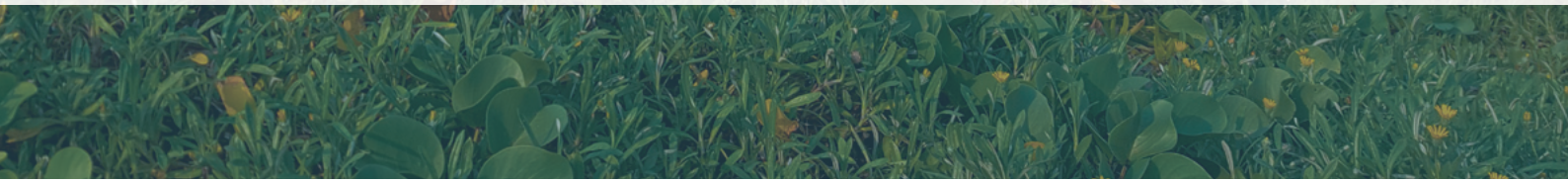
cities fit for climate change

'From Policy to Action' – Climate Resilience Implementation Plan for Spatial Planning (CRISP) for the eThekwini Municipality



Published by:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

ETHEKWINI MUNICIPALITY

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Bonn and Eschborn, Germany

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Project
The project 'Cities Fit for Climate Change' is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag. The project also cooperates with the Federal Ministry of the Interior, Building and Community (BMI).

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On behalf of
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Berlin

GIZ is responsible for the content of this publication.

Printing:
druckriegel GmbH, Frankfurt am Main

Printed on 100% recycled paper, certified to FSC standards.

As at
Durban, South Africa, May 2019

Acknowledgements

The development of the Climate Resilience Implementation Plan for Spatial Planning (CRISP) was led by the eThekwini municipal team and supported by the global project Cities Fit for Climate Change (CFCC) of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for the Environment, Nature Conversation and Nuclear Safety. The CFCC project commissioned the local experts of the Urban Earth consultancy[1] who worked in close cooperation with the municipal core team and developed the CRISP, which forms Part II of this publication.

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Summary

The Climate Resilience Implementation Plan for Spatial Planning (CRISP) is a tool for promoting the integration of eThekwini's climate change response into its spatial planning framework. Specifically, the CRISP has taken recommended climate change adaptation and mitigation actions from the Durban Climate Change Strategy (DCCS) that are relevant to spatial planning and integrated these into the city's Spatial Development Framework (SDF) and lower order plans. The SDF is the spatial development 'masterplan' for the city and one of its key planning instruments.

In this way, the CRISP seeks to contribute to the climate resilience and spatial transformation of the city. Through the CRISP, the SDF now reflects specific climate resilience actions across the 10 DCCS themes and gives proposals that sector departments should manage and implement as part of their sector plans. In some cases, CRISP actions create the need to modify sector plans; in others, the actions complement existing sector plans. This encourages more collaboration between various departments and actors in eThekwini (Durban) and requires dealing with climate change in a proactive and productive manner.

Examples of such actions include:

1. Identify open space areas that provide flood mitigation services.
2. Amend land use schemes to accommodate renewable energy installations.
3. Amend land use schemes to incorporate mitigation measures for buildings to respond to increasing heat.
4. Establish a working group to identify areas to which coastal infrastructure at risk could be relocated in the long term.
5. Identify priority transport nodes, priority feeder routes, priority stations and transport corridors and promote the facilitation of densification around these transport nodes and stations.
6. Identify approaches to facilitating the uptake of green services and products.
7. Set up a technical/administrative committee to coordinate climate change responses in the Municipality.
8. Support climate change focused research.

Once fully integrated into the city's budgeting and development planning process, these actions can be implemented. This contributes to making the city climate resilient and therefore benefits the population of eThekwini.

Durban and eThekwini are used interchangeably to refer to the same city. eThekwini formally refers to the Metropolitan Municipality that includes the city of Durban and surrounds. In this document, we refer to it consistently as eThekwini. Some documents that are mentioned in this text, however, refer to the municipality as Durban.

Content

List of Abbreviations

CER	Certified Emission Reductions
CFCC	Cities Fit for Climate Change
ClimPUDA	Climate-Proof Urban Development Approach
CoGTA	Department of Co-operative Governance and Traditional Affairs
CPB	Climate Protection Branch
CRISP	Climate Resilience Implementation Plan for Spatial Planning
DCCS	Durban Climate Change Strategy
DEA	Department of Environmental Affairs
D'MOSS	Durban Metropolitan Open Space System
ECOD	Economic Development and Planning
EMA	eThekwini Municipal Area
EMCCC	eThekwini Municipal Climate Change Committee
EO	Energy Office
EPCPD	Environmental Planning and Climate Protection Department
EXCO	Executive Committee of Council
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GWP	Global Warming Potentials
IDP	Integrated Development Plan
IRPTN	Integrated Rapid Public Transport Network
M&E	Monitoring & Evaluation
NMT	Non-Motorised Transport
PSC	Project Steering Committee
SALGA	South African Local Government Association
SDBIP	Service Delivery and Budget Implementation Plan
SDF	Spatial Development Framework
tCO_2e	Tonnes of Carbon Dioxide Equivalent
TTT	Climate Change Strategy Technical Task Team
UNFCCC	United Nations Framework Convention on Climate Change
ZAR	South African Rand

List of Figures

Part I: Report on the Development of the Climate Resilience Implementation Plan for Spatial Planning (CRISP)

I. The Global Project: Cities Fit for Climate Change (CFCC)

CFCC is part of the International Climate Initiative and is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety supports this initiative based on a decision adopted by the German Bundestag. The project also cooperates with the German Federal Ministry of the Interior, Building and Community.

The project activities are carried out in three partner countries of the project namely: India, Chile and South Africa (namely eThekwini), and in partnership with various international actors, for example in Germany and Sweden. The CFCC project aims to strengthen cities as actors of sustainable development and it supports the development of integrated, resilient and low carbon instruments for sustainable urban development. In the process, the project has developed a Climate-Proof Urban Development Approach (ClimPUDA), which promotes innovative approaches to urban planning including climate change aspects to make cities 'fit for climate change'.

Lessons learned from existing projects promoting climate resilient and low carbon urban development are analysed during the project. The three partner cities Chennai, eThekwini (Durban) and Santiago de Chile are supported in improving their climate-proof strategies. The overarching goal is for climate change to become an integrated and strategic part of urban development.

The project supports the United Nations Framework Convention on Climate Change (UNFCCC) process and contributes to the implementation of the New Urban Agenda, the international agreement of the Habitat III process.

CFCC Implementation in South Africa

The eThekwini Municipality has a national and international reputation for being at the forefront of addressing climate change. It is an active member of several international networks on climate change and has internationally renowned climate change experts among its staff. eThekwini representatives voiced high interested in the CFCC project, specifically requesting its support in structural local governance changes rather than 'just' in implementing projects.

The key partners in the eThekwini Municipality are the Strategic Spatial Planning Branch, the Energy Office (Climate Change Mitigation and Energy), and the Climate Protection Branch (Climate Change Adaptation). They are responsible for driving the project in the municipality and coordinating with other departments where required, for example for stakeholder consultation activities or discussing the Climate Resilience Implementation Plan for Spatial Planning (CRISP) implementation actions and progress. In addition, the CFCC project initiated the establishment of a steering committee in the municipality that consists of its key partners and others that are involved indirectly in the

project through the CRISP, such as Coastal, Stormwater and Catchment Management; Water and Sanitation; Transport; Economic Development; Land Use Management and others. In the end, all relevant units and branches of the municipality were involved in the process. The CFCC Steering Committee is a platform for the project to engage and exchange with its partners in the municipality, report on progress, get feedback and buy-in to activities.

Moreover, the CFCC project has key partners at the national level in South Africa, namely the:

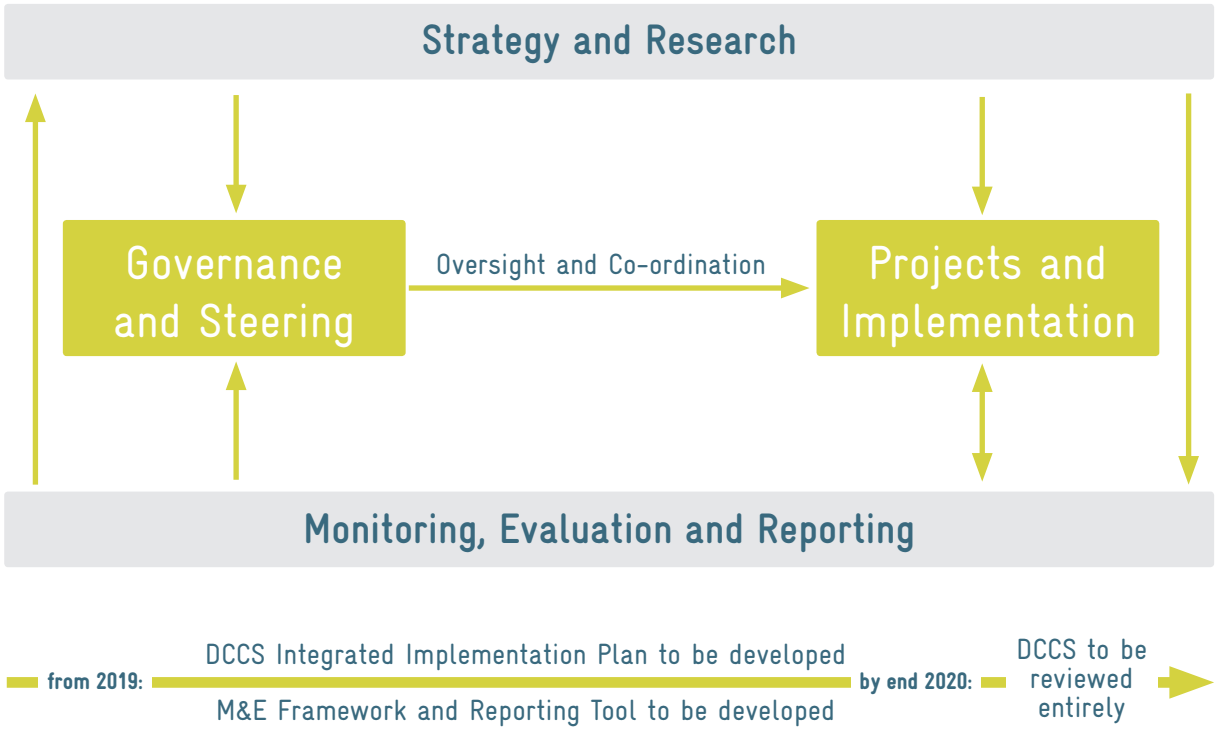
- Department of Co-operative Governance and Traditional Affairs (CoGTA)
- South African Local Government Association (SALGA)
- Department of Environmental Affairs (DEA)

II. eThekwini Municipality (Durban) Climate Change Response

Acknowledging the need of all residents – from big industries to vulnerable communities – to prepare for the impacts of climate change, eThekwini Municipality engaged in an inclusive participatory process to develop a combined mitigation and adaptation climate change strategy for the city. The Durban Climate Change Strategy (DCCS) was adopted by the City Council in June 2015. It represents a citywide approach for mitigating and adapting to the impacts of climate change. EThekwini also compiles and updates its greenhouse gas (GHG) emissions inventory in order to track its contribution to GHG reductions. The DCCS emphasises action in 10 thematic areas, namely: water, sea level rise, biodiversity, food security, health, energy, waste and pollution, transport, economic development and knowledge management. A set of goals, objectives and responses were developed for each theme. Even though it is set against specific sector themes, the implementation of the DCCS, like the Climate Resilience Implementation Plan for Spatial Planning (CRISP), requires coordination and cooperation among all units and departments in the municipality. The implementation plan for the DCCS is currently being developed and implementation will take place through a separate framework that is led by the Climate Protection Branch and Energy Office.

As part of the DCCS Implementation Framework, the city has established climate change governance structures with the aim of providing oversight and coordinating the implementation of climate actions between municipal departments. The structures consist of a political body, known as the eThekwini Municipal Climate Change Committee (EMCCC), which is chaired by the Mayor, and provides political oversight of climate change implementation in the city (see Figure 2). The EMCCC is supported by the Durban Climate Change Strategy Technical Task Team (TTT), a senior administrative body convened at the level of Unit Heads. It provides the strategic drive for the DCCS and oversees its implementation across municipal sectors. The TTT is supported by the DCCS Sub-Committee, which is convened at the level of Unit Deputy Heads and Senior Management. The Sub-Committee is responsible for operationalising climate change policies and plans at project level. The CRISP can be included in the overall implementation framework at this level.

Figure 1: Durban Climate Change Strategy Implementation Framework



Source: adapted from eThekwini Municipality

The figure shows a simplified version of Durban's Climate Change Strategy Implementation Framework, the elements that make up the framework and the relevant processes and information exchanges between these elements. This framework will support climate change implementation in Durban for the short to long term planning horizons. Arrows show the interdependent relationship between the different elements emphasising information exchanges and processes that maintain the functionality of the framework. The governance and steering structures are described with more detail in Figure 2 of this document. The projects and implementation elements refer to existing projects and actions such as those in the CRISP, greenhouse gas emissions reporting and other ongoing climate related projects. The arrows pointing up indicate a flow of information into the governance and implementation framework from the monitoring and evaluation framework to support decision making in the governance structures and project implementation. The arrows pointing down indicate an information flow from relevant strategies (international national and local) and research done by the city that is also informed by outcomes of project implementation and monitoring activities. In the bottom part of the figure, it is shown that the goal of the municipality is to include all these existing actions into an integrated implementation plan for the DCCS, which will be developed by the end of 2020. This would be complemented by an M&E Framework and corresponding Reporting Tool. Short term milestones are also depicted, which indicate that the framework and its elements have not been fully developed to be functional yet.

Figure 2: Various Relevant Steering Committees for the Climate Resilience Implementation Plan for Spatial Planning

Executive Committee of Council (EXCO)

Stakeholders:
The Council comprises an elected Mayor, Councillors, executive committee and several implementation committees.

Responsibility:
The Council serves to facilitate the provision of infrastructure, services and support to the people of eThekwini.

The council has five committees and every councillor serves on at least one committee. Members of the Executive Committee are tasked with the responsibility of chairing the portfolio committees.

The portfolio committees are:
- ECOD (Economic Development and Planning)
- Community Services
- Security and Emergency Services
- Human Settlements & Infrastructure
- Governance & Human Resources

These committees have certain delegated powers by which they take decisions on behalf of the council, and are required to report and make recommendations to Council on matters falling within their spheres of operation.

Frequency: The EXCO meets twice a month.

eThekwini Municipal Climate Change Committee (EMCCC):

Stakeholders:
The committee is chaired by the Mayor of eThekwini Municipality. It is made up of councillors that are responsible for administrative clusters.

Responsibility:
The EMCCC is responsible for providing political oversight on climate change implementation in the city.

Frequency:
The EMCCC meets quarterly.

Durban Climate Change Strategy Technical Task Team (TTT):

Stakeholders:
The TTT is made up of unit heads of Development Planning and Environment, Human Settlements, Engineering, Transport, Economic Development, Finance etc.

Responsibility:
The task team is an administrative body supporting the EMCCC, convened at the level of Unit Heads. It provides the strategic drivers for policy change and bears the task of overseeing the implementation of the DCCS across municipal sectors.

Frequency:
The TTT meets bi-monthly.

Durban Climate Change Strategy (DCCS) Sub-Committee:

Stakeholders:
The Sub-Committee includes senior managers and deputy heads from the Strategic Spatial Planning Branch; Climate Protection Department; Energy Office; Land Use Management Branch; Economic Development Department; Coastal, Stormwater and Catchment Management Department; Human Settlements Unit; eThekwini (Durban) Water and Sanitation; Parks, Recreation and Culture; eThekwini (Durban) Transport Authority; Disaster Management Department; Electricity Department and Integrated Development Planning/Strategy Office.

Responsibility:
It supports the TTT, and is convened at the level of Unit Deputy Heads and Senior Management. It is responsible for operationalising climate change policies and plans at project level.

Frequency:
The Sub-Committee meets as required.

CFCC Steering Committee:

Stakeholders:
The Steering Committee comprises representatives from the Strategic Spatial Planning Branch, Climate Protection Department, Energy Office and GIZ. Furthermore, it involves extensive stakeholder engagement with the Land Use Management Branch; Economic Development Department; Coastal, Stormwater and Catchment Management Department; Human Settlements Unit; eThekwini (Durban) Water and Sanitation; Parks, Recreation and Culture; eThekwini (Durban) Transport Authority; Disaster Management Department; Electricity Department and Integrated Development Planning/Strategy Office.

Responsibility:
The Committee focuses on the coordination and implementation of the global CFCC project as a whole and on providing a platform for exchange on climate change and urban development. Furthermore, it coordinated and provided oversight for the development of CRISP.

Frequency:
This Steering Committee met every quarter since the beginning of the CFCC project with the last one in May 2019.

III. The Preparation of the Climate Resilience Implementation Plan for Spatial Planning (CRISP)

Through its various initiatives and champions, eThekwini (Durban) has been a leader of climate change response in South Africa. However, this has not always resulted in visible actions in the field of urban development. There are three main reasons for this: firstly, even though climate change integration is visible at strategic planning levels this is not always easily translated to operations and projects. Secondly, climate change has not been fully integrated into sector risk profiles and subsequently not included in spatial and development plans. Thirdly, the development of eThekwini Municipality is marked by the inclusion of high levels of informal and semi-rural to rural areas leading to a complex governance system. Therefore, the process of considering climate change through the Durban Climate Change Strategy (DCCS) has just begun. The municipality needs to look at urban development in an integrated way and add a climate lens to its development goals.

Bilateral talks between the CFCC project and the key departments enabled the identification of specific needs and interests for interventions. In June 2016, a kick-off workshop took place with a larger group of partners from the municipality as well as national partners, namely the Department of Co-operative Governance (DCOG), the South African Local Government Association (SALGA) and the Department of Environmental Affairs (DEA). The workshop brought together actors from selected line departments and initiated a joint brainstorming session. Previously, there had been no regular platform for exchanges on climate change and planning among various line departments. Hence, the CFCC Steering Committee was established in August 2016 to provide such a platform and to ensure coordination for the implementation of the project interventions.

Although topics raised by line departments at the kick-off workshop were largely sector-specific, referring to each department's specific challenges, the interventions have proven to be relevant and applicable to many other line departments throughout the project. Due to the cross-sectoral nature of the project, representatives of various municipal departments identified a lack of collaborative implementation measures concerning climate change.

As a result of these needs, the CRISP project was initiated to support the municipality in mainstreaming climate change aspects consistently into its regular planning processes by fostering a high level of involvement of partners. The CRISP provides a starting point for this process. The implementation of the activities is envisaged to be inter-departmental and therefore, guided by the established municipal climate change governance structures.

IV. Process: How Was It Done?

The initial intention was to create a more 'climate sensitive' spatial plan and develop an action plan to support its implementation. The approach taken to develop the the Climate Resilience Impl ementation Plan for Spatial Planning (CRISP) included the following steps:

1. Transferring the climate change policy context from global to local level.
2. Review of the Durban Climate Change Strategy (DCCS) and identification of climate change responses relevant to spatial planning.
3. Review of the Spatial Development Framework's content and current response to the DCCS.
4. Identification of key areas where a climate change spatial response is possible.
5. Development of a detailed analysis report that considers the city's strategic climate change plans.
6. Consultations with key municipal stakeholders and interactive workshop sessions. Stakeholders included municipal departments such as Land Use Manage-

ment; Coastal, Storm Water and Catchment Management; Water and Sanitation; Electricity Department and so on.

7. Identification of specific spatial responses according to DCCS themes.
8. Inclusion of recommendations into the Spatial Development Framework (SDF) and its respective lower order plans and sector proposals.

The analysis report and review of the Spatial Development Framework (SDF) is based on the 10 themes and goals of the DCCS, namely: Water, Sea Level Rise, Biodiversity, Food Security, Health, Waste and Pollution, Energy, Transport, Economic Development and a Cross cutting theme. In the initial stage of the CRISP project development, these 10 themes were workshopped with the key sector departments in order to draft content on climate sensitive spatial planning that could be included in the SDF and lower order spatial plans. The report included an analysis of each of the themes, their goals and responses and importantly their current representation in the SDF. In cases where aspects of themes lacked representation, recommendations were added to the SDF. The process was guided by the CFCC Steering Committee which met at intervals to evaluate outputs and project milestones to improve or change direction where required. One role of the CFCC project was to fill the gaps in the implementation of the CRISP and to conceptualise the process. Throughout the process, high value was placed on streamlining the coordination efforts into existing governing bodies to avoid overburdening stakeholders.

V. Outcome: What Were the Results?

The result of these cross-cutting discussions was the development of the analysis report and subsequently the final recommendations included in the Spatial Development Framework (SDF) along with an itemised action plan. This plan described specific actions that have to be implemented to achieve climate change resilience.

The main gateway to achieve climate resilience in the context of eThekwini is to climate-proof the Integrated Development Plan Framework (IDP) and SDF. In particular the review processes of the SDF and IDP have the potential to unlock municipal funding for climate resilience measures through the link with the Service Delivery and Budget Implementation Plan (SDBIP). For example, one of the actions of the CRISP is to promote densification around transport nodes and stations, which requires inclusion into transport plans, architecture, urban renewal and so on. In addition, there needs to be a coordinated strategy across relevant planning and implementing departments to support inclusion into sector and budget plans. Given that the review process takes place annually, there are opportunities for including these updates that consider climate change. The purpose of this is to achieve consistency in planning and action to deal with climate change responses and risks. Often climate change is reflected in some element or section of respective plans in the city but is not fully and systematically integrated. The idea is that if climate change is part of the thinking in planning and determining action then it will become more consistently reflected in planning documents.

Whilst the CRISP has already set targets in the SDF for sectors it is difficult to influence the sectors to take action unless these targets are included in their budget planning process. In addition, the reason for the proposed action needs to be properly understood by staff within the sector departments. Financing climate actions through city budgets requires an integrated approach. Actions that have multiple co-benefits (or the ability to leverage impact) are 'smarter' than those that compete for resources. In this way, competition for finance and funding needs to be reduced through more coordination and optimisation of existing steering bodies.

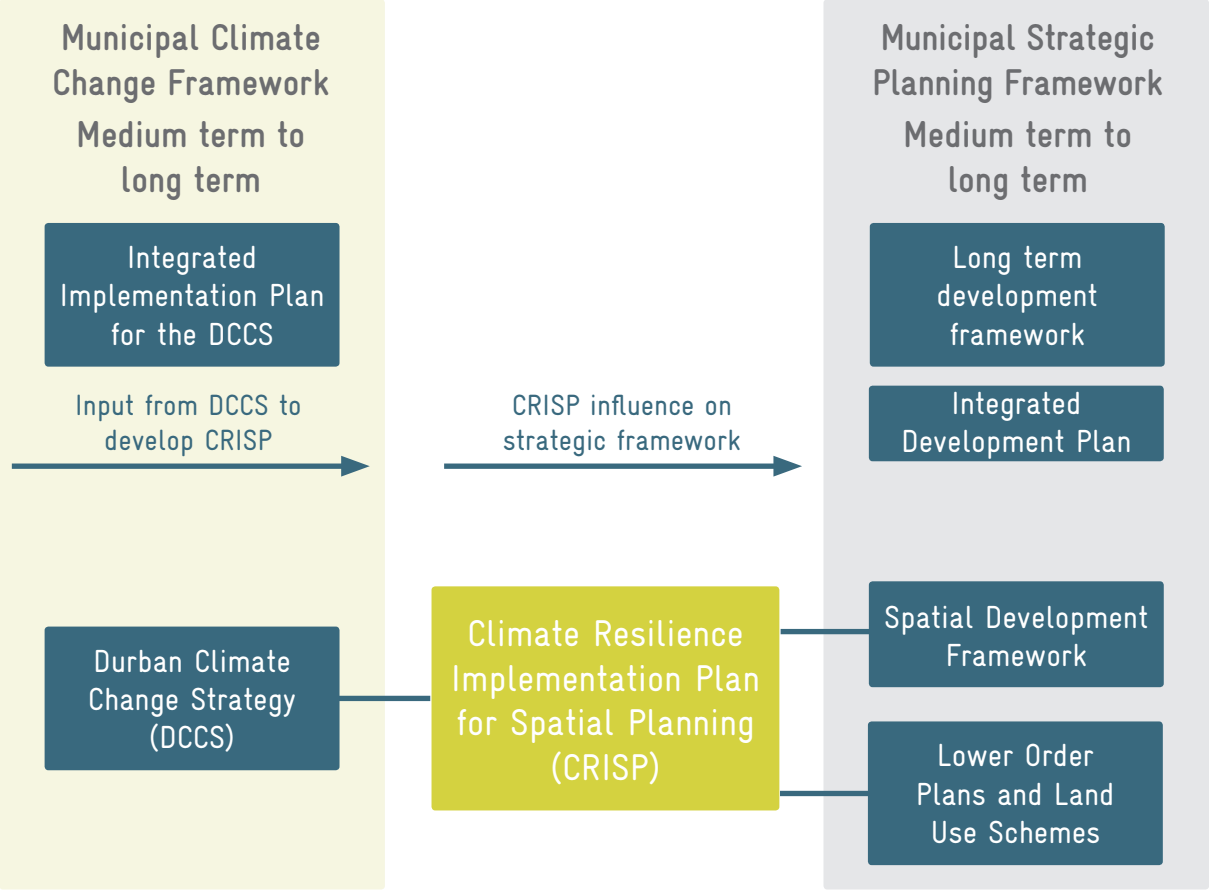
The respective recommendations in the CRISP list of actions for updating the SDF were written into the SDF sector proposals and the itemised list of actions was annexed to the SDF. The **final SDF for 2017/2018** – including the changes – was accepted and approved by the City Council in May 2017 and therefore provides the legal mandate for relevant departments to imple-

ment or act accordingly. A consultative workshop was held in November 2017 with key sector stakeholders to check on the progress of implementation and to identify any barriers and complementary actions to support implementation. This was followed by one-on-one sector engagements in 2018 to monitor progress and refine the recommended actions, budgets and timeframes for implementation as part of the annual SDF review process.

Importantly, the CRISP helped to break down the 'silo mentality' that is prevalent in many government organisations and cities around the world. A silo mentality refers to reluctance to share information among employees of different divisions in the same organisation or to take decisions only considering one's own field. This was not an objective of the intervention at first but developed as part of the development of the CRISP. The need to work in an integrated manner became apparent as many departments had an interest in the respective actions. For example, developing an agriculture strategy would entail interest from economic development in terms of growth, job creation and so on; parks department from a health and livelihood perspective; strategic spatial planning and land use management in terms of identifying land for development at the same time as protecting agricultural land and resources; and environmental planning and climate protection by ensuring climate smart practices would be adhered to; among others. High relevance of the interventions within the municipal administration was an important success factor.

Durban's beachfront; © Adobestock

Figure 3: Influence of the CRISP on Long Term Development Planning in the eThekwini Municipality



Source: adapted from eThekwini Municipal website

The figure shows the influence of the CRISP in connecting the Durban Climate Change framework through the DCCS and the municipal strategic planning framework. The target of the CRISP was the SDF, however, the actions directly influence lower order plans such as Local Area Plans (LAPs) and land use schemes. There is a potential for further integration with the Integrated Development Plan (IDP) but this would be an indirect connection and a result of further integration of the CRISP as part of the planned DCCS integrated implementation plan (see Figure 1).

As of May 2019 the process of integrating the CRISP actions into eThekwini's spatial plan, relevant sector plans and lower order spatial plans is ongoing. In some cases actions proposed by the CRISP have already made an impact. For example, under the Transport theme, the Mpumulanga Functional Area Plan has incorporated eThekwini's first Active Mobility/Non-Motorised Transport (NMT) network into its spatial plan. Furthermore, the Inner City Densification Plan has been amended to include NMT. This has become a standard requirement for all lower order spatial plans.

The city is currently developing a 1.5 °C Climate Action Plan in response to the Paris Agreement. This work is premised on the Durban Climate Change Strategies (DCCS) and will ensure the accelerated and focused implementation of the municipality's climate actions to achieve carbon neutrality by 2050 whilst reducing its carbon emissions and climate risks.

Durban's beachfront; © Lea Kulick

Durban's city centre; © Lea Kulick

Part II

Specific Recommendations of the Climate Resilience Implementation Plan for Spatial Planning for All Ten Themes of the Durban Climate Change Strategy

These specific recommendations refer to proposed changes to the Spatial Development Framework (SDF), which have been incorporated in the SDF of 2017/2018.

1. Water

1.1 Overview

The Durban Climate Change Strategy identifies the following responses for the water sector that have a spatial dimension:

- Implement watershed management that responds to projected climate change impacts to optimise yields of clean freshwater and storage capacity in dams.
- Recognise, make use of and manage the role that open spaces, natural areas and agricultural land can play in providing flood and storm water protection services.
- Adopt a risk-averse approach to water quality protection by imposing stringent controls on water polluting land uses and activities to ensure that the impacts of climate change are not exacerbated.
- Adopt and enforce a risk-averse approach to spatial, land use and infrastructure planning and development controls that respond to potential climate change amplified flood risks.
- Identify existing critical infrastructure that is in areas of high flood risk and relocate it to areas of lower risk.
- Identify and prioritise the relocation or upgrading of informal and low income settlements that are vulnerable to flooding.

Since the Spatial Development Framework (SDF) includes a layer reflecting the Durban Metropolitan Open Space System (D'MOSS), by default it includes many of the open spaces that protect water management areas, mitigate floods and are prone to floods. The D'MOSS layer is primarily intended to protect biodiversity for its intrinsic value and the ecosystem services it provides. However, it is not certain whether all areas supplying significant water services have been included in D'MOSS.

1.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

The following changes are proposed to the SDF regarding water and climate change:

Plan	Comment	Proposed Change
SDF	**Chapter 3: Synthesis of Key Issues, Challenges and Development Trends:** Although this chapter highlights the impacts of climate change and development on natural resources it does not specifically highlight the impact on water resources. The following text in inverted commas is recommended for inclusion under the heading "Environmental Management and Climate Change".	Climate change will have a significant effect on the land and its people in the form of extreme weather conditions, storms, drought, floods and rising sea levels. These changes will also have a negative impact on biodiversity in the municipality, which is located in one of 34 biodiversity hotspots in the world. Furthermore, water resources in the municipal area will be under threat and it is essential that areas upstream of water resources such as rivers and dams, are protected. Open spaces in the municipal area play a crucial role in providing ecosystem services including protection from flooding, storm attenuation, and filtration of water. In the face of climate change, these open spaces need to be preserved for these services that they provide. For new growth and development, the SDF suggests that a comprehensive response to the challenge of climate change is needed in the eThekwini Municipal Area (EMA). This can be achieved through appropriate densification of existing urban centres and well located settlements to maximise the use of existing services and infrastructural capacity, and ensuring that development concentrates along specific public transport/ mixed use corridors and within existing nodes, that densification is promoted at strategic locations, that environmental conservation areas and areas of high ecosystem services delivery are demarcated and protected and areas of agricultural importance are identified and protected. In terms of flood related risk, it is projected that the EMA will experience increased flooding and it is essential that new developments are not placed in areas at risk from flooding. Areas that fall with in the 1:100 flood line have been mapped by Coastal and Stormwater Department and work is currently underway to understand the impacts of climate change on the extent of areas at risk from flooding. No development should be permitted in these areas.
SDF	**Chapter 6: The SDF Key Spatial Proposals:** The table highlighting the different analysis layers, guiding principles, spatial proposals and strategies, as well as the intended outcomes.	Under the first analysis layer, entitled Environment, Coastal, Agriculture, and Disaster Management, the spatial proposals and strategies should include the areas of flood risk that have already been identified (These are currently being updated to incorporate climate change risk). Under the Intended outcomes column water resources should be included. "Protect and manage important environmental areas, agricultural, water and coastal resources."
SDF	**Chapter 6: The SDF Key Spatial Proposals:** Paragraph 3: The value of open spaces in providing protection from flooding needs to be highlighted.	The following text in inverted commas is suggested for inclusion: "It is recognised that natural resources provide the platform for sustainable growth and development for all of eThekwini's residents, poverty alleviation opportunities for the Municipality's most vulnerable households, and help to buffer the negative impacts associated with climate change. For example, open spaces provide protection from climate change amplified impacts such as flooding. The eThekwini Municipality is therefore committed to ensuring the long term sustainability of the natural resource base through concerted efforts in a number of key areas."

Plan	Comment	Proposed Change
SDF	**Chapter 6: The SDF Key Spatial Proposals:** Paragraph 6: The project identified for mapping open spaces that provide flood protection services should be mentioned here.	The following text in inverted commas is suggested for inclusion: "The Durban Metropolitan Open Space (D'MOSS) plan identifies those environmental service assets that require protection and management. These assets include rivers, wetlands, estuaries, grasslands, forests and coastal zone resources. To ensure the sustained functioning of ecosystems that provide services, it is essential that we conserve and manage the biodiversity (simply defined as plants, animals and micro-organisms) that live in and shape these ecosystems. The D'MOSS spatial layer that has been prepared, therefore, has a biodiversity focus. In addition, areas have been included that provide ecosystem services, such as protection from flooding. A research project is proposed to specifically map open areas that provide flood mitigation services and to compare this with the D'MOSS layer. Since all open space is likely to provide some flood mitigation service it will be necessary for the research to rate the importance of these areas relative to each other."
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.1 Managing the Drainage Catchments: A section on the importance of preserving water resources in the catchments should be added.	The following text in inverted commas is recommended for inclusion: "The terrestrial and aquatic elements within drainage catchments are linked through complex processes. The condition of these systems is felt downstream and where degraded will impact on the quality of water resources and on the coastal plain. It is vital therefore that the adverse impacts of urban land are minimised and managed. Since most of eThekwini Municipality's water is supplied from outside of the municipal area, key areas of importance are most likely be located above catchments of dams. These areas are important for protecting the quality of water entering dams and reducing sedimentation. This may require the prevention of certain land uses/activities around dams so that water quality is not compromised. It is recommended that research is done to identify key water management areas and the protections that should be put in place for these areas to protect water resources."
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.8 Managing Development Impacts: A section on managing the impacts of developments on water resources should be added.	The following text in inverted commas is recommended for inclusion: "Land uses adjacent to, or upstream from, open spaces can have major impacts on sensitive ecological systems. Activities therefore need to be carefully assessed and controlled to ensure that they do not undermine the ecological viability of the open space system. Developments proposed around dams and in upper catchment areas should be assessed carefully as they could have an impact on the city's drinking water. It is recommended that research is done to identify key water management areas, including dams, and the protections that should be put in place to protect water resources in the face of new developments."
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.9 Incorporating Climate Change Considerations: It is recommended that the project that is currently taking climate change into account in the flood lines is referenced at the end of existing paragraph as follows:	Furthermore, the areas at risk of flooding in the municipal area have been mapped and are currently being updated to incorporate the impacts of climate change. The results from this work will assist planners when assessing development applications.

Plan	Comment	Proposed Change
SDF	**Chapter 8: Table 10** Strategy 1 Manage urban growth, construct and maintain viable built environment and sustain natural environments and resources 3. Sustain natural environments and resources.	Changes to the column **Requirements to achieve policy Statements** in inverted commas: "Existing natural environmental resources should be protected and enhanced to ensure that the ecosystems within the open spaces are able to effectively deliver services, such as flood protection, especially in the face of climate change. Development must be directed away from sensitive areas such as floodplains, areas of flood risk, unstable soils and steep slopes." Add bullet: "Protect key water management areas, including dams, to ensure that water quality is not compromised."
SDPs, LAPs, FAPs, Precinct Plans	All lower order spatial plans should explicitly identify flood risk areas using the existing maps and discourage development in these areas.	Include areas subject to flood risk in lower order spatial plans. Lower order plans should also incorporate provisions highlighting this as an area of consideration when assessing development.

1.3 Implementation Plan

It is also proposed that the following projects be implemented to further enhance the water and climate change content of the SDF.

Project Name	Project Description	Responsible departments	Estimated budget	2017/2018	2018/2019	2019/2020
Identify key water management and key watershed areas	Undertake a research project to identify key water management and key watershed areas which support the supply of clean and abundant freshwater in eThekwini Municipality. Since most of eThekwini Municipality's water is supplied from outside the municipal area, key areas of importance are most likely to be located above catchments of dams. These areas are important for protecting the quality of water entering dams and reducing sedimentation. This may require the prevention of certain land uses/activities upstream of dams so that water quality is not compromised. Other upstream areas that may be of importance are areas upstream of communities that depend on natural water resources as well as those that protect ground water resources. Once this information exists a layer can be added to the SDF and addressed in detail in lower order plans.	Climate Protection Branch (CPB), Water & Sanitation.	500,000 South African Rand (ZAR)		X	
Identify open spaces that provide protection from flooding.	A research project is proposed to specifically map open areas that provide flood mitigation services and to compare this with the D'MOSS layer. Since all open space is likely to provide some flood mitigation service it will be necessary for the research to rate the importance of these areas relative to each other to understand which open spaces play a particularly important role in this regard. A layer identifying the areas rated as most important for flood impact management can then be added to the SDF.	CPB, Coastal Engineering, Storm Water, Catchment Management Department	ZAR 1,000,000		X	

2. Sea Level Rise

2.1 Overview

The Durban Climate Change Strategy identifies the following responses with a spatial dimension for the sea level rise sector:

- Adopt and enforce the provincial coastal management line and risk zones to manage current and future development in the face of climate change.
- Adopt and enforce a risk-averse approach to spatial, land use and infrastructure planning, and to development control that responds to all potential coastal flooding and other coastal risks.
- Prioritise the relocation or upgrading of informal and low income settlements that are vulnerable to sea level rise, coastal storms and coastal erosion.
- Relocate existing municipal buildings and infrastructure that are in high risk zones to areas of lower risk at the end of their economic life or when severely damaged by storms.

The Spatial Development Framework (SDF) already addresses sea level rise to a certain extent by including the coastal erosion line as a spatial layer in the SDF.

2.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

The following changes are proposed to the SDF regarding sea level rise and climate change:

Plan	Comment	Proposed Change
SDF	**Chapter 3: Synthesis of Key Issues, Challenges and Development Trends**: The following text in inverted commas is recommended for inclusion under the heading "Environmental Management and Climate Change".	"Sea level rise under three scenarios has also been mapped and development that falls within the most high risk scenario is discouraged. Restrictions on additions to existing land uses should also be applied that will limit potentially hazardous outcomes resulting from sea level rise."
SDF	**Chapter 6: The SDF Key Spatial Proposals**: The table highlights the different analysis layers, guiding principles, spatial proposals and strategies, as well as the intended outcomes.	Under the first analysis layer, entitled Environment, Coastal, Agriculture, and Disaster Management, the spatial proposals and strategies should include the sea level rise tool that is currently used when assessing development applications. Under the intended outcomes column, the following bullet point should be added: Discourage development within high risk areas for sea level rise and coastal storms and incentivise development outside high risk areas. This will allow for a steady retreat of development from the coastal management line.

Plan	Comment	Proposed Change
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.8 Managing Development Impacts: The sea level rise modelling tool should be mentioned here after the existing text.	The following text in inverted commas is recommended: "Developments proposed on the coast need to be assessed according to the sea level rise tool that has been developed considering three different sea level rise scenarios. Development within the most high risk areas should be discouraged and development outside high risk areas incentivised. Developers that want to develop in high risk areas should be advised on the implications of future sea level rise".
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.9 Incorporating Climate Change Considerations: The inclusion of the work that has been done on sea level rise modelling should be included.	The following text in inverted commas is recommended (including the deletion of certain text passages): "At this point, not all impacts of climate change have been mapped ~~it is extremely difficult to incorporate climate change considerations into planning because of the difficulty in representing climate change impacts accurately at a spatial level~~. However, one of the areas where significant progress has been made is in the development of three sea level rise scenarios. A user-friendly sea level rise tool based on the GIS spatial data has been developed that is currently being used by officials in the planning and environmental departments to assess development applications."
SDF	**Chapter 8: Table 10** Strategy 1 Manage urban growth, construct and maintain viable built environment and sustain natural environments and resources 3. Sustain natural environments and resources.	Changes to the column **Requirements to achieve policy Statements** in inverted commas: "Development must be directed away from hazardous areas such as floodplains, coastal areas at risk from sea level rise and coastal storms, unstable soils and steep slopes." Changes to column **Land use management guideline** in inverted commas: "Ensure proposed development does not encroach onto environmentally sensitive land, land within flood plains, and on land at risk from sea level rise." Changes to the column **Alignment with policies** in inverted commas: "Add in Sea level rise tool that shows three different sea level rise scenarios"
SDPs, LAPs, FAPs, Precinct Plans	Lower order plans should reflect the three sea level rise scenarios so that when development is proposed sea level rise is considered.	Include the three sea level risk scenario lines in lower order spatial plans.

2.3 Implementation Plan

It is also proposed that the following project is implemented to further enhance the sea level rise and climate change content of the SDF.

Project Name	Project Description	Responsible departments	Estimated budget	2017/2018	2018/2019	2019/2020
Establish a working group to identify areas where coastal infrastructure at risk could be relocated to in the long term.	Set up an internal working group to conduct research into the identification of coastal infrastructure that is at risk from climate change impacts and evaluation of possible relocation options. It is recognised that a significant amount of municipal infrastructure is located in areas of high risk to sea level rise. If this infrastructure is significantly damaged, further development should be discouraged. Coastal Engineering Branch will play a lead role in initiating a conversation with key service departments (including, Water, Electricity, and Treasury) in this regard, supported by Energy Office (EO), Spatial Planning and Climate Protection Branch (CPB). CPB have already submitted a request to have heads of Departments meet to discuss issues of climate change. This may serve as a suitable platform for this conversation.	Coastal Engineering Branch should take the lead role with Strategic Spatial Planning, the Energy Office, and Climate Protection Branch providing support.	ZAR 0 – conducted in house	X		

3. Biodiversity

3.1 Overview

The Durban Climate Change Strategy identifies the following responses for the biodiversity sector that have a spatial dimension:

- Adopt and enforce integrated planning approaches and development controls that protect the integrity and enhance the functionality and resilience of Durban's biodiversity and natural capital to withstand climate change impacts.
- Ensure that linkages between open spaces are conserved and maintained to allow for poleward and altitudinal movement of plant and animal populations to ensure that gene flow and diversity are maintained, and that species are able to adapt to climate change impacts where such potential exists.

The Spatial Development Framework (SDF) already addresses these two responses as the Durban Metropolitan Open Space System (D'MOSS) has been included as a layer within the SDF. D'MOSS identifies a linked network of private and public open spaces of biodiversity significance in Durban. It should however be noted that the preparation of the D'MOSS layer has not specifically taken into account the additional pressure of climate change. Consideration should be given to reviewing D'MOSS to ensure that the open space system is designed in a manner to support the persistence of biodiversity in the face of climate change and to ensure that the open space system plays a significant role in climate change adaptation and mitigation.

3.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

Since biodiversity and climate change are already significantly addressed very few changes are recommended:

Plan	Comment	Proposed Change
SDF	**Chapter 3: Synthesis of Key Issues, Challenges and Development Trends**: Although this chapter highlights the impacts of climate change and development on natural resources it does not specifically highlight the impact on biodiversity. The following text in inverted commas is recommended for inclusion under the heading "Environmental Management and Climate Change".	"Climate change will have a significant effect on the land and its people in the form of extreme weather conditions, storms, drought, floods and rising sea levels. These changes will also have a negative impact on the biodiversity in the municipality, which is located in one of 34 biodiversity hotspots in the world. This biodiversity underpins the provision of ecosystem services (such as flood attenuation, water provision, clean air) to the citizens of Durban."

Plan	Comment	Proposed Change
SDF	**Chapter 6: The SDF Key Spatial Proposals:** One of the key Spatial Proposals identified in Chapter 6 is "Sustaining our Natural and Built Environment". Section 6.1.9 'Incorporating Climate Change Considerations' notes that it is extremely difficult to incorporate climate change consideration in planning due to the difficulty of mapping climate change impacts spatially. It is recommended that the project identified to incorporate climate resilience into D'MOSS is referenced as follows:	Furthermore, it is recommended that D'MOSS is reviewed to ensure that the open space system is designed in a manner to support the persistence of biodiversity in the face of climate change and to ensure that the open space system plays a significant role in climate change adaptation and mitigation.

3.3 Implementation Plan

It is also proposed that the following project is implemented to further enhance the biodiversity and climate change content of the SDF.

Project Name	Project Description	Responsible departments	Estimated budget	2017/2018	2018/2019	2019/2020
Review D'MOSS to incorporate climate resilience.	Review D'MOSS and include a biodiversity layer to ensure that the open space system is designed in a manner to support the persistence of biodiversity in the face of climate change and to ensure that the open space system plays a significant role in climate change adaptation and mitigation. The updated climate resilience version of D'MOSS can then be incorporated into the SDF.	Environmental Planning and Climate Protection Department (EPCPD)	ZAR 0 – conducted in house	X		

4. Food Security

4.1 Overview

The Durban Climate Change Strategy identifies the following responses for the food security sector that have a spatial dimension:

- Develop and enforce policies and by-laws that reserve space for local food production.

Strategy Four of Chapter Eight of the SDF notes the need to conserve good agricultural potential land for future food security and job creation. In addition, an agricultural layer has been included in the SDF. However, there is no existing agricultural policy for the eThekwini Municipality and as a result the agricultural layer that is currently in the SDF is not based on a researched strategic understanding of key food production areas.

4.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

At this stage, no changes are proposed to the SDF and other lower order spatial plans as the priority action is the development of an Agricultural Policy that can then inform the SDF.

4.3 Implementation Plan

It is also proposed that the following project is implemented for agriculture:

Project Name	Project Description	Responsible departments	Estimated budget	2017/2018	2018/2019	2019/2020
Develop an Agricultural Policy	A research project should be initiated to develop an agricultural policy for the eThekwini Municipality. A key element of the policy should be the identification of significant agricultural land in the eThekwini Municipality. This research should also consider the availability of agricultural land in the Province as a whole because of the role that the municipality plays as an urban centre for the entire province. In addition, the research needs to consider competing priorities, for instance, land for housing and industrial development, and land for biodiversity. Once the research project is complete an agriculture sector plan can be developed which will include the promotion of innovative farming practices. Once areas within the eThekwini Municipality have been identified that are critical to food security this layer can be added to the SDF.	Parks, Recreation and Culture, and Economic Development Unit supported by Strategic Spatial Planning and Climate Protection Branch.	ZAR 2,500,000	X	X	

5. Health

5.1 Overview

The Durban Climate Change Strategy identifies the following response for the health sector that has a spatial dimension:

- Recognise, make use of and manage the role of open spaces and agricultural land in providing protection from urban heat islands and other climate impacts.

Specific mention of the urban heat island effect is made in several places in the SDF. In addition, D'MOSS has been included as a layer within the SDF and D'MOSS includes elements that perform the role of providing protection from the urban heat island effect. However, it should be noted that D'MOSS is intended as a biodiversity protection layer and does not map the full range of open spaces that may provide protection from the urban heat island effect such as agricultural land and parks with little biodiversity value.

5.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

The following changes are proposed to the SDF regarding the health sector and climate change:

Plan	Comment	Proposed Change
SDF	**Chapter 2: Introduction to the eThekwini Municipal Area.**	Include a section on the Urban Heat Island Effect based on the report entitled "Cool Durban: Development of an Urban Heat Model and Recommendations for eThekwini Municipality" once a final draft of the report is available.
SDF	**Chapter 2: Introduction to the eThekwini Municipal Area.**	Changes in inverted commas recommended: "In addition, large numbers of informal settlements are scattered across the city, many in peripheral locations or on steep land or flood plains, placing them at higher risk of erosion and flood damage, as indicated in the figure below. People living in informal settlements are the most vulnerable communities in the city and climate change is expected to impact these communities the most, especially with regards to increased flood risk. This requires that urgent attention be given to addressing the housing backlog and a key spatial challenge is to identify residential opportunities on land that is well located, serviced and with good access to public transport as well as social and economic opportunities."
SDF	**Chapter 3: Synthesis of Key Issues, Challenges and Development Trends**: The following text in inverted commas is recommended for inclusion under the heading "Environmental Management and Climate Change".	"Areas of high density such as the Durban CBD and Phoenix/KwaMashu are strongly affected by the Urban Heat Island Effect. ~~is significantly higher than in less developed areas.~~ This effect will become more severe through climate change but it can be reduced e.g. through measures such as vegetated and reflective surfaces. The eThekwini Municipality ~~plans to research and address the Urban Heat Island effect~~ is in the process of researching the heat island effect in Durban through the Cool Durban Project."

Plan	Comment	Proposed Change
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.8 Managing Development Impacts	The following text in inverted commas is recommended: "In addition, developments in areas that are highly susceptible to the urban heat island effect such as the Durban CDB and Phoenix/KwaMashu should be required to include mitigating measures that contribute to the overall reduction of heat."
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.9 Incorporating Climate Change Considerations: The text referring to the Urban Heat Island effect should be amended.	"~~Further input is expected from the Urban Heat Island research and recommendation project~~. "A map has been developed showing the Urban Heat Island effect in Durban. Through this map priority areas for the implementation of heat mitigation measures can be identified."
SDF	**Chapter 8: Table 10 Strategy 1** Manage urban growth, construct and maintain viable built environment and sustain natural environments and resources 1. Construct and maintain a viable built Environment.	Changes to column **Requirements to achieve policy statements** in inverted commas: "Upgrade informal settlements (where it is appropriate to do so) and under-invested areas and ensure that these vulnerable communities are protected from the impacts of climate change." Changes to the column **Land use management guideline** in inverted commas: "Ensure mitigation measures are implemented for new developments in areas susceptible to the heat island effect." Changes to column **Alignment with policies** in inverted commas: Heat Island Effect report.
LAPs, FAPs, Precinct Plans, Land Use Schemes	Lower order plans for areas most susceptible to the urban heat island effect should include measures that mitigate the heat island effect that will shortly be identified by the Cool Durban Project.	Include a range of mitigation measures for the Urban Heat Island effect. Mitigation measures include, but are not limited to, the following: **Planting of trees and vegetation, and maintaining existing green open spaces:** Trees and vegetation can help to cool a city down as they provide shade, absorb heat, and cool the air through evapotranspiration. **Installing Green Roofs:** Growing vegetation on rooftops is another way to help reduce the heat island effect. In cities, there is often little land available to allocate to green spaces, and rooftops provide a way to increase the amount of vegetation in a city and reduce temperatures. They also have a direct impact on the cooling of buildings. Environmental Planning and Climate Protection Department (EPCPD) has conducted a pilot study on green roofs and has developed a guideline document for the roll out of green roofs which can be used. **Using materials for paving and rooftops that reflect solar radiation:** Using materials with high albedo (or reflectiveness) help to reflect solar radiation rather than absorb it, which lowers the surface temperature. **Reduction of energy use through design:** Designing and retrofitting buildings to take advantage of natural ventilation so that use of air conditioners can be reduced. **Prioritise public transport:** Prioritising public transport will help to reduce the number of vehicles on the roads and reduce heat. The results from the Cool Durban Project will also provide detail on the most suitable mitigation measures for Durban.

5.3 Implementation Plan

It is also proposed that the following project is implemented for health:

Project Name	Project Description	Responsible departments	Estimated budget	2017/2018	2018/2019	2019/2020
Amend land use scheme to incorporate mitigation measures for buildings to respond to increasing heat.	Initiate a set of workshops with a view towards amending the land use scheme to incorporate mitigation measures for buildings in response to increasing heat.	Land Use Management, Architecture Department	ZAR 50,000 for workshops and advertising	X		

6. Energy

6.1 Overview

The Durban Climate Change Strategy identifies the following response for the energy sector that has a spatial dimension:

- Develop and implement a road map for the supply of 40% of electricity from appropriate renewable energy technologies by 2030. A minimum of 10% of the electricity supplied from the national grid will be derived from renewable sources.

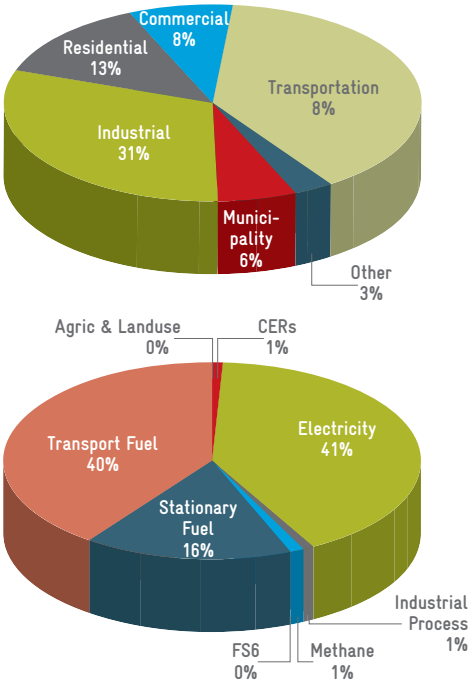
Renewable Energy is already addressed in Strategy Four of Chapter Eight of the SDF: Ensure eThekwini strategies and policies are proactive in responding to and promoting rural development. In particular, the following are proposed:

- Investigate the potential of resources for renewable energy generation and appropriate technologies.
- Facilitate investment into renewable energies in rural areas.
- Include and manage generation of renewable energy as an additional land use.

6.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

The following changes are proposed to the SDF regarding energy and climate change:

Plan	Comment	Proposed Change
SDF	**Chapter 2: Introduction to the eThekwini Municipal Area:** Section 2.4 Climate Change. The section on Greenhouse gas emissions should be updated with the latest information annually.	Greenhouse gas emissions (GHGs), such as carbon dioxide from burning of fossil fuels and methane e.g. from organic waste contribute towards climate change. ~~In EM per capita emissions are equivalent to cities with developed economies. There is therefore a need to reduce the greenhouse gas emissions in the eThekwini Municipality through mitigation activities, focussing on the generation and use of energy~~. The 2014 GHG inventory for the municipality found that total emissions for the entire eThekwini Municipal Area was 29,092,003 tCO_2e. A pie chart showing the total emissions of the 2014 GHG inventory by sector is shown here. The largest contributing sector in 2014 was the transportation sector accounting for 39% of the total emissions. The next pie chart shows GHG emissions by source. The two main sources of emissions are electricity and transport fuels. The 2014 GHG Inventory highlights that the per capita emissions for the eThekwini Municipality were 7.04 tCO_2e/per capita when taking into account Scope 1 and 2 emissions; and 8.26 tCO_2e/per capita when taking into account Scope1, 2 and 3 emissions.

		Add footnote: CERs stand for Certified Emission Reductions. These are carbon credits that are sold by the eThekwini Municipality from their landfill gas to energy projects which reduce greenhouse gas emissions. To avoid double counting, these emissions are recorded on the eThekwini Municipality's inventory as these credits have been traded with another organisation. **Add footnote:** Greenhouse emissions are measured in tonnes of carbon dioxide equivalent (tCO_2e). As there are many different types of greenhouse gases, with different global warming potentials (GWP), greenhouse gases are converted to carbon dioxide equivalents so that a common unit of measurement is used.  Figure 4: GHG Emissions by Sector and Carbon Emissions by Source (Source: adapted from eThekwini Municipality Energy Office, eThekwini Greenhouse Gas Emissions Inventory, 2014) **Add footnote:** The GHG Protocol Corporate Standard classifies a company's GHG emissions into three 'scopes'. Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.
SDF	**Chapter 8:** **8.2.2 Strategy 4 Ensure eThekwini strategies and policies are proactive in responding to and promoting rural development, food security and agriculture** Policy Statement 4 in the Table: Promote the opportunities of generating renewable energy in rural areas.	Add in reference to existing renewable energy potential maps such as the Wind Potential Map for the eThekwini Municipality, under "Requirements to achieve policy statements"
SDF	**Chapter 2:** **2.4 Climate Change** Add in Wind Potential Map for eThekwini Municipality on climate change.	A Wind Resource Map was developed for the eThekwini Municipality in 2011 (see Figure below). The areas in orange and red are the areas with mean annual wind speeds over 6 m/s and 6.5 m/s respectively.

These are the areas with the highest wind energy potential. Any wind projects may require approval via different statutory requirements such as Environmental Authrorisations.

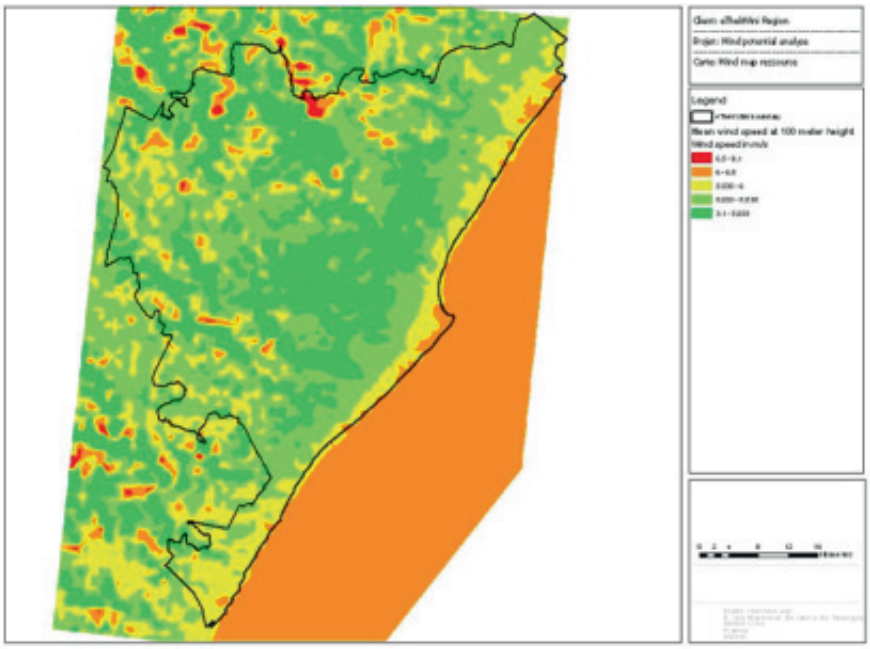


Figure 5: Wind Resource across eThekwini Region at at 100 metres above ground level (Source: eThekwini Municipality, Wind Site Identification Report, 2011)

6.3 Implementation Plan

The following projects are proposed for energy and climate change:

Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Renewable energy potential map	Initiate a research project that develops a map of Renewable Energy potential for Durban. The map should build on existing renewable energy potential maps that have been produced for Durban, such as the wind potential map, and extract Durban relevant information from the national renewable energy potential map that has been produced. The Renewable Energy potential map should identify priority precincts for renewable energy generation which can then be incorporated into the SDF. It should be noted, however, that renewable energy developments, such as wind turbine projects, need to be assessed on a site by site basis and require approval via different statutory requirements such as Environmental Assessments.	Energy Office	ZAR 100,000		X	

Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Energy Efficiency Guidelines for Precinct Planning.	Initiate a project to develop a set of Energy Efficiency guidelines for a precinct plan which can then be used to guide energy efficiency planning for other precincts. This should be included in the Terms of Reference for the next precinct plan done by consultants.	Strategic Spatial Planning	ZAR 0 – incorporated in existing Precinct Plan budget.		X	
Update land use scheme to accommodate small scale renewable energy installations.	Initiate a project to update the land use scheme to accommodate small scale renewable energy. A research report was completed on how to accommodate small scale renewable energy in the land use scheme by The Planning Initiative entitled: Recommendations and Clarification of Development Applications for Renewable Energy Installations in eThekwini Municipality. This report can be used as the starting point to the project.	Land Use Management; Energy Office	ZAR 0, conducted in house	X		

7. Waste and Pollution

7.1 Overview

The Durban Climate Change Strategy identifies the following response for the waste and pollution sector that has a spatial dimension:

- Operate a functioning separation-at-source recycling service that creates multiple job opportunities and is supported by well distributed recycling drop-off stations.

This is not considered a strategic spatial issue that requires inclusion in the SDF and it should rather be accommodated in the Urban Design plans for specific areas.

7.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

No changes are proposed to the SDF regarding waste and pollution and climate change

7.3 Implementation Plan

No projects are proposed for the waste and pollution sector.

8. Transport

8.1 Overview

The Durban Climate Change Strategy identifies the following responses for the transport sector that have a spatial dimension:

- Encourage densification within nodes and along public transport routes (and that respects the carrying capacity of the natural environment) to achieve economies of scale. Development outside of these nodes, public transport routes and the Urban Development Line should be discouraged.
- Develop economic nodes and mixed use zones in existing and planned neighbourhoods and communities where residents have access to shops, services and entertainment, thus reducing the need for extensive travel.
- Improve transport linkages that enable access to goods and services between neighbourhoods, communities and economic nodes.
- Provide and maintain efficient, high quality and safe road and rail infrastructure that supports low carbon, climate smart public transport options.
- Continue with the implementation of the Integrated Rapid Public Transport Network (IRPTN) in Durban to provide an affordable, high quality, clean and safe form of public transport that enables seamless movement between modes.
- Maintain and extend high quality infrastructure that allows for safe movement by non-motorised transport.

Densification is comprehensively addressed in the SDF through a range of elements such as the Urban Development Line and the Densification Strategy. In addition, the SDF has a strong focus on describing and promoting a public transport network with a specific emphasis on the IRPTN. On the other hand, while non-motorised transport is covered in the SDF there is not a strong emphasis on this mode of transport.

8.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

Plan	Comment	Proposed Change
SDF	**Chapter 2: Introduction to the eThekwini Municipal Area:** Section 2.5.2 Freight Transport System. Changes proposed in inverted commas	"Durban is the trade gateway for the Southern African region, as the busiest port in terms of cargo value and shipping activity. One of the goals for transport in eThekwini, is to develop an efficient and integrated freight transport system that will ensure regional economic stability. The region's transportation system requires the optimum integration of the different modes of transport that includes road, rail, aviation, maritime and pipeline with the appropriate modal balances. However, with regards to freight a key strategy involves promoting rail use over road use to reduce demand on road infrastructure and to reduce GHG emissions associated with freight travel."

Plan	Comment	Proposed Change
SDF	**Chapter 2: Introduction to the eThekwini Municipal Area:** Section 2.5.6 Non-Motorised Transport (NMT).	The following text in inverted commas is proposed: "NMT is the highest priority form of transport in the city, followed by Public Transport and lastly Private Transport. Residents of the City already make considerable use of NMT. The Household Travel Survey conducted in 2008 found that 32% of all households made at least one walking trip per day. This increases to 41% for low income households. Promotion of NMT is important as it reduces the travel costs of already financially stressed residents, promotes health and well-being and helps reduce the GHG emissions of the municipal areas. A ~~The~~ NMT plan has been developed to encapsulate the City's commitment towards NMT, by giving prominence to NMT as an integral part of the City's overall transport system. The plan defines NMT policies, strategies and NMT guideline standards, together with the network development process for implementation for over the next five years."
SDF	**Chapter 3: Synthesis of Key Issues, Challenges and Development Trends:** Section a) The Current Urban Form.	The following text in inverted commas is proposed: "The current spatial form of the eThekwini Municipal Area (EMA) is also fragmented with low densities. The spatial fragmentation and low density dramatically affect the access which residents can enjoy to places of residence, to employment, and to social facilities. The fragmentation of the metropolitan area can threaten its potential as an economic engine, contribute to higher GHG emissions and in addition social and environmental problems in any one part of the urban area can stunt overall metropolitan growth."
SDF	**Chapter 6: The SDF Key Spatial Proposals:** The table highlights the different analysis layers, guiding principles, spatial proposals, and strategies, as well as the intended outcomes.	Under the combined analysis layer, entitled Land Use and Spatial Planning, and Transport, the following bullet point should be added to the intended outcomes column: Prioritise low carbon modes of transport including non-motorised transport, and public transport.
SDF	**Chapter 6: The SDF Key Spatial Proposals:** 6.1.9 Incorporating Climate Change Considerations	The following text in inverted commas is recommended: "The recently completed densification strategy and the development of sustainability criteria for spatial planning are current initiatives that will significantly assist with taking climate change considerations into spatial and land use planning. Since the transportation sector accounts for 39% of the GHG emissions of the municipal area, densification measures that reduce the number of trips and the distance of trips in the municipality are critical to ensure the reduction of GHG emissions. The mitigation impact of densification is being further enhanced by adoption of a hierarchy by the transport department that prioritises non-motorised transport, followed by public transport over private transport."

Plan	Comment	Proposed Change
SDF	**Chapter 8: Table 10 Strategy 2**: Improve access and movement of people and goods between areas of need and areas of opportunity.	Changes to column **Requirements to achieve policy statements** in inverted commas: "Reduce the need to travel by vehicular transport which will contribute to the reduction of greenhouse gas emissions." Changes to **Land use management guidelines** column in inverted commas: "Identify public transport feeder routes"
LAPs, FAPs, Precinct Plans	Map the NMT network in lower order spatial plans.	Terms of Reference for lower order plans need to be revised to incorporate NMT. In particular, the NMT network should be mapped in these plans.
LAPs, FAPs, Precinct Plans	Map public transport feeder routes in low order spatial plans.	EThekwini Transport Authority has mapped public transport feeder routes for several areas. These feeder routes should be mapped in all lower order spatial plans.

8.3 Implementation Plan

The following project is proposed for transport and climate change:

Project Name	Project Description	Responsible departments	Estimated budget	2017/2018	2018/2019	2019/2020
Identify priority transport nodes, priority feeder routes, priority stations and transport corridors and promote the facilitation of densification around these transport nodes and stations.	Identify the transport nodes, priority feeder routes, priority corridors and stations within Public Transport corridors where development should be prioritised and densified (this exercise requires a review of the hierarchy of nodes). Once these have been identified they should be included in the SDF to direct and prioritise development in these transport nodes and stations. In addition, a workshop should be convened to identify a range of planning measures that could be instituted or relaxed (e.g. parking requirements) to facilitate the densification around these transport nodes, corridors and stations.	eThekwini Transport Authority, Strategic Spatial Planning	ZAR 0, conducted in house	X		

9. Economic Development

9.1 Overview

The Durban Climate Change Strategy identifies the following responses for the economy sector that have a spatial dimension:

- Promote the efficient use of existing space, infrastructure and resources in Durban where brown fields developments are prioritised.

The SDF comprehensively addresses the need for densification and efficient use of space through elements such as the Urban Development Line and the Densification Strategy.

9.2 Proposed Changes to SDF and Other Lower Order Spatial Plans

Proposed changes to the SDF relating to densification are reflected in the transport section above. In addition, the following changes are recommended for economic development:

Plan	Comment	Proposed Change
SDF	**Chapter 2: Lower Order Plans and Land Use Schemes 2.6.1 Future Economic Growth and Development** Add in paragraph on the Economic Strategy and the potential of the green economy after the paragraph that begins "The Strategy examines trends in the detailed sub sectors…"	The Economic Development and Job-Creation Strategy also highlights the Green Economy as a key focus area for the City. Currently the green economy is not a significant economic contributor, but there is significant potential for growth in this sector which will also assist in reducing greenhouse gas emissions. The Strategy indicated that significant attention will be paid to this sector because of both its future growth potential and the climate change mitigation and adaptation benefits associated with it. e.g., the large-scale community reforestation programmes and the various Working For programmes.
SDF	**Chapter 2: 2.4 Climate Change** Add in paragraph on the implications of climate change on shipping routes and the port of Durban.	Some initial research has been done in association with Transnet to understand the implications of climate change on shipping routes. Due to the melting of the Arctic Circle, ships may be able to travel from the East to Europe through the Artic, making it unnecessary to ship goods moving between these areas past Durban. This could have some economic impacts on Durban's port, as some of these vessels previously stopped in Durban for refuelling, repairs etc. However, since the primary focus of Durban's port is shipping goods to and from Durban, the impact is expected to not be that significant.

9.3 Implementation Plan

The following project is proposed for economic development and climate change:

Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Identify approaches to facilitating the uptake of green services and products.	Initiate a research project to identify: 1) Ways in which current local regulations prevent uptake of green products and services; 2) Ways in which local regulations could facilitate uptake of green products and services 3) Ways in which direct incentives could be put in place. Some of the recommendations arising out of this research project could then lead to a range of recommendations that may impact on the land use scheme and building controls. However, this project may have several recommendations that are not relevant to Spatial Planning.	Economic Development Unit. Land Use Management	ZAR 500,000	X		

10. Cross-Cutting

In addition to the various proposals discussed per theme, one additional cross-cutting project is recommended:

Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Set up a technical/administrative committee to coordinate climate change response in the Municipality.	Complete the process of establishing a technical/administrative committee to coordinate climate change response in the Municipality. This committee should take responsibilities going forward to review the climate resilience of the SDF.	CPB	ZAR 0 – conducted in house	X	X	X
Support climate change focussed research	Support climate change research of tertiary institutions that helps to inform the climate resilience of the SDF and management response to climate change in eThekwini Municipality.	CPB	ZAR 0 – conducted in house	X	X	X

11. Implementation Plan Across Sectors

This table is a summary of all the projects proposed across the different sectors

Sector	Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Water	Identify key water management and key watershed areas.	Undertake a research project to identify key water management and key watershed areas which support the supply of clean and abundant freshwater in the eThekwini Municipality. Since most of the eThekwini Municipality's water is supplied from outside of the municipal area, key areas of importance are most likely to be located above catchments of dams. These areas are important for protecting the quality of water entering dams and reducing sedimentation. This may require the prevention of certain land uses/ activities upstream of dams so that water quality is not compromised. Other areas that may be of importance are areas up stream of communities that are dependent on natural water resources as well as those that protect ground water resources. Once this information exists a layer can be added to the SDF.	Climate Protection Branch (CPB), Water & Sanitation.	ZAR 500,000		X	
Water	Identify open spaces that provide protection from flooding.	A research project is proposed to specifically map open areas that provide flood mitigation services and to compare this with the D'MOSS layer. Since all open space is likely to provide some flood mitigation service it will be necessary for the research to rate the importance of these areas relative to each other to understand which open spaces play a particularly important role in this regard. A layer identifying the areas rated as most important for flood impact management can then be added to the SDF.	CPB, Coastal Engineering, Storm Water, Catchment Management Department	R1,000,000		X	

Sector	Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Sea level rise	Establish a working group to identify areas where coastal infrastructure at risk could be relocated to in the long term.	Set up a working group to conduct research into the identification of coastal infrastructure that is at risk from climate change impacts and evaluation of possible relocation options. It is recognised that a significant amount of municipal infrastructure is located in areas of high risk to sea level rise. If this infrastructure is significantly damaged, further development should be discouraged. Coastal Engineering Branch will play a lead role in initiating a conversation with key service departments (including Water, Electricity, and Treasury) in this regard, supported by Energy Office (EO), Strategic Spatial Planning and CPB. CPB have already submitted a request to have heads of Departments meet to discuss issues of climate change. This may serve as a suitable platform for this conversation.	Coastal Engineering Branch should take the lead role with Strategic Spatial Planning, the Energy Office, and Climate Protection Branch providing support.	ZAR 0 – conducted in house	X		
Biodiversity	Review D'MOSS to incorporate climate resilience	Review D'MOSS, a biodiversity layer, to ensure that the open space system is designed in a manner to support the persistence of biodiversity in the face of climate change and to ensure that the open space system plays a significant role in climate change adaptation and mitigation. The updated climate resilience version of D'MOSS can then be incorporated into the SDF.	EPCPD	ZAR 0 – conducted in house	X		
Food Security	Develop an Agricultural Policy	A research project should be initiated to develop an agricultural policy for the eThekwini Municipality. A key element of the policy should be the identification of significant agricultural land in the eThekwini Municipality. This research should also consider the availability of agricultural land in the Province as a whole because of the role that the municipality plays as an urban centre for the entire province. In addition, the research needs to consider competing priorities, for instance, land for housing and industrial development, and land for biodiversity. Once the research project is complete an agriculture sector plan can be developed. Once areas within the eThekwini Municipality have been identified that are critical to food security this layer can be added to the SDF.	Parks, Recreation and Culture, and Economic Development Unit supported by Strategic Spatial Planning and Climate Protection Branch.	ZAR 2,500,000	X	X	

Sector	Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Health	Amend land use scheme to incorporate mitigation measures for buildings to respond to increasing heat.	Initiate a set of workshops with a view towards amending the land use scheme to incorporate mitigation measures for buildings in response to increasing heat.	Land use management, Architecture Department	ZAR 50,000 for workshops and advertising	X		
Energy	**Renewable energy potential map**	Initiate a research project that develops a map of Renewable Energy potential for Durban. The map should build on existing renewable energy potential maps that have been produced for Durban, such as the wind potential map, and extract Durban relevant information from the national renewable energy potential map that has been produced. The Renewable Energy potential map should identify priority precincts for renewable energy generation which can then be incorporated into the SDF. It should be noted however that renewable energy developments, such as wind turbine projects, need to be assessed on a site by site basis and require approval via different statutory requirements such as Environmental Assessments.	Energy Office	ZAR 100,000		X	
Energy	**Energy Efficiency Guidelines for Precinct Planning.**	Initiate a project to develop a set of Energy Efficiency guidelines for a precinct plan which can then be used to guide energy efficiency planning for other precincts. This should be included in the Terms of Reference for the next precinct plan done by consultants.	Strategic Spatial Planning	ZAR 0 – incorporated in existing Precinct Plan budget		X	
Energy	**Update land use scheme to accommodate small scale renewable energy installations.**	Initiate a project to update the land use scheme to accommodate small scale renewable energy. A research report was completed on how to accommodate small scale renewable energy in the land use scheme by The Planning Initiative entitled: Recommendations and Clarification of Development Applications for Renewable Energy Installations in eThekwini Municipality. This report can be used as the starting point to the project.	Land Use Management; Energy Office	ZAR0, conducted in house	X		

Sector	Project Name	Project Description	Responsible departments	Estimated budget	2017/ 2018	2018/ 2019	2019/ 2020
Transport	Identify priority transport nodes, priority feeder routes, priority stations and transport corridors and promote the facilitation of densification around these transport nodes and stations.	Identify the transport nodes, priority feeder routes, priority corridors and stations within Public Transport corridors where development should be prioritised and densified (this exercise requires a review of the hierarchy of nodes). Once these have been identified they should be included in the SDF to direct and prioritise development in these transport nodes and stations. In addition, a workshop should be convened to identify a range of planning measures that could be instituted or relaxed (e.g. parking requirements) to facilitate the densification around these transport nodes, corridors and stations.	eThekwini Transport Authority, Strategic Spatial Planning	ZAR 0, conducted in house	X		
Economic Development	**Identify approaches to facilitating the uptake of green services and products.**	Initiate a research project to identify: 1) Ways in which current local regulations prevent uptake of green products and services; 2) Ways in which local regulations could facilitate uptake of green products and services 3) Ways in which direct incentives could be put in place. Some of the recommendations arising out of this research project could then lead to a range of recommendations that may impact on the land use scheme and building controls. However, this project may have several recommendations that are not relevant to Spatial Planning.	Economic Development Unit. Land Use Management	ZAR 500,000	X		
Cross-cutting	**Set up a technical/administrative committee to coordinate climate change response in the Municipality**	Complete the process of establishing a technical/administrative committee to coordinate climate change response in the Municipality. This committee should take responsibilities going forward to review the climate resilience of the SDF.	CPB	ZAR 0 – conducted in house	X	X	X
Cross-cutting	**Support climate change focussed research**	Support climate change research of tertiary institutions that helps to inform the climate resilience of the SDF and management response to climate change in eThekwini Municipality.	CPB	ZAR 0 – conducted in house	X	X	X

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