

DRAFT

Strategy Framework and Action Plan

Climate Resilient Development Strategy Framework

Nelson Mandela Bay Metro (including Algoa Bay)

February 2025

A project of the Presidential Climate Commission and Wilderness Foundation Africa

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Introduction

Nelson Mandela Bay was selected by the Presidential Climate Commission as a Pilot Area for developing a *Climate Resilient Development Strategy Framework and Action Plan*. Because it is a Pilot Project, ‘developing’ refers to formulating an adaptive process that can be replicated, as well as producing the Strategy Framework and Action Plan itself. The process has been guided by principles of climate resilient development planning, where an equitable and just approach is paramount.

Developing the Strategy Framework and Action Plan has been a public-driven process, integrating contributions from stakeholders and communities from various sectors and across places. It has been run by a team of consultants under the auspices of the Wilderness Foundation Africa, but informed and shaped by outcomes of engagement, research and mapping. Products that have been developed leading up to the Action Plan are a Scoping Report, a co-developed systems map of Nelson Mandela Bay, a Narratives Report, and a Strategy Framework. Each product is a reflection of a growing understanding of the Metro in the context of climate-resilience, expanding and refining details along spatial scales and considering temporal changes. We recommend that these documents be read together, and that the reader cross-references the reports when reading the Action Plan for context and more detail where required.

We present here the Strategy Framework and Action Plan – a culmination of activities, outputs, outcomes and products (refer to the process flow diagram below); developed over 14 months between September 2023 and February 2025. Each step (and product) has been developed collaboratively, building on the outcomes of earlier activities. The Strategy Framework includes the Vision, the 8 resilience outcomes that the Strategy Framework and Action Plan aim to achieve, and 4 Strategic Interventions. A fifth Strategic Intervention is ‘cross-cutting’, relevant to all others. The graphic below illustrates the Framework Strategy.

Over the course of developing this Strategy Framework and Action Plan, the Climate Change Act (Act 22 of 2024) was enacted. The Act requires that municipalities put in place a Climate Forum. The Action Plan recommends (under Strategic Focus Area 3D: Governance) that the Forum should have multi sectoral representation (public and private sectors) and must drive the implementation of the Strategy Framework and Action Plan. Establishing this Forum must be the critical next step.

A CLIMATE-RESILIENT DEVELOPMENT STRATEGY FRAMEWORK FOR NELSON MANDELA BAY, INCLUSIVE OF ALGOA BAY

VISION:

A climate resilient Nelson Mandela Bay that thrives
(clean, safe, working)

Resilience Outcome 1:
Healthy safe communities

Resilience Outcome 2:
Healthy natural environment

Resilience Outcome 3:
A thriving, sustainable economy

Resilience Outcome 4:
Resilient equitable services

Resilience Outcome 5:
Resilient built environment

Resilience Outcome 6:
Efficient and accessible mobility

Resilience Outcome 7:
Collaborative good governance

Resilience Outcome 8:
Unified civic pride and identify

1

STRATEGIC INTERVENTION 1: BUILD THE FUTURE WE WANT

1. **Strategic Focus Area 1:** Shift to a sustainable, low-carbon economy (formal & informal)
2. **Strategic Focus Area 2:** Sustainable, low-carbon livelihoods and Just Transition jobs
3. **Strategic Focus Area 3:** Sustainable urban planning (formal and informal)
4. **Strategic Focus Area 4:** Low-carbon and efficient mobility corridors
5. **Strategic Focus Area 5:** Waste minimisation and improved waste management

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STRATEGIC INTERVENTION 2: DEFEND AGAINST THE EXTREMES

1. **Strategic Focus Area 1:** Floods - Build resilience to flooding
2. **Strategic Focus Area 2:** Sea - Prepare for sea-level rise, storm surges, coastal flooding and erosion, and sand inundation
3. **Strategic Focus Area 3:** Drought preparedness and water security
4. **Strategic Focus Area 4:** Fire - Wildfire and fire preparedness
5. **Strategic Focus Area 5:** Heat - Build resilience to increasing temperatures and heat

3

STRATEGIC INTERVENTION 3: SECURE THE BASICS

1. **Strategic Focus Area 1:** Delivering municipal services
2. **Strategic Focus Area 2:** Disaster management planning and response
3. **Strategic Focus Area 3:** Support community well-being and safety
4. **Strategic Focus Area 4:** Governance

4

STRATEGIC INTERVENTION 4: STEWARD OUR ASSETS

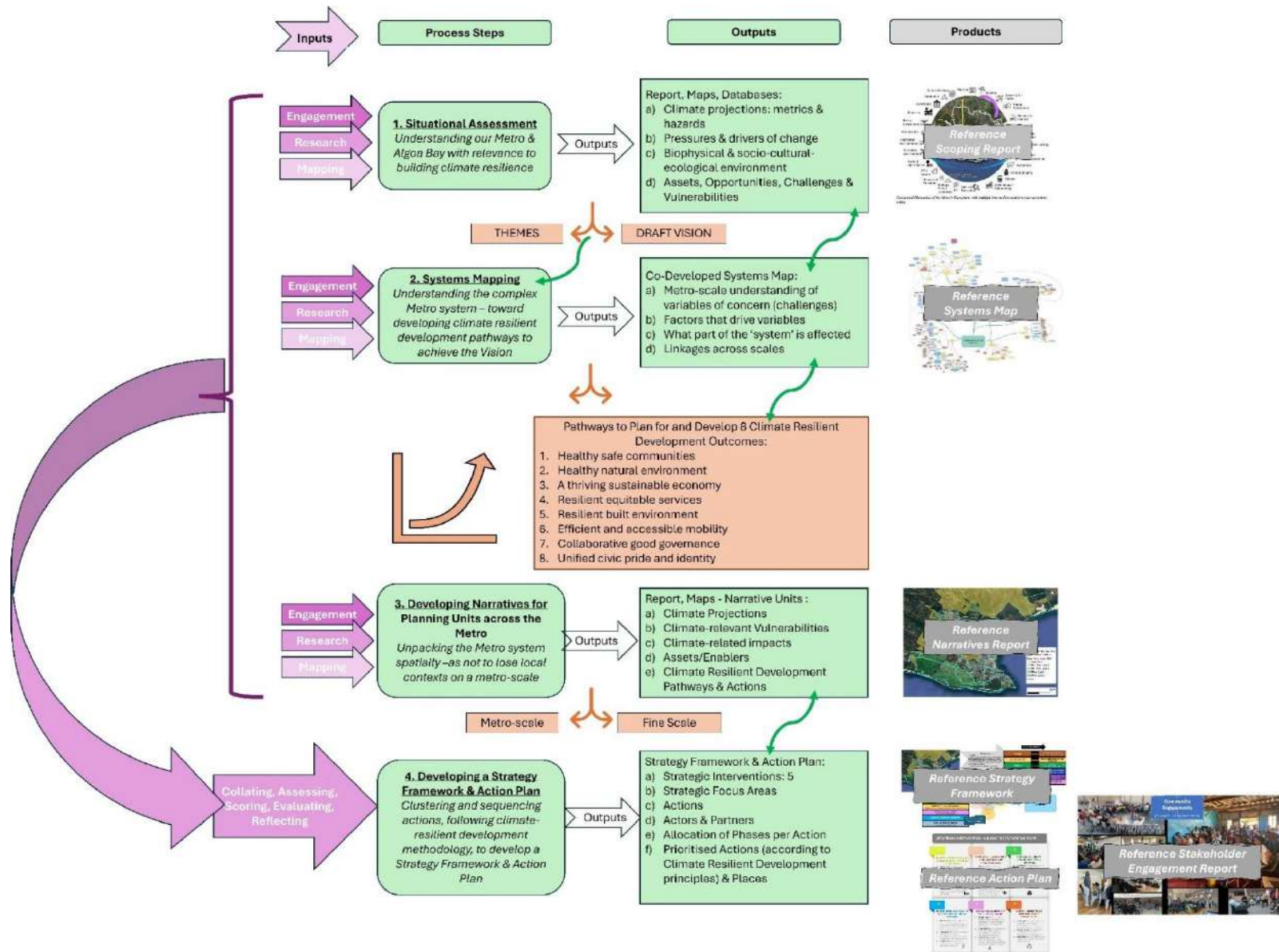
1. **Strategic Focus Area 1:** Carbon-conscious manufacturing
2. **Strategic Focus Area 2:** Skills and innovation
3. **Strategic Focus Area 3:** Pollution prevention
4. **Strategic Focus Area 4:** Protection / management / restoration of natural areas and resources

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STRATEGIC INTERVENTION 5: CROSS-CUTTING THEME – WORKING TOGETHER

1. **Strategic Focus Area 1:** Working together - inclusive resilience planning, action and monitoring

Strategy Framework Plan.



An overview of the process that led up to the Strategy Framework and Action Plan, showing the steps, outputs, outcomes, and products.

The Action Plan

The Action Plan occurs at 3 levels of detail – 5 overarching Strategic Interventions, a sub-set of Strategic Focus Areas for each Intervention, and a set of Actions for each Focus Area. Actions have been identified for each Strategic Focus Area under each Strategic Intervention based on the development of the broad system – knowing its vulnerabilities, assets and enablers, and climate change impacts and other external pressures. Actions should be familiar to stakeholders and communities who have been part of the process, as they respond to what has been shared in engagements. They aim to build resilience to climate hazards and their impacts, through adaptation and/or mitigation, and/or to address climate-relevant vulnerabilities. Some actions come from organisational plans (for example the NMBM’s Drought Mitigation Plan), and some are informed by research or specialist knowledge and recommendations (e.g. contributions by Nelson Mandela University, SAEON and others). The Action Plan includes a relative resilience and co-benefit impact score, an Actor and Partner, and is allocated to a phase (short, medium or long term). For spatial priorities per action, the reader should refer to the Narratives report, where detailed information is provided on a fine-scale.

Assigning Scores and Phasing to Actions

We thought it would be helpful to determine a relative score for actions, the purpose being to prioritise those that score highest under the ‘resilience category’ and where the co-benefit impact is likely to be highest. Climate resilient development planning is about prioritising building resilience in the most vulnerable areas and/or the most vulnerable people, leaving nobody behind, so it makes sense to emphasise actions that help achieve this.

Resilience scores are a sum of 4 variables –

- the extent of the impact of the action (i.e. how many people or areas does it impact),
- the potential to benefit the lives of the most vulnerable,
- the potential to improve landscape resilience/ecological health, and
- the potential to support low-carbon and sustainable economies.

The co-benefit impact score captures the effectiveness/efficiency of the action in helping to achieve resilience outcomes, and how many climate hazards it addresses (i.e. where there are multiple benefits linked to one action). The resilience score is weighted more than the co-benefit score, elevating its importance in the ultimate action score.

We have attempted to follow a rigorous and comprehensive process in scoring and phasing actions. It is important to be consistent and as objective as possible. The scores presented in this Action Plan were developed by the team who have been working on the project, actively involved in developing all stages of the process and all outputs and products. Team members scored actions independently, and together, and debated allocations until consensus was reached. Each variable is scored on a scale of 0 to 5, ‘0’ being not applicable and ‘5’ indicating highest value. Allocated scores were tested by others on the team too and considered together in second iterations.

We also wanted to phase actions, to help decision-makers and implementors stage their actions, and to put plans in place to implement longer term actions. There are 3 categories of phasing in the Action Plan – short, medium and long term.

- Short term is for actions that are urgent (i.e. where the impact is already happening and is having a negative effect on people and/or the environment) and where planning is in place to implement the action and where budget is not limiting.
- Medium terms actions are also urgent, but these require more planning and/or budget before they can be implemented.
- Long term actions are those that address projected risks or where risks are imminent but significant funding and/or planning is needed for implementation.

Regarding Actors and Partners, of note is that the Strategy Framework and Action Plan was commissioned by the PCC and not the municipality (as is mostly the case). The NMBM is however a key stakeholder in the process. Actors are assigned based on mandate and/or core responsibility, however the value and critical importance of partnerships is recognised and emphasised. Where actors do not have capacity or budget to implement or plan for certain actions, provision should be made for partners to support and drive the process. The development of a Climate Forum to oversee the planning and implementation of the Action Plan should greatly assist in overseeing implementation of the Strategy Framework and Action Plan. The Forum should be represented by multiple stakeholders, thus strengthening partnerships by working together.

The Section below unpacks each Strategic Intervention and provides a list of actions for each Strategic Focus Area. However, these should be carefully reviewed by the reader and / or implementors, who may assign different scores to each action or who may decide the phasing should be different. This may vary due to capacities and resources for example. All identified actions are important nonetheless, and the assignment of scores is merely to aid the process of staging and planning actions and to instil the importance of resilience principles and thinking.

To allow for flexibility, the Action Plan Report is supplemented by an Excel file that is set up for interactive scoring and planning, and people are encouraged to test these. The Climate Forum would be helpful in overseeing testing of the scores, adding new actions, and in planning for next phases. The Climate Resilient Development approach requires a proactive process, which will need actors and partners to continually check where capacities and resources are required, putting these in place to be ready to adapt to the anticipated changes. Over the period of developing the Framework and Action Plan, people have started to come together, and networks have grown, supporting one another's work and integrating their plans. This must continue and expand for our Metro to reach its Vision for climate-resilience.

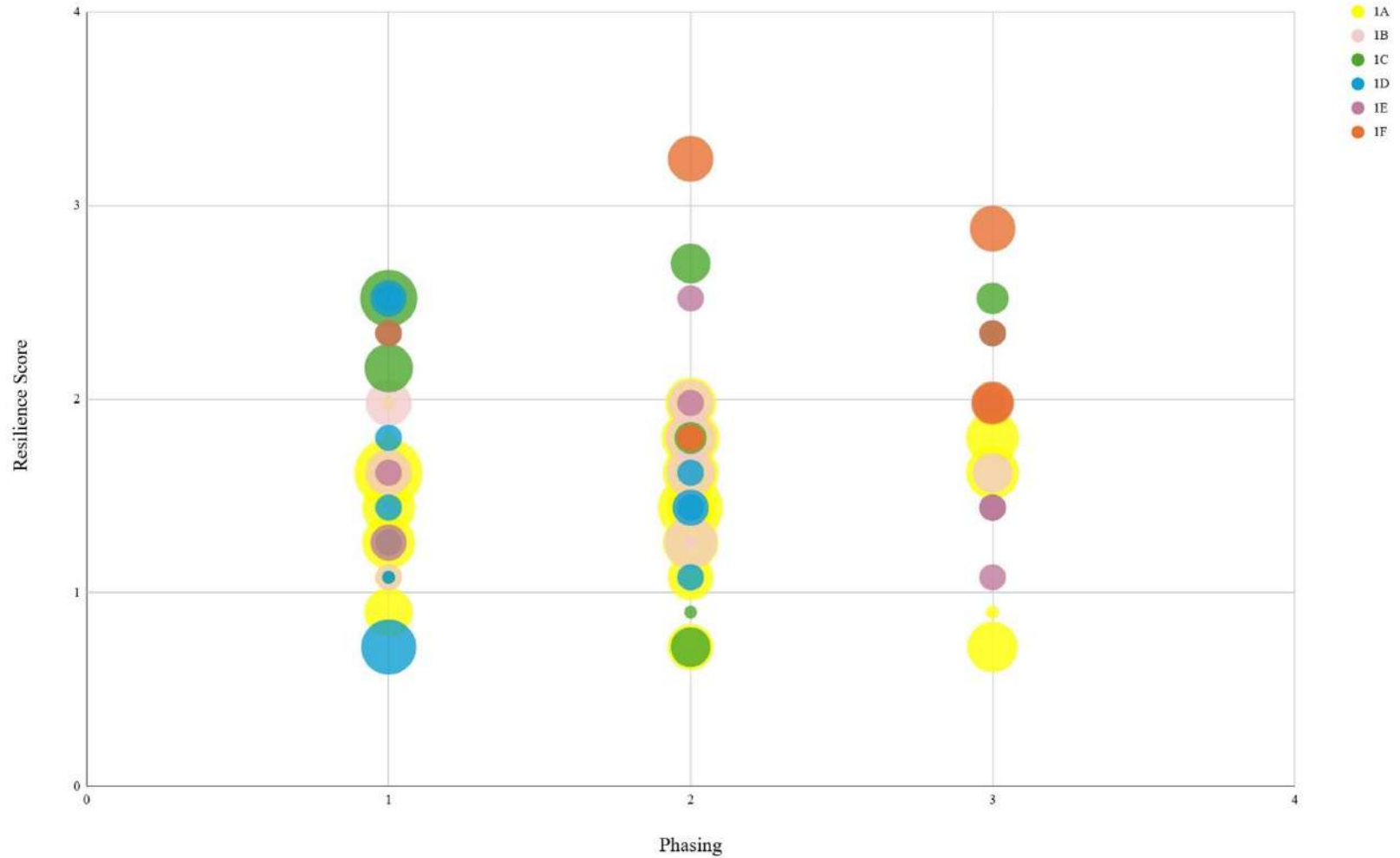
In essence, the Action Plan should continue to grow, tracking its implementation and evaluating its successes.

Strategic Intervention 1: Build the Future We Want



Strategic Focus Areas to achieve 'Strategic Intervention 1: Build the Future We Want', showing the most resilient actions for short-, medium- and long-term planning.

STRATEGIC INTERVENTION 1: BUILD THE FUTURE WE WANT – CLIMATE RESILIENT DEVELOPMENT PLANNING CHART



Climate Resilient Development Planning Chart for ‘Strategic Intervention 1: Build the Future We Want’.

Strategic Focus Area 1A: Shift to a Sustainable, Low-Carbon Economy (Formal and Informal)

Phasing	1A. Shift to a Sustainable, Low-Carbon Economy (Formal and Informal)	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Encourage industries, businesses, and shopping centres to landscape gardens and parking areas with indigenous vegetation.	0.9	0.32	Industry Business	NMBM Communities
	Develop port specific Climate Action Plans for Ngqura and Port Elizabeth Ports that integrate planning across government departments, parastatals, industrial sectors and relevant role-players to address climate resilience at ports and related business, as these have bearing on the full Metro. (TNPA is currently developing a climate-risk assessment to determine impacts of climate hazards on port infrastructure and operations. This includes areas within TNPA's jurisdiction, and how port operations can strive for carbon reduction/minimisation and resilience to climate hazards).	1.62	0.72	TNPA	DEDEAT DFFE Business Industry ECDC
	Promote the full-cycle of the hemp industry (from growing to production), based on the project spear-headed by the NMB Business Chamber.	1.98	0.04	Business Chamber	Hemp industry Business
	In areas where construction is required, source materials locally and work with local SMMEs and local people as far as possible.	1.26	0.08	NMBM	Local SMMEs
	Facilitate collaboration between SANParks, DFFE, TNPA and NMB EDTA to support development of aquaculture and fishing co-operatives.	1.44	0.04	NMBM DEDEAT	DFFE TPNA SANParks

	Support sustainable seeding and harvesting of coastal resources for livelihoods and food security (e.g. mussels, seaweed). Prioritise equitable and just work for fishers/harvesters.	1.62	0.08	NMBM DEDEAT	Fishers Harvesters
	Expand on the Business Chambers' business cluster model and develop its sustainability principles.	1.26	0.4	NMBM	Business Chamber Business
	Set up community-level organic composting and soil conditioner production facilities to support urban food farms, and for sale to business.	1.44	0.4	NMBM DRDAR	Business Urban food farms Civil Society
	Support the growth and expansion of local farming operations and initiatives in peri-urban and rural areas of the Metro for food security.	1.62	0.32	NMBM DRDAR	Communities Local farmers
	Develop supporting infrastructure (markets) to make locally produced goods accessible to people of the Metro at an affordable price.	1.8	0.04	NMBM EDTA DRDAR	Communities Local farmers
Medium-term	Incentivise sustainable business practices (e.g. resource efficiency, waste management, and travel).	1.44	0.28	NMBM; Business	Business Chamber Small business Large business Research
	Develop the biomass value chain for NMB and related enterprise development opportunities that link alien tree clearing programmes, organic waste, and used pallets for example for biomass utilisation (such as energy, steam, fuel-pellets).	1.98	0.36	NMBM DEDEAT	Business Civil Society especially alien vegetation clearing groups
	Leverage carbon-conscious production facilities as a competitive advantage for NMB - proactively responding to carbon "taxes" across major markets.	1.62	0.2	NMBM	researchers

	Support low carbon energy transition in industry by developing metro-scale renewable energy supply via a focus on roof-top generation and feed-in tariff policies.	1.44	0.04	NMBM	Industry
	Develop a carbon offset plan for increased air and vehicle traffic associated with more tourists coming into NMB.	1.08	0.04	NMBM SANRAL Eastern Cape Department of Transport	ACSA Chief Dawid Stuurman Airport Vehicle owners Tourists
	Develop the tourism and recreational potential of beach zones (Wild Side, South, North) across the Metro (e.g. St Georges Strand and Brighton Beach). Address coastal erosion, improve water quality and safe swimming, address safety, and develop amenities. Build on the many existing tourism resources as tourism offerings.	1.26	0.44	NMBM DEDEAT	ECPTA Tourism related establishments Businesses
	Green the tourism industry throughout the supply chain, incentivising sustainable operations - transport, accommodation, waste management and recycling, and related services. Develop a green star rating for sustainable operations to incentivise and promote businesses that subscribe to this system.	1.44	0.32	NMBM DEDEAT	Businesses Tourism related establishments Waste collectors
	Develop and expand 'Green Flag' trails and promote outdoor activities in eco-tourism offerings. Include local communities as guides. Link existing established trails along the 'Wildside Beaches' to create overnight hikes. Expand hiking trails at Cape Recife and NMU along the beachfront.	1.62	0.12	NMBM DEDEAT	Private landowners Communities MBDA Tourism related establishments
	Develop Happy Valley as a recreation and outdoor venue that uses the access to both a sheltered beach and “forest” area.	1.8	0.32	NMBM	Communities MBDA

					Beachfront Business Cluster Alien Clearing Groups
	Create livelihood and small business opportunities to service the ecotourism industry (e.g. fresh produce, shuttle services, guides, waste collectors). Aim for using EV-shuttles.	1.62	0.08	NMBM DEDEAT	Communities Waste collectors Tour guides Business
	Invest significantly in expansion and modernisation at the Port Elizabeth and Ngqura Ports to handle larger vessels and increased cargo volumes.	0.72	0.28	Transnet National Ports Authority (TNPA) DFFE	Port users CDC NMBM ECDC
	Maintain stable labour relations for ensuring uninterrupted Port services. This includes ongoing training and development to equip the Port workers with the skills necessary to operate new technologies and adhere to evolving industry standards.	1.08	0.28	TNPA	Industry Port workforce
	Drive development at the PE Port to grow the local economy. This will require the manganese ore stockpiles and “Tank Farm” to be decommissioned and a replacement facility to build at the Coega SEZ. It will also require the commissioning of a cruise-liner docking facility and the development of a multi-purpose commercial and leisure waterfront property. Include resilience to storm surges and coastal erosion, strong winds and heat at the coast in the design.	1.62	0.44	TNPA DEDEAT	NMBM MBDA

	Upgrade and maintain coastal resorts, camping areas and infrastructure to maximise on eco-tourism potential. An example is the Beachview Resort which is subject to significant erosion.	1.44	0.64	NMBM DEDEAT	Private-public partnerships Communities
	Promote innovation around the development and production of alternative construction materials, collaborating across research and manufacturing (with the aim of mainstreaming the use of alternative materials in housing projects and developments).	1.8	0.48	NMBM Department of Human Settlements	Green Building Council of South Africa Business Research
	Develop/formalise the road to connect Markman Industrial to the Coega SEZ, reducing truck movement along the R335.	1.26	0.24	NMBM DEDEAT SANRAL CDC	Markman Industrial Business TNPA
	Grow the local agro-processing market, linking with regional agricultural producers in neighbouring municipalities (e.g. citrus, mohair).	1.08	0.04	NMBM Neighbouring municipalities DRDAR	Local agro-processing market Farmers Regional agricultural producers
Long-term	Develop a network of eco-industrial parks across the NMBM with the aim of incorporating them into a metro-scale Climate-SEZ that aligns to Coega's "green" SEZ potential (See Scotland's Green Freeports as an example).	1.8	0.4	NMBM Business	Eco-industrial parks across the Metro CDC
	Rehabilitate the Brighton Beach marine outfall (extend or reroute to Papekuils) and turn the beach site into a multi-purpose facility that attracts passing N2 traffic.	1.62	0.4	NMBM DEDEAT	Business Communities

	Protect critical transport connectors for industry to thrive on a regional level - the N2, Addo Road, R75, and railway infrastructure.	0.72	0.36	NMBM SANRAL	Industry Business Communities
	Promote and grow eco-tourism development. Develop supporting infrastructure to bring tourists into the Metro and hold them (not just acting as a gateway), including at the Port Elizabeth Port and Chief Dawid Stuurman Airport	0.9	0.04	NMBM	PE Port ACSA Chief Dawid Stuurman Airport

Strategic Focus Area 1B: Sustainable, Low-Carbon Livelihoods & Just Transition Jobs

Phasing	1B. Sustainable, low-carbon livelihoods & Just Transition Jobs	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Promote livelihoods and local economic development in resilience planning and action. Be inclusive of settlements on the periphery of the Metro when planning for local economic development actions.	1.08	0.08	NMBM	Communities on the periphery of Metro Communities Business Chamber
	Develop markets for local crafters to sell goods. Prioritise tourism nodes.	1.44	0.04	NMBM	Local crafters Business Chamber
	Formalise and support (informal) waste reclaimers/pickers already operational and integrate them into the waste value chain	1.98	0.28	NMBM Waste recyclers	NGOs Communities
	Develop multi-media campaigns to highlight “all of society” approaches to carbon reduction and awareness e.g. what can individuals do, what can church groups do, etc.	1.62	0.28	NMBM	Civil Society
Medium-term	Develop operations at waste Buy-Back Centres to include secondary processing of waste, making products for manufacturing (e.g. shredded plastic)	1.44	0.16	NMBM	Business Buyback centres
	Formalise and support operations of waste reclaimers / pickers to improve their working conditions and grow their operations. Integrate their work with a metro-scale waste	1.98	0.28	NMBM DEDEAT	Waste reclaimers Civil Society NMBM's waste

	collection, sorting and recycling programme. Plan what this looks like with waste reclaimers				collection, sorting and Recycling Programme
	Investigate and implement alternate sources of food security that create livelihoods and address hunger (e.g. land-based aquaculture, and bacteria brewing)	1.62	0.32	NMBM DEDEAT	Communities
	Promote farming training centres (in permaculture or similar methods), and develop skills in agriculture	1.8	0.36	NMBM DRDAR	Farmers Farm workers NGOs
	Support the maintenance of the Markman Fresh Produce Market and investigate options to create additional markets across the Metro. Ambient air quality and environmental health in the area to be improved.	1.26	0.04	NMBM DEDEAT	Markman fresh produce market Communities Civil Society
	Plan and implement local resilience actions with communities and local leadership to include local knowledge and experiences. The actions are to respond to specific needs to build social cohesion and sustainability.	1.26	0.4	NMBM	Local leaders Communities Ward councillors
	Drive new industrial developments (that meet sustainability criteria) that can replace job losses in industries that are in decline (e.g. the Hive Green Ammonia facility in Coega, solar parks within the Metro boundary)	1.62	0.04	NMBM NMBBC	ECDC CDC
Long-term	Develop sustainability hubs in human settlements that serve as demonstration centres (e.g. alternative building materials and methods, waste recycling, water harvesting) and provide opportunities for skills development and transfer to stimulate livelihoods.	1.62	0.2	NMBM Human Settlements Directorate	Provincial Human settlements Communities Civil Society

Strategic Focus Area 1C: Sustainable Urban Planning

Phasing	1C. Sustainable Urban Planning	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Prioritise implementation of the NMBM's Urban Network Strategy which includes developing priority corridors (Integration Zones). Implement Sustainable Community Unit (SCU) Planning principles. Promote the development of SCUs so that settlements have access to amenities and services. To enable this, facilitate integrated provincial and municipal planning using e.g. District 'One Plan' Development Model.	2.52	0.48	NMBM, Provincial Housing	Built environment sector (public and private), communities
	Promote the importance of sustainable development planning and the need to densify and make cities more compact to improve service efficiency and climate resilience.	1.26	0.08	NMBM	Councillors Built environment practitioners
	Reclaim civic open spaces (e.g. by converting dumps to parks and food gardens), and support community-led programmes to green sidewalks with indigenous planting.	2.16	0.32	NMBM, Civil Society, Ward Councillors	Private sector
	Consider requirements for disabled (access, freedom of movement, support needs in extreme events) in built environment development.	1.08	0.04	NMBM	Built Environment Council, Organisations of people living with disability
Medium-term	To reduce urban sprawl, implement policy changes that promote densification (build up not to the periphery). Aim for an increase in overall development density from the current average of 22 units per hectare to 30 -40 units per hectare,	1.8	0.12	NMBM	Urban planners, Architects Ward councillors

	where services and stormwater systems allow. Include this in NMBM Planning Regulations.				
	Restore and support formal occupation of abandoned buildings in the City with a specific focus on creating affordable inner-city housing	0.9	0.04	NMBM MBDA	Owner/ Developers Social Housing Institutions
	Develop and maintain sport and recreational facilities, and link these with civic open space maintenance. Include shaded areas/areas for cooling.	0.72	0.2	NMBM	Communities, NGOs, sports
	Mainstream the use of low-carbon/alternative building materials in housing programmes, by developing enabling municipal regulations. Develop demonstration centres with local communities to show-case methods and to grow skills.	2.7	0.2	NMBM	Engineers, Architects, Civil Society, Green Building Council, Nelson Mandela University (Research and Technology)
Long-term	Identify optimally located land for densification and prioritise these areas for public- and private-sector development. Where optimal land is not owned by the Municipality, prioritise raising the purchasing the land for subsidised housing development.	2.52	0.12	NMBM, Provincial Planning, National Human Settlements	Environmental sector
	Prioritise the development of amenities (such schools, health care, and open spaces) and services in existing indigent settlements that do not have access to these services. Meet the principles of SCU planning.	1.44	0.08	NMBM, Provincial, National sector departments	Civil Society

Strategic Focus Area 1D: Energy Efficiency and Shift to Low-Carbon Energy Systems

Phasing	1D. Energy Efficiency & a Shift to Low-Carbon Energy Systems	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Investigate the feasibility of NMBM becoming a power trader to enable them to on-sale locally produced power, thereby reducing reliance on the on-sale of Eskom power as a revenue source.	1.8	0.08	NMBM Department of Mineral Resources and Energy (DMRE)	IPPs
	Support the development (and up-scaling) of socially owned RE systems (such as the Soltuba Co-op) at the local scale and facilitate the on-sale of electricity to third parties and the sale of excess energy to the NMBM.	2.52	0.08	NMBM DMRE	Communities
	Support and grow current initiatives under the Municipal Energy Management System to improve energy efficiency (e.g. changing traffic and streetlights to LED and solar bulbs, solar water heating systems)	2.34	0.08	NMBM	Business Research IPPs Business Chamber Private Sector Civil Society
	Conduct Energy Audits and display Energy Performance Certificates at government, parastatal and commercial/industrial buildings.	1.08	0.04	NMBM Energy Auditors	NMU Research organisations
	Facilitate alternative small-scale energy systems (e.g. biogas, using dry compost toilets and organic waste) to provide energy to communities without access to electricity and others	2.52	0.16	NMBM	Communities Civil Society

	Drive public awareness of energy efficiency and energy saving measures that can be used at a home-level (e.g. lights, water heating systems and electrical appliances).	1.44	0.08	NMBM	Civil Society
	Maintain powerline corridors to be free of trees and flammable material.	0.72	0.44	NMBM, Eskom	Communities
Medium-term	NMBM to pursue a diversified energy supply mix, prioritising local alternative and renewable energy opportunities in line with its Renewable Energy Plan (2030)	1.62	0.08	NMBM DMRE Eskom DFFE	IPPs National Energy Regulator of South Africa (NERSA) Communities
	Shift the NMBM's energy consumption load to RE and alternative energy solutions through municipal owned installations, Public Private Partnerships, or IPPs.	1.08	0.08	NMBM DMRE Eskom DFFE	Business NMBBC IPPs
	Plan for and implement mechanisms for effective integration of renewable energy into the distribution network / grid.	1.44	0.08	NMBM DMRE ESKOM DFFE	IPPs
	Enforce the design and development of energy efficient buildings in new developments.	1.44	0.16	NMBM	Architects Developers
Long-term	Roll out pilot solar lights as implemented along Stanford Road, and in lower Baakens into the rest of the City.	2.34	0.04	NMBM	MBDA

	Develop the metro-scale waste to energy facility at Arlington landfill site as advised by a recent feasibility study commissioned by the NMBM Energy Department. Work with local waste collectors.	2.34	0.08	NMBM DEDEAT	Waste collectors
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Strategic Focus Area 1E: Low Carbon and Efficient Mobility Corridors

Phasing	1E. Low Carbon & Efficient Mobility Corridors	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Promote non-motorised transportation through the upgrading and maintenance of existing cycling and pedestrian pathways along the coast, connecting the southern beaches with the Coega SEZ	1.26	0.16	NMBM	NDOT Communities NGOs Tourism industry
	Initiate a public relations campaign that drives attention to using alternative means of carbon-efficient transport	1.62	0.08	NMBM	NDOT Communities NGOs
Medium-term	Develop/rehabilitate a safe and affordable public transport system across the Metro - an Integrated Public Transport System	1.98	0.08	NMBM	Communities NDOT
	Plan and develop a safe pedestrian and cycle network that provides non-motorised access to amenities, places of work, livelihood opportunities and civic/open spaces	2.52	0.08	NMBM	NGOs Cycling associations, Communities

Long-term	Upgrade rail passenger transport between Kariega and Gqeberha	1.44	0.08	NMBM, PRASA	MBDA
	Develop the proposed Western Arterial and Bloemendal Arterial to connect settlements from the south-western part of the Metro with those to the north and north-east. Provide for cycling and pedestrian lanes and public transport lanes and infrastructure.	1.44	0.08	NMBM	Communities Cycling organisations
	Develop safe transition area linking the inner city to the beachfront / port precinct	1.08	0.08	NMBM, MBDA	private sector
	Investigate the feasibility of using existing railway reserves across the city for electrified public transport	1.98	0.08	NMBM, PRASA	

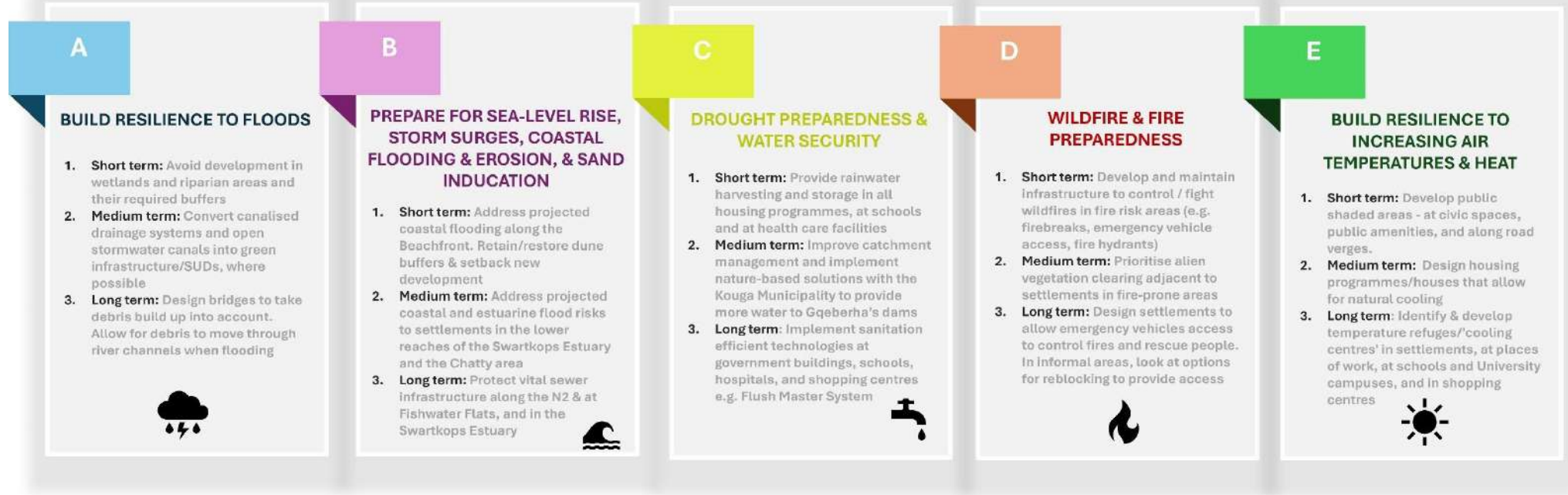
Strategic Focus Area 1F: Waste Minimisation and Improved Waste Management

Phasing	1F. Waste Minimisation & Improved Waste Management	Resilience Score	Co-benefit Score	Actor	Partner/Supporter
Short-term	Roll-out small-scale organic waste composting and biogas plants across settlements and government facilities (e.g. schools, clinics, hospitals)	2.34	0.08	NMBM Department of Health NGOs	Business sector, private sector
	Remove pressure from the Metro's waste collection service by setting up a network of (recyclable) waste buy-back centres. Prioritise these in areas where dumping is a problem and where available data shows socio-economic vulnerability. (Refer to narrative maps). This can be done at existing waste drop off sites and must be done in partnership with communities. Formalise and support operations of waste reclaimers / pickers that already work in this space, and plan collaboratively around strengthening the waste value chain.	3.24	0.28	NMBM, Waste Reclaimers, Communities (with ward councillor support)	DFFE, DEDEAT Private Sector, NGOs, Community based organisations (CBOs) and co-operatives
Medium-term	Through the Business Chamber and Tourism Association, link waste recyclers with the tourism and business industry to promote general waste collection and recycling. Include recyclable waste from ships at the Port Elizabeth and Ngqura Ports, particularly cruise liners.	1.8	0.08	Business Chamber, Tourism Association	Waste reclaimers, TNPA
	Operationalise sludge beneficiation at existing WWTW, depending on sludge classification and licensing (for example composting, for use in brickmaking off-site). Integrate with other organic waste/biomass to manufacture compost. Driftsands WWTW is licensed to compost sludge and	1.8	0.08	NMBM	Private sector CBOs

	Fishwater Flats WWTW has an (inactive) off-take agreement with a local brickwork.				
Long-term	Roll out the NMBM-led pilot waste separation project in Westering to other parts of the Metro and develop a metro scale waste separation and collection service with community waste-collectors.	2.88	0.28	NMBM	Waste reclaimers communities
	Develop an NMBM-led metro-scale waste sorting and recycling facility, including organic waste and garden refuse. Develop and run waste sorting and recycling with existing waste collectors/sorters. Link with the waste to energy facility proposed at Arlington landfill site.	2.34	0.08	NMBM	Waste reclaimers private sector, NGOs
	Address waste collection and management in informal areas specifically through applying the ‘reblocking’ method to develop roads/corridors for waste trucks to pass through these areas and collect waste.	1.98	0.2	NMBM, Communities	NGOs
	Link waste removal services by the Metro with population density rather than on an erf basis to increase waste collection frequency in relevant areas and alleviate dumping.	1.98	0.24	NMBM	

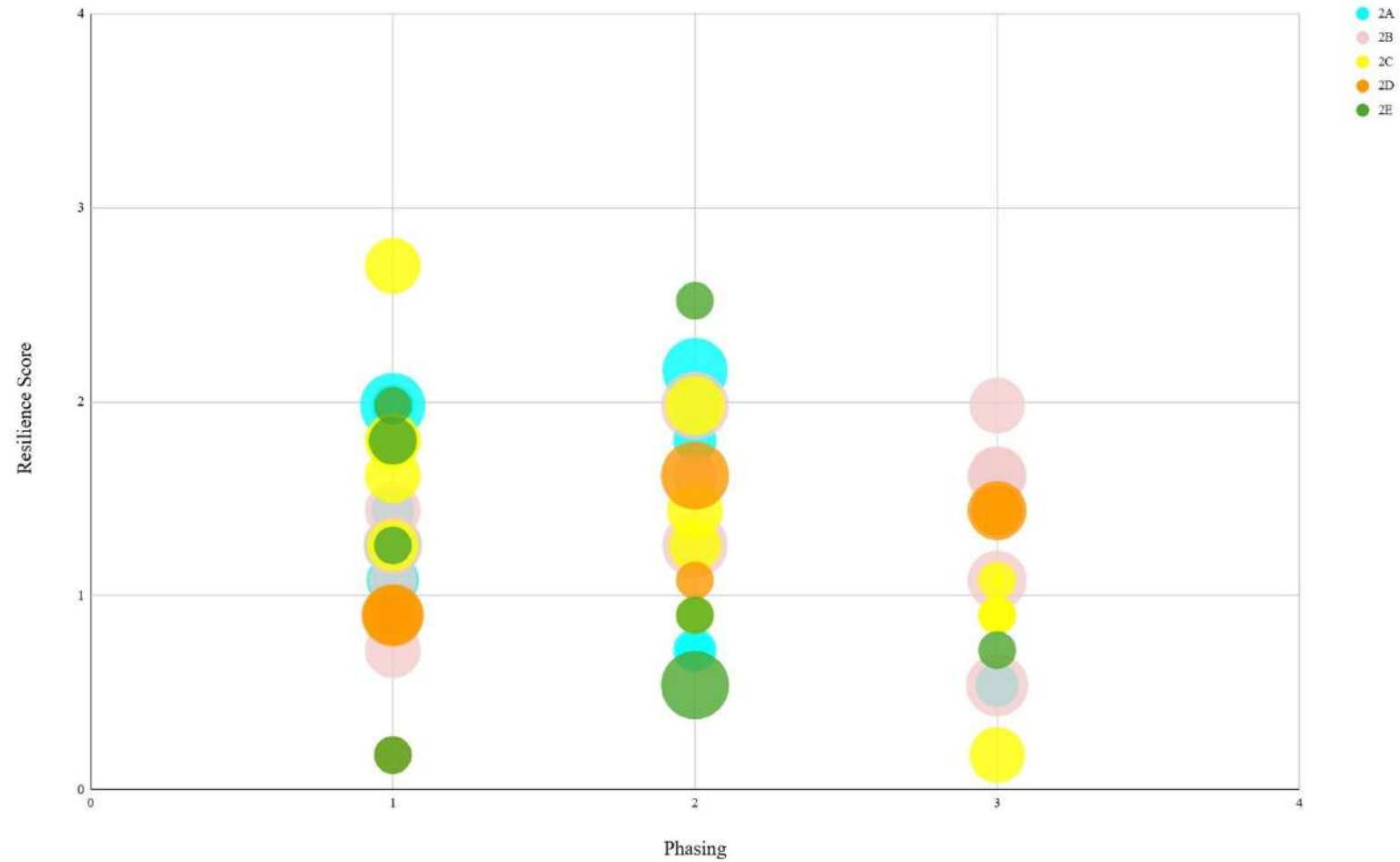
Strategic Intervention 2: Defend Against the Extremes

STRATEGIC INTERVENTION 2: DEFEND AGAINST THE EXTREMES



Strategic Focus Areas to achieve ‘Strategic Intervention 2: Defending Against Extremes’, showing the with most resilient actions for short-, medium- and long-term planning

STRATEGIC INTERVENTION 2: DEFEND AGAINST THE EXTREMES – CLIMATE RESILIENT DEVELOPMENT PLANNING CHART



Climate Resilient Development Planning Chart for ‘Strategic Intervention 2: Defend Against the Extremes’.

Strategic Focus Area 2A: Floods - Build Resilience to Flooding

Phasing	2A. Building Resilience to Flooding	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Avoid development in wetlands and riparian areas and their required buffers.	1.98	0.52	NMBM DEDEAT DWS Civil Society	Research, Private sector, Urban designers, Town planners, Communities
	Promote de-paving and infiltration zones across developed areas.	1.08	0.36	NMBM DWS	Civil Society Communities Private sector
	Implement an ongoing rigorous drain cleaning system, and keep drainage areas, canals and civic spaces free of waste. Work with community members in monitoring, reporting, and routine cleaning. Mobilise teams to inspect and clean drains ahead of anticipated floods.	1.98	0.28	NMBM Communities	Private Business Civil Society
	Maintain road surfaces and fix potholes, especially after rain. Prioritise surfacing of gravel roads.	1.08	0.28	NMBM South African National Roads Agency Eastern Cape Province of Transport	Communities Private contractors

	When designing/repairing/upgrading river crossings, review current design parameters and the extent of the 1:100-year flood-line to consider more intense rainfall events, changes in the catchment, and flooding of infrastructure.	0.9	0.28	NMBM DEDEAT	Research Built Environment professionals
	Identify convergence hotspots (e.g. Union Street Bridge – Kariega, Target Kloof, and Brickmakers Kloof bridges) and routinely remove debris (and aliens) build up to reduce damming effect during floods.	1.44	0.28	NMBM	Communities
	Continually revise the delineation of river floodlines (1:50 and 1:100) in the Metro to take into account development 'squeeze' and the projected increase in intense rainfall events.	1.8	0.28	NMBM DEDEAT	Research Built Environment professionals
	Collaborate with communities, leaders, committees and ward councillors to build awareness of the risks of living in floodplains. with the intent of preventing flood plain settlements	1.98	0.32	NMBM Ward councillors	Communities Church Leaders
	Prioritise emergency responses to people with disabilities during flooding. Make provision for safe and timeous evacuation	1.26	0.4	NMBM	Civil Society
Medium-term	Convert canalised drainage systems and open stormwater canals into green infrastructure/SUDs where possible, to promote attenuation and filtration of runoff. Prioritise and phase implementation, with affected communities.	2.16	0.52	NMBM DWS	Research Civil Society Communities
	Restore degraded aquatic areas to provide attenuation and filtration function. Work with local community members and leadership in planning restoration projects, and implementing actions.	1.26	0.28	NMBM DEDEAT DWS	Research, Communities

Where there is development in flood risk areas (refer to narrative report) NMBM/private landowners must develop on-site flood-protection measures (barriers, swales), and/or implement emergency contingency measures to cope with secondary flood impacts (e.g. being cut off from services - plan for alternative energy and water supplies). Integrate flood-protection measures across neighbouring properties.	0.72	0.28	NMBM DWS DEDEAT Private landowners	Research Civil Society
Where there is NMBM infrastructure in flood risk areas (refer to narrative report) NMBM must develop flood-protection measures and/or implement emergency contingency measures to cope with flood impacts.	0.72	0.24	NMBM DEDEAT DWS	Research Civil Society Communities
Protect cemeteries, as far as practically possible, that are in flood risk zones. (Refer to narrative report).	1.8	0.28	NMBM DEDEAT DWS	Research Civil society Communities
Provide safe pedestrian and cycle crossing of drainage areas for people to access schools, amenities, places of work, and open spaces.	1.26	0.28	NMBM South African National Roads Agency Eastern Cape Province of Transport	Civil Society especially associations Private Business
Address flooding and closure of key roads and collapse of/damage to bridges, as highlighted by the significant floods in 2024. Priorities are bridges in Kariega and KwaNobuhle, Third Avenue dip across the	0.54	0.28	NMBM South African National Roads Agency Eastern Cape	Research

	Baakens River, and parts of the R335 through Markman and Motherwell.			Province of Transport DEDEAT DWS	
Long-term	Implement protection measures to handle the risk of flooding of Marine Drive and the N2 at 'convergence zones' (i.e. where the Hume and Baakens River intersect with sewer and water infrastructure and discharge under these roads).	0.54	0.28	NMBM DEDEAT DWS	Communities
	Design bridges to take debris build up into account. Allow for debris to move through river channels when flooding.	0.54	0.28	NMBM DEDEAT DWS	Communities

Strategic Focus Area 2B: Sea - Preparing for Sea-Level Rise, Storm Surges, Coastal Flooding and Erosion, and Sand Inundation

Phasing	2B. Sea - Preparing for Sea-Level Rise, Storm Surges, Coastal Flooding and Erosion, and Sand Inundation	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Restore the dolosse protection barrier along the N2 (North End and Brighton Beach sections) to protect the freeway and infrastructure from storm surges/waves.	0.72	0.4	Transnet National Ports Authority DEDEAT	NMBM Research
	Move sand from the massive dune at Sardinia Bay and transfer this sand into the surf zone at a suitable site north of Cape Recife (e.g. Flat Rocks). This process will replicate what the dunefields were already doing prior to stabilisation.	1.26	0.44	NMBM DEDEAT Communities	Research Civil Society
	Address the risk of the projected coastal flooding along the Beachfront. Maintain existing dune systems to serve as buffer areas. Set new development back from the projected coastal flood risk zones (see Narrative Report).	1.44	0.4	NMBM DEDEAT	Research Civil Society Communities
	Address shifting sands from the beach towards land, inundating structures and public infrastructure in the area between Something Good and Flat Rocks. Use brush packs and sand fences to trap sand and create dune hummocks. Sandbags along this stretch of the beach are not effective.	1.08	0.32	NMBM DEDEAT	Research
Medium-term	Develop a sand bypass system at the Port Elizabeth Port to restore sand to North End and Brighton beaches, and to protect the N2, rail, and sewer infrastructure from storm surges and coastal erosion.	1.62	0.28	NMBM DEDEAT	Research Civil Society

	Address the stormwater drains under the N2 that discharge surface runoff from Deal Party/North End industries to the sea. Clean and maintain stormwater outlets to facilitate flow during high rainfall conditions and during coastal storm surges. Alternatively, redirect stormwater from Deal Party into the Papekuils Canal, and consider designing SUDs for discharge.	1.26	0.52	NMBM DEDEAT DWS	Research Communities
	Design a phased approach to address the projected coastal and estuarine flood risks to settlements, roads and infrastructure in the lower reaches of the Swartkops Estuary and the Chatty area: a) In addition to using EBA methods to restore habitats, employ a nature-based solution using hybrid designs of natural habitat and built infrastructure (Sutton-Grier et al., 2015; Moller, 2019). Design and implement “living shorelines” to protect settlements and infrastructure from erosion. Follow biomimicry approaches to design culverts to reduce flood damage to roads (Davis et al., 2015; Sutton-Grier et al., 2015) (Raw et al, 2023).	1.98	0.56	NMBM DEDEAT DWS Communities	Research Built Environment professionals
	Maintain public roads and amenities at the coast that are inundated by shifting sands (e.g. Marine Drive between The Beacon and Cape Recife, the boardwalk along the beachfront between Something Good and Flat Rocks, the access road to Maitlands Beach and parking lot, the parking lot at Blue Horizon Bay and Bluewater Bay beaches.	1.26	0.24	NMBM DEDEAT	Communities
Long-term	Restore sand supply and beaches to the north of Cape Recife Point (Schumann, 2024): Reinstatement of the littoral dunes at the start of the Sardinia Bay dunefield to halt the movement of sand overland, making more sand available to move around the Point in the sea. Use indigenous plants to form the littoral dunes, and work with local people to do the restoration work. This will take many years and will require maintenance.	1.62	0.44	NMBM DEDEAT Communities	Research Civil Society

	Build additional piers like the one at Hobie Beach to retain sand at specific sites. The report done by Prestedge (1986) can be used as a guide to where these should be built. An obvious place is at Pollock Beach. This will serve to build up a localised beach (for ~100 m), providing a recreational beach and helping to buffer landward development from storm surges	1.08	0.44	NMBM DEDEAT DWS	Research
	Build dunes along the coast, using brush packs and sand fences, encouraging natural dune vegetation to establish to serve as a buffer.	1.62	0.4	NMBM DEDEAT	Research Civil Society Communities
	Implement measures to protect vital sewer infrastructure along the N2 at Fishwater Flats, and in the estuarine functional zone from the projected coastal and estuarine flood risks.	1.98	0.4	NMBM DEDEAT DWS	Research
	Create a WWTW in the Coega SEZ to allow sewage to be rerouted and treated elsewhere, without needing to cross the Swartkops Estuary (at the steel bridge and N2 bridge).	1.62	0.2	CDC (Coega) DEDEAT DWS	NMBM Research
	Reinstate and maintain the littoral dunes at the start of the Noordhoek Dunefield to reduce sand moving overland, and to protect structures and infrastructure at Cape Recife (e.g. the Cape Recife WWTW & sludge ponds, the discharge channel, and the public road to the Cape Recife Lighthouse).	1.44	0.2	NMBM DEDEAT DWS	Research
	b) In high-risk areas where these design adaptation options are not feasible, a managed retreat will be necessary. Impacts of predicted flooding will be more severe in areas where hard infrastructure is immediately adjacent to the estuary channel, such as at Swartkops Village and Amsterdamhoek (Raw et al, 2023).	0.54	0.48	Landowners	Research

Strategic Focus Area 2C: Drought - Drought Preparedness and Water Security

Phasing	C2. Drought Preparedness & Water Security	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	<p>Prioritise raising of funds to support the maintenance and implementation of the following interventions identified in the NMBM Drought Mitigation Plan:</p> <p>a. Measures to reduce overall abstraction, including water restrictions and punitive tariffs, pressure management and Leak Repair Programme, Prioritise sustained education/awareness campaigns to get people to adhere to 50 kl / day water restriction, and to reuse water at home (in accordance with the NMBM Non-Revenue Water Strategy)</p>	1.62	0.4	NMBM DWS	Private Business Civil Society
	<p>b. Plan for and implement emergency supply options for people to have access to water in times of drought (e.g. continued potable water supply to critical areas via water trucks, collection from public boreholes). Make provision for disabled people to be able to access water sources and take them home, and for elderly and vulnerable people who have to stand in queues.</p>	1.8	0.36	NMBM DWS	Civil Society Communities
	<p>Provide rainwater harvesting and storage in all housing programmes, at schools and at health care facilities.</p>	2.7	0.4	NMBM DWS	Communities
	<p>Allocate resources to the NMBM to address water leaks as a priority</p>	1.26	0.36	National Treasury NMBM DWS	Private Business Communities

	Revive the Business Chamber 'Adopt a Leak' programme, working with communities to monitor and report water leaks.	1.8	0.4	Business Chamber NMBM	Communities
	At household level, develop systems to enable using greywater for flushing toilets and watering gardens.	0.9	0.32	NMBM DWS	Research Civil Society Communities
Medium-term	Engage with appropriate authorities on the state of the Orange-Fish River Tunnel and devise a response plan should water supply be interrupted to the Metro	1.26	0.36	NMBM DWS DEDEAT DFFE	Research Civil Society
	Prioritise raising of funds to support the maintenance and implementation of the following interventions identified in the NMBM Drought Mitigation Plan: Implement and maintain interventions to mitigate drought impacts - i) Complete the work on the Gariep Dam/ Orange River Transfer Scheme, ii) Groundwater augmentation, iii) Re-use of treated effluent at wastewater treatment works (WWTW), etc.	1.44	0.4		
	Improve catchment management and implement nature-based solutions in collaboration with the Kouga Municipality and relevant stakeholders to provide more water to Gqeberha.	1.98	0.44	NMBM DWS DEDEAT Mzimvubu- Tsitsikamma Catchment Management Agency	ECPTA SANParks

	Upgrade and maintain existing NMBM infrastructure to facilitate re-use and distribution of treated effluent for irrigation in public spaces, sports fields and parks.	0.9	0.24	NMBM DWS DEDEAT	Civil Society Research
	Consider strategy & enabling regulations for converting waterborne sewage into waterless systems	0.9	0.24	NMBM DWS	Civil Society Research
	Investigate the use of the weir above Tyriville as an alternative water source for Lapland community and the surrounding area.	1.08	0.16	NMBM DWS	Communities
	Prioritise raising funds to support the maintenance and implementation of the interventions identified in the NMBM Drought Mitigation Plan- Review & update feasibility studies done for the development of desalination plants for the Metro.	0.18	0.4	NMBM DWS	Communities
Long-term	Industry and business - implement systems for water efficiency and innovative measures to recycle and reuse water.	1.08	0.24	Industry Business	NMBM DWS
	Implement sanitation efficient technologies at government buildings, schools, hospitals, and shopping centres e.g. Flush Master System (high pressure that use far less water).	1.44	0.24	NMBM DWS	Communities
	Upgrade WWTW operations and capacity to generate treated effluent of sufficient quality for re-use.	0.9	0.24	NMBM DWS DEDEAT	Civil Society Research
	Plan for re-use of treated effluent in flush toilets (as per pilot at NMU residences). Planning to include addressing perceptions on the acceptability of this method.	0.9	0.24	NMBM DWS	Civil Society Research Communities

Strategic Focus Area 2D: Fire - Wildfire and Fire Preparedness

Phasing	2D. Wildfires and Fire Preparedness	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Establish trained citizen volunteer fire groups to support the Fire Department in fighting fires.	0.9	0.44	NMBM	Residents' associations Civil Society
	Develop and maintain infrastructure to control / fight wildfires in fire risk areas (see narratives) - develop and maintain firebreaks (implement minimum width requirements), provide for emergency water storage specifically for firefighting and ensure there is sufficient water pressure, maintain and ensure access to fire hydrants, and maintain access for emergency vehicles	0.9	0.48	NMBM DWS Eastern Cape Parks & Tourism Agency South African National Parks	Civil Society Communities
	Farmers / people living on farms to join the Fire Protection Association	0.9	0.24	Landowners Fire Protection Association	Civil Society
	Compliance and enforcement around fire prevention and control in the design, operation and maintenance of industrial developments that create fire risks (e.g. storage dangerous goods and hazardous substances).	0.18	0.24	Industry	NMBM
Medium-term	Prioritise alien vegetation clearing adjacent to settlements in fire-prone areas. Tackle the problem at various scales, from large scale coordinated programmes to smaller scale citizen-led volunteer groups	1.62	0.56	NMBM DEDEAT	Citizens Communities Private Business

	Develop and implement Fire Management Plans for conservation areas and natural open spaces to manage biodiversity, and to protect surrounding settlements from spreading wildfires.	1.08	0.24	NMBM ECPTA SANParks	Research Civil Society
Long-Term	Provide reliable and affordable safe electricity to human settlements (formal and informal) to reduce activities that create a fire risk - i.e. illegal connections, paraffin use.	1.44	0.36	NMBM Independent Power Producers	Communities
	Design settlements to allow emergency vehicles access to control fires and rescue people. In informal areas, look at options for reblocking to provide access.	1.44	0.44	NMBM Department of Health	Landowners Communities Civil Society

Strategic Focus Area 2E: Heat - Building Resilience to Increasing Air Temperatures and Heat

Phasing	2E. Heat - Building Resilience to Increasing Air Temperatures and Heat	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Develop public shaded areas - at civic spaces, public amenities, and along road verges. Prioritise areas where vulnerable people need to queue (for e.g. at clinics and water collection points), and at waiting areas for public transport (e.g. bus stops).	1.98	0.24	NMBM	Department of health NGOs Resident Associations
	Develop an urban heat map to identify 'hotspots' across the Metro to prioritise cooling interventions.	0.18	0.24	NMBM Research	Civil Society Communities
	Use existing weather stations to alert the public of dangerously high temperatures/heat waves. Work with community monitors.	1.26	0.24	NMBM	ACSA Weather Services (SAWS)

	Design and roll out a public awareness campaign on the dangers of heat and humidity and actions that can be taken to reduce risk and impact	1.8	0.32	NMBM	Health Department Communities
Medium-term	Design housing programmes/houses that allow for natural cooling - i.e. consider building orientation, use alternative building materials that have insulation properties and promote cooling (e.g. polystyrene, hemp, clay and daub), and plant trees for shade in civic spaces//landscaped areas.	2.52	0.24	NMBM Department of Human Settlements DEDEAT	Civil Society Communities Research especially architects and town planners
	Provide for back-up cooling systems to manage the impact of high temperatures and power cuts at health care facilities, agro-processing facilities (e.g. dairies), poultry houses, and food and beverage storage and processing facilities (e.g. citrus packhouses).	0.9	0.24	Department of Health Department of Rural Development and Agrarian Reform (DRDAR)	NMBM Research
	Encourage the uptake of non-state weather stations across the metro that can act as supplementary early warning aids in alerting public to discomfort levels	0.54	0.56	SAWS NMBM	Research Ward Councillors NMBBC
Long-term	Identify and develop temperature refuges/'cooling centres' in settlements, at places of work, at schools and University campuses, and in shopping centres for people to have cool spaces in temperature extremes. These could be natural open spaces or buildings that are designed specifically for cooling.	0.72	0.24	NMBM	Research Department of Education Research Civil Society Communities

Strategic Intervention 3: Secure the Basics

STRATEGIC INTERVENTION 3: SECURE THE BASICS

A

DELIVERING MUNICIPAL SERVICES

1. **Short term:** Prioritise stable and consistent service delivery (water, energy, sewer, stormwater)
2. **Medium term:** Install back-up generators and telemetric systems in all critical sewage pump stations
3. **Long term:** None identified



B

DISASTER MANAGEMENT PLANNING & RESPONSE

1. **Short term:** Finalise the NMBM Disaster Management Plan.
2. **Medium term:** Train health care workers to assist with disaster response
3. **Long term:** Develop emergency routes / corridors for emergency vehicles to gain access to settlements during disasters. Investigate 'reblocking' in informal areas



C

SUPPORT COMMUNITY WELL-BEING & SAFETY

1. **Short term:** Develop Urban Food Farm demonstration sites and support the expansion to a household level.
2. **Medium term:** Address service delivery challenges, making sure that all people have access to clean drinking water, affordable energy, and decent sanitation
3. **Long term:** Prioritise alternative housing for informal settlements on waste dumps and within buffer areas of landfill sites where there is a health risk. Plan with affected communities



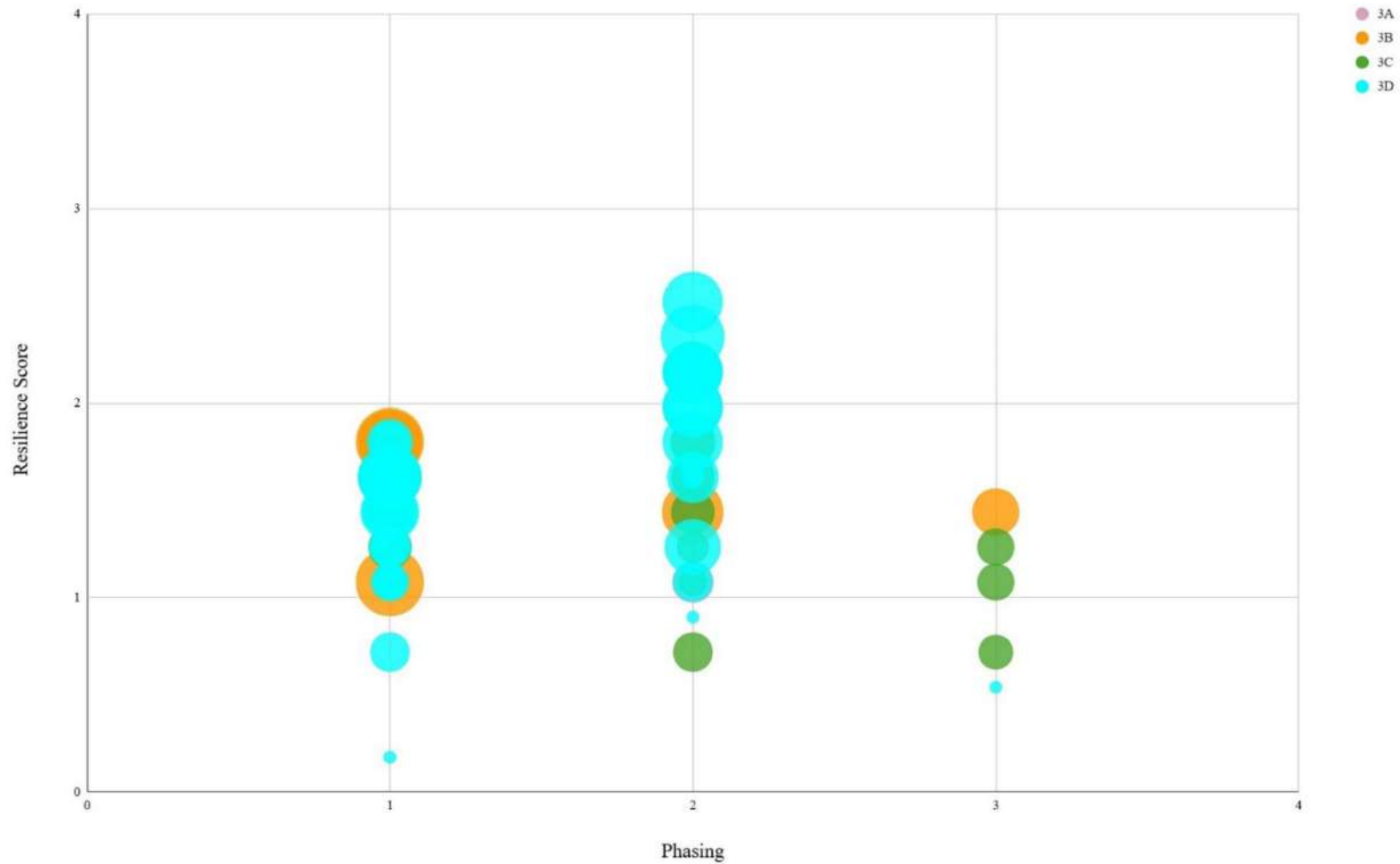
D

GOVERNANCE

1. **Short term:** The NMBM through the City Manager to establish a Climate Forum with multi sectoral representation (public and private sectors) to drive the implementation for the CRDSF
2. **Medium term:** Incorporate climate resilience into IDP, budgets, & SDF/LSDP's to be more responsive to community needs, and to actively address climate resilience initiatives
3. **Long term:** Promote City Improvement Districts and Special Ratings Areas across the Metro for safety & cleanliness. ✓

Strategic Focus Areas to achieve 'Strategic Intervention 3: Secure the Basics', showing the most resilient actions for short-, medium- and long-term planning.

STRATEGIC INTERVENTION 3: SECURE THE BASICS – CLIMATE RESILIENT DEVELOPMENT PLANNING CHART



Climate Resilient Development Planning Chart for ‘Strategic Intervention 3: Secure the Basics’.

Strategic Focus Area 3A: Delivering Municipal Services

Phasing	3A. Delivering Municipal Services	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Prioritise stable and consistent service delivery (water, energy, sewer, stormwater)	1.62	0.36	NMBM	Communities Business Industry
	Complete the sludge rising main from Cape Recife WWTW to Driftsands WWTW to include in beneficiation plans.	1.62	0.12	NMBM	DWS
	Update key master plans (stormwater, sanitation, water, roads) and ensure regular (5-year) updates	1.44	0.48	NMBM	
	Ensure climate change impacts are prioritised in IDP planning processes	1.44	0.48	NMBM	CoGTA Civil society
	Resolve delays in central NMBM functions that are critical to infrastructure directorates being able to fulfil their duties: recruitment, procurement, fleet maintenance, legal services, Municipal call centre	1.62	0.48	NMBM	CoGTA Civil society
	Ensure Council Committees meet at least once per quarter and make information available on the NMBM website and FB pages	1.62	0.36	NMBM	CoGTA Civil society
Medium-term	Develop a user-friendly app that allows for GIS located reporting of municipal issues with photo capture	1.44	0.32	NMBM, private sector	Civil society, Business Chamber
	Install back-up generators and telemetric systems in all critical sewage pump stations	1.62	0.32	NMBM	

	Ring-fence maintenance and capital projects within infrastructure directorates to ensure appropriate availability of funding	1.08	0.32	NMBM National Treasury	
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Strategic Focus Area 3B: Disaster Management Planning and Response

Phasing	3B. Disaster Management Planning & Response	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	Implement a pre-emptive//planning structure within the NMB that enables planning for disaster preparedness disasters (flooding, wildfires, drought), and transversal authority.	1.08	1.08	NMBM Department of Health (EC Province) Department of Home Affairs Department of Human Settlements	Private Business, Business Chamber, NGOs Civil Society Weather Services South African Police Services Airports Company of South Africa Industry and waste management companies
	Finalise the Disaster Management Plan and review every 5 years. Collaborate with the Business Chamber & the CDC to integrate disaster management planning across the Metro.	1.8	1.08	NMBM	Business Chamber CDC
	Design and implement a community-based (radio, social media etc.) Early Warning System for pending disasters/extreme events. Build on existing Ward Committee groups to disseminate warnings.	1.8	0.92	NMBM Ward councillors and Ward committees	Research Community groups such as clinic committees

					CPFs Resident committees
	Ensure Joint Operation Centres (JOCs) are established one day prior an anticipated extreme event, after SAWS weather warnings are issued.	1.62	0.44	SAWS CoGTA NMBM	Gift of the Givers, Business Chamber, Provincial Department of Health, Provincial Department of Human Settlements, SAPS, DWS
	Ensure that disaster management coordination with SOE's and citizen volunteer initiatives takes place through regular joint meetings, trainings, and involvements in strategy development	1.62	0.88	NMBM Disaster Management	SOEs, civil society, Business Chamber, NMU
Medium-term	Train health care workers to be ready to assist with disaster response.	1.8	0.32	Department of Health	Health care workers Civil society
	Plan and develop community centres in proximity to flood-prone settlements where people can access resources and facilities for safety, food, and supplies in disasters. Outside of disaster times, the facilities should be used for alternative livelihoods, food gardens and waste sorting.	1.44	0.84	NMBM	Civil Society Communities
Long-term	Develop emergency routes / corridors for emergency vehicles to gain access to settlements during disasters. In informal areas, use the reblocking method to provide these routes, planning with affected communities.	1.44	0.44	NMBM	Civil Society Communities

Strategic Focus Area 3C: Support Community Well-Being and Safety

Phasing	3C. Support Community Well-Being and Safety	Resilience Scores	Co-benefit Score	Actor	Partner / support
Short-term	Improve staff capacity, infrastructure requirements and security at clinics	1.62	0.4	Department of Health	Civil society
	Train and deploy community health workers in the ward-based primary health care outreach teams (WBPHCOT), taking health care to household level. Via surveys, collect baseline data to identify vulnerable households, and support these into the long term. Health care workers to make people aware of the health risks related to climate change at household level, in waiting areas at clinics, and via public forums.	1.62	0.4	Department of Health	Community health workers Civil Society Researchers
	Ramp up monitoring for diseases related to warmer temperatures and poor environmental health and make communities aware of the potential risks and which areas to avoid (e.g. bilharzia).	1.44	0.28	Department of Health	Communities Civil Society
	Support community-led crime prevention initiatives, e.g. Community Police Forums.	1.62	0.08	South African Police Services NMBM	Communities
	Capacitate metro-police to deliver service at a required level.	1.08	0.08	NMBM	SAPS
	Remove the bucket system as a priority and replace it with more hygienic and dignified sanitation options.	1.26	0.36	NMBM	Civil Society Communities

	Support the expansion of urban food farms at clinics, schools and in public open spaces (for e.g. through seedlings, equipment, and infrastructure). Promote the use of mulch, and organic fertiliser.	1.8	0.04	NMBM Department of Education Department of Health DRDAR	Communities
	Establish demonstration food farms at clinics, using permaculture or similar methods. Clinic committee members can support the establishment of food gardens on a household level. Where space is a challenge at household level, plant in containers and use vertical planting methods.	1.8	0.04	Department of Health	Clinic committee members Communities
	The coastal environment and rivers are spaces of significant value to local communities for cultural and spiritual connections, and for recreational enjoyment. Access to natural areas for the broader community of the Metro must be promoted.	1.62	0.32	NMBM	Civil Society (especially faith-based organisations) Coastal Management Forum Communities
Medium-term	Avoid developing housing in the buffer areas of landfill sites.	1.08	0.12	NMBM Department of Human Settlements	Civil society Communities
	Address service delivery challenges, making sure that all people have access to clean drinking water, affordable energy, and decent sanitation	1.8	0.4	NMBM DWS DEDEAT National Treasury	Civil society Communities

	Tackle illegal electrical connections	1.26	0.16	NMBM	Communities Civil Society
	Restore and maintain the ecological health of the North End Lake. Undertake regular testing to determine whether the lake is safe to use, and if fish can be caught for human consumption	1.62	0.36	NMBM	Research Civil Society Communities
	Develop a safe swim program across the Metro	0.72	0.28	NMBM DEDEAT	Communities
	Create & implement development plans for each of the Beach zones	1.44	0.36	NMBM	Business Research Civil Society Communities
Long-term	Prioritise alternative housing for informal settlements on waste dumps and within buffer areas of landfill sites where there is a health risk. Plan with affected communities.	1.08	0.24	NMBM Department of Human Settlements	Communities
	Develop community centres that provide space and resources for arts, culture and sport. These facilities can also provide cool spaces, and serve as safe spaces for people in disasters	0.9		NMBM	Civil Society Artists
	Develop community hubs, especially for youth, which provide safe meeting spaces, and where wi-fi is provided for research and access to employment opportunities. Provide for cool spaces.	0.72	0.2	NMBM	Youth Communities Civil Society

Strategic Focus Area 3D: Governance

Phasing	3D. Governance	Resilience Score	Co-benefit Score	Actor	Partner/Support
Short-term	The NMBM through the City Manager to establish a Climate Forum as required by Section 9 of the Climate Change Act. The Forum to have multi sectoral representation (public and private sectors) and to drive the implementation for the CRDSF.	1.62	0.92	NMBM	DFFE, PCC, NMBBC, NMU SAWS Private Sector Civil Society
	Establish a climate office in a central administrative location tasked with ensuring climate issues are dealt with appropriately and transversally including the development and implementation of a climate strategy/ CRDSF.	1.62	0.92	NMBM	SA Cities Network National Treasury City Support Programme (CSP) Unions
	Establish a transversal Climate Task Team within NMBM composed of representatives from all Directorates within the municipality to work on mainstreaming climate actions and seeking climate funding.	1.62	0.92	NMBM	SA Cities Network, National Treasury City Support Programme
	Municipality to find political climate champions to work with the administration for climate resilience - develop a communication strategy to inform public and political leadership of the importance of climate considerations.	1.44	0.64	NMBM-Mayor's Office and City Manager's Office	NMBM Climate Office

	Integrate cross-border planning with neighbouring municipalities - around coastal erosion, water security, wildfires, agriculture and ecosystem and catchment protection.	1.8	0.4	NMBM	Adjacent municipalities EC Province DWS DFFE
	Resource the NMB Environmental Management Department with the appointment of an Environmental Manager and support staff to lead their function.	1.8	0.36	NMBM	
	Supply Chain Management in the NMBM to be addressed to become efficient, effective and transparent.	1.08	0.24	NMBM	National Treasury
	The NMBM organisational structure should be reviewed and finalised to ensure that climate considerations are a priority in structure and staffing.	1.08	0.24	NMBM	CoGTA
	Fulfil capacity development needs of staff at the NMBM to assist with meeting KPAs. Organisations to consider how to capacitate staff to develop municipal plans and reports, for example through co-developing municipal documents with consultants.	1.08	0.24	NMBM	CoGTA National Treasury CSP
	Update the Coastal Management Plan.	1.62	0.56	NMBM	
	Reinstate the Coastal Committee, inclusive of Estuary Management Committees in line with the requirements of Estuary Management Plans for the Sundays and Swartkops Estuaries.	1.62	0.56	NMBM	Coastal community committees, and other residents
	Address unregistered/illegal water and groundwater storage and abstraction. All users need to register, and abstract water that is in	1.26	0.32	NMBM	DWS

	line with sustainable volumes as determined by geohydrology assessments.				
	Implement a comprehensive groundwater abstraction monitoring and reporting plan.	1.26	0.32	NMBM	DWS
	Tackle abalone and other poaching at a strategic level. Provide more resources and support to Environmental Management Inspectors. Implement a Municipal By-Law that restricts night diving.	1.08	0.04	DFFE	Anti-Poaching Unit, Communities, SAPS, Private Sector
	Ensure enforcement of the Problem Building By-Law and other appropriate regulations to address derelict buildings in the City.	0.18	0.04	NMBM	Communities
	Introduce City Infrastructure Delivery and Management System - include Asset Management Plan for municipal assets. Ensure sufficient budget is allocated to maintain assets for their anticipated lifespan, and budget to replace infrastructure.	0.72	0.28	NMBM	NT (CSP)
	Mainstream climate resilience in all phases of projects: conception, planning, procurement, implementation and maintenance.	1.44	0.76	NMBM Climate Forum	
Medium-term	Climate Forum to commission a Metro specific Climate Risk Assessment to verify/update projections in this report from existing (e.g. SAWS & CSIR) plans	1.98	0.8	NMBM	Forum members
	Incorporate climate resilience into IDP, budget, SDF/LSDF's to be more responsive to community needs, and to actively address climate resilience needs.	2.52	0.8	NMBM	Civil Society, CoGTA, National Treasury
	Ensure that the capital budget and capital investment framework are climate-smart with no investment that is wasted on non-climate smart projects / programmes. (Climate Investment Framework).	2.16	0.8	NMBM	National Treasury CSP

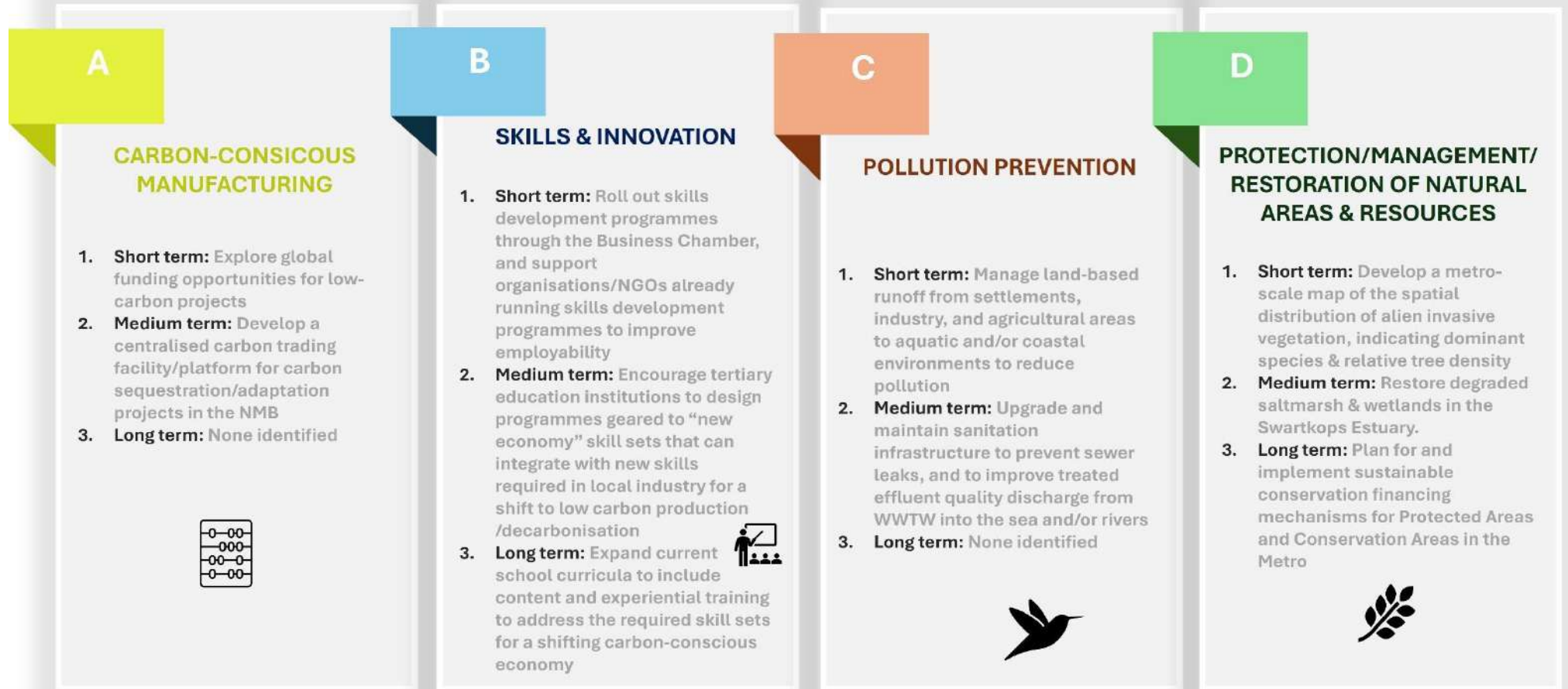
	Climate considerations need to be considered in capital budget prioritisation.				
	District Development Model to align provincial expenditure with local expenditure, and to facilitate SCU operations- amenities close to homes (e.g. resourcing clinics)	1.8	0.8	NMBM	CoGTA
	Develop a multi-functional Sustainable Energy Office that reports directly to the ED: Electricity & Energy and the proposed Climate Office	0.9	0.04	NMBM	
	Plan for accessible and transparent climate finance to implement actions, working with partners and communities in the landscape.	2.16	0.8	NMBM	National Treasury NMBBC NMU SAWS Private Sector Civil Society
	Promote education and awareness through mainstreaming climate resilience across education programmes	1.08	0.28	NMBM	Dept Higher education Education, universities and learning institutions
	Monitor and evaluate resilience progress under the various resilience outcomes. Make this transparent and inclusive, allowing citizens to participate in M&E. Build up a database, and investigate developing a user-friendly App or similar for people to view and contribute to resilient tracking.	1.62	0.56	NMBM Climate Forum	Members of the Climate Forum SA Cities Network Civil Society

	The Municipality needs to prepare a Maintenance Management Plan (as defined in the EIA Regulations and Listing Notices) to apply for Environmental Authorisation to undertake routine maintenance and implement restoration work in the coastal zone, aquatic areas, and other sensitive environments (as listed under the EIA Regulations)	1.26	0.68	NMBM	DFFE
	Develop regulations that determine fair contracts for informal traders, and people working in co-operatives or similar arrangements who trade their goods/services with companies, or that do contract work. For example, waste collectors, seaweed harvesters, and small-scale fishers. Working conditions and fair payment needs to be regulated.	1.62	0.08	NMBM	CoGTA DFFE
	Keep the Metro's planning, policies and plans up to date and ensure that these integrate climate-resilience in planning, implementation and operations of development. Audit existing Plans and Policies, and check for climate relevance. This extends to spatial planning, environmental management, roads and services, energy, and disaster management.	2.34	0.92	NMBM	National Treasury CoGTA DFFE
	A mindset shift is required by the National Government to recognise and support informality, and to work with informal communities and processes to improve the quality of life of those that fall outside of the regulatory framework.	2.16	0.72	NDoHS DTI National Planning Commission	All government Departments NMBM
	Implement the Long-Term Financial Sustainability Strategy as required by National Treasury	1.98	0.8	NMBM	NT (CSP)

Long-term	City Improvement Districts and Special Ratings Areas to be promoted across the Metro with the objective of safety and environmental improvement. Existing By-law to be updated.	0.54	0.04	NMBM	NMBM- Ratepayers Associations Ward Councillors
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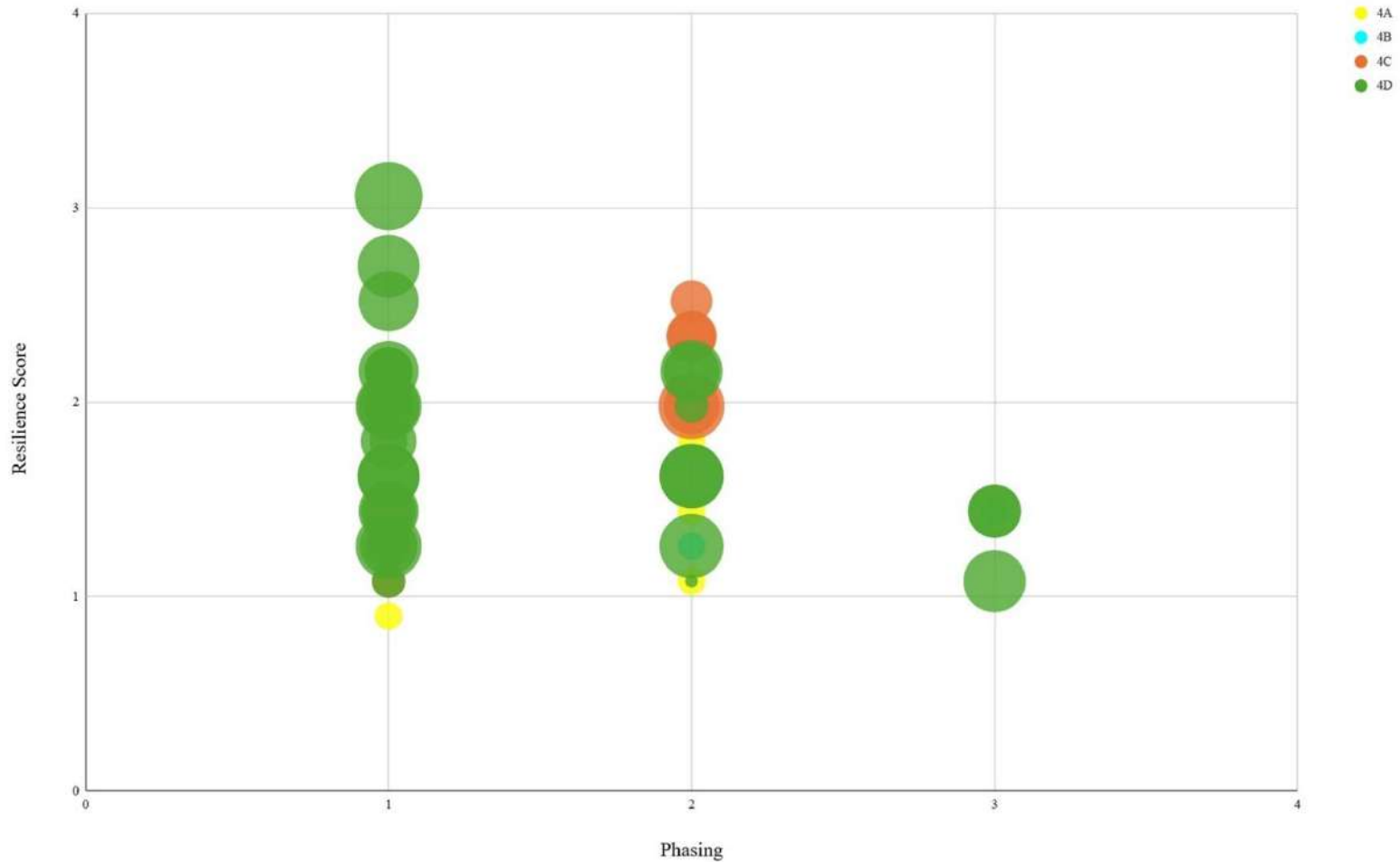
Strategic Intervention 4: Steward Our Assets

STRATEGIC INTERVENTION 4: STEWARD OUR ASSETS



Strategic Focus Areas to achieve ‘Strategic Intervention 4: Stewarding Our Assets’, showing the most resilient actions for short-, medium- and long-term planning.

STRATEGIC INTERVENTION 4: STEWARD OUR ASSETS- CLIMATE RESILIENT DEVELOPMENT PLANNING CHART



Climate Resilient Development Planning Chart for 'Strategic Intervention 4: Steward Our Assets'.

Strategic Focus Area 4A: Carbon-conscious Manufacturing

Phasing	4A. Carbon-conscious manufacturing	Resilience Sores	Co-benefit scores	Actor	Partner / support
Short-term	Identify and collaborate with companies within NMB who already measure and implement strategies to lower their carbon footprint. Grow the network.	1.26	0.04	NMBBC, NMBM, Business Chamber Clusters	Business Community
	Identify which key markets are in process of implementing some form of carbon accounting and “tax” (e.g. CBAM).	0.9	0.04	NMBBC, NMBM, Business Chamber Clusters	Business Community
	Create a metro-scale annual award system for top carbon conscious manufacturers.	1.08	0.04	NMBCC, NMBM	CDC, Business Community, NMU
	Create a brand programme marketing NMB as a carbon-conscious manufacturing leader and destination to attract sustainable investment	1.44	0.04	NMBM, NMBBC	Brand and Marketing Agencies, Media, NMU, CDC
	Explore global funding opportunities for low-carbon projects.	1.44	0.08	NMBBC, NMBM, NMU	Civil Society, PCC, SANBI, DFFE, DEDEAT
Medium-term	Organise workshops for SMMEs on carbon impact and measurement.	1.44	0.04	DTI, NMBM, NMU, NMBBC	Civil Society, PCC
	Develop a centralised carbon trading facility/platform for carbon sequestration/adaptation projects in the NMB.	1.8	0.04	NMBM, Banks, NMU	RE Projects, specialists
	Create a system of municipal incentives for low-carbon manufacturing.	1.08	0.04	NMBM	DTI, NMU, Business Sector

Strategic Focus Area 4B: Skills and Innovation

Phasing	4B. Skills and Innovation	Resilience Sores	Co-benefit scores	Actor	Partner / support
Short-term	Roll out skills development programmes through the Business Chamber, and support organisations/NGOs already running skills development programmes to improve employability.	1.98	0.04	Business Chamber	Civil Society Industry Communities
Medium-term	Encourage tertiary education institutions to design programmes geared to “new economy” skill sets that can integrate with new skills required in local industry for a shift to low carbon production /decarbonisation.	1.26	0.04	Provincial Education Department, Research Institutions	Business Sector
Long-term	Expand current school curricula to include content and experiential training to address the required skill sets for a shifting carbon-conscious economy.	1.44	0.04	Provincial Education Department, Research Institutions	Business Sector

Strategic Focus Area 4C: Pollution Prevention

Phasing	4C. Pollution Prevention	Resilience Sores	Co-benefit scores	Actor	Partner / support
Short-term	Maintain septic tanks, french drains and conservancy tanks to avoid sewage effluent polluting groundwater and coastal areas	1.98	0.24	Landowners	NMBM
	Promote the reduction/management of industrial air emissions through improved production processes, technologies and mitigation systems (e.g. mineral ore storage depots, chemical production plants).	1.98	0.16	Industry DEDEAT	NMBM Civil Society Research
	NMBM to monitor and enforce compliance with ambient air quality standards & AELs where relevant.	1.98	0.16	NMBM DEDEAT	Industry Civil Society Research
	Industrial emitters/AEL holders to join the NMB Air Quality Forum to share lessons and develop best practices for air quality management.	1.26	0.08	NMBM	Industry AEL holders
	Manage land-based runoff from settlements, industry, and agricultural areas to aquatic and/or coastal environments to reduce pollution.	2.16	0.24	DWS NMBM	Industry DRDAR Communities
	Install and maintain/clean litter booms in urban rivers, and litter traps at stormwater outlets to reduce solid waste pollution in rivers and on beaches.	1.44	0.24	NMBM	Civil Society Communities
	Support & expand existing litter clean-ups along the coast.	1.26	0.12	Civil Society	NMBM Citizens

	Identify key water quality “hot-spots” across the metro (river and sea), ensure measurement of key quality criteria every two weeks and the publishing of these results on the NMBM website	1.08	0.08	NMBM, DWS	Civil Society, Research Organisations
Medium-term	Upgrade and maintain sanitation infrastructure to prevent sewer leaks, and to improve treated effluent quality discharge from WWTW into the sea and/or rivers.	2.52	0.16	NMBM DWS DEDEAT	Civil society Research
	NMBM to investigate implementing a formal sanitation system for the Colchester area to avoid water quality issues in groundwater and the Sundays Estuary. This could be an opportunity to test and implement an innovative technology that benefits the environment and people. This is a priority as the Colchester community needs support, and the receiving environment is sensitive.	2.34	0.28	NMBM DWS DEDEAT	Colchester community Community health workers
	Implement and maintain protection and emergency measures at pump stations to prevent sewer spills including operationalising telemetric warnings. Prioritise pump stations that are in coastal and river flood risk zones.	1.98	0.56	NMBM DWS DEDEAT	Civil Society Research
	Develop artificial wetlands for tertiary treatment of WWTW effluent before discharging treated effluent to rivers and/or the marine environment (i.e. avoid direct discharge).	2.34	0.24	NMBM DWS DEDEAT	Civil Society Research
	Upgrade the tertiary wetland treatment system at the Motherwell Canal into the Swartkops Estuary. Design and implement SUDs at other significant discharge areas (e.g. Markman Canal, Chatty River, Kat Canal).	1.98	0.36	NMBM DWS DEDEAT	Communities Civil Society

Strategic Focus Area 4D: Protection / Management / Restoration of Natural Areas and Resources

Phasing	4D: Protection / Management / Restoration of Natural Areas and Resources	Resilience Scores	Co-benefit scores	Actor	Partner / Support
Short-term	Provide resources to manage municipal and provincial nature reserves, in partnerships with non-government organisations, communities, and private institutions/companies.	2.16	0.24	NMBM ECPTA	Civil Society Communities
	Assess and apply for formal Protected Area status of suitable municipal conservation areas.	2.16	0.24	NMBM DEDEAT	Communities Business Private sector
	Co-develop Management Plans for municipal Protected Areas with local communities, business clusters and private interests.	1.26	0.2	NMBM DEDEAT	Communities Business
	Initiate the process to have Algoa Bay declared a UN mixed-use heritage site	1.08	0.08	NMBM DEDEAT	DFFE Communities Civil Society
	Protect the Metro's Critical Biodiversity Areas network in development planning and allocate resources to maintain these important biodiversity areas.	2.16	0.44	NMBM DEDEAT	Built Environment professionals
	Update the Metros CBA network and Bioregional Plan on a 5 yearly basis, and integrate in SDF reviews	1.44	0.44	NMBM DEDEAT	DFFE Civil Society Research Business Industry

	Protect stromatolites along the coast, and the flow and quality of freshwater to these unique features.	1.8	0.12	NMBM	Researchers Coastal community groups
	Update the Metro's fine-scale wetland map and identify suitable wetland buffers & flow requirements. Protect these areas in development planning.	1.98	0.56	NMBM DEDEAT	Research
	In development planning, and especially stormwater management plans, consider recharge of wetlands, rivers and aquifers on a sub-quaternary catchment level. Design stormwater management plans that mimic natural recharge patterns and processes, and hydrological flow requirements.	1.98	0.48	NMBM DWS DEDEAT	Research
	Increase awareness around the need to apply for abstraction of surface water and groundwater and for water storage, and to assess sustainable abstraction to avoid depleting water resources & deteriorating water quality.	1.8	0.36	NMBM DWS	Local communities Business Civil Society
	When assessing sustainable abstraction of groundwater from aquifers, look at the full system, investigating potential impacts on dependent ecosystems (for e.g. the nearshore of Algoa Bay and the Coega Aquifer).	1.98	0.2	NMBM DWS	Business Research Industry Agriculture CDC
	Secure pockets of open space in highly urbanised areas that host important biodiversity and habitats	1.44	0.36	NMBM	Civil Society Communities Citizens
	Protect and/or restore ecosystems in the Albany Thicket biome, Forest, and forest/thicket mosaic vegetation areas; saltmarshes in coastal areas, and the marine environment as carbon sinks/stores.	2.52	0.44	NMBM DEDEAT	Private landowners Built Environment professionals Civil Society Communities

	Ensure that estuaries receive freshwater inflows to meet their ecological reserve requirements, and for flushing of these systems.	2.7	0.48	NMBM DEDEAT	Research Civil Society
	Where still possible, retain coastal buffers to protect estuaries from storm surges. The Metro's estuaries are situated in urbanised/industrial environments and have lost their natural buffers, so this would apply to the Sundays, Maitland and Van Stadens estuaries.	1.26	0.56	NMBM DEDEAT	Civil Society Communities Citizens Private landowners
	Prevent ongoing 'coastal squeeze' as a result of developing in the Estuarine Functional Zone and/or dynamic coastal dunes and process areas.	1.26	0.4	NMBM DEDEAT	Civil Society Built Environment professionals
	Develop a metro-scale map of the spatial distribution of alien invasive vegetation. Identify dominant AIPs and determine relative tree density. Link AIP clearing programs and biomass to the full value chain. Promote and support community-based AIP clearing/control programs across the Metro and build this into the metro-scale plan.	3.06	0.6	NMBM	DFFE Communities Civil Society Business
	Implement recommendations of the Swartkops Estuary Management Plan.	1.62	0.48	NMBM DEDEAT	Communities Civil Society Local fishers
	Finalise (and implement) the Sunday's Estuary Management Plan.	1.62	0.48	NMBM DEDEAT	Communities Civil Society Local fishers Farmers
	Provide support to SANCCOB and Bayworld that rescue and rehabilitate sea birds and animals and provide important environmental awareness & education to the public.	1.26	0.08	NMBM	Civil Society SANCCOB Bayworld Public

	Construction projects along the coastline must consider and plan for mitigating the impacts of noise- and vibration-generating activities (e.g. blasting, jackhammering) on marine mammals that inhabit the coastline.	1.26	0.04	Civil Society Research	Construction projects operating along the coast
Medium-term	Investigate and implement a consolidation of the marine traffic channels and anchorages in Algoa Bay to minimise noise and pollution impacts on the Bay's marine ecosystems	1.08	0	TPNA DFFE	Research
	Investigate options of implementing landscape-scale ecological corridors, linking Protected Areas and Conservation Areas and CBAs across municipal and privately owned properties.	2.16	0.36	NMBM	Private landowners Researchers Civil Society
	Many plans have been made for upgrading the Baakens Estuary and its catchment. Revive these plans with the public and restore a system that provides for biodiversity conservation and community use and enjoyment.	1.62	0.52	NMBM DWS DEDEAT	Communities Civil Society
	Commission a metro scale assessment of priority biodiversity areas for restoration. Develop a plan for implementation with communities and stakeholders. Identify priority areas for alien invasive vegetation clearing, and restoration of degraded landscapes/ecosystems across terrestrial, aquatic and coastal areas. Develop EBA-projects in these areas, sourcing external funding to develop and implement these projects, for example through the Green Climate Fund. These projects must be planned and implemented with community partners. They have the potential to provide work for people who are unemployed.	1.62	0.52	NMBM DEDEAT	Green Climate Fund Communities Local Civil Society
	Restore degraded areas of the Swartkops Estuary. The old salt pans have been assessed for their potential as a carbon store if restored to a regularly flooded marsh, by creating two channels and opening up tidal connectivity. Further research is needed to determine the feasibility of the restoration action, considering implementation costs and available finance. In 2021, the dried pans	2.16	0.48	NMBM DEDEAT	Research Civil Society

	were converted to a freshwater pan by directing stormwater from the Motherwell Canal into the pans. Reeds, sedges and rushes in the pan have the potential to store carbon, but the sequestration potential needs to be re-assessed because of the potential for methane emissions from freshwater marshes (Raw et al, 2023).				
	Develop and implement Fire Management Plans for natural open spaces where fynbos- and fynbos-mosaic vegetation types occur.	1.26	0.52	NMBM DFFE	Private landowners Communities Civil Society
	Investigate the creation of a Bellbuoy to Sardinia MPA, with zones informed by the Pilot Algoa Bay MSP. Protect key humpback dolphin habitat, ragged-tooth shark pupping area and soft coral ecosystems. Plan for mitigating impacts on the species from boat strikes, pollution, and habitat disturbance.	1.98	0.08	DFFE	TNPA, DEDEAT, NMBM, Civil Society, Communities
Long-term	Plan for and implement sustainable conservation financing mechanisms for Protected Areas and Conservation Areas in the Metro.	1.44	0.32	NMBM	Private landowners ECPTA
	Engage farmers in the catchment area of the Sundays Estuary to address the use of pesticides and inorganic fertilisers, and the impact on the health of the estuary.	1.44	0.32	NMBM DEDEAT	Farmers Civil Society
	Assess the potential to restore the Papenkuils Estuary, converting the canalised system into a functional ecosystem.	1.08	0.48	NMBM DWS DEDEAT	Civil Society Research

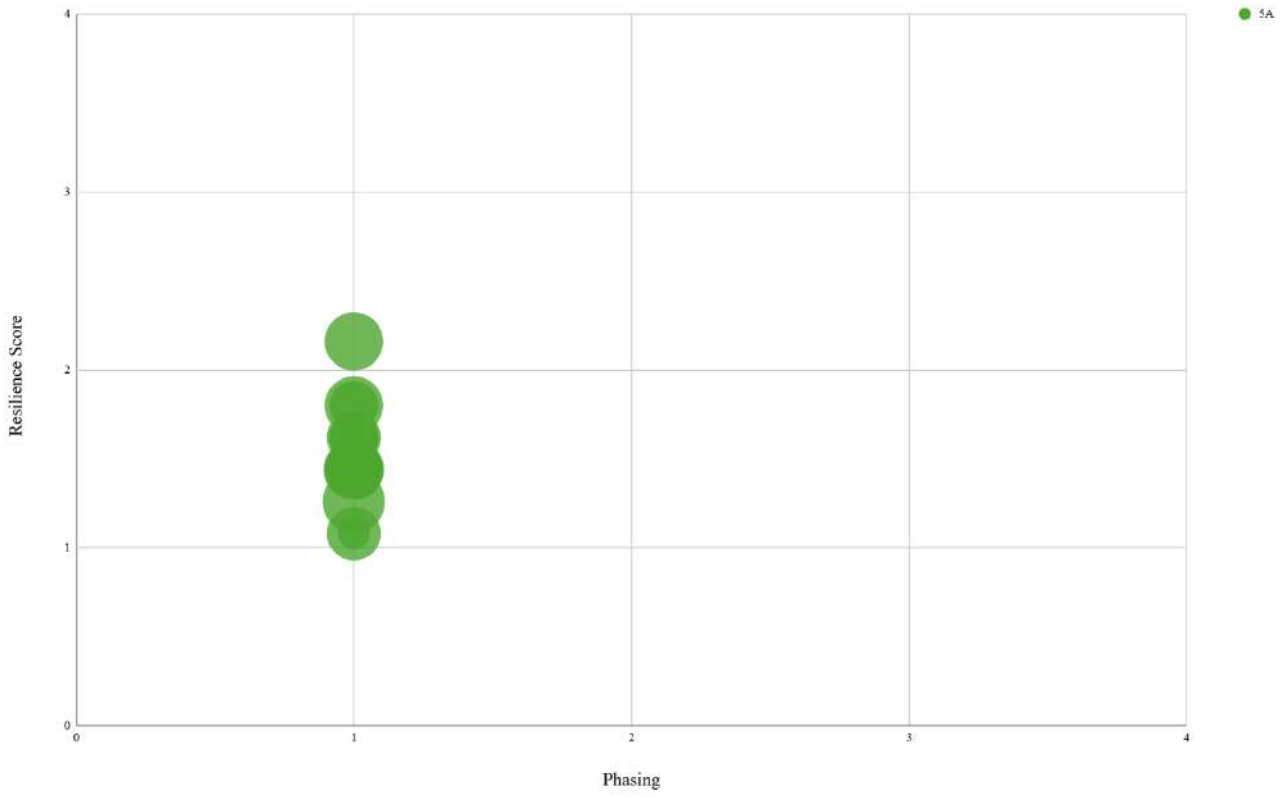
STRATEGIC INTERVENTION 5: WORKING TOGETHER

CROSS-CUTTING: COLLABORATION & NETWORKING FOR INCLUSIVE RESILIENCE PLANNING, ACTION & MONITORING

- 1. Short term:** Facilitate/enable collaboration between NMBM, industry/businesses, NGOs and local communities in 'geographic clusters' to plan for and implement resilience actions - e.g. in addressing waste management, management of natural open spaces in the local environment, and to support community health and well-being (e.g. food gardens and clinics)..



A Cross-Cutting Strategic Intervention 5, showing the most resilient action under the heading of collaboration and networking. Only short-term interventions were identified, but with the intention of them continuing.



Climate Resilient Development Planning Chart for ‘Strategic Intervention 5: Steward Our Assets’

Phasing	5A. Working together - Inclusive Resilience Planning, Action and Monitoring	Resilience scores	Co-benefit	Actor	Partner / Support
Short-term	Facilitate/enable collaboration between NMBM, industry/businesses, NGOs and local communities in 'geographic clusters' to plan for and implement resilience actions - e.g. in addressing waste management, management of natural open spaces in the local environment, and to support community health and well-being (e.g. food gardens and clinics).	2.16	0.48	NMBM DEDEAT	Industry Business Civil Society Department of Health
	Support organisations that make recycling happen at scale and community groups/individuals that work in waste collection and sorting. Learn from and expand these working models.	1.62	0.32	Civil Society	Community groups Individuals Waste collectors
	Industry leaders in sustainability and decarbonisation are to be encouraged to serve as examples and provide guidance to small businesses via the Business Chamber.	1.44	0.28	Industry leaders Business Chamber	Small business
	Collaborate with churches, schools and Clinic Committees to promote awareness and understanding of climate change and its impacts and opportunities, through sharing information, and active involvement of members in resilience actions.	1.44	0.52	NMBM Civil Society	Churches Department of Education (Schools) Clinic Committees
	Generate climate awareness and action through creative art programmes, and provide support to artists to expand their work and mentor others	1.26	0.56	Civil Society NMBM (grant in aid)	Artists
	Include citizen science in monitoring and reporting on environmental health and resilience with researchers. Connect NGOs and community groups with researchers to plan how to take this forward.	1.62	0.32	Civil Society	Research Community groups Citizens

	Develop community monitoring and reporting of the state of stormwater drains, sewer leaks, water leaks, electrical challenges etc. in partnership with NMBM.	1.8	0.32	Civil Society Communities	NMBM
	Connect urban farmers for shared learning and resources.	1.8	0.48	NMBM Civil Society	Urban farmers
	Revive the Business Chamber's 'Adopt a Leak' programme, working with communities to monitor and report water leaks.	1.62	0.4	Business Chamber NMBM	Communities
	Business Chamber and universities to support small businesses in making submissions for climate finance to build economic resilience.	1.44	0.44	Business Chamber Researchers	Small businesses
	Support and publicise existing NGOs and community groups and their work in looking after the environment, community development, and environmental education / awareness. Link identified priority areas for EBA restoration in urban areas to these programmes.	1.44	0.32	NMBM	Civil Society Community groups
	Actively include the University and students in advocating, planning and implementing resilient actions. Include representatives in multi-stakeholder forums.	1.62	0.04	NMBM	Research Students
	Expand on the Algoa BotSoc 'Adopt a Plot' programme	1.08	0.4	Civil Society Botanical Society of South Africa	Community groups
	Connect community groups doing alien vegetation clearing across the Metro on a forum to share knowledge and experience and grow support.	1.44	0.48	Civil Society	NMBM Community groups

	Link plant search and rescue operations done in the Coega SEZ and at other developments across the Metro with community-led urban greening programmes, making indigenous plants available.	1.44	0.36	Civil Society Coega SEZ	Community-led urban greening programmes Other developments
	Activate a public awareness campaign that is geared to “doing your bit, where you are, what you can” that encourages broad citizen ownership of verges and public open space.	1.08	0.12	NMBM	Civil Society, Business Chamber