and Civil Society Organisations (CSO) to meet the overall objective of "global environmental benefits secured through community-based initiatives and actions". The SGP funds grants up to $50,000, although the average is around $25,000. The SGP provides a maximum of $150,000 for strategic projects, which allow for scaling up and replication of successful approaches, covering a large number of communities within critical landscapes or seascapes.

In the last funding cycle, UNDP made calls for projects in the Vhembe Biosphere Reserve and is expecting to make calls for projects related to "wildlife economy projects" when the next round of cycle of funding is made available.

Although the structure of the SGP would suit funding one or two stand-alone projects within the TRMP programme of projects, the focus of the SGP in South Africa is not aligned with the TRMP.

[81] https://www.thegef.org/what-we-do/topics/gef-small-grants-programme

8.10.2 The Climate Investment Funds (CIFs)

This is administered by the World Bank in partnership with regional banks, including the African Development Bank (AfDB). One area of work of the funds is climate resilience and some of the current projects supported under this area of work have synergies with the TRMP.

However, in South Africa, all the projects funded from the CIFs are focused on clean energy[82].

8.10.2.1 Adaptation Fund

"The Adaptation Fund finances projects and programmes that help vulnerable communities in developing countries adapt to climate change. Initiatives are based on country needs, views and priorities[83]".

Grant awards for projects since 2010 have ranged from $10 000 up to $14 million. All projects larger than $10 million have been regional projects, but there are many country projects in the $8 million to $10 million range. It is notable that the Adaptation Fund does not require co-funding. The two Adaptation Fund projects that have been implemented in South Africa received $2.4 million and $7.5 million. The duration of most projects is between four and six years.

The Department of Environment, Forestry and Fisheries is the national designated authority and South African National Biodiversity Institute (SANBI) is the accredited national implementing entity. Designated authorities endorse proposals by "national, regional or multilateral implementing entities for adaptation projects and programmes".

The Fund is financed largely by government and private donors, and also from a two percent share of proceeds of Certified Emission Reductions (CER) issued under the Protocol's Clean Development Mechanism projects.

Project areas of the Adaptation Fund are: Agriculture; Coastal Zone Management; Disaster Risk Reduction; Disaster risk reduction and early warning systems; Ecosystem based Adaptation; Food Security; Forests; Multi-sector Projects; Rural Development; Urban Development; Water Management

The Adaptation Fund has supported two projects in South Africa:

- **"Building resilience in the greater Umngeni Catchment"** has many synergies with the TRMP. The uMgungundlovu District Municipality is the Executing Entity (EE) for the project with overall responsibility for project implementation, including project and financial management. It appears that UMDM started conceptualising the project and commissioning research to prepare the application in 2011 and funds were awarded in 2015 (the strategic environmental assessment was submitted in 2013 and funding approved, of $7.5million, for disbursement in 2015 through to 2019).
- **The "Community Adaptation Small Grants Facility project**[84]" provided small grants to rural communities to implement tangible climate change adaptation responses that were identified locally. Communities, from two districts, could apply for grants across three investment windows (Climate-Smart Agriculture, Climate Resilient Livelihoods and Climate

[82] https://www.climateinvestmentfunds.org/country/south-africa
[83] https://www.adaptation-fund.org/about/
[84]https://www.sanbi.org/wp-content/uploads/2021/10/Community-Adaptation-Small-Grants-Facility-project-An-Overview.pdf

Proof Settlements). There were various levels of governance in this project with SANBI acting as secretariat to a body of mostly national departments that approved proposals, an NPO that was supported by a Project Advisory Group acted as the executing entity and a few facilitating agencies helped with project implementation. Although there are no direct synergies between these projects and TRMP, a similar institutional approach to funding a set of catalytic projects that all contribute to the TRMP objectives could be taken.

The following points from Adaptation Fund instructions on applying for funds are interesting and relevant for the TRMP[85]:

1. Applications for funding can be for a project or a programme. The projects (in a programme) must have synergies in their objectives and implementation. A programme may cover more than one sector and geographic location and usually engage multiple partners and stakeholders.
2. A concrete adaptation project is defined as "a set of activities aimed at addressing the adverse impacts of and risks posed by climate change. The activities shall aim at producing visible and tangible results on the ground by reducing vulnerability and increasing the adaptive capacity of human and natural systems to respond to the impacts of climate change, including climate variability"[86].
3. The Adaptation Fund **does not require co-financing**. The fund does allow for projects to be implemented alongside projects funded by other donors, but the proposal must **show that the impact of the activities funded by the Adaption Fund are not reliant on any other funding.**
4. The adaptation benefits achieved with the help of the project/programme should be sustained after its end and should enable replication and scaling up with other funds after its end.

Projects funded through the Adaption Fund must align with the Fund's results framework, which is structured around eight outcomes. The outcomes most relevant to the TRMP and their associated outputs and indicators as shown in the Strategic Results Framework (Amended March 2019) are shown below.

[85] Instructions for Preparing a Request for Project or Programme Funding from The Adaptation Fund. Annex 5 to OPG Amended in October 2017. Accessed from https://www.adaptation-fund.org/apply-funding/project-funding/project-proposal-materials/ February 2022.

[86] https://programme.worldwaterweek.org/Content/ProposalResources/PDF/2020/pdf-2020-9467-3-Adaptation%20Fund%20Innovation%20Webinar%20Slides_part%201.pdf

Table 26. Adaptation Fund outcomes most relevant to the TRMP

Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets
Output: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability
Responsiveness of development sector services to evolving needs from changing and variable climate
Physical infrastructure improved to withstand climate change and variability-induced stress
Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress
Output: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability
Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress
Number of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)
Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas
Output: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability
Percentage of households and communities having more secure access to livelihood assets
Percentage of targeted population with sustained climate-resilient alternative livelihoods
No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies
Type of income sources for households generated under climate change scenario

A few of the existing TRMP projects align with Outcomes 4 and 5. Outcome 6 is not core to TRMP, but programmes could be designed to align with this outcome.

It is not exactly clear what “development sector services” described under Output 4 are. The most relevant sector to the TRMP is the Ecosystem based Adaptation which “includes wetlands management and conservation, coastal and river restoration, and enhancing governance of natural resources, among others. The core of every ecosystem-based adaption-based project/programme is to contribute to improve livelihood opportunities of vulnerable communities while maintaining and enhancing surrounding ecosystem.”

The figure below provides a simplified overview of the opportunities for accessing funding from the adaptation fund.

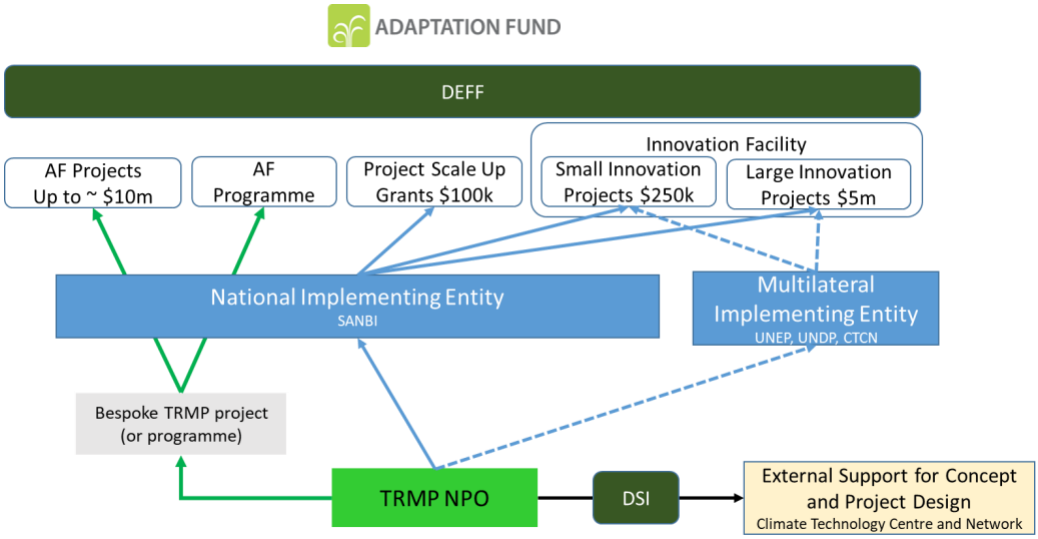

Figure 18. Adaptation Fund application process

Adaptation Fund opportunities

The following table is useful. There are two windows for the small grants and one for the large grants.

Table 27. Adaptation Fund opportunities

Adaptation fund opportunities	Detail
Project Scale-Up grants	National Implementing Entities (NIE) can access up to $100 000 per programme or project to scale up programmes under implementation … "to increase the readiness of accredited national implementing entities (NIEs) to expand or replicate quality projects that are based on country needs, views and priorities, in order to reach more people and / or broaden project/programme effectiveness to help vulnerable communities in developing countries adapt to the adverse effects of climate change." This is only relevant to TRMP if any of the Adaptation Fund projects that are being implemented in South Africa have demonstrated success which could be replicated in eThekwini
Innovation Facility – small and large grants	The Innovation Facility provides small and large grants. The innovation grants can be used to address adaptation challenges in various thematic areas, the most relevant to TRMP are: ▪ Disaster risk reduction ▪ Nature-based solutions ▪ Urban adaptation ▪ Water resources management
Small Grants for Innovation[87]	Small grants of up to $250k are available "to develop and/or test innovative products, adaptation practices, tools, and technologies, and generate an evidence base to scale up effective solutions". At COP24 (December 2018) these grants were announced and could be accessed directly through the national implementing entities (SANBI). In December 2019 at COP 25, the grants were also made available through the Adaptation Fund Climate Accelerator (AFCIA) carried out by UNDP, UNEP and the Climate Technology Centre and Network.

[87] https://www.adaptation-fund.org/apply-funding/innovation-grants/

	The AF indicated it will provide 28 of these over the current medium-term strategy (2018-2022). No information regarding the number awarded to date was found.
Large Innovation Grants	A large grants mechanism (up to US$5million each) which rolls out proven solutions in new countries and regions or scales up innovations already demonstrated to work. An initial call for proposals for $30 million was issued in early 2021. These can be accessed through any accredited implementing entity (national, regional or multilateral).
External Support for Concept and Project Design	This is an interesting opportunity described on their website[88]: The Adaptation Fund is partnering with the Climate Technology Centre and Network (CTCN) which is the operative arm of the UNFCCC Technology Mechanism. Countries seeking project financing from the Adaptation Fund can request complimentary technical assistance through the CTCN to address specific challenges (from technology barriers to deployment of adaptation technology solutions), and thereby strengthen design of their project concepts and proposals submitted to the Adaptation Fund. Requests for technical assistance through the CTCN can support early-stage feasibility assessments for deployment of specific adaptation technologies, market studies, recommendations for regulatory reform, and other technical analysis that can help strengthen project design. Support must be endorsed by the National Designated Entity under the UNFCC, which is the Department of Science and Innovation.

8.10.2.2 International Climate Initiative

The International Climate Initiative (IKI) of the German Federal Ministry of Environment provides funding for climate adaptation activities relevant to the TRMP through a few different funding streams. These are detailed below.

IKI awards funding through four areas, of which the following two are relevant to the TRMP:

- Mitigation of greenhouse gas emissions
- Adaptation to climate change
- Preserving and restoring natural carbon sinks
- Conservation of biological diversity

Project funding is awarded in four modes and available to almost all organisations, except for governments.

Below is a simplified overview of how TRMP can access opportunities through IKI:

[88] https://www.adaptation-fund.org/apply-funding/project-funding/

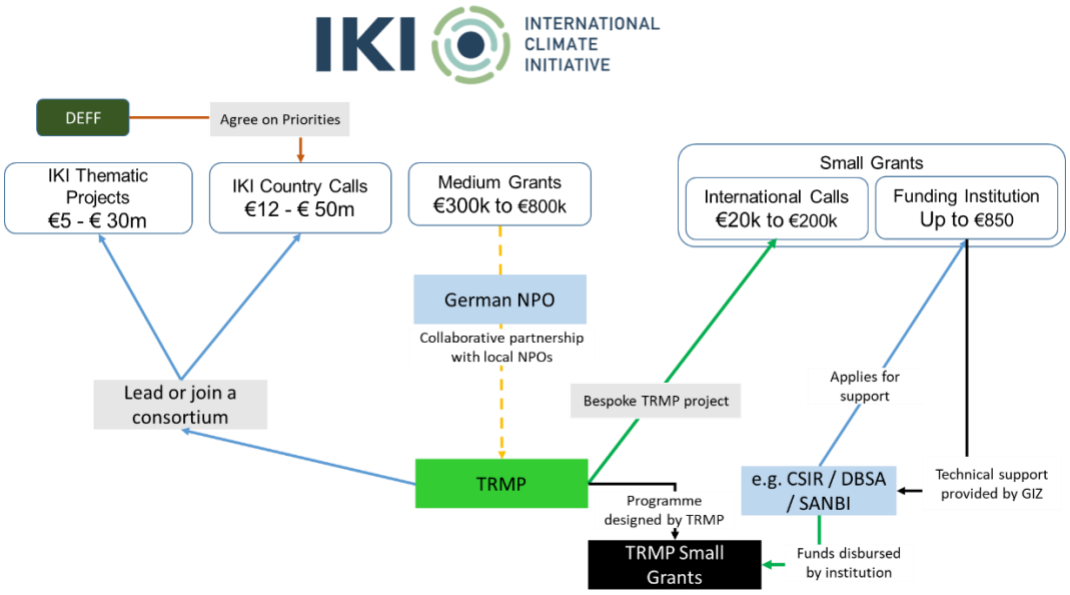

Figure 19. IKI application process

In the thematic selection process, current challenges in climate protection and biodiversity conservation are usually addressed once a year. Funding priorities for these challenges are then defined, for which project outlines can be submitted. "Each thematic selection procedure has its own funding priorities for which project outlines can be submitted. These topics are as varied as the challenges facing climate action and biodiversity conservation: they may address strategic issues or provide an agile response to current development.[89]"

There is a two-stage process for selecting projects. In the first stage project outlines that meet "mandatory requirements" are evaluated and projects must meet "formal and technical criteria specified in the funding information" to proceed to the second stage. In the second stage lead organisations are invited to prepare a detailed project proposal. The cost of preparing the proposal can be included in the total project cost (deducted if the proposal is successful).

The next thematic selection procedure will start once the IKI has had time to ensure that the funding priorities can be optimally matched to the decisions of the major climate and biodiversity summits held in 2021.

Projects can range between €5 and € 30million. Governments cannot apply for funding, but applicants may include NGOs, commercial enterprises, federal implementing organisations, higher education and research institutions, and international or multilateral organisations. It is not explicitly stated, but it appears there is an expectation that projects will be submitted by consortia.

IKI country calls

This is a country specific selection procedure. IKI publishes a document which defines in quite precise terms their priorities for the country. This is based on a detailed review of the policy

[89] https://www.international-climate-initiative.com/fileadmin/Dokumente/2021/IKI_Factsheets/20211102_Factsheet_Themencall_EN.pdf

environment. IKI agrees the topics of their calls with their partner ministry and usually identifies two topics to be addressed.

For these IKI require that consortium of organisations apply for the funding and that the total project cost, for each project, should be between €12 and € 15 million for projects of between five and seven years. TRMP would not fit neatly into either of the priority areas but there are aspects could benefit TRMP (like data collection systems).

With respect to funding, "Adequate own contribution and contributions from implementing organisations as well as the mobilisation of additional financial resources to finance eligible expenditure are generally prerequisites for funding. Cooperation with projects financed by other donors is also possible. Co-financing or in-kind contributions from national, provincial, or district government and/or from private actors are an important aspect for the final selection".

IKI medium grants

IKI medium grants are awarded to non-profit civil society organisations, academic institutions and non-profit companies headquartered and operating in Germany:

The IKI Medium Grants funding programme therefore addresses **civil society actors** based in Germany that work in collaboration with local partners in selected Official Development Assistance (ODA) eligible implementing countries to put measures in place to intensify **North-South cooperation on climate action, adaptation to the impacts of climate change and biodiversity conservation**. The programme explicitly aims to strengthen civil society actors and their international networks. Specifically, IKI Medium Grants support project activities that address innovative, bottom-up contributions for implementing the Paris Agreement and the Convention on Biological Diversity. To achieve this, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) sets varying funding priorities each year, for which interested parties can apply with innovative project ideas.

Project Funding amount ranges from € 300 000 to € 800 000 for a duration of 24 to 36 months

IKI Small Grants– International Calls[90]

There are two components of small grants: international calls and funding institutions. "Projects and organisations selected in either component receive support from the IKI Small Grants team in Berlin as well as from GIZ country offices worldwide. GIZ supports the technical as well as the financial and administrative implementation of all projects and initiatives and promotes networking with other projects and actors in the field".

Small Grants

Under the international calls component, IKI small grants are made available for sub-national, national and regional non-profit organisations "for funding of the implementation of local or regional climate and biodiversity projects". Project proposals go through a single stage selection process.

Grant Value is between €60 000 - € 200k 000, for a maximum duration of two years. The second call closed in February 2021 and the end date for the third call is April 2022.

[90] List of projects can be found here https://iki-small-grants.de/projects/

Some of the criteria for organisations applying for these funds affect how they can be used in TRMP:

- The organisation applying for funds must have been operative for at least three years.
- For the last three years, the organisation must have had an annual revenue of between €60k and €500k and the average revenue of the organisation should be higher than the funding request.
- The organisation can be for profit, but "must pursue strictly **non-profit objectives** within the scope of their proposed project".
- Funding covers a minimum of 12 months and a maximum of 2 years, and the project must be implemented by the applicant organisation.

TRMP aligns well with some of the conceptual priorities identified by IKI for its small projects:

- Support action on the ground to contribute to the UN Decade on Ecosystem Restoration 2021-2030.
- Support the engagement of young people.
- address the risks, challenges and opportunities of global megatrends (e.g. increasing demand for natural resources, rapid urbanization, digitalisation) or the COVID-19 pandemic in the context of climate change and biodiversity loss.
- Strengthen networks, knowledge sharing and cooperation of organisations working on climate change and biodiversity related issues.
- Contribute to awareness building and education regarding climate change and biodiversity[91].

Small Grants – Funding Institutions

Under the 'Funding Institutions" component, national and regional institutions receive technical and financial support for implementing calls for proposals or providing funds at a local level. The 'Funding Institutions' component strengthens the capabilities of larger national and regional institutions to implement their own funding programmes. National and regional institutions receive technical and financial support for implementing calls for proposals or providing funds at a local level. Funding of up to €850,000 per institution is available, which covers the financing of the programme, capacity building measures and technical support. A total of € 5 million is available for this component (2019–2025).

This note from the IKI website[92] on the most recent award of funding institutions puts the support in context: "6 national and regional funding institutions were selected ... They will implement their own call for proposals and funding lines for local projects and measures. The National Development Bank Botswana would like to offer pro-rata funding for renewable energy and water-saving equipment for farms. In India, Pakistan and Tajikistan, the Aga Khan Foundation is planning to launch a call for proposals for innovative approaches by small and medium-sized enterprises ("Business Challenge") in the land use sector. And in Ecuador, IKI Small Grants will support the National Biodiversity Institute to launch a school competition focusing on energy and water-saving installations, recycling systems, and school gardens. In addition to the provision of funds, the institutions are strengthened through intensive support in carrying out their own selection procedures."

[91]This project in South Africa is an IKI small grants project https://iki-small-grants.de/project/khwa-ttu-conserving-biological-diversity/

[92] https://www.international-climate-initiative.com/en/news/article/38_new_projects_and_6_funding_institutions_selected

This type of financial support could be very useful for launching a catalytic / competitive project arrangement in TRMP but would have to be managed through a "regional or national institution".

8.10.2.3 Bonds

There are several different terms used for this rapidly growing and evolving space, such as pay-for-performance bonds, pay-for-success bonds, social benefit bonds, green bonds, climate bonds, sustainability bonds, etc. There may be opportunity in these for the TRMP, but in general a very sophisticated measuring system and highly competent project management team would be needed, and it would take time to establish a feasible model for TRMP. The various types of bonds, which can be combined and blended, are:

- ***Climate and green bonds*** – this is a traditional bond that can only be used for specific purposes – e.g. hard green infrastructure (solar, wind) – but interest paid is not dependent on performance.
- ***Sustainability bonds –*** also a traditional bond, which can also only be used for specific purposes – usually softer expenditures, like cleaning rivers. Interest paid depends on performance against pre-determined non-financial KPIs (malus / bonus).
- ***Pay for performance bonds*** – does not necessarily involve a registered bond; at the core of this is *a public private partnership* that external/private investors can buy into. "Beneficiaries" pay for performance, which is used to repay the investors.

The last two are better suited to TRMP.

A **Sustainability Bond** is a bond that investors can buy into. The eThekwini Municipality would register a sustainability bond (through an originator) and pay investors interest on that. The use of proceeds can only be used for activities specified in a framework paper, and these need to be clearly defined. The interest payable depends on achievement of (independently verified) KPIs – if the municipality reaches the target they pay less, if they don't, they pay a penalty.

The potential herein is that money should be protected for TRMP. If the eThekwini Municipality does not achieve the relevant KPIs, then they pay a higher interest (malus). Therefore, correctly structured KPIs can create political and public awareness about river health.

With **Pay for performance bonds** independence of facilitator and implementing partners from other role players is important. The potential herein is that these bonds can create local awareness. For the TRMP, a Pay-for-performance bond could work in the following manner:

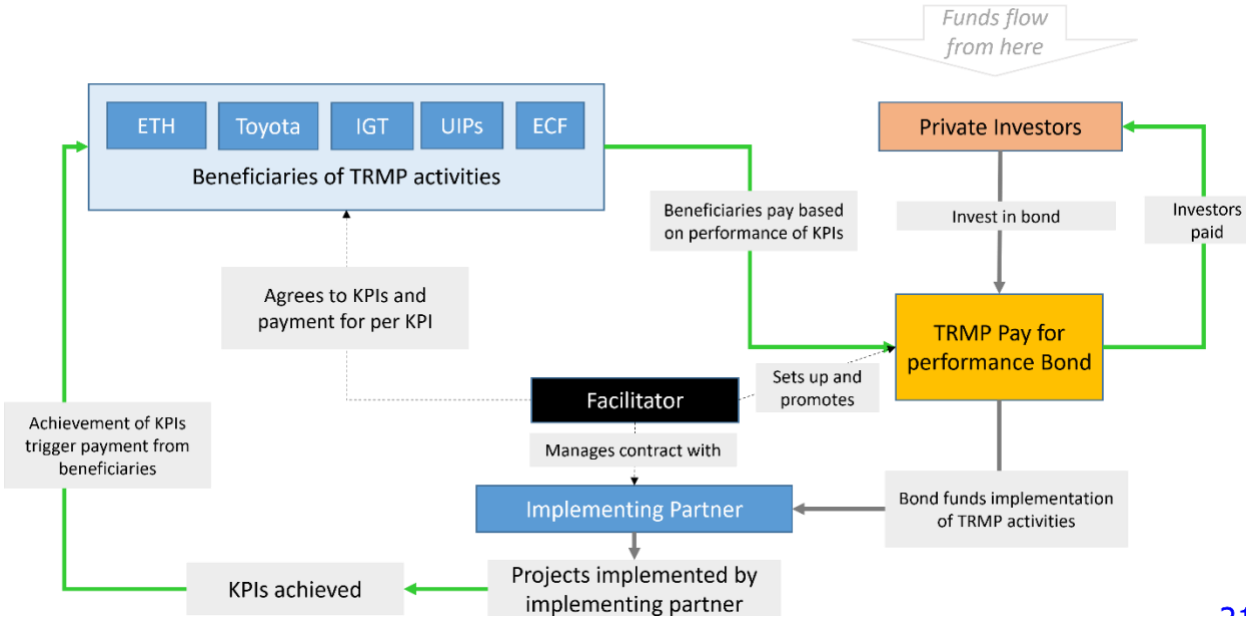

Figure 20. Pay-for-performance bond application process

8.10.3 Classifying Nature Based Solutions as Capital Expenditures: A Case for Loan Finance

The funding opportunities discussed in this paper have focused on grant funding. No attention was given to loan financing or equity funding for TRMP programmes because the existing TRMP activities do not involve investments that generate direct revenue streams that can be used to repay loans. This may be an opportunity for reframing, as the TRMP activities do create savings on the operating budget, which can be used to finance loans. For instance, investing in nature-based solutions that restore river functioning reduces flood damage to areas around rivers and leads to substantial savings on maintenance and repair, as the Sihlanzimvelo Programme has amply proven and as the TRMP Business Case has reported on. These savings generate significant enough returns on the investment in nature-based solutions to justify raising loan to finance them.

The combination of a few budgeting policies and accounting practices get in the way of raising loan financing for TRMP. Firstly, expenditures on nature-based solutions and investments in ecological infrastructure – such as removing alien invasive plants from rivers and restoring indigenous vegetation and thereby regenerating normal river functioning – are currently interpreted as operating expenditures by municipal accountants. Therefore, these expenditures must be funded from the operating budget, which is funded by rates and revenues. Secondly, eThekwini has a policy that loans can only be raised to finance capital expenditures, and these are funded from the capital budget.

These budget and accounting classifications mean that funding raised through loan financing or equity cannot be allocated to nature-based expenditures. A simplistic interpretation of this is that eThekwini is not able to raise loan funding, not even from climate funds, to take a big bang approach to invest in nature-based solutions to restore river functioning. An example of how the issue can be reframed is illustrated by the fact that if the municipality installed gabions or paved the river beds and banks with concrete to stabilise them, this expenditure would be classified as capital expenditure for which loan financing would be easier to raise. This even though these options are more expensive in the short and long term and less effective than nature based solutions.

It is important to distinguish between municipal budget policies and constraints imposed by budgeting and accounting standards. The capital budget is funded from a range of sources, including internally generated revenues, grants from other spheres of government and loan financing. Municipalities have the flexibility to substitute internally generated revenues allocated to the capital budget with loan funding. This enables them to shift that internally generated revenue onto the operating budget, if they made that choice – where it could be invested in ecological infrastructure. In addition, municipalities raise loan financing through various instruments, such as bonds, and the funding is not linked to specific capital projects but raised on the "back of their balance sheets".

8.10.4 Research & Learning Institutes

Through partnerships with research and learning institutes, funding can be accessed to add value to TRMP-related activities. This type of funding will not be applicable for implementation, coordination, administration or planning as part of the TRMP, but can still contribute meaningfully to TRMP outcomes by providing means for action-oriented research. The benefit of this mechanism is that various aspects of the TRMP can be investigated and better understood – whether it is ecological, social or economic.

The funding that can be sourced for the TRMP through partnerships with research and learning institutes in South Africa are as follows (but not necessarily limited to):

- Water Research Commission (WRC) Funding, as an example of river-related funding. Other types of funding relating to the social research, health (e.g. Arts and Humanities Research Council), etc., also exist.
- National Research Foundation (NRF) funding.
- Funding from local research institutions.
- International research funding.

The **WRC** aims to facilitate informed water decision-making through science and technology at all levels, in all stakeholder groups and innovative water solutions through research and development for South Africa. The strength of this fund is that it is heavily centred on research that informs policy and decision-making; developing human capital; empowering communities; creating new products, innovation and services; and developing sustainable solutions in the water sector. The added benefit of the WRC is that application for the funds is not limited to universities and research institutions, but can be accessed by any entity. The WRC publishes an annual call for proposals that lists focus areas in directed and undirected calls, and project proposals can also be co-developed with WRC Research Managers.

The **NRF** is a government mandated research and science development agency, which funds research, the development of high-end Human Capacity and critical research infrastructure to promote knowledge production across all disciplinary fields. The goal of the NRF is to create innovative funding instruments, advance research career development, increase public science engagement and to establish leading-edge research platforms that will transform the scientific landscape and inspire a representative research community to aspire to global competitiveness. The NRF promotes South African research and innovation interests across the country and internationally, and together with research institutions, business, industry and international partners build bridges between research communities for mutual benefit that contributes to National

Development[93]. Accessing funds from the NRF are limited to researchers employed and remunerated on a full-time permanent, or full-time contract basis at beneficiary institutions. The wide range of Funding Opportunities of the NRF is dynamic, and therefore, subject to change, and applicants are advised to visit the NRF website at www.nrf.ac.za regularly for notifications of changes and updates on the status of the respective Funding Instruments.

Partnering with **local research institutions** may result in co-funding being provided for research on context-specific TRMP-related activities, where the funds may come from a specific national or international fund, or a variety of sources within the institution. Examples of TRMP-related projects that have received funding in this manner are:

- The Durban Research Action Partnership (a collaboration between UKZN and the eThekwini Municipality) which provides funding for student projects on aspects of biodiversity, climate change, and water.
- The Aller River Pilot Project received extensive support from UKZN who was carrying out various research interests. The support was an in-kind contribution that would otherwise have been paid for in the project.
- Rhodes University has an extensive focus on learning innovation through the Environmental Learning Research Centre, which has a number of projects focusing on catchment management and climate change.

Apart from action-oriented research, there are other benefits to partnering with research institutions, such as training (e.g. research skills for collecting data in communities) that can be provided through the collaboration; as well as research partners playing integral roles as intermediaries between organs of state and communities.

Applications for funding can also be made for **international research funding.** Examples of TRMP-related projects that have received funding in this manner are the FRACTAL and LIRA2030 projects conducted by the University of Cape Town's Climate Systems Analysis Group, with Durban as a partner city in both these projects. These projects facilitated the production of ground-breaking research on the climate resilience of African cities and transformative cities in a changing climate.

Palmiet Catchment Rehabilitation Project – there has been strong and active involvement of academics from UKZN School of Built Environment and Development Studies that had a community research study in the affected community. This work played "an influential role in this shared governance system and currently leads the ongoing research component of the project. For example, researchers from UKZN recently conducted a project wherein the community mapped their settlement (identifying risks, locating their structures, and so on). This was an important step in the community taking ownership and driving the project and its action plan."

Aller River Project Phase 2 was funded by the Arts and Humanities Research Council (AHRC) through a project called Healthy Waterways: connecting communities locally and globally. This was a result of collaboration between project managers of Aller River projects and academics at Cambridge. This phase of the project involved using experiences in implementing Aller River project as a practical way to provide training on research methods. This example shows how the project was sustained, due to collaboration with academics who were interested in research and training. In addition, the training provided through the collaboration developed research skills for collecting data on the social circumstances of project beneficiaries, which is essential data for funding applications.

[93] https://www.nrf.ac.za/

The research has been transformative as it was action research which followed very successful trans-disciplinary processes with city stakeholders.

8.11 Technical Support

Technical support is likely to be critical to the TRMP, particularly in the early stages of implementation. Three key sources of funding for technical support are described below. There are other facilities like these that provide technical support to prepare proposals and business cases (like CFF has done for the TRMP), incorporate climate issues into planning and budgeting and help prepare climate related plans (such as nationally appropriate mitigation actions).

8.11.1 Cities Finance Facility

The TRMP business case and this research has been supported by the C40 Cities Finance Facility (CFF), which: "facilitates access to finance for climate change mitigation and resilience projects in urban areas by providing technical assistance to develop cities' sustainability priorities into bankable investment proposals. The CFF aims to deliver project preparation and capacity development, and to widely share knowledge and establish partnerships between cities and financiers"[94]. The CFF is supported by the German Federal Ministry for Economic Cooperation and Development, UK government, United States Agency for International Development (USAID) and is implemented by GIZ with the C40 Cities Climate Leadership Group.

Given its close relationship with the TRMP, CFF is a likely candidate to approach for additional funding for preparing the TRMP for implementation.

8.11.2 The Global Facility for Disaster Reduction and Recovery (GFDRR)

GFDRR is a grant-funding mechanism, managed by the World Bank that supports disaster risk management projects worldwide. It is a global partnership that helps developing countries better understand and reduce their vulnerability to natural hazards and climate change. It provides technical assistance, capacity building, and analytical work to help vulnerable nations improve resilience and reduce risk.

The GFDRR does *not fund project implementation but does provide technical support* in a range of forms that can be very valuable to taking the TRMP forward. Their database shows that they facilitate grants of up to $400 000, which could cover the cost of technical work in the following focal areas, all of which are relevant to the TRMP:

- Promoting open access to risk information.
- Scaling up the resilience of cities.
- Deepening financial protection.
- Deepening engagements in resilience to climate change.
- Promoting resilient infrastructure.
- Strengthening hydrometer services and early-warning systems.
- Building resilience at community level.
- Enabling resilient recovery.
- Resilient Cities Network.

[94] https://c40cff.org/apply

8.12 Additional Funding and Support for TRMP

There are a range of sources of support for TRMP programmes additional to what may be allocated through the municipal budget. This section discusses these briefly and provides detailed information in the relevant annexure.

8.13 Partnerships

Collaborations and partnerships between eThekwini municipality and other role players have been, and will continue to be, both central to the TRMP vision and *modus operandi.* In fact, partnerships and shared responsibility are right at the heart of the TRMP concept. The project promotes a partnership-relationship between people and the environment. It assumes that the mandated authorities will partner society in ecosystems protection and management. The first layer of partnerships is at the landowner and land-user level. The range of partnerships then diverges to see multiple cross-overs of interest and responsibility. To achieve transformation, these partnerships have to walk in common cause to protect our natural assets and ourselves for our seventh generation grandchildren and other living creatures.

Resourcing the TRMP at whatever scale, and in whatever precinct, will require mobilising direct and indirect support from partnerships. This may take the form of technical expertise, cash, labour and any other form of assistance.

The TRMP conceptualisation has been predicated on partnerships and collaboration right from the start, knowing that there will be no large-scale impact nor transformation unless the municipality works closely with other role-players. This means that the TRMP Programme must place considerable effort into relationship building and partnership development. While the most obvious partnerships will be with organisations and individuals in the eThekwini Municipality and along catchments that affect the municipality, there are multiple entities further afield that have or may have an interest in the TRMP. These could be from various levels of government, from the private sector (individual and organised), from civil society and from the donor community.

The private sector is a key potential partner at every level from large corporate multinationals, to small, local catchment-based businesses. Some TRMP projects have been funded directly from Corporate Social Responsibility budgets (e.g. AECI in uMbogontwini) and others have been enabled through corporate interests in ensuring their product are environmentally sustainable (e.g. EDANA's interest in assisting in the safe disposable of absorbent hygiene products).

Learning institutes are also critical partners that can add value to the TRMP, including bringing key skills, competencies and services into the mix, often funded by other agencies; linking with other programmes for shared learning; facilitating relationships with local communities and providing in-kind support.

The value of partnerships to the TRMP cannot be underestimated. Essentially, any riverine management activity done by anyone is a contribution to the TRMP as a whole, which will benefit the Municipality directly and indirectly and benefit the citizens accordingly. Every contribution could technically have a monetary value, and is therefore relevant to raising resources for a TRMP.

It goes without saying that there is great value in building intra-municipal partnerships, between different units and departments.

Other important partnerships should be forged with strategic entities working in the same or similar space, such as NBI, SWPN, IWASP and others.

In this report partnerships are described at a precinct, local, regional, national and global level. Some stakeholder partners can be represented at more than one level. The following table provides a snapshot into the kinds of partnerships that must be mobilised in to provide various kinds of support and resources.

Table 28. Partnership options

Location of potential partners	Types of potential partners	Examples
Precinct	Communities	Quarry Road Informal Settlement uMdloti community iNgonyama Trust
	NGOs/NPOs/CSOs	aBahlali baseMjondolo uMdloti Conservancy uMhlanga UIP Green Corridors
	Private sector	Tongaat Huletts Developments uMhlanga UIP
	Local government	Councillors & ward committees
	National government	Department of Water and Sanitation
Local	Local government / Municipal departments & COGTA	CSW/DSW / EWS / PRC / EPCPD / Human Settlements / etc iNgonyama Trust
	Research institutes	UKZN / UDW
	Private sector	Tongaat Huletts Developments uMhlanga UIP Cornubia Management Association
	NGOs/NPOs/CSOs	aBahlali baseMjondolo eThekwini Conservancies Forum Adopt-a-River
Regional	Provincial government	EDTEA
	NGOs/NPOs/CSOs	IWASP DUCT / AEN
	Research institutes	UKZN
	Private sector	Tongaat Huletts Developments Sanlam/Santam/Old Mutual/etc
National	National Government	DFFE
	Private sector	SWPN NBI Sanlam/Santam/Old Mutual/etc
	Research institutes	SANBI / Water Research Commission
	NGOs/NPOs/CSOs	WWF
Global	Donors	C40 CFF / GCF/
	NGOs/NPOs/CSOs	WWF

8.13.1 Local Partnerships

The most significant partnerships for the TRMP are those that are local and represent the primary landowning agencies and entities. These are mainly, the iNgonyama Trust and its representative structures and systems; large-scale private sector role-players like Tongaat Hulett, big development sites and their representative structures, Urban Improvement Precincts (UIPs) (see section 8.9.2.2) and catchment based private sector interests; civil society role-players like conservancies and other NGO/CBO/FBO structures, political structures such as ward committees and others. It is likely that all these sectors can be made aware of their interest in TRMP-type interventions, increasingly so as climate change impacts are felt more and more directly.

Table 29. Some examples of local partnerships that could be leveraged

Type of role-player	Name
Public	iNgonyama Trust
	Ward committees
Organised business	Durban Chamber of Commerce & Industry
	uMhlanga UIP
	Gateway Management Association
	Cornubia Management Association
	Riverhorse Valley Business Estate Management Association
	Bridge City Management Association
Individual Private Sector	Tongaat Hulett
Civil Society	Green Corridors
	eThekwini Conservancies Forum
	Adopt-a-River
Learning institute	UKZN

8.13.2 Regional Partnerships

Regional partnerships could be those close to eThekwini Municipality, or KwaZulu-Natal, or could be regional to other areas, but with a shared interest in waterway rehabilitation and ecosystems services enhancement. Collaboration at the catchment and provincial level with organisations such as Amanzi Ethu Nobuntu (AEN) and Dusi-uMngeni Conservation Trust (DUCT) have led to sharing of knowledge and strategic guidance. In the future there are likely to be opportunities for the TRMP to collaborate with these organisations and others in the country such as the Orange-Senqu River Commission (ORASECOM) to prepare joint proposals for funding and/or support each other apply for funds from existing programmes.

Table 30. Partnership options

Type of role-player	Name
Provincial government	Department of Cooperative Governance and Traditional Affairs
	KZN Department of Economic Development, Tourism and Environmental Affairs
Organised Civil Society	Duzi Umngeni Conservation Trust
	Amanzi Ethu Nobuntu
Transboundary arrangements	ORASECOM
	Southern African Development Community

Forums	KZN Wetland Forum
	Msunduzi Catchment Management Forum
Organised Private Sector	KwaZulu-Natal Business Chambers Council

8.13.3 National partnerships

The most strategic national partners which the TRMP should access are the national governmental departments, especially those implementing programmes such as the EPWP and the Natural Resources Management's "Working-for" Programmes. Strategic national non-governmental partners include research facilitators such as the Water Research Commission, and organised private sector forums such as the National Business Initiative.

Table 31. National partnerships

Type of role-player	Name
National government	Department of Forestry, Fisheries and the Environment
	Department of Water Affairs
	Expanded Public Works Programme
National Institutes	South African National Biodiversity Institute
	National Research Foundation – SA Earth Observatory Network (SAEON)
Organised Private Sector	National Business Initiative
	Strategic Water Partners Network SA
Research	Water Research Commission

8.13.4 International Partnerships

Technical expertise, which is critical for providing strategic guidance and making resources available to prepare proposals and concept notes that are pre-requisites for preparing project proposals can be accessed from a variety such as the C40 Cities Finance Facility (CFF) and Global Facility for Disaster Reduction and Recovery (GFDRR). There are also multiple international role-players which, while not having a direct stake in the TRMP, should be kept in mind as potential stakeholders when doing innovative and ground-breaking work such as scaling the TRMP.

Table 32. International partnerships

Type of role-player	**Name**
International Climate Organisations	C40 and the C40's City Finance Facility (CFF)
	Global Facility for Disaster Reduction and Recovery
Independent intergovernmental bodies	Intergovernmental Panel on Climate Change (IPCC)
	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)
	United Nations Environment Programme (UNEP)
	United Nations Framework Convention on Climate Change (UNFCCC)
International NPOs	The World Resources Institute (WRI)
	ICLEI-Local Governments for Sustainability

8.14 Case Study: GreenCape – A Special Purpose Vehicle of Relevance[95]

In 2010, in direct response to the opportunities to be created by the Integrated Resource Plan (IRP) and anticipated Renewable Independent Power Producer Programme (REIPPP) in the context of the unreliable supply of nationally produced electricity, the Western Cape Government established Green Cape as a non-profit sector development agency. The main aim was to support businesses operating in the green economy in the Western Cape. GreenCape was formally established and launched by the Western Cape Government and the City of Cape Town. Funding for GreenCape was provided by the Western Cape Department of Development and Tourism with the City of Cape Town agreeing to provide strategic guidance as an advisory board member.

GreenCape uses several operational oversight mechanisms. The primary ones are steering committees, which meet with varying frequency (some monthly, some quarterly) depending on the nature of the activity. These committees typically represent the funder, civil society, and academia.

Green Cape established the Green Finance Desk (GFD) in 2014 to facilitate access between funding and the market, which is highlighted by the creation of an online database together with a local and an international partner. This database documents a comprehensive list of funding sources and the eligibility requirements for this funding. Business can access this information directly or through one of GreenCape's sector desks or programs. A similar TRMP finance desk could be established.

Key lessons from a case study on Green Cape relevant to TRMP:

- Strong and continued financial and nonfinancial support from its primary funder which sees GreenCape as a key partner to support the achievement of its Green Economy goals.
- Strong alignment with national, provincial, and local green economy policies and strategies, while remaining an entity separate from government. This establishes GreenCape's credibility as an independent agent of change. This governance structure retains accountability to government funders, but also allows for impact oriented, agile delivery.
- Strong links to industry across all sectors of the green economy, and a strategic position that allows access to multiple stakeholders (in business/industry, all tiers of government and civil society).
- As a small start-up organization, an initial specific focus on renewable energy helped build its reputation through clear and visible impact. This enabled expansion over a five year period into a larger organization with a wider green economy remit.
- A diverse, multidisciplinary team that takes a robust approach to problem solving, while also being able to adapt strategies rapidly to changing circumstances.
- Maintaining an independent view at all times—supported by technical competence, legal independence, and political neutrality.

[95] https://www.greencape.co.za/ -

8.15 Conclusion & recommendations

This funding report aims to provide insight into what kinds of funding mechanisms are available to support the TRMP in eThekwini Municipality, considering municipal budget options, government programme support as well as independent funding mechanisms that have an interest in climate-related risk and environmental interventions. A key factor aside from direct funding is the kind of support that is available through building strategic and operational partnerships at various points of implementation, from the local precinct to the municipality and beyond, along cross-municipal catchments that end in eThekwini.

Taking time to understand the rationale and logic of an international solution, and to develop an understanding of the local problem and its economics, enables a workable, typically adjusted, locally applicable solution. It is easy to fall into the trap of trying to change the context to replicate the success conditions for green technologies elsewhere, rather than determining the local conditions for success, which is ultimately more effective.

- A successful funding strategy will require the following: The eThekwini Municipality maintaining and increasingly committing its own resources to strengthening its resilience to climate change and making explicit its commitment to invest in ecological infrastructure, according to a credible plan, such as the TRMP.
- The Municipality developing interventions and solutions that are fit for purpose and appropriate to the context in which they are implemented. The more these solutions take the ecological, social and economic contexts into consideration the more likely applications for funding are to be successful. Most, if not all, donors recognise that building ecological resilience requires addressing social issues.
- Partnerships with stakeholders across the municipality, across catchments and across the country – and possibly even across the SADC region. Each of these types of partnerships can yield different funding opportunities and the Municipality must be willing to be leading partner and be led by other organisations.
- Applying for funding for specific projects that the Municipality designs and controls implementation of and designing projects that fit within programmes that are led by other role-players.
- Having people in place that have the skills to build relationships with entities accredited to the big climate and environmental funds.

Key to accessing direct and indirect support is understanding the motivations, requirements and framing necessary to engage the different mechanisms, and understanding that securing funds will be a composite of multiple approaches that will need to be implemented over time. Sufficient dedicated skills and resources will be required to secure ongoing funding. In addition, strong commitment from within the municipal system to use whatever processes and collaborations possible to aggregate unit and departmental mandates and efforts will create a strong enabling environment and a powerful footprint to which any external efforts can add value.

9. A MONITORING, EVALUATION, REFLECTION AND LEARNING (MERL) FRAMEWORK FOR THE TRMP

This chapter presents a Monitoring, Evaluation, Reflection and Learning (MERL) framework for the TRMP. Like the Implementation Framework itself, this MERL framework is high-level and presents a guideline for how a MERL for the proposed TRMP should be approached. Once the TRMP operational plan is designed, then a detailed MERL will need to be formulated based on that design.

9.1 Introduction

Monitoring and evaluation (M&E) is a systematic process of collecting and analysing data in order to assess the extent to which an intervention or programme is achieving its desired goal. Traditional M&E approaches assume that project activities can be planned in a linear sequence that leads to a desired outcome. However, many programmes that aim to make change across socio-ecological systems, such as the TRMP, have multiple components, multiple projects, multiple scales of implementation, and multiple implementing partners (see box insert below). In these complex environments, progress is non-linear, and there is a high degree of uncertainty about the consequences, intended or otherwise, of an intervention (Rosenberg & Kotschy, 2020). So, while the programme itself may have an overall goal, the outcomes and impacts emerge over time as different actors engage and respond to new challenges and opportunities.

Key characteristics of complex social-ecological systems:

- Integrated bio-geophysical and socio-cultural processes
- Self-organization
- Nonlinear and unpredictable dynamics
- Feedback between social and ecological processes,
- Changing behavior in space (spatial thresholds) and time (time thresholds)
- Legacy behavioral effects with outcomes at very different time scales
- Emergent properties, and
- The impossibility to extrapolate the information from one SES to another

Adapted from Delgado-Serrano et al. 2015

Acknowledging the complexity of socio-ecological systems has important applications for how we think about programmes, how we collect and analyze data, and how we report and use our findings. Key to this complexity is acknowledging that all interventions are context-specific. There can be a tendency for bureaucrats to want a simplistic and measurable and definable approach to dealing with service delivery. However, this context-dependence of what is needed undermines this. Complexity-sensitive M&E should shift away from standard procedures that focus on accountability (tracking expenditure, activities and outputs) to approaches that support ongoing and cumulative learning. Such approaches are also sensitive to how context shapes emergent outcomes and impacts. A Monitoring Evaluation, Reflection and Learning (MERL) framework requires a hybrid approach that *combines the value of monitoring against indicators with reflective process monitoring and more open-ended processes for obtaining explanatory data and evaluative insights* (Rosenberg et al. 2018, pg. 7). Probing 'what works for whom and why', may enable explanatory evaluation and therefore learning, within and across cases (Rosenberg & Kotschy, 2020).

This chapter outlines important components of a MERL framework for the TRMP. Although we make some suggestions about indicators that might be included in the MERL, a more detailed system should be co-developed with relevant actors as the programme moves forward.

9.2 What is the purpose of the TRMP MERL and who is it intended for?

The TRMP MERL should set out a complexity-sensitive approach to monitoring, evaluation, reflection and learning of transformative river management in the eThekwini municipal area. Following examples of MERL's in other landscape initiatives, the TRMP MERL should be designed to achieve multiple objectives. These include:

1. **Internal learning** that build the capacity of implementers and programme managers, informs internal strategies, and supports adaptive management of the programme.
2. **External learning** that builds communities of practice and provides guidance to development partners and decision-makers.
3. **Strategy and development** that informs which interventions or projects should continue, change or stop.
4. **Accountability** (to funders, partners and managers) of how funds have been spent and what the impacts have been.
5. **Communication** of success stories and areas that require attention (adapted from Rosenberg et al. 2018).
6. An **effective data system** that enables the other five objectives and gives due consideration to data quality assurance in all phases of the data cycle, including collection, aggregation and reporting, analysis and use, and dissemination and feedback.

The TRMP MERL may be useful for five different actor groups described below. Ideally, all these groups should be involved in co-designing details of the TRMP MERL. Such an approach would support collaboration across the landscape as partners and stakeholder groupings work towards a common broader goal. It will also help various groups of people to understand how their targeted activities contribute to this goal:

1. **Funders:** organisations that fund projects or programmes across the municipal area or catchment, which contribute to broader TRMP objectives. MERL processes provide an accountability and learning framework for all participants, including funders. Implementation of the MERL framework, including communication with funders, can help these organisations to understand if funds are being spent effectively, which funding strategies demonstrate value, and what is (and what's not) working. Such learning can contribute to evolution of the funding landscape and, ideally, the funding bodies.
2. **Local partners:** government, private sector, civil society and other groups participating in the TRMP. MERL at this local level can help TRMP partners to design and implement interventions in a more flexible and responsive way. Such activities can also help these local groups understand the impact of interventions, and to assess whether TRMP investments are having the intended results.
3. **Project managers and field staff engaged in river restoration initiatives**: Project managers and staff involved in relevant programmes and contributing to the broader TRMP goal. This group can find guidance about how to develop participatory monitoring and evaluation process alongside the communities and partner organisations they support. They can

identify and track indicators to understand progress of their interventions, while acknowledging how this progress fits in to the bigger TRMP picture.

4. **Communities and community structures:** The MERL process should allow for vulnerable groups and their representatives to participate in collecting or generating data and information that enables them to track how well interventions are working, and to strengthen adaptive decision-making at the community-level. Ultimately, the MERL should capacitate communities and representative structures so that they can lead their own sustainable process of investigation and learning, including after initial support from partners. This may entail the use of citizen science approaches. The results that are generated should also be used to inform decision-making at the community, household or individual scale, and help communities lobby for appropriate support for effective adaptation interventions associated with TRMP.
5. **Decision-makers**: decision makers at the community level (see above), politicians, other decision-makers within the municipality, as well as decision makers at provincial and national levels. TRMP MERL will generate insights into the benefits (and challenges) associated with river rehabilitation and interventions that can potentially reduce climate risks and contribute to wellbeing of urban residents. TRMP-related activities are already included in the Durban Climate Action Plan (2019), so it will be important to consider whether investment in these activities yields intended outcomes, and consequently if they should be continued within planning documents at various levels. MERL activities, particularly those related to external learning, will allow decision-makers working in eThekwini and other cities to learn from the TRMP, and to integrate such lessons into their planning. It is important that information and knowledge generated from MERL processes be shared in easy-to-digest formats (e.g. information briefs).

9.3 What should we monitor in the TRMP MERL?

Monitoring and evaluation processes are underpinned by a set of indicators (defined by either qualitative or quantitative information) that are used to track progress towards the desired goal. While quantitative information is useful for tracking anticipated outputs and outcomes, qualitative approaches, are usually better able to accommodate novelty and surprise (Rosenberg et al., 2018). The proposed TRMP MERL should monitor and evaluate the extent to which the TRMP is meeting its desired goal, and also capture emergent insights. We therefore recommend that qualitative indicators are combined with more open-ended approaches. However, a limited number of indicators should be selected to ensure that the system is practical, feasible and cost-effective. We also suggest that monitoring adopt an integrated approach which includes both primary and secondary data. While the use of secondary data reduces monitoring costs and enables a quick overview of the programme, primary data provides context-specific information that can be used to understand and address a particular issue.

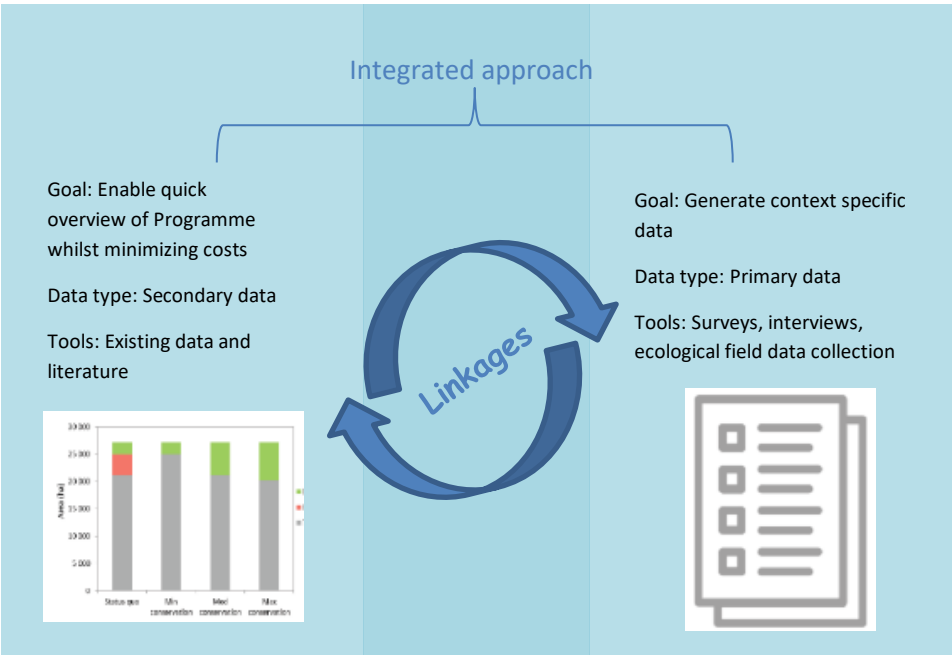

Figure 21. Proposed integrated approach to monitoring the TRMP (adapted from GIZ, 2014).

Deciding what to monitor should be closely informed by the TRMP Theory of Change. This enables us to track what is meaningful as defined by the Programme developers. The Theory of Change for the TRMP is discussed in more detail in Chapter 4.
The ToC for the TRMP frames the goal of the programme as follows:

> *eThekwini is a climate-resilient and safe city with functional and well-managed riverine areas, and ecological infrastructure that is owned by and delivers equitable benefits to all communities.*

It also sets out eight potential outcomes (See column 2 of Table 34), linked to three domains of change (See column 1 of Table 34). In order to track progress towards this goal, the TRMP MERL should ideally link indicators to each of these outcomes. Several outcome indicators, which are largely quantifiable, are proposed in Table 1. Qualitative and quantitative methods can be used to generate or aggregate data and information across projects and programmes to measure the extent to which a broader set of inputs or management activities contributes to the overall goal of the TRMP. These measures are particularly useful for providing a snapshot of the success or not of the different interventions, directing attention to areas of concern or opportunity, and highlighting where starting assumptions might need to be changed. However, to better understand why the outcomes may or may not have been achieved, qualitative and explanatory data is required, and should be coupled with reflection (Rosenberg et al. 2018).

Further details on reflection within the TRMP MERL are detailed elsewhere in this chapter. We have proposed a set of indicators based on those used in locally-relevant monitoring initiatives together with some identified from literature. In the design of the final MERL system, these indicators can be refined or added to. Refinement of quantitative indicators could be based on the SMART methodology, which proposes that indicators be Specific, Measurable, Achievable, Relevant and Time-bound. However, this methodology should not constrain the selection of additional indicators that may be better able to accommodate unexpected change. Examples of potential outcome indicators and measures for the TRMP are included in Table 33.

A key factor that will need to be addressed at the point of developing a purposed TRMP MERL process relates to timeframes and frequency of monitoring. It is clear that the frequency of monitoring will vary with each of the indicators. A number of associated factors will influence the frequency including the resourcing of the exercise, the prioritisation of indicators, indicator already being tracked under other monitoring programmes/initiatives, how the data will be used, and by whom, as well as other factors such as whether the indicator will rely on primary or secondary data sources. In general, the social data is likely to be gathered less frequently as it is labour intensive and expensive to gather (and there are unlikely to be existing data sets) whereas some of the other data sets could be gathered more frequently from existing data sets (e.g. economic data on an annual basis).

Table 33. Suggested outcome indicators and measures for the TRMP (linked to the outcomes and domains of change set out in the ToC)

Domain		Outcome		Proposed output/outcome indicator		Measure	Means of Verification
1	Improved Ecological Infrastructure	1.1	Flood and climate resilient riverine corridors	1.1.1.	Extent of rivers rehabilitated	▪ No of kms of rivers with improved biophysical conditions ▪ % length of rivers rehabilitated (disaggregated by tenure type for both measures)	▪ Project reporting synthesis of information (various existing projects) ▪ Spatially explicit analyses (e.g. in a GIS)
				1.1.2	Improved biophysical condition of rivers (and estuaries)[96]	▪ Present ecological state of rivers ▪ River health (including miniSASS, riparian health, water clarity, velocity plank) in/below rehabilitation sites ▪ Estuarine health index[97] (where relevant) ▪ N and P concentrations or River Trophic Status (defined by the ratio of TIN to TP) in sites in/below rehabilitation sites ▪ E-coli in sites in/below rehabilitation sites (Reaches/sites disaggregated by tenure type)	▪ River (and estuarine) monitoring and assessment at select sites
				1.1.3	Reduced vulnerability of infrastructure and people to climatic events	▪ No and/or extent of infrastructure located within specified distances of rehabilitated rivers	▪ Mapping and spatial analysis using aerial imagery and project locations (e.g. in a GIS)

[96] Note that a baseline for all relevant variables should be established against which further samples can be compared. This will enable the tracking of trajectories of change and determination of "improvement". Ideally the baselines should be established prior to project implementation.

[97] Unfortunately these kinds of metrics are done very seldom, so timeframes become important with some of these indicators. Same is true for aspects of river health. It would be important to try and align with some of the existing, and sustainable, monitoring systems eg EWS has some stations across the municipal area.

						▪ No of households located within specified distances of rehabilitated rivers	
		1.2	Communities enjoying accessible, safe, clean and well-managed environments	1.2.1	Access to riverine corridors for a variety of communities	▪ Use of riverine area (rivers and areas around) by communities for recreational and other use purposes	▪ Mapping and spatial analysis using aerial imagery and project locations (e.g. in a GIS)
				1.2.2	Perception of safety of riverine corridors	▪ Qualitative change in perception of communities living near riverine corridors disaggregated by age and gender (using lickert scale)	▪ Survey with community members living near project sites
		1.3	Cohesive riverine communities	1.3.1	Intra-group trust in communities adjacent to riverine corridors	▪ Qualitative change in trust between communities living near riverine corridors disaggregated by age and gender (using lickert scale)	▪ Survey with community members living near project sites
2	Building partnerships and governance	2.1	Greater political consciousness and support for the TRMP	2.1.1	Inclusion of TRMP in governmental fprogrammes/strategies/documents (e.g. Sihlanzimvelo) and resourcing same	▪ Inclusion of TRMP in IDP, and others	▪ Policy and plans review
				2.1.2	Budget allocated to TRMP by government organisations	▪ Resourcing of the TRMP internal hub ▪ Resourcing of the TRMP external hub/s with funds raised *This can be linked to indicator on financial sustainability* (See below)	▪
		2.2	Catchment-scale coordination and partnerships that	2.2.1	Organisations participating in the TRMP at various levels	▪ No. and type of organisations participating in TRMP at various levels	▪ No of organisations that may have applied for funding via the external hub etc

			enable resource flows and learning	2.2.2	Satisfaction of organisations and departments participating in TRMP with levels of cooperation	▪ Levels of satisfaction by organisations and departments involved in the TRMP (using lickert scale)	▪ Survey with representatives of organisations involved in the TRMP
		2.3	Changed perceptions of rivers	2.2.3.	Community and other actor perceptions of rivers and their connections to people	▪ Qualitative change in community and other actor perceptions of rivers and connections to people (using lickert scale)	▪ Survey with community members living near project sites and other actors involved in the area
3	Financing the TRMP and supporting a green economy	3.1	Sustainable funding for TRMP activities	3.1.1	Financial sustainability of the TRMP	▪ Securing funding from govt and other sources measured as percentage of state funding of overall income of programme. ▪ No. of years for which guaranteed funding for the TRMP is secured. ▪ No of budget votes with funding earmarked for ecological infrastructure activities / projects ▪ No of budget votes reporting expenditures related to ecological infrastructure	▪ TRMP budget review
		3.2	Diverse and sustainable livelihoods from TRMP activities	3.2.1	Employment in TRMP-related activities	▪ Number of people earning an income from TRMP related activities, disaggregated by age, gender and HDI ▪ Length of time that individuals have been earning an income from TRMP activities ▪ Green economy opportunities realized.	▪ Database of TRMP beneficiaries ▪ Reporting from TRMP activities associated with livelihoods *(This will take time to become measurable)*

While the outcome indicators (listed above in Table 33) are likely to form the backbone of the MERL framework, monitoring should also consider the overall impact of the programme. Given the complex nature of the system, it is difficult to assign causality to the impacts of a single programme (such as the TRMP) as these impacts are usually the result of multiple interventions, projects and programmes operating in concert with one another. The TRMP MERL should therefore also include a set of indicators that reflect the overall impact (to which the TRMP has contributed). These should link to impacts on climate resilience and social-wellbeing, as set out in the ToC vision.

Numerous indicators have been developed to track social wellbeing, including the OECD framework (see https://www.oecd.org/wise/measuring-well-being-and-progress.htm). This framework defines 11 aspects of social wellbeing (see Figure 22) which can be reported on separately or in combination. By rating each of these 11 topics, it is possible to create a "Better Life Index" that can be used to measure well-being differences (including gender differences) and to highlight wellbeing inequalities across different groups in the population. This index may also be useful in reflecting variations between areas (e.g. in areas where the TRMP has been applied or not, and changes in wellbeing in selected areas over time). Using the OECD as a starting point, we have identified a set of programme-relevant dimensions of well-being. These can be measured using qualitative methods such as surveys with community members involved in (or living near) project sites. We have then shown how some indicators already proposed for tracking outcomes of the TRMP could also be used in an aggregated way as part of a better life index (See Table 2). However, these should be supplemented with additional relevant indicators agreed by actors during the development of the TRMP MERL.

Figure 22. Flower presentation of the 11 dimensions of social wellbeing measured in the OECD, Better Life initiative
(Extracted from https://www.weforum.org/agenda/2019/05/sweden-is-a-top-performer-on-well-being-here-s-why/)

Table 34. Suggested indicators for measuring wellbeing in the TRMP

Dimensions of well-being aligned with TRMP		***Indicator***	
A	Income and wealth	A1.	▪ Employment in TRMP-related activities
B	Work and job quality	B1.	▪ To be developed by service provider appointed to design MERL
C	Health	C1.	▪ To be developed by service provider appointed to design MERL
D	Knowledge and skills	D1.	▪ To be developed by service provider appointed to design MERL
E	Environmental quality	E1. E2.	▪ Extent of rivers rehabilitated ▪ Improved biophysical condition of rivers
F	Subjective well-being	F1.	▪ To be developed by service provider appointed to design MERL
G	Safety	G1.	▪ Reduced impact of climatic events on people and infrastructure

A variety of indices have also been developed to assess and monitor climate resilience. It is important to note that there is considerable variation in the conceptual understanding and definition of resilience, and hence in the proposed indicators applied in these different initiatives. In the social-ecological systems literature, resilience is regarded as the "The capacity to anticipate, respond, adapt, or transform in response to shocks, uncertainty, and change, especially novel systemic changes, in order to facilitate desired outcomes" (Biggs et al., 2021 p3). These capacities are underpinned by a set of key system characteristics, which have been the focus of several monitoring approaches. For example, GIZ (2014) use these capacities and characteristics to define a resilience matrix, which can serve as a proxy to assess whether a social-ecological system is climate resilient (See Figure 3). However, they caution that both the characteristics and capacities in each dimension should be tailored to specific areas. The selection of appropriate and relevant climate resilient indicators for the TRMP MERL therefore requires careful consideration.

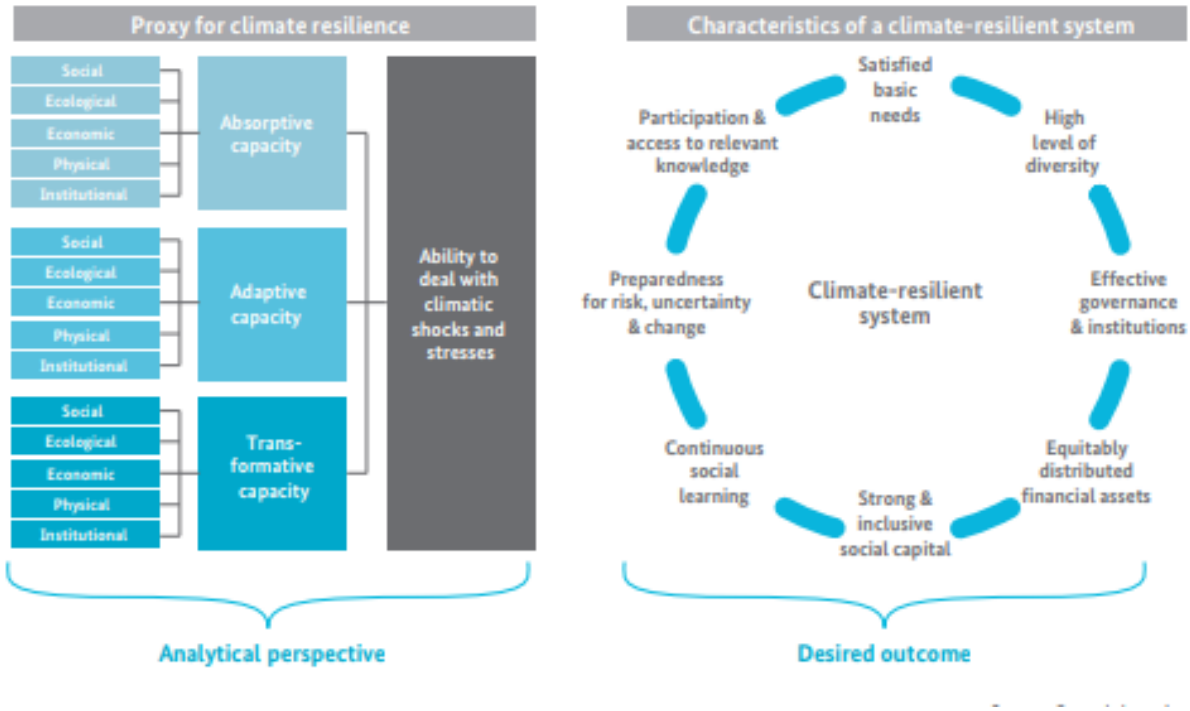

Figure 23. Generic climate resilience framework (extracted from GIZ, 2014).

The impact of the TRMP can also be measured in terms of its contribution to national and global initiatives such as the Sustainable Development Goals (SDGs). The SDGs are a constellation of 17 interlinked global goals designed to balance economic growth, social development, and environmental protection, and move the world towards a more sustainable future. While South Africa tracks the SDGs at a national level, understanding progress at a local scale may help to surface issues that require urgent attention (Wernecke et. al. 2021). Tracking the contribution of the TRMP to the SDGs might therefore be a helpful approach. Many of the activities that will be implemented to verify progress of the TRMP towards the desired goal (see Table 1) can be expanded or strengthened to track contribution to SDGs. Table 3 sets out the SDG targets and indicators that intersect with the TRMP.

Table 35. Proposed SDG targets and indicators that relate to the overarching goals[98]

Goal/target	Indicator	Means of Verification (indicative)
Goal 1. End poverty in all its forms everywhere		
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	1.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population 1.5.2 Direct economic loss attributed to disasters in relation to global Gross Domestic Product (GDP)	▪ Analysis of Disaster risk reduction (DRR) and emergency data, census data and GDP data
Goal 6. Ensure availability and sustainable management of water and sanitation for all		
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.1 Proportion of domestic and industrial wastewater flows safely treated 6.3.2 Proportion of bodies of water with good ambient water quality	▪ Analysis of Cleansing and Solid Waste (CSW) and/or Umgeni Water data, and/or Blue drop and Green drop reports ▪ River monitoring and assessment at project sites and or CSW/Umgeni Water data
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time	▪ River monitoring and assessment at project sites
6.b Support and strengthen the participation of local communities in improving water and sanitation management	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management	▪ Analyses of TRMP stakeholders database and administrative information
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		
8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	8.3.1 Proportion of informal employment in total employment, by sector and sex	▪ Database of TRMP beneficiaries ▪ Reporting from TRMP activities associated with livelihoods
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable		

[98] adapted from https://unstats.un.org/sdgs/indicators/indicators-list/

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population 11.5.2 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters	▪ Analysis of DRR and emergency data, census data and GDP data
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities 11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 month	▪ Mapping and spatial analysis using aerial imagery and project locations (e.g. in a GIS) ▪ Survey with community members living near project sites
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss		
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	▪ Policy reviews
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels		
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels	16.7.2 Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	▪ Survey with community members living near project sites

Finally, progress towards outcomes and impacts of the TRMP, in terms of both scale and time, is contingent on the implementation pathway selected and how effectively it has been executed. A description of pathways is included in Chapter 5. These pathways reflect different institutional arrangements and scales at which the programme will be implemented. For example, Pathway 1 would entail the TRMP being run entirely as an internal municipal project, comprised mainly of expansion of municipal departmental projects contributing to river management work, covering all waterways on municipal land. Under this pathway, many of the outcomes detailed in the ToC, such as flood and climate resilient riverine corridors; communities enjoying accessible, safe, clean and well-managed environments; and diverse and sustainable livelihoods from TRMP activities, would be restricted to municipal areas only. However, over time, the idea is to transition to other pathways that would extend the reach of outcomes and the level of impact. It is therefore

important that the TRMP MERL also track (i) the outcomes relative to the scale of the pathway, (ii) transitions to new pathways in relation to proposed timeframes, and (iii) the performance of the implementation vehicle. Table 4 outlines how indicators could be linked to the different pathways while Table 5 provides examples of categories and some examples of possible indicators that could be used to assess the performance of the TRMP institutional vehicle. These categories are extracted from Hooper's (2010) framework for tracking performance of river basin organisations but will need to be re-visited and refined in the detailed development of the MERL.

Table 36. Linking the TRMP MERL to pathway progress

Types of indicators	Pathway 1[99]		Pathways 2 and 4[100]		Pathway 3[101]	
	Scale	Timeframes	Scale	Timeframes	Scale	Timeframes
Outcome indicators linked to Theory of Change	Measured in relation to resources & communities on municipal land only	Measured in the short-term	Measured in relation to resources & communities on municipal & private land	Measured in the medium-term	Measured in relation to resources & communities on municipal, private & iNgonyama Trust land	Measured in the long-term
Impact indicators						

Table 37. Categories and indicators of performance of the institutional vehicle[102]

Category	Significance (extracted from Hooper 2010)	Examples of some indicators that could be applied in the TRMP
A. Coordinated decision-making	The use of coordination mechanisms between and within agencies and basin organizations; consensus based decision-making; links between local water institutions and a basin organization; how relevant sectoral interests are engaged	▪ Representation in the TRMP Stakeholder Forum (which should include a range of actors e.g. local, provincial and national government, civil society, NGOs, academic organisations, and donors) ▪ TRMP forum is functional and well attended
B. Responsive decision-making	Decision processes which adapt to new knowledge and new conditions; promote efficiency; value cross-sectoral dialogue; promote best practices	▪ Multilateral forum and TRMP bodies commission relevant research papers and assignments ▪ Decisions are implemented based on consensus reached in multilateral forum ▪ Reflection and learnings are used to guide decision-making and embedded within adaptive management cycle

[99] Pathway 1. Upscaled internal municipally-driven riverine management

[100] Pathway 2. Upscaled internal municipally-driven riverine management + informal collaboration with external riverine management & green economy projects; Pathway 4. P2 with riverine activities happening separately under municipal & non-municipal stewardship

[101] Pathway 4. P2 with riverine activities happening separately under municipal & non-municipal stewardship

[102] Adapted from Hooper 2010

C. Financial sustainability	Evidence of ongoing financial support, cost-sharing, transparency, innovative water pricing and demand management	▪ Funds raised by TRMP hub ▪ Expenditure on operational costs and TRMP projects.
D. Organizational design	The use of democratic processes; evidence of stable agreements and evidence of water policy conducive to river basin management; use of organizational structures which fit basin needs and avoid fragmentation	▪ Number of qualified managers appointed full time in a coordination and oversight role (or appointed to the ”hub”)
E. Training and capacity building	The use of ongoing training and capacity building of staff relevant to basin needs	▪ External/outreach capacity building is included ▪ Internal evaluation, reflection and learning processes are in place
F. Information	The existence of a knowledge system to aid decision-making, protocols to share information, and a culture of research-knowledge links	▪ Data system developed and implemented ▪ Number of municipal departments and other actors inputting/capturing data on the system
G. Private and public sector roles	Evidence of stakeholder participation; clear specification of roles of private and public sector	▪ Existence of constitution clearly identifying stakeholder roles

9.4 When to monitor, who monitors, and the role of citizen science

Monitoring of landscape level initiatives is often challenging as there are usually no clear responsibilities for who will gather, analyse and share data. In most instances, individual organisations employ different methods to collect their own (and often different) data but do not share or align their efforts. Some of these challenges surfaced in the baseline review of ongoing river rehabilitation projects in the eThekwini Municipal Area. While some projects monitor frequently using the same set of indicators (e.g. Sihlanzimvelo, Adopt a River and KwaMashu Bridge City Open Space project), monitoring processes varied in space and time, and according to funder requirements. In addition, a variety of stakeholders were involved, to greater or lesser extents, in these different processes. For example, communities played a key role in monitoring in the Wize Wayz Water Care programme (with monitoring activities considered important for capacity building) while in other projects (e.g. Riverhorse Wetland Rehabilitation Project), monitoring was undertaken by consultants. There was also a range of methods and procedures employed across the projects. For example, the Amanzi Ethu Nobuntu project uses an application (app) to support their monitoring processes, which helps with standardizing their monitoring activities.

To overcome these challenges, a detailed monitoring guideline should be developed as part of the TRMP MERL. This guideline should consider the following:

- What potential measures and mechanisms will be used for monitoring the different indicators?
- How frequently will the data need to be gathered?
- Who will be responsible for collecting and analysing the data?
- How much will the monitoring cost (both in terms of time and money)?
- Where will the data be held, and how will it be included in a broader adaptive management cycle?

At an indicator level, information for each indicator (including description of the indicator and the associated measure, sampling method, frequency and processing) should be captured in a tabular format in the guideline. Where possible community level monitoring / citizen science should be optimized to enable a range of other benefits such as job creation, capacity building, stewardship and greater data coverage.

At a programme level, the guideline should detail the overall coordination of the MERL. This includes assigning responsibility for gathering, collating and analysing the data as well as facilitating the various evaluation, reflection and learning processes. It is likely that the competencies required for implementing the MERL will be distributed across a range of people, rather than at an individual level (Rosenberg et al. 2018). It is therefore recommended that a specific MERL team is identified and should be connected to the structure tasked with implementing and managing the TRMP. These requirements should be factored into the financial resources required to implement the MERL.

9.5 Evaluation, Reflection and Learning

Monitoring and evaluation are closely linked. While monitoring focuses on measuring, evaluation asks (a) are we doing the right things, (b) are we doing things right, and (c) are there better ways of doing it. In this way, evaluation complements indicator-based monitoring, informs strategic planning and deepens learning.

While there are different ways of measuring things, there are also different ways of evaluating things. The development of the TRMP MERL should consider how evaluations and reflections may be designed to optimise *learning*, and whether the techniques applied elsewhere may be applicable in the context of the TRMP. Examples of some evaluation techniques that have been used to complement (explain and extend) indicator-based monitoring in other landscape initiatives in South Africa include:

- Most significant change stories.
- Case studies.
- Meta-evaluation (See Rosenberg et al. 2018 for further details).

Rosenberg et al (2018) highlight the tensions between getting on and doing the work and reflecting on what has already been done. Ideally the TRMP MERL should seek to balance the need for action with the need to learn and guide future activities. Examples of activities used to enhance reflection include:

- Monthly reporting on both qualitative and quantitative information, and using purposively designed reporting templates.
- Providing platforms to reflect on the most significant changes, challenges and other (open ended) observations.
- Case study evaluation interviews, reports, presentations and discussions on reports
- Reference group/management group meeting discussions.
- Inputs into strategic planning processes (Rosenberg et al., 2018).

It is important to note that reflection, learning and capacity building should be undertaken at all levels including for *inter alia*:

- ***Managers*** who use evaluation for adaptive management. This may entail exploring how reporting can be better designed to optimise learning.

- ***Stakeholders*** who are building their capacity through implementation and/or monitoring related activities, or whose capacity development may contribute to stewardship.
- ***Project teams*** who are learning through implementation of their respective projects/programmes.

Reflection and evaluation should consider any external factors that may influence activities and results, such as political, institutional, social or environmental changes under which the activities have been implemented, together with any emerging insights. This information may enable communities and practitioners to better respond to, and/or take advantage of changing contexts and unexpected events in the future.

9.6 Linking the MERL to Strategic Adaptive Planning and Investment

The TRMP MERL should also be nested within a broader adaptive management cycle, defined as a structured, iterative process of robust decision-making in the face of uncertainty (Figure 4). This includes connecting the TRMP MERL back to the planning processes of eThekwini and other participating organisations to ensure that the outcomes are achieved.

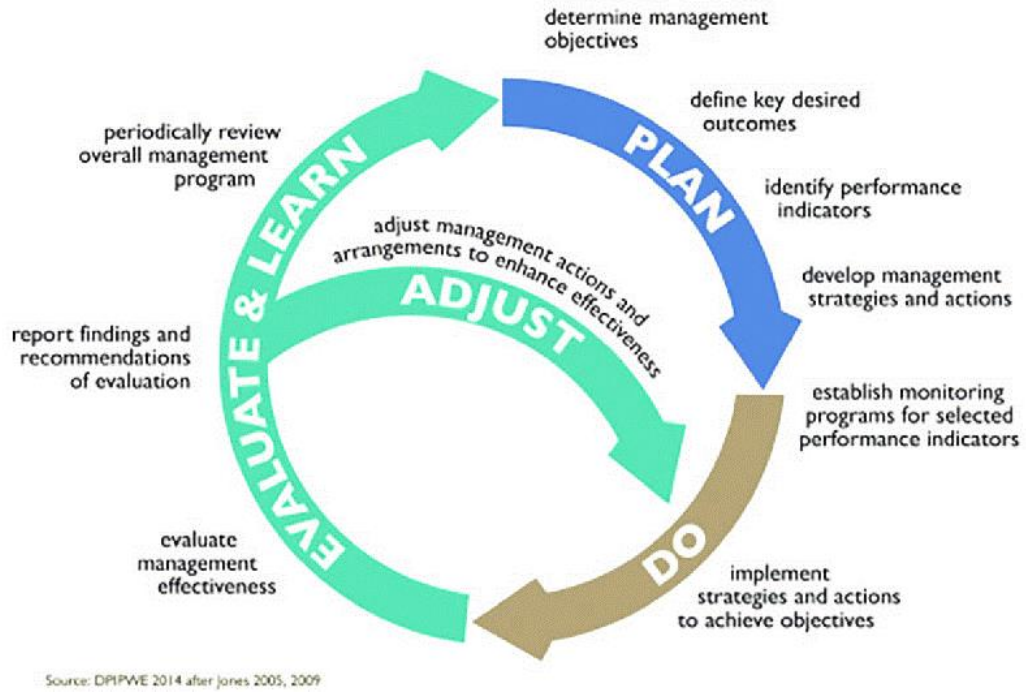

Figure 24. The adaptive management cycle (extracted from West, 2016)

The MERL should also be structured in such a way that it can be used to unlock additional investment in the TRMP. This may be achieved through specific design elements. Firstly, the MERL should connect indicators at different levels from activity to output to outcome to impact indicators. This may permit potential tracking of pathways to impact and facilitate an understanding of potential causal relationships between project components at different scales (from site to catchment to provincial to national) (Figure 5). In this way the MERL framework could be used as standardized tool to support individual projects needing to demonstrate impact. This may be particularly useful in securing further municipal or donor funding which often requires the mapping and measuring of pathways to impact. Secondly, by aligning the outcome

and impact indicators with other strategic initiatives (such as the SDGs) the MERL can be used to demonstrate the contribution of the programme to broader policy initiatives. Lastly, the MERL should be designed in a way that accommodates frequent and rapid changes to individual projects (inputs and activities) without necessitating changes to the overall framework. To achieve this, it is recommended that the MERL focus on slower and less frequent outcomes and impacts.

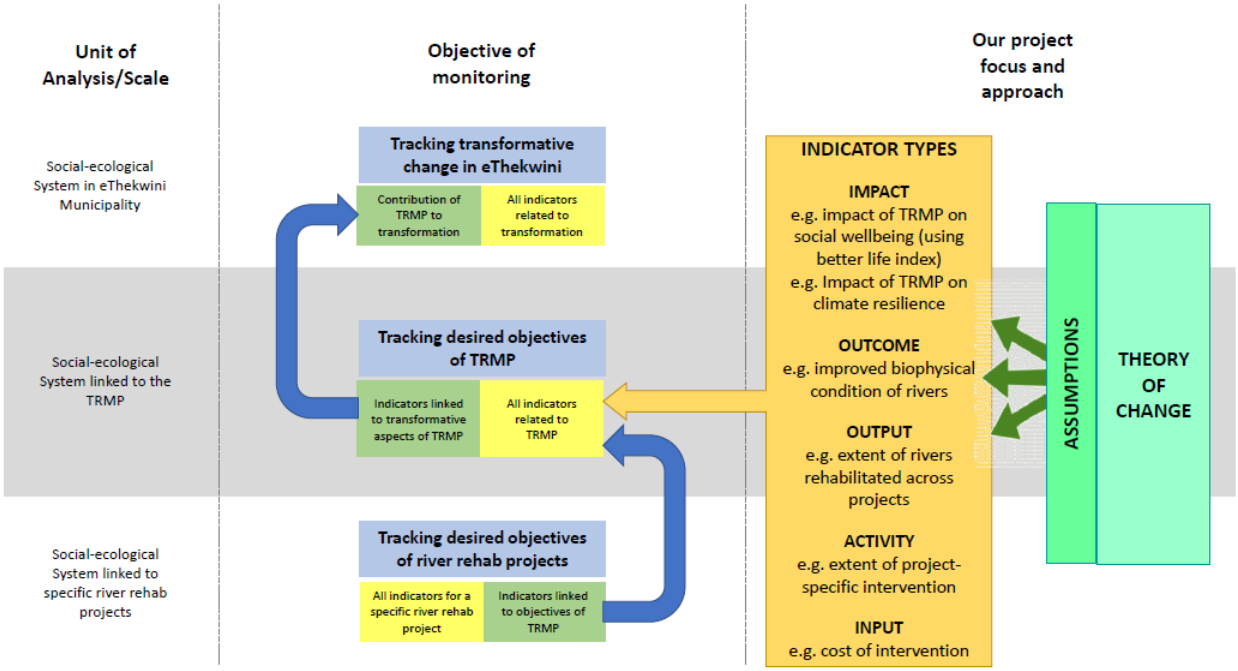

Figure 25. Connections across scales, which are represented as various elements in the TRMP MERL

9.7 **Way forward**

This section sets out the basic framework that should underpin a system for monitoring, evaluation, reflection and learning in the TRMP. However, going forward, a detailed MERL that enables the environmental and socio-economic benefits, outcomes and impacts of the TRMP to be assessed and quantified must be developed. The MERL should be created by a service provider experienced in developing complexity-sensitive monitoring, evaluation, reflection and learning processes for landscape level initiatives. Ideally, the service-provider should work hand in hand with the team/individual responsible for implementing the MERL within the TRMP. These partners should also co-develop the MERL with other relevant actors. This development process should include the following key activities:

- **Review, refine and agree a set of indicators relevant to the selected pathway**. A short list of high-level indicators is suggested that could be used to track the outcomes and impacts of the TRMP, detailed project-specific indicators are not provided. However, project level indicators will need to be designed at the inception of on the ground projects to feed into these higher indicators. In addition, the proposed outcome indicators will need to be refined and aligned with the selected pathway and relevant impact indicators will need to be agreed.
- **Develop the monitoring programme and associated guideline**, with particular consideration given to community level monitoring / citizen scientists.

- **Develop appropriate evaluation processes**, including a review of evaluation processes applied in other landscape level initiatives
- **Explore and implement relevant learning approaches,** including an investigation of meta-systems for synthesis and reflection and exploring platforms for improved engagement and knowledge-sharing better access to research, and capacity-building for officials at operational and strategic management levels as well as for policy makers. Ideally a living guideline should be developed that captures both generic and specific ways that learning could be optimized.
- **Linking the MERL to Strategic Adaptive Planning and investment**, with specific direction on how the information and learning generated in the MERL will connect to planning processes particularly within eThekwini and other participating organisations.

10. RECOMMENDATIONS & WAY FORWARD

The work carried out to develop this Implementation Framework brings together the range of preparatory research and deliberation and combines this into a high-level framework that will take the process to the next stage of planning. The next stage involves securing the necessary buy-in from firstly Municipal decision-makers, and secondly stakeholders from outside the municipal system, including those from iNgonyama Trust, from the Private Sector and from Civil Society. There can be no doubt after the recent flood disaster that an intervention such as is formulated into the TRMP would be both valuable and cost-effective. The numbers indicated in the costing exercise measured against the rough tally of R17 billion that the flood damage cost KwaZulu-Natal make it an imperative that programmes like the TRMP be taken seriously.

However, the programme is both innovative and complex. This makes it difficult to "insert" into siloed municipal planning systems that roll by habit. The bigger the system, the greater the challenge in respect of introducing change. Having noted this, many of the activities that comprise the TRMP, both inside and outside the municipal system, are already in process, and are already embedded into mandates and projects that are happening. This provides a powerful strong foundation on which to build.

The Implementation Framework, specifically the content of Chapter 7 identifies what needs to take place, but in summary it is as follows:

- Engage stakeholders inside and outside the Municipal system to share the concept, to secure support, to iterate the ToC and to set the basis of co-responsibility, collaboration and partnership. Both groupings will need to be mobilized separately and then together.
- Establish an "Internal Hub" to begin the task of facilitating the impact value of the work that the municipality is already doing through the various departmental mandates.
- Secure funding for the bridging and initiation phases of the TRMP.
- Complete the catchment profiling beyond the four that will be done by the end of 2022.
- Based on the above three activities, develop set of detailed operational plans that can be executed inside the Municipal system and on the outside in the rest of the EMA and along relevant catchments.
- Build the capacity to coordinate, both with the Internal Hub f, and then the development of an External Hub.

The above six broad actions will lay the foundation for the ongoing TRMP.

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APPENDIX

The Appendix comprises several supporting documents and tools.

Appendix 1.1_TRMP Inception Report

Appendix 1.2_TRMP Strategic Plan Attendance Register

Appendix 2.1_TRMP Master database_28.04.2022

Appendix 2.2_TRMP Geospatial Database

Appendix 2.3_TRMP draft Geospatial database explanatory video

Appendix 3.1_TOC process records

Appendix 3.2_TRMP ToC Attendance Register

Appendix 4_TRMP Detailed Pathway option descriptions

Appendix 5.1_TRMP Institutional Governance graphic

Appendix 5.2_TRMP AEN Institutional partner option

Appendix 5.3_TRMP GC Institutional partner option

Appendix 6.1_TRMP Detailed Implementation Plan_24.04.2022

Appendix 6.2_TRMP Costing Tool_06.06.2022

Appendix 7_TRMP Resourcing database_24.04.2022

Appendix 8.1_ Learnings from Apr 2022 Floods.Umlaas River Shongweni Dam

Appendix 8.2_Learnings from Apr 2022 Flood. AIPs&solid waste

Appendix 8.3_Learnings from Apr 2022 Flood_different impacts

Appendix 8.4_KZN Crises- Engineering design for the future