



TRMP Business Case

Inception Report



C40 Cities Finance Facility (CFF)

eThekweni
24 October 2018

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1. INTRODUCTION

The eThekweni Municipal area is crossed by many valley lines, all of which carry flood waters downstream and ultimately to the sea. These floods are unpredictable and if unmanaged can cause destruction of property and loss of life. Added to this, is the predicted climate change impacts which talk of an increase in rainfall intensity and an associated increase in flood levels and frequency.

The flood related damage, in addition to the loss of property, infrastructure and life, ultimately has a negative effect on the economy of the city in that clean up and repair costs, whether they be private or public funds, are being used to restore the present situation rather than improve or grow the city.
(eThekweni Flood Lines Strategy)

The eThekweni Municipality was successful in applying for technical assistance to develop a Business Case for up scaling Sihlanzimvelo from the C40 Cities Finance Facility (CFF). This report outlines the scope and methodology for the technical support from the C40 Cities Finance Facility (CFF) to the City of eThekweni for the development of a business case to facilitate the up scaling of the Sihlanzimvelo community-based stream management programme in some form or other to cover the entire river/stream network of the city.

Climate change is already affecting millions of people around the globe through extreme and unseasonal weather events. These impacts are likely to have a disproportionately greater impact upon nations from the global south, who have limited resources and infrastructure to adequately protect themselves from these impacts, and insufficient means to recover. Local Governments, in particular are most at risk because climate impacts are felt at a local level. It is at the local level where livelihoods are lost, water security and food security are impacted and where infrastructure is destroyed. Whilst local governments will suffer the full impacts of climate change they are also most equipped to take rapid action now and prepare for and adapt to the impacts of climate change.

Sihlanzimvelo currently operates on public land in high socio economic need / high density areas in eThekweni's upper catchments including the Inanda, Ntuzuma and KwaMashu (INK) and Umlazi settlements.

- The programme deploys teams of workers over 5km waterway segments who are employed by cooperatives contracted by the municipality.
- The teams include coop members and workers they employ, for maintaining a 3m verge abutting the streams.
- Maintenance tasks include removing litter, dumped waste, alien vegetation, grass cutting and clearing blockages.
- This work is monitored and photographically reported by assessors reporting to a consultant and monthly payments are made to the co-ops if performance is satisfactory.
- The teams report incidents that they see e.g. blockages, damaged roads, pipes etc. which is an important part of the monitoring 'presence' on the stream, which helps facilitate more efficient municipal response times.

The present funding comes from the Roads and Stormwater Maintenance Department operating budget despite the project addressing issues which fall under the responsibilities of various other line Departments of the City.

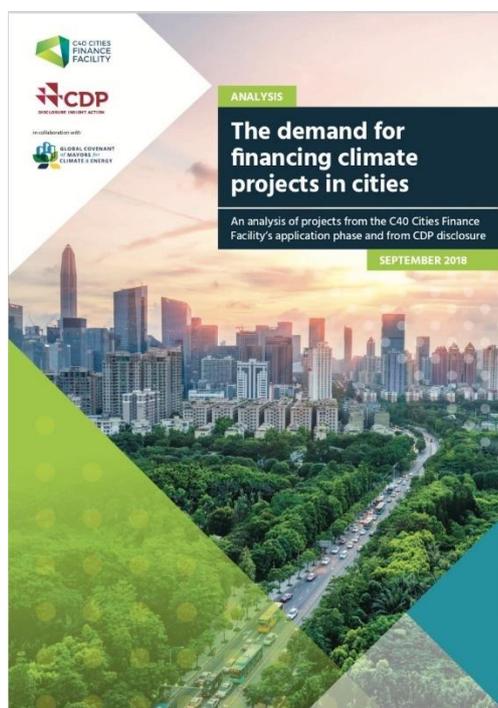
2. THE C40 CITIES FINANCE FACILITY (CFF)

The C40 Cities Finance Facility (CFF) is a joint project of the C40 Cities Climate Leadership Group (C40) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and the United States Agency for International Development (USAID). It is implemented by a partnership of GIZ and C40.

The CFF was set-up in 2015 to support C40 cities in developing and emerging countries to prepare and deliver sustainable, low carbon and climate adaptation projects. The CFF aims to support the development of new infrastructure and to use this experience to catalyse further action in other cities, to support greater market understanding and engagement in infrastructure projects, and to develop the capacity of supported cities to independently undertake similar projects in the future.

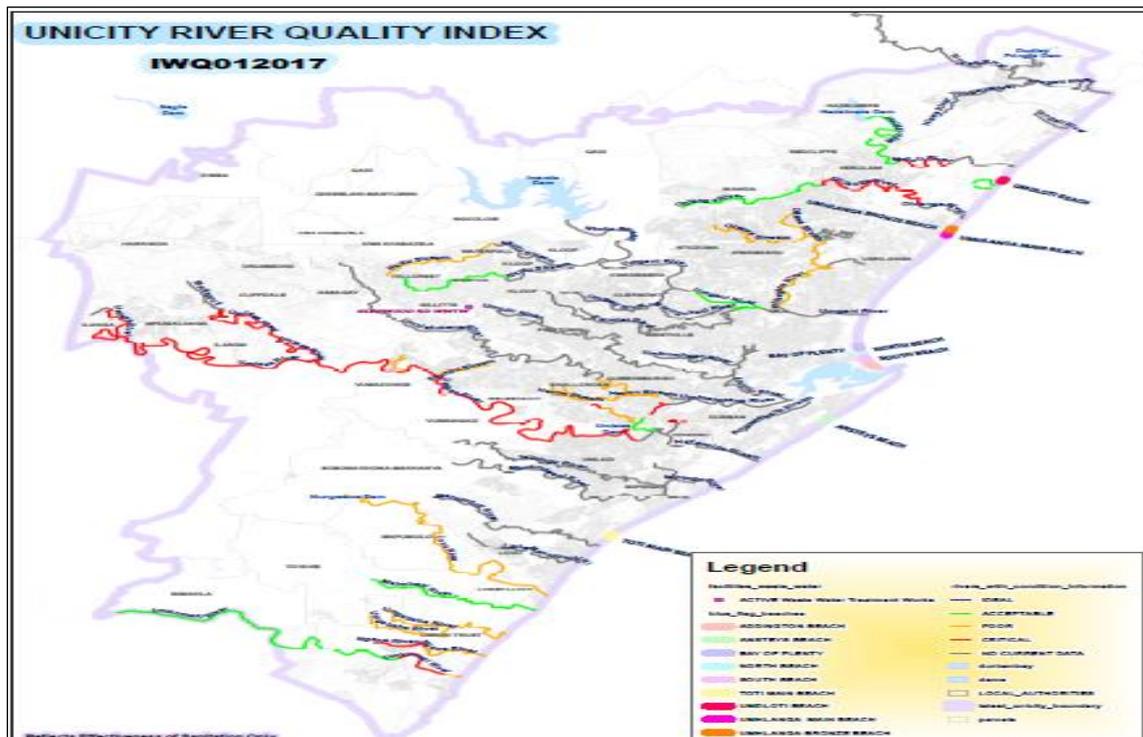
The ultimate objective of the CFF is to reduce greenhouse gas emissions and increase resilience in cities by mobilizing finance for city-level climate change action. It aims to achieve the following high-level project outcomes:

- Enabling sustainable financing of urban climate change investment projects
- Developing the capacity of city administrations to mobilize and access a broad range of financing instruments
- Sharing knowledge bond CFF partner cities via peer-to-peer learning and CFF stakeholders, and
- Developing partnerships between cities and investors/financiers and their representations.



3. DURBAN'S RIVERINE ENVIRONMENTAL CHALLENGES

Durban has more than 6 000km of rivers and streams, 18 River Catchments, 17 Estuaries and 98 km of coastline. As is typical of most cities in the developing world, the quality of water in Durban's abundant streams and rivers is not good. This is illustrated in the River Quality Index (2017) where relatively few watercourses are denoted of "acceptable" water quality.

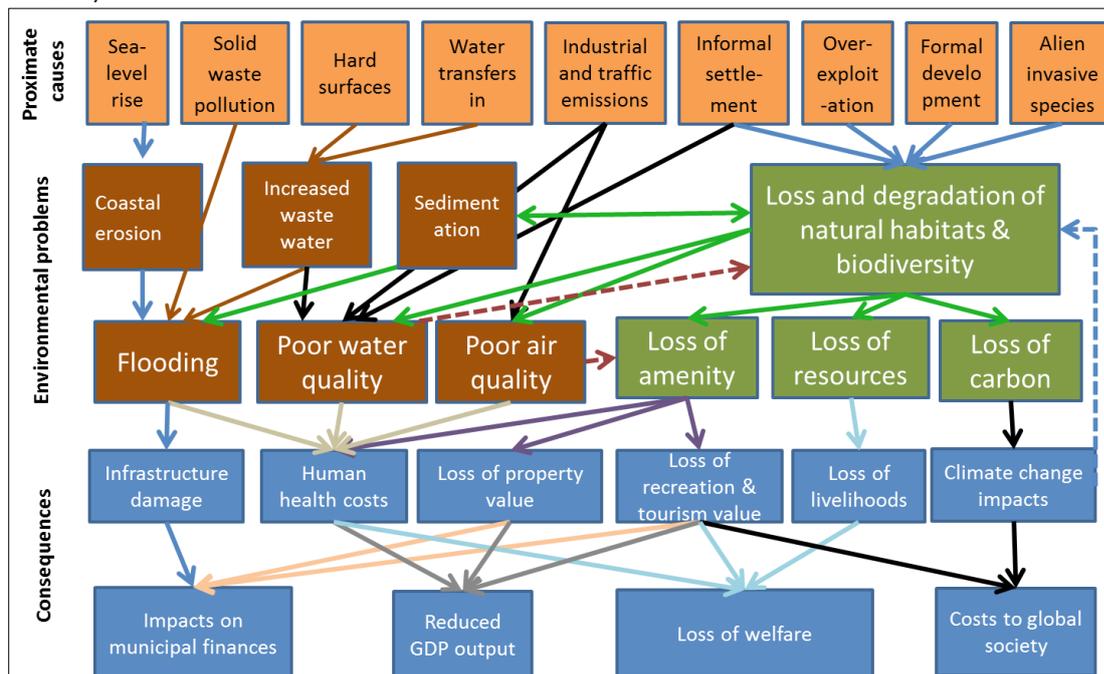


The World Bank (2017) points out that “during the summer rainfall months, the city has to deal with frequent floods. While Durban has a relatively well-developed drainage system, flooding problems are exacerbated by the increased hard surfaces and the solid waste that accumulates in storm water conduits, particularly plastic bottles”

The study notes that a factor contributing to high flows and flooding is the importation of water to supply city inhabitants. In formal areas, the resulting waste water makes its way to sewage treatment works, which then discharge their wastes into the drainage systems. Combined with the effects of hardened surfaces, these elevated flows and nutrient levels lead to erosion of river banks and have an impact on estuarine ecology and functioning. Very little of this waste water is recycled. Yet, ironically, the eThekweni Municipal Area faces major water shortages as the supply of potable water from the surrounding catchments is outstripped by growing demand.

Currently, water is supplied primarily by the uMngeni catchment to the city but it is expected that water from other catchments will soon be needed to meet growing demands. Water is also becoming more expensive as local resources are depleted and more water is imported into the city from greater distances away (Turpie et al 2017).

This chain of impacts is summarized in the attached diagram from the World Bank study (Turpie et al 2017):



Climate change and the ongoing loss of ecological infrastructure¹ in critical parts of the city's catchments will intensify Durban's riverine environmental challenges and exacerbate damage to the city's engineered infrastructure. The Municipal Adaptation Plan which was approved by the eThekweni Municipal Council in 2009 points to:

- A generally wetter climate and more variability in rainfall
- Increased storm events
- Sea level rise
- Increased flooding and reduced water quality
- Higher temperatures expressed as extremes in urban heat islands with direct impacts and impacts on vectors and diseases

Investing in the city's ecological infrastructure is increasingly being seen as a critical part of adapting to climate change and is known as 'ecosystem-based adaptation'. The involvement and employment of communities in such initiatives (Community Ecosystem Based Adaptation or 'CEBA') is also seen as an important part of building social and economic capital in vulnerable communities so that they can respond better to the challenges associated with an increasingly climate-stressed future.

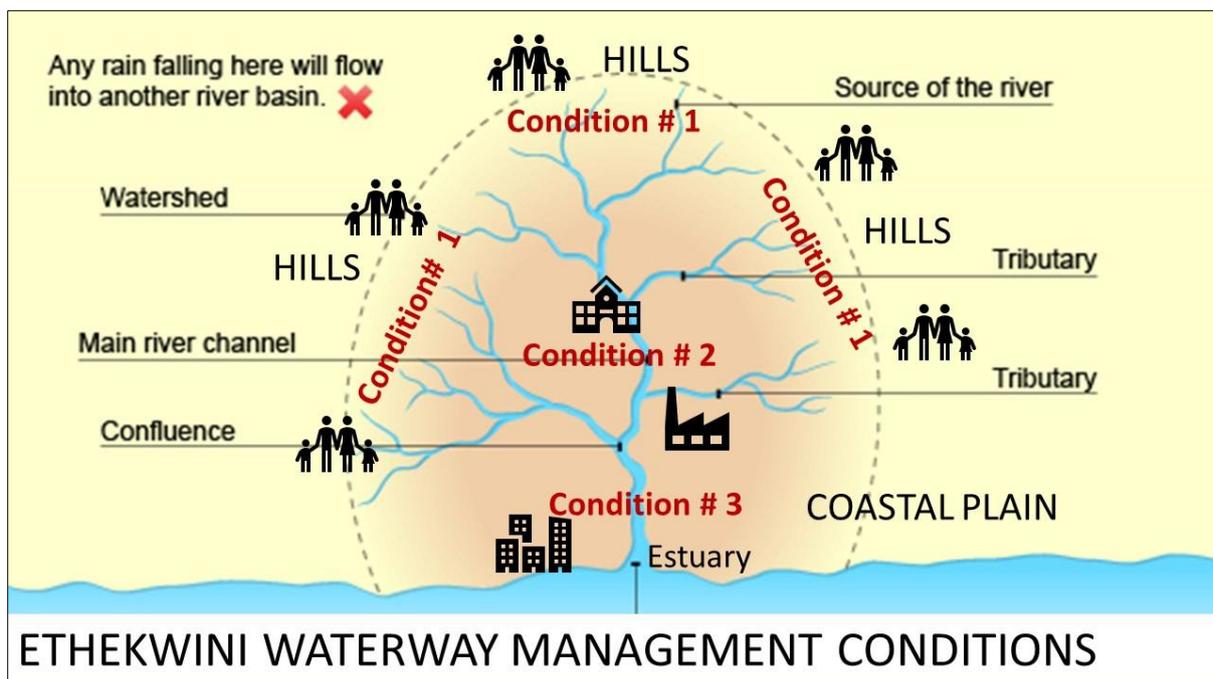
Within this backdrop the development of a business case to facilitate the up scaling of the Sihlanzimvelo Programme presents a major opportunity for tackling the City's riverine environmental challenges, reducing damage to engineered infrastructure, restoring biodiversity and building the adaptive capacity of surrounding communities through job creation and skills development.

Up scaling will involve splitting the catchment into three generic waterway management conditions:

¹ 'Ecological infrastructure' refers to naturally functioning ecosystems that deliver valuable services to people e.g. climate regulation, water purification and flood attenuation.

- Waterway Management Condition # 1: Upper zone of the catchment where the catchment area does not exceed 1000 Ha. This is where the present Sihlanzimvelo program is situated. This size catchment area means that the streams can be safely cleaned by the co-ops with minimal experience and safety equipment.
- Waterway Management Condition # 2: Middle zone of the catchment where the catchment area is greater than 1000 Ha but less than 12000 Ha. Alternative service delivery models need to be explored for these reaches of river.
- Waterway Management Condition # 3: Lower zone of the catchment where the catchment area is greater than 12 000 Ha. These are the large rivers of the City and will include the coastal plain & estuaries. Alternative service delivery models need to be explored for these reaches of river.

These waterway management conditions are illustrated below:



Additional considerations such as land ownership and landuse activities in the respective parts of the catchment, will also influence the development of alternative models for implementation and up-scaling. These are detailed further in the next section.

4. THE BUSINESS CASE VISION

The proposed vision for the Business Case is as follows:

Build a compelling Business Case based on Cost Benefit Analysis for the City to work in partnership with all affected stakeholders to collectively rehabilitate and sustainably manage all the riverine corridors in the City in a manner that:

- *is resilient to climate change;*
- *transforms riverine corridors into valuable places which are clean, safe, healthy, useful and pleasant open spaces;*
- *is generative of social and economic opportunity; and*
- *impacts positively on the City as a whole.*



5. CAPACITY BUILDING

Recognising the enormous challenges of cities to continuously develop investment projects and link these to finance, the aspiration of the CFF support is to strengthen the technical, managerial as well as operational and administrative capacity of its partner cities and their administrations in project preparation and finance and thus ultimately enable those city administrations to undertake similar projects independently in the future. Projects proposed by cities for support through the CFF are often of innovative and complex nature.

Strengthening city administration's capacities is therefore necessary to overcome the lack of experiences, best practices and establish standard procedures to ensure the replication of similar projects in the future. Overall the capacity development support by the CFF thus closely interlinks with CFF's technical assistance in the project preparation process, targeting capacities relevant for a successful project development and finance.

The CFF draws on the GIZ's distinction of three different levels of capacity development: individual skills and competencies, organisational performance, and inter-organisational coordination and cooperation systems. Generally the CFF perceives the project preparation process as a vehicle to identify and address capacity needs in the three levels of capacity development.

Therefore the CFF envisions the following capacity development outcomes of its support to city administrations:

- The departments responsible for the project and their staff have increased technical capacities and skills in the area of project preparation
- The responsible departments within the city administration have increased managerial and financial capacities necessary to mobilise innovative climate finance instruments.
- Cooperation and communication among the city administrations and relevant organisations and networks are strengthened
- Cities have applied and institutionalised appropriate methodologies and processes for effective project preparation.

In order to achieve the capacity development outcomes the CFF takes a three-step approach:

- 1) Capacity assessment that analyses the existing capacity and identifies gaps at the three levels of capacity development specifically relevant to the project.
- 2) Formulation of a capacity development plan, that draws on the assessment results to address identified capacity gaps. Similar to the operational plan, the capacity development plan constitutes the basis for the implementation of capacity development activities and monitoring the effectiveness of these activities. The city administration and the CFF jointly agree the capacity development plan including a timetable and the division of responsibilities. The capacity development plan acts as the second pillar for CFF's support to the city and serves as the basis for the ToR of the contracts to be tendered.
- 3) Implementation of the capacity development plan constitutes the core of the capacity development support provided by the CFF to its partner cities throughout the duration of CFF support. The Senior Project Advisor supported by the consultancy firms contracted under the framework agreement will be responsible for providing the majority of the capacity development support.

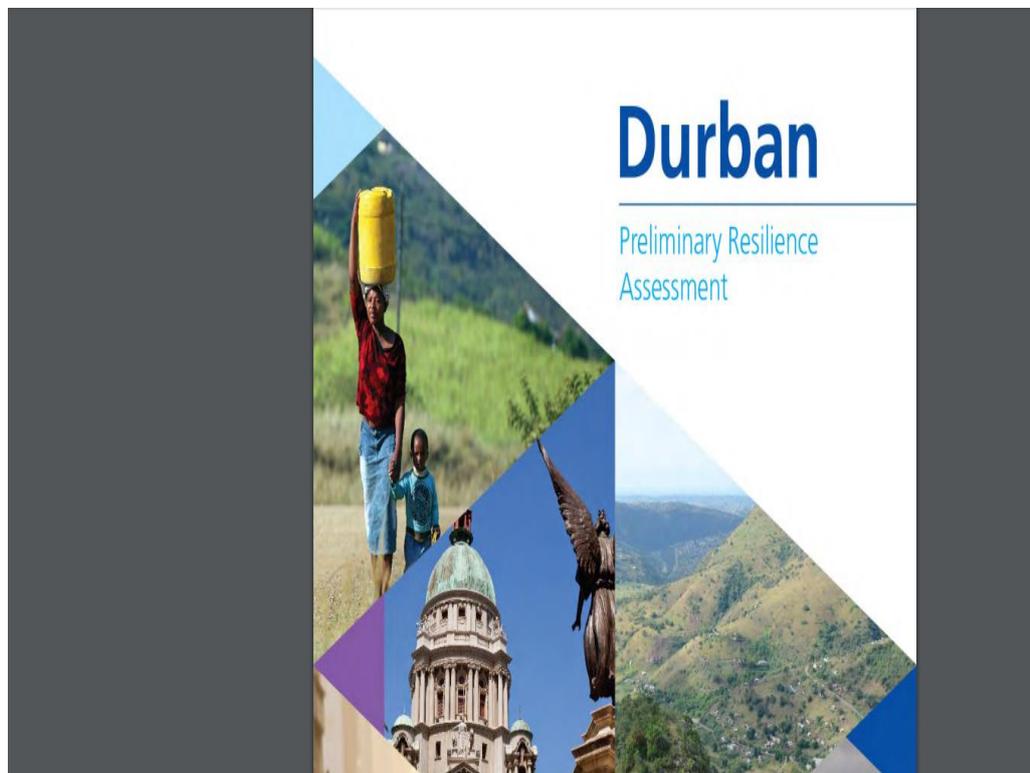
The intention is to:

- Build skills that will facilitate building programme sustainability (e.g. development of technical and process/management skills)

- Build organisational capacity: Ensuring that the department has the skills needed to operate an 'up-scaled' programme. Something to consider under this would be skills around 'closing the loop'/integration skills
- Networking/ inter-organisational skills e.g. who do we need to partner with to facilitate implementation.

The following process is indicated, which would run in parallel with development of the Business Case:

- 1) Needs assessment (e.g. questionnaire, workshops). Terms of reference has been drafted for a consultant to undertake the needs assessment.
- 2) Development of capacity development plan
- 3) Implementation



6. KNOWLEDGE AND LEARNING

The Durban Adaptation Charter of 2011 involves the following commitments:

1. Mainstreaming adaptation as a key informant of all local government development planning
2. Understand climate risks through conducting impact and vulnerability assessments
3. Prepare and implement integrated, inclusive and long-term local adaptation strategies designed to reduce vulnerability
4. Ensure that adaptation strategies are aligned with mitigation strategies
5. Promote the use of adaptation that recognises the needs of vulnerable communities and ensures sustainable local economic development
6. Prioritise the role of functioning ecosystems as core municipal green infrastructure
7. Seek the creation of direct access to funding opportunities
8. To develop an acceptable, robust, transparent, measurable, reportable and verifiable (MRV) register
9. Promote multi-level and integrated governance and advocacy for partnerships with sub-national and national governments on local climate action
10. Promote partnerships at all levels and city-to-city cooperation and knowledge exchange including information and knowledge sharing, capacity development and technology transfer in all areas relevant to adaptation.

Through the DAC the following platforms are in place to facilitate the sharing of knowledge and learning:

- The Southern African Regional **Hub**
- The Central KZN Climate Change Compact

A 'knowledge cluster' for the Business Case could 'piggy back' on the existing Durban Adaptation Charter 'Hub and Compact' approach. Durban is also a Knowledge Hub for the Urban Climate Change Research Network, which links to its African city partners through, amongst others, the EPIC-A network.

The intention is to ensure that the Business Case can be replicated as required. These could be in the form of webinars, workshops, case studies, using existing opportunities to feed into other programmes and processes. There are three components to this:

- 1) Knowledge sharing with cities: This could include sharing of approaches/methodologies (and why these were selected in the context), understanding CBAs, what can be quantified and what needs to be developed as a narrative.
- 2) Engagement with practitioners for example those engaging in similar programmes and/or finance institutions, NPOs etc that have an interest.
- 3) Target national and international policy makers: Intention is to understand the enabling conditions required (e.g. in policy, legislation etc) to facilitate the implementation of such programmes, CBA processes etc.)

It is important to note that there is an opportunity through the current GEF6 project (which has the intention of influencing policy around financing investments in ecological infrastructure) to achieve some of the objectives,

7. PHASED DEVELOPMENT OF THE BUSINESS CASE

7.1. PHASE 1: INCEPTION

August 2018 – January 2019

The objective of this phase is to lay the foundation for the project.

This phase entails the following elements:

- 7.1.1. Project design and work programme formulation
- 7.1.2. Kick off workshop with community stakeholders
- 7.1.3. Set up of community stakeholder group
- 7.1.4. Setting up of project governance structures
- 7.1.5. Internal and external stakeholder engagement mechanisms and process
- 7.1.6. Capacity Building Needs Assessment
- 7.1.7. Preparatory Studies:
 - 1) Study to evaluate the best approach to Cost Benefit Analysis for the Business Case and required supporting studies
 - 2) Capacity Development Needs Assessment and Plan
 - 3) Gap analysis of riverine climate change vulnerability in eThekweni

7.2. PHASE 2A: BUSINESS CASE FOR UPSCALING STREAM MANAGEMENT

January 2019 – July 2019

The objective of this phase is to develop a business case that is based on the existing Sihlanzimvelo programme (Waterway Condition # 1):

This is a priority to influence the City's 2020/21 operational budget to fund upscaling the existing Sihlanzimvelo program. It will mainly on state or City owned land but also includes private land and the Ingonyama Trust Lands which would require a unique approach. This Business Case will form a foundation as many of the benefits will be duplicated in Conditions # 2 and #3.

The following elements are entailed:

- 7.2.1. *Baseline Assessment* of current Sihlanzimvelo performance, modalities and costs and internal data collection to support CBA
- 7.2.2. Local & Global *Case study review* of riverine CbA and EbA (local + global)
- 7.2.3. Development of enhanced stream model & costings for Ecosystem-based Adaptation and Community-based Adaptation
- 7.2.3. *CBA#1 of the current model extended*: Undertaking CBA of the existing 300 km Sihlanzimvelo Model (mainly on Waterway Condition #1) and extrapolating this to cover all parts of the City where the model is applicable and feasible. This aspect would only look at the streams within state or city owned land i.e. those where the current Sihlanzimvelo program model could be expanded.
- 7.2.4. *A CBA#2 current model extended AND enhanced*: This would involve designing how the initial model could embrace add-on activities and opportunities which are enabled because the project is bigger and can accommodate them and undertaking a CBA on the extended and enhanced model. This could include
 - Expanding the work done by the co-ops to outside the 3m on each side of the stream in order to cover the wider open space systems which follow the valley lines and lengthening stream operations to areas not directly adjacent to settlements.

- Providing amenities such as pocket parks, walkways, pools and play facilities
- “Closing loops” with supporting and inter-dependent initiatives such as recycling, food security, community environmental awareness programmes, the tree-preneur program etc. and incorporating other stream and river management, cleaning and upgrading programmes
- Business development to extend the capability of those co-ops which are willing and able to:
 - Undertake more complex works in the stream zone such as repairing gabions, planting stabilising vegetation and applying herbicides to stem alien vegetation growth.
 - Be supported to provide Sihlanzimvelo-type services on private land and areas with deeper rivers and more complex infrastructures.
 - Be supported to diversify into other sectors in the township economy and the mainstream economy.
- These proposed add-on activities and opportunities would need to be developed in a modular way so that various combinations form a step-wise programme of stream management

7.2.5. A CBA of the current model extended to private and Ingonyama Trust land. This would need to give consideration to alternative service delivery models such as water stewardships and conservancy programs.

7.1.8. Capacity Building Plan

7.2.6. Verification workshop with stakeholder reference group(s)

7.2.7. Formulation of Business Cases

7.3. PHASE 2B: FINANCING STREAM MANAGEMENT

June 2019- August 2019

The objective of this phase is to explore funding options for City, private and Ingonyama Trust Land.

The following elements are entailed:

7.3.1. An application for operating budget funding in the context of the City’s 2020/2021 budget and the 2020/ 2021 – 2023/2024 MTEF will be submitted.

7.3.2. This phase may also involve funding applications to the Port and major private land owners that benefit from stream management activities in Condition # 1 and developing model proposals

7.4. PHASE 3: BUSINESS CASE FOR RIVER MANAGEMENT

August 2019 – February 2020

The objective of this phase is to develop a business case for partnership-based management of Waterway Conditions # 2 and # 3.

- This category of the Business Case looks more broadly at partnership- based river management in the middle and lower catchments: Waterway Management Conditions # 2 and # 3.
- Here the City’s support would be complemented with a mix of partnership / incentive / voluntary measures for mixed ownership land adjacent to larger tributaries and rivers.

- New implementation models need to be developed which take into account the different size of river and river corridor and safety requirement, would need to be looked at
- Capable co-ops developed in Condition # 1 could be deployed to assist in the more complex operational environments in Conditions # 2 and # 3 and/or entirely new approaches may need to be developed.

The following elements are entailed:

7.4.1. Designing a stream management and partnership model(s) that is effective on Waterway Conditions # 2 and # 3

7.4.2. *Undertaking a CBA of the new model.*

7.4.3. Verification workshop with stakeholder reference group(s)

7.4.4. Formulation of Business Case

7.5. PHASE 4: FINANCING THE INTEGRATED BUSINESS CASE

January 2020 – March 2020

The objective of this phase is to secure funding for the new model.

The following elements are entailed:

7.5.1. This phase entails exploring a broad suite of funding models and sources such as CSI, BBBEE, stewardships and others and developing model proposals

7.5.2. This phase also looks at national and international sources of finance and funding such as the Global Green Fund and developing model proposals

7.6. PHASE 5: CLOSURE

March 2020 – July 2020

The objective of this phase is to ensure that the City is able to take the Business Cases and Funding Applications forwards.

This phase entails the following elements:

7.6.1. Final recommendations Report

7.6.2. Closure seminars with officials and stakeholders

7.6.3. Dissemination of learnings across relevant platforms

8. KNOWLEDGE AND LEARNING

The intention is to ensure that the programme and/or its approaches can be replicated as required. These could be in the form of webinars, workshops, case studies, using existing opportunities to feed into other programmes and processes. There are three components to this:

Knowledge sharing with cities: This could include sharing of approaches/methodologies (and why these were selected in the particular context), understanding CBAs, what can be quantified and what needs to be developed as a narrative.

Engagement with practitioners for example those engaging in similar programmes and/or finance institutions, NPOs etc that have an interest.

Target national and international policy makers: Intention is to understand the enabling conditions required (e.g. in policy, legislation etc) to facilitate the implementation of such programmes, CBA processes etc.)

Important to note that there is an opportunity through the current GEF6 project (which has the intention of influencing policy around financing investments in ecological infrastructure) to achieve some of this.

An important component of this would be the establishment of a 'knowledge cluster'. This could 'piggy back' on the existing Durban Adaptation Charter 'Hub and Compact' approach. Durban is also a Knowledge Hub for the Urban Climate change Research Network, which links to its African city partners through, amongst others, the EPIC-A network.

9. STAKEHOLDER MANAGEMENT

This requires a stakeholder mapping exercise in relation to each phase of the work. Bilaterals might be needed with critical stakeholders who are currently not participating in the Sihlanzimvelo conversations.

The following initial lists of stakeholders was developed at the workshop on

Minor stakeholders:

- Schools near streams
- Tourism department
- waste contractors
- recreation users
- water sports
- universities
- residents far away from the streams
- Neighbouring municipalities
- CMAs
- Agro-Ecology
- Community Based organisations
- national government
- SACN, SALGA, Other C40 Cities
- Water Stewardship Alliance
- shack dwellers
- major commercial businesses

- Roads department
- DSW
- Law enforcement
- community participation awareness
- waste water department
- CFO Funding Department
- Parks Department
- Farmers
- port of Durban
- Tourism Association.

Major stakeholders:

- Industries located near streams
- Politicians
- traditional authorities
- community workers who are taking care of the streams
- Durban Green corridor
- maritime industry
- CFO Durban
- DSW Waste
- local co-operatives
- ward councilors, Ward councilors,
- Tent Bushes
- NGOs,
- WESSA
- Law Enforcement.

Subject experts:

- Roads and Storm Water Maintenance Unit
- all municipal departments
- Housing department
- Development Planning
- Biodiversity Planning
- Consultancies e.g. Ground truth and Eco-Pulse,
- Project coordinators
- technical experts
- climate adaptation team and academia,
- Environmental Health
- CSCM
- EPCPD
- Water Wise Interest and knowledge
- Vector Control Co-Op.
- Aller river
- THD community projects
- DUCT
- Working for wetlands
- Working for environment
- IWASP
- Waterwize
- Umnini wetland project

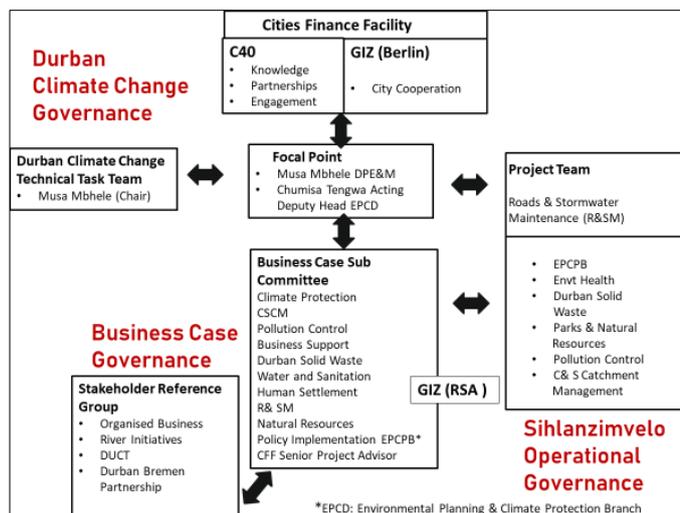
10. GOVERNANCE ARRANGEMENTS

The following structures will direct, manage and support the development of the Business Case:

- 10.1. The *CFF* is represented from the C40 by Ms Manisha Gulati (Knowledge and Partnerships) and Mr Hastings Chikoko (Engagement) and from GIZ by Ms Lisa Junghans reporting to Mr Alexander Linke and Mr Martin Dirr of the City Cooperation unit.
- 10.2. The *Focal Point* link between the CFF as supported by C40 and GIZ is Mr Musa Mbhele who is Head of the Development Planning, Environment and Management Unit and chair of the Durban Climate Change Technical Task Team (TTT). He is supported in this by Ms Chumisa Thengwa Acting Deputy Head of the Environmental Planning & Climate Protection Department (EPCPD).
- 10.3. Technical work will be undertaken by the *Business Case Sub Committee of the TTT* chaired by Ms Chumisa Thengwa and including:
 - Climate Protection,
 - Biodiversity Impact and Municipal Compliance
 - Policy Implementation
 - Coastal and Stormwater Catchment Management
 - Natural Resources
 - Pollution Control
 - Business Support
 - Durban Solid Waste
 - Water and Sanitation

- Human Settlement
 - Roads & Stormwater Maintenance
 - Social development
 - Senior Project Advisor CFF City Cooperation Unit
- 10.4. Operational management of Sihlanzimvelo is undertaken by the *Sihlanzimvelo Project Team (SPT)* which has overlapping membership with the BCSC and which is led by Mark Tomlinson and Thandeka Zondi.
- 10.5. Finally, the project links with the *Durban Climate Change Strategy Technical Task Team (DCCS TTT)* through Mr Musa Mbhele and Chumisa Thengwa who are part of the DCCS TTT. Other Unit Heads (including the Head: Engineering, who oversees the work of both the Coastal Stormwater and Catchment Management Department, and the Roads and Stormwater Maintenance Department) are represented on the DCCS TTT.

These arrangements are illustrated below:



11. REFERENCES

Capstone (2013) *Leveraging the Multiple Benefits of Green Infrastructure Sustainability Management for New York City's Department of Environmental Protection*

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eThekwini (2015) *Municipality Climate Change Spend Analysis: Towards a Credible Quantification of Municipal Investment into Climate Change Mitigation and Adaptation*

EU (2015) *Restoring rivers for effective catchment management: Cost-effective restoration measures that promote wider ecosystem and societal benefits* Author(s) Roy Brouwer et al

Marais C. et al (2001) *A Cost Benefit Analysis of the National Working for Water Programme*

Turpie J et al (2017) *Evaluating the Potential Returns to Investing in Green Urban Development in Durban*

ANNEXURE: PARAMETERS OF COST BENEFIT ANALYSIS

The attached table summarising the outputs of internal and stakeholder brainstorming of the Cost Benefit Analysis parameters:

Thematic Structuring:

THEME (Dimension)	Second and third order Impacts
1. IMPACT ON CITY AS A WHOLE	
1.1. As catalyst for responsible city-wide (mitigation) & climate sensitive (adaptation) action by government, business and community	
1.2. Reduced climate risk profile for city as a whole	
1.3. Increased civic pride	
1.4. Increased social cohesion	
1.5. Threshold effects and tipping points	
1.6. Integrated Waterway management	
1.7. Beach & Estuarine Tourism Benefits	
1.8. Reduced City Health Risk	
1.9. City branding and global liveability indexes	

1.10.	Improved Port functionality & risk reduction	
1.11.	Capacity to raise external funding for waterway management and climate change adaptation & mitigation	
2. ECONOMIC IMPACT ON ADJACENT COMMUNITIES / CATCHMENTS		
2.1.	Job Creation	<ul style="list-style-type: none"> • Capacity Building • Link to job creation • Close to home • In communities most needed • Political win • Capacity building
2.2.	Income Generation	
2.3.	Entrepreneurship Stimulation	
2.4.	Business Development Capital	
2.5.	Reduced Unemployment	
2.6.	Poverty Reduction	
2.7.	Skills Development	
2.8.	Community Based Tourism	
2.9.	Community Based Recycling	
2.10.	Property Values & Tax benefits	
2.11.	Homes / properties not damaged through local flooding	
	Business opportunities	<ul style="list-style-type: none"> • Income/local economy • less unemployment • more household income • improved lifestyle
	Harvesting Biomass	<ul style="list-style-type: none"> • Furniture—SME opportunities • Compost—Community gardens: nutrition • Income • Cooperation sense of community • Brick making • Bioenergy—climate change mitigation • Building material—reduced cost of building
3. SOCIAL IMPACT ON ADJACENT COMMUNITIES / CATCHMENTS		
3.1.	Job creation	<ul style="list-style-type: none"> • Potential tension around different wages
3.2.	Vector Control (rats, diseases etc)	<ul style="list-style-type: none"> • Less insecticide • Comfort

	<ul style="list-style-type: none"> • Health • Costs
3.3. Reduced crime against persons	<ul style="list-style-type: none"> • Less work load on the police force • Safety • Presence link
3.4. Reduced property crime	
3.5. Improved sense of place, local pride and community investment	
3.6. Improved social cohesion	<ul style="list-style-type: none"> • Less Xenophobia
<u>Recreation</u>	<ul style="list-style-type: none"> • Cycle paths • Fishing---food • Picnic • Happier kids and parents
3.7. Environmental Education	<ul style="list-style-type: none"> • Increase appreciation of the environment
3.8. Youth & women employment	<ul style="list-style-type: none"> • Drug abuse decreases • Less women and child abuse
3.9. Local community pride, responsibility and ownership	<ul style="list-style-type: none"> • Positive attitude • Communities adopt a stream • They put less waste in the stream—cleaner environment and less blockages • Community awareness • Reduce waste into the stream - cleaner stream—Water free flowing
3.10. Improved safety of riverine spaces esp women & children	
3.11. Skills Development	<ul style="list-style-type: none"> • Training (health and safety)
3.12. Mobilisation of community organisations and enhanced social capital	
3.13. Opportunity to develop open space web and pocket parks	<ul style="list-style-type: none"> • Local parks management
3.14. Improved health, disease reduction	<ul style="list-style-type: none"> • Catchment water diseases---employees working on the streams
3.15. Enhanced employability of local population	<ul style="list-style-type: none"> • Exit opportunities
4. Community tourism	
5. CITY INFRASTRUCTURE & SERVICES IMPACT	
5.1. OPERATING COSTS /BENEFITS	

5.1.1. Services Integration & Non Duplication	<ul style="list-style-type: none"> • Encroaching on the territory of other departments/programmes • Budget allocations-could be perceived negatively
5.1.2. Implementation Costs	<ul style="list-style-type: none"> • Wages • Contractors/assessors • Capital costs e.g. gabions • Software-programme management, monitoring and evaluation • Internal department-operating costs • Coordinating costs-other departments
5.1.3. Avoided Costs	<ul style="list-style-type: none"> • Reduced repairs • Reduced investment of new capital • Inability of people to use infrastructure • Improved health and safety • Reduced harbor blockages-enhanced revenue for Port • Increased efficiency of waste collection • Decreased cost of water treatment
5.1.4. Visibility of maintenance needs	
5.1.5. Improve response time for service disruptions esp sewer overflows	<ul style="list-style-type: none"> • Community reports to teams • Better community with municipal departments—better response and better service delivery • Erosion reported sewers exposed – early response less breakage – less cost and less pollution • Report illegal sewer connections - action can be taken
5.1.6. Reduced solid waste dumping	
5.1.7. Reduced litter	<ul style="list-style-type: none"> • Functional responsibility-who is responsible to remove litter? • Costs associated with removal, disposal of litter

- Resources needed to remove litter
- Separating waste/identifying the types of wastes and this requires different approaches and tools to remove waste.

5.1.8. Reduced blockages requiring cleaning

5.1.9. Early detection of sewer leaks

5.2. CAPITAL COSTS

5.2.1. Reduced infrastructure damage

6. Reduced flooding risks

6.1.1. Erosion Protection

6.1.2. Detention and Flood Attenuation Opportunity

6.1.3. Reduced oil pollution

7. ENVIRONMENTAL AND ECOLOGICAL IMPACT ON ADJACENT COMMUNITIES / CATCHMENTS

7.1. Promotes integrated approach to management of whole catchment

7.2. Minimise soil erosion

7.3. Minimizing water pollution

7.4. Estuaries (global significance)

7.5. Fish & amphibians

7.6. Trees & aquatic plants

7.7. Reduced alien vegetation

Water hungry aliens
 Removal of Spanish reed and other aliens
 Costs associated with removal of alien plants:
 Environmental impacts of chemicals
 Tent cleaning
 Operational challenges
 Soil erosion

7.8. Better base flow

7.9. Encouraging recycling

7.10.

7.11. Synergy with Treepreneur & other programmes

7.12. Local wetlands: retention, water quality & attenuation

7.13. Local park systems / biological corridors / connectivity

- Biodiversity hotspot
- Ecosystem services

- Estuarine link
- Wetland water polishing
- Replanting vegetation

7.14. Improved coordination of activities around stream management and enhanced partnership opportunities for effective implementation

7.15. Community ecological awareness

Functional Structuring:

REMOVAL OF SOLID WASTE

- 1 Less waste in the Port
 - 1.1 Less disruption of the Port operations
 - 1.1.1 Less income loss by port (less closing of port)
 - 1.1.2 Less disruption to Cargo imports and exports
- Less negative economic impact
 - 1.2 Less operational clean up costs
- 2 Less Rats (vectors)
 - 2.1 Less risk of disease in community
 - 2.1.1 Reduced demand on clinics
 - 2.2 Less snakes
 - 2.2.1 Less risk to community
 - 2.2.2 Community feels safer in area
- 3 Reduced risk of blockage of road crossings
 - 3.1 Reduced damage to infrastructure
 - 3.1.1 Road
 - Capital cost
 - Reduced Disruption to business and residential traffic
 - Reduced Economic cost
 - Reduced risk of Extra travel
 - Reduced risk of Carbon emission increase
 - 3.1.2 Culvert/pipes
 - Capital Cost
 - 3.1.3 Sewer
 - Reduced risk of environmental damage
 - Capital cost
 - 3.1.4 Water

- Capital Cost
- Reduced risk of water loss
- Cost of water
- 3.1.5 Electricity cables
 - Capital cost
 - Reduced Disruption to business and residential
 - Reduced Economic cost
 - Reduced risk of losses due to outage
- 3.1.6 Telkom cables
 - Capital cost
 - Reduced Disruption to business and residential
 - Reduced Economic cost
- 3.2 Reduced flooding of private property
 - 3.2.1 Reduced insurance claims
 - Reduced impact on economy
 - 3.2.2 Reduced loss to Residents
- 3.3 Reduced maintenance callouts
 - 3.3.1 Reduced operational costs
- 4 Opportunity for more recycling
 - 4.1 Less need for new resources
 - 4.2 Small business opportunity
- JOB/ BUSINESS CREATION
 - More money in local economy
 - Increase in local businesses
 - economic growth
 - Work close to home
 - More money stays in local economy and households
 - Reduced travel to work
 - reduced carbon footprint
 - More money available for other expenses
 - Improved business skills
 - Opportunity for Co-op to use skills in other fields
 - Economic growth
 - More jobs created
- PRESENCE ON THE STREAM
 - Early and accurate reporting of sewer leaks or blockages
 - Faster more efficient response by operations team
 - lower operating costs
 - improved water quality
 - healthier community
 - reduced demand on clinic
 - Improved biodiversity (birds/fish)
 - Improved estuaries
 - Recreation use
 - fish breeding/stocks
 - fisheries
 - Fishing industry
 - Subsistence fishing
 - Improved beach water quality
 - Blue flag beaches
 - tourism

economy
 Community awareness
 community policing
 Sense of ownership
 community contribution
 stop others polluting
 support community workers
 Reporting of other wrongdoings
 Action against perpetrators
 Name and shame/ community pressure
 less dumping
 Less cost to clean up or rectify
 Reduced criminal activity
 Safer neighbourhood
 improved sense of place
 Less money spent on community on security
 More money available to households for other purchases

REMOVAL OF ALIEN VEGETATION

- 1 Less waste in the Port
 - 1.1 Less disruption of the Port operations
 - 1.1.1 Less income loss by port (less closing of port)
 - 1.1.2 Less disruption to Cargo imports and exports

Less negative economic impact

- 1.2 Less operational clean up costs

2 Reduced erosion potential

- 2.1 Reduced damage to river bank

- 2.1.1 Less damage to infrastructure

Road

Capital cost

Reduced Disruption to business and residential traffic

Reduced Economic cost

Reduced risk of Extra travel

Reduced risk of Carbon emission increase

Operational cost

Sewer

Reduced risk of environmental damage

Capital cost

Operational cost

- 2.1.2 Less damage to private property

Reduced insurance claims

Reduced impact on economy

Reduced loss to Residents

- 2.2 Reduced downstream siltation

- 2.2.1 Less culvert cleaning

Operational cost

- 2.2.2 Less siltation of wetlands

Wetland functionality

Cleaner water

Sediment entrapment

Biodiversity improvement

- 3 Cleared areas can be used for veggie growing

- 3.1 Improved food for family
 - 3.1.1 Healthier family
 Reduced demand on clinic
- 3.2 Possible selling of veggies
 - 3.2.1 More funds for family
- 4 Cleared area means safer area
 - 4.1 Community feels safer in area
 - 4.1.1 sense of place
 - 4.1.2 Community takes ownership of open space
- 5 Reduced risk of blockage of road crossings
 - 5.1 Reduced damage to infrastructure
 - 5.1.1 Road
 - Capital cost
 - Reduced Disruption to business and residential traffic
 - Reduced Economic cost
 - Reduced risk of Extra travel
 - Reduced risk of Carbon emission increase
 - 5.1.2 Sewer
 - Reduced risk of environmental damage
 - Capital cost
 - 5.1.3 Water
 - Capital Cost
 - Reduced risk of water loss
 - Cost of water
 - 5.1.4 Electricity cables
 - Capital cost
 - Reduced Disruption to business and residential
 - Reduced Economic cost
 - Reduced risk of losses due to outage
 - 5.1.5 Telkom cables
 - Capital cost
 - Reduced Disruption to business and residential
 - Reduced Economic cost
 - 5.2 Reduced flooding of private property
 - 5.2.1 Reduced insurance claims
 Reduced impact on economy
 - 5.2.2 Reduced loss to Residents
 - 5.3 Reduced maintenance callouts
 - 5.3.1 Reduced operational costs
- 6 Improved biodiversity in river corridor
 - 6.1 Improved natural corridor for fauna
 - 6.2 Link to trepreneur program
 - 6.2.1 Increase in trepreneur program
 Advantages of program for community
- 7 Alien plant recycling
 - 7.1 Business opportunity
 - 7.1.1 Composting
 - 7.1.2 Building materials
 Less demand on natural materials