



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD



COLLABORATION FOR SUSTAINABLE TRANSFORMATION

MAYOR'S PORTFOLIO
OF URBAN SUSTAINABILITY

2020

Making progress possible. Together.

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Foreword

Cape Town faces the challenges of rapid urbanisation and population growth. Every person should have access to opportunity, progress, social equality, dignity and respect. However, against a backdrop of limited and dwindling natural resources, these aspirations need to be met in a manner that does not deplete Cape Town's natural capital.

Many of the City of Cape Town's ongoing projects are tackling these challenges in highly creative and innovative ways.

The Mayor's Portfolio of Urban Sustainability features 20 of these. The selected projects are assessed in terms of their sustainability in a delicate urban ecosystem – i.e. their ability to meet Capetonians' social and economic needs without compromising the natural system on which we all rely. This edition further revisits projects assessed in previous editions.

In addition to keeping track of sustainability, analysis of these projects also helps change thinking and encourages all City project managers to incorporate sustainability parameters into their planning and implementation.

The portfolio showcases some of the best practices achieved, while also highlighting areas that require improvement to achieve long-term sustainability.



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waste management facility

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A message from the Executive Mayor

Resilience can present itself in a number of ways – whether on a personal or professional level and in terms of governance, it provides a wealth of opportunities to innovate. The way we think, the choices we make, and the way we are able to adapt to changing circumstances all reflect how resilience is part of our daily lives. This has become evident for everybody to see and experience during the current Covid-19 pandemic. Resilience is the theme that sums up the past year, but also the past three years of governance in Cape Town. We overcame the drought through smart strategies and the commitment of our residents to save water. This year we have found ourselves navigating the Covid-19 pandemic to emerge stronger, as One City Together.

In the future, changes to our climate pose possible further environmental, social and economic challenges, but we have shown that we are up to the task of preparing for and adequately responding to these types of events and shocks.

The City of Cape Town and our residents have persistently demonstrated a commitment to facing complex challenges, building resilience and striving towards a more sustainable city. At the same time, our responses to sustainability challenges are people-centred and inclusive, and focus on improving the well-being of our citizens and reducing inequality and vulnerability.

In 2017, the City adopted its ground-breaking Environmental Strategy, which provides City decision makers with an effective policy and governance framework to address the need for sustainable development. The strategy embraces an

integrated approach to sustainability that recognises that our economy is part of society, which in turn is deeply connected in nature. The idea of the strategy is to protect and manage our city's natural and cultural resources in a way that enables long-term prosperity and promotes social well-being.

Since its first edition in 2014, we have put a spotlight on more than a hundred innovative City projects. These projects provide a sample of the City's commitment to urban sustainability, but the Mayor's Portfolio is far more than a publication to showcase how we demonstrate best practice. The programme has become an essential tool for bringing forward the idea of sustainability as a key concept across the organisation. It has emphasised the need for continuous learning and discussions on long-term sustainability, and has influenced the City's operations and approach to service delivery. Additionally, the Mayor's Portfolio has provided a platform for a network of project managers to share ideas and encourage staff across line functions to emphasise sustainability in their daily work.

Through this process, we are striving for significant sustainable change for Cape Town, for the benefit of our residents, communities, and future generations. In responding to current and future shocks, we remain committed to Making Progress Possible Together.

Dan Plato
Executive Mayor



A message from the City Manager

The process of striving towards sustainability is a deeply complex and challenging endeavour for any city. In Cape Town, this challenge is enhanced as a result of past and persistent socio-economic and spatial inequalities, in the context of rapid urbanisation and unemployment. The City of Cape Town (the City) has been a pioneer in its efforts to navigate this complexity of addressing social inequality, protecting the city's globally significant natural environment and promoting sustainable growth.

The Sustainable Development Goals provide cities with a blueprint for responding to such complex urban challenges, in a manner that benefits communities and the environment. The City has started a process of "localising the Sustainable Development Goals", through building on our long track record of underpinning our service delivery and decision making with sustainability principles. The Mayor's Portfolio exemplifies the City's commitment to this process.

In this fourth edition of the Mayor's Portfolio, we profile 20 new projects, from across City directorates, that are contributing to sustainable change in our city. We also revisit 10 projects profiled in previous editions of the Mayor's Portfolio, in recognition that the process of embedding sustainability is ongoing and requires constant reflection and revision.

Following this publication, the broader programme of the Mayor's Portfolio of Urban Sustainability will continue to explore and develop tools, partnerships and platforms to encourage and support

project managers to approach projects and programmes through the lens of sustainability. This process, by its very nature, erodes silos, promotes integration and improves the City's service delivery.

Importantly, this edition provides an opportunity to celebrate the project managers that have led the initiatives showcased, and to acknowledge their innovation, creativity and dedication to a sustainable future.

Our city is increasingly faced with highly complex, system-wide challenges. Confronting these challenges, consequently, requires a sustainable transition. This, in turn, requires a society-wide response or governance for sustainable change. While the Mayor's Portfolio showcases sustainability solutions being driven from within the City's administration, the design and implementation of these projects are often informed and supported by a range of partnerships and stakeholder engagements. This, more broadly, underscores that the City's sustainability vision cannot be realised without wide-ranging collaboration and partnerships.

We thus invite stakeholders, in academia, civil society, businesses, and communities, to continue partnering with us in this journey of pursuing sustainable change.

Lungelo Mbandazayo
City Manager

Introduction: Accelerating sustainable solutions

The past decade has clearly shown that the climate and ecological crisis is not a concern for the distant future – it is unfolding right now, affecting the lives of millions worldwide. By 2019, the world had experienced a full decade of record global temperature increases, wildfires, retreating ice and accelerating sea-level rise, all driven by the greenhouse gases emitted by human activities.

Locally, 2015 saw the lowest rainfall in South Africa since 1904. In the same year, Cape Town recorded its highest temperature in the past 100 years, at 42 °C. This period of abnormally low rainfall alongside record-high temperatures also contributed to devastating wildfires in the city. Then, in 2017, the worst drought in 100 years descended upon the Western Cape and threatened the entire region's water security.

While 2019 can arguably be seen as the year in which the climate emergency and ecological crisis were officially declared, 2020 is the year that requires decisive action. To keep global warming below 1,5 °C, carbon emissions must peak this year and halve by 2030. As stated in the Intergovernmental Panel on Climate Change (IPCC) special report on global warming in 2018, this will require “rapid, far-reaching and unprecedented changes in all aspects of society”.

Cities are home to more than 55% of the world's population and account for up to 75% of global natural resource use, 80% of global energy consumption and 75% of global carbon emissions. Therefore, confronting the climate crisis demands

rapid urban sustainable transitions – of urban energy, waste, transport, food and water systems, as well as infrastructure. It requires the built environment to be transformed and the natural environment to be protected and restored.

Cities are responding to this challenge in various ways. For instance, cities across the world (including Cape Town) have committed to preparing inclusive climate action plans in line with the Paris Agreement by the end of 2020. In 2018, more than 750 cities and states disclosed climate data and actions to the CDP (including the City of Cape Town, which was recognised for its climate leadership), highlighting the scope and depth of urban climate responses. In practice, cities across the globe are undergoing major sustainable reconfigurations.

The City of Cape Town (hereinafter “the City”) has a long track record of pursuing sustainable change. This commitment is articulated in the City's Environmental Strategy (2017), which seeks to ensure that –

“the intrinsic value of the natural environment is recognised, the benefits that the natural environment provides are managed and optimised in a sustainable manner, historical disparities in environmental access are addressed, a low-carbon, resource-efficient and low-impact approach to development is followed, environmental education and awareness is optimised, and the natural environment is managed and promoted as a common asset”.

The Mayor's Portfolio of Urban Sustainability is an essential tool to support the implementation and mainstreaming of the City's Environmental Strategy. Underpinned by sustainability principles, the programme actively promotes a long-term approach to project planning and implementation, as well as to wider service delivery and decision making.

Although only a small sample of projects are profiled in this edition, the selected projects provide unique case studies and, hence, learning opportunities relating to mainstreaming sustainability. These cases not only promote urban sustainability in the City and across its line functions, but also showcase how the City is “leading by example”. This is a call to citizens to actively partner with the City in co-creating a sustainable Cape Town. These principles of education, empowerment and partnership are entrenched in the City's Environmental Strategy, as well as the administration's *modus operandi*.

This edition of the Mayor's Portfolio provides a snapshot of why and how project managers are directing their efforts towards building a more sustainable city. In line with increased shifts in behaviour and more awareness across the globe, this portfolio features a selection of behaviour change projects, including the Smart Driver programme, as well as the Strengthening Families programme, which is aimed at improving public awareness and building capacity for sustainable change across society.

In addition, this edition embraces the opportunity to reflect on some of the key water projects that underscored the City’s response to the recent drought. The projects profiled here are by no means an exhaustive list of the initiatives through which we avoided Day Zero. Yet, they do demonstrate the importance of an integrated approach to effectively respond to a crisis – an approach that involves hard infrastructure, galvanising, incentivising and supporting residents and businesses, as well as more sweeping policy and institutional change.

A newly added feature is the inclusion of a ‘Revisit portfolio’, which reflects on previously profiled initiatives. Revisiting these projects is in line with the broader need for ongoing review and reflection on the journey towards sustainability. Ten projects are revisited in this edition under the broad categories of integrated human settlements and the circular economy.

Finally, a long-standing member of the external review panel, Dr Zarina Patel, reflects on the Mayor’s Portfolio in the context of the “wicked problems” facing Cape Town and the rest of the planet in this decade and century.

The Strengthening Families programme (page 52) uses practical and interactive methods to improve familial relationships and the overall climate in the home.







Overview

Key elements of the portfolio

Strategic support

To effectively embed sustainability best practice in the City, this portfolio has benefitted substantially from the support and guidance of the Policy and Strategy Department, the advisory forum and the review panel of sustainability practitioners. The input provided has facilitated the incorporation of aspects of sustainability into City projects and stimulated an ongoing sustainability dialogue in the organisation.

The strategic support for this programme ensures that sustainability objectives are upheld in decision making, and also puts the City on a stronger environmental sustainability footing, encouraging other institutions and organisations to follow suit.

Advisory forum

The advisory forum, which comprises representatives from the various City directorates, was established to provide high-level strategic input to the Mayor's Portfolio.

The forum provided insight into projects to be profiled, and advised on mechanisms to ensure the most favourable outcomes and the fulfilment of longer-term objectives.

Review panel

The review panel of persons external to the City is comprised of eminent representatives from the Western Cape government, the academic sector,



The Green Infrastructure Programme (page 30) prioritises the protection and enhancement of existing natural assets to promote sustainability and enhance the living environment in Cape Town.

private-sector professionals and civil-society leaders. They were invited to join the panel based on their knowledge, interest and work in broad areas of urban sustainability.

The panel played an important part in reviewing the processes and moderating the assessment of the projects included in the Mayor's Portfolio. This is done through group review sessions of project methodology, individual study and analysis of initial project assessments, determination of final assessments, and provision of feedback to project managers.

Assessment algorithm

The advisory forum and review panel identified and reviewed 12 sustainability objectives or criteria (see page 106-107) against which to monitor change over time. The selection of these objectives or criteria was directed by the following guidelines:

- Relates to the achievement of sustainable development
- Easy to understand, regardless of field or specialisation
- Easily attainable data
- Accommodates the varying time, spatial scales and project contexts

Each objective or criterion was interpreted by one or more sub-criteria or guidelines, and was loosely defined to allow for creativity and flexibility in determining the performance of individual projects.

The assessment scale relied more on descriptions than on absolute numbers to avoid a potentially misleading quantitative analysis of project data. Thus, interpretive criteria and guidelines were incorporated.

Assessment process

To simplify outcomes, the qualitative scale was linked to a quantitative one, with "poor" equating to 1, and "excellent" to 5. The scoring against each of the 12 axes was represented in a spider diagram, as shown on page 106.

With the assessment framework finalised, each directorate received the opportunity to identify projects that:

- were under way or recently completed, or new and active phases of older projects;
- addressed socio-economic and environmental issues in an integrated manner and within a framework of good governance, thereby encompassing the principles of sustainability;
- were making a positive difference in their sector, while also crossing sector boundaries and working transversally;
- were innovative or original in their approach;
- demonstrated collaboration and partnership building;
- definitively contributed to the implementation of the City's Economic Growth Strategy, Social Development Strategy and Environmental Strategy;
- empowered their local or the greater Cape Town community, whether with skills, employment, connections and networks, or knowledge transfer, including empowering City staff with improved thinking, operational strategies and modes of work; and
- encouraged replication through ease of process, creative or cost-effective use of material, and being a true example of a practical way to achieve sustainability.

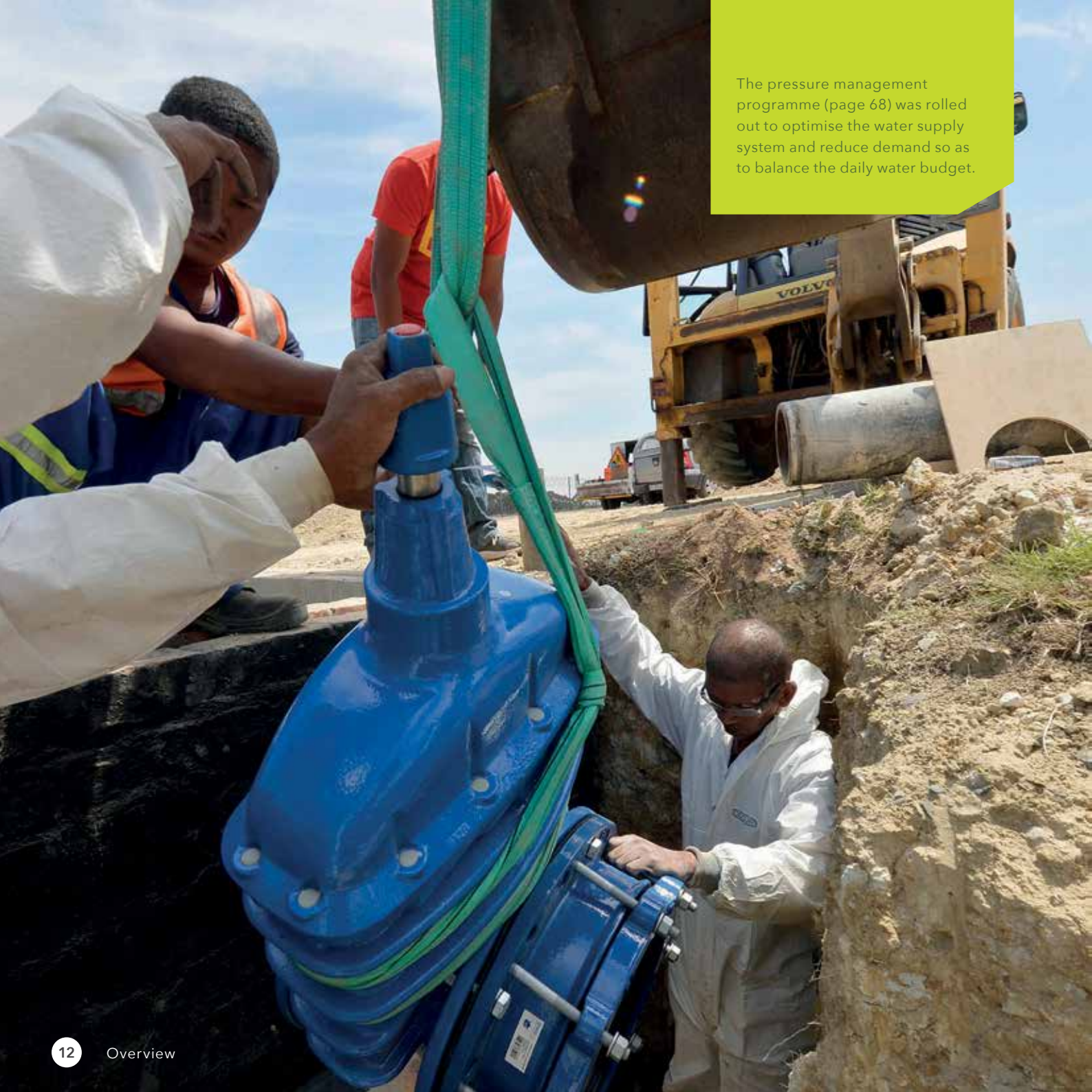


The municipal electrification programme (page 80) provides electricity connections to communities in underserved areas.

Interviews with project managers provided the necessary information on how projects met assessment objectives. This was then translated into an assessment table, diagram and a project profile, which summarised the challenges addressed by the project and outlined some of its key features.

Project managers were then invited to review their respective profiles and initial assessments, and were afforded the opportunity to implement concrete interventions to strengthen their projects and project sustainability, prior to a final assessment. Following an internal review, the final project profiles and

initial assessments were presented to the review panel for verification and formal assessment.



The pressure management programme (page 68) was rolled out to optimise the water supply system and reduce demand so as to balance the daily water budget.

Strategic links

Integrated Development Plan

The portfolio links to the strategic focus areas (SFAs) of the City’s Integrated Development Plan (IDP) (see page 103-104), which are as follows:

Opportunity city: This recognises the need to build an economically enabling city by ensuring that people have decent jobs. The need to conserve local biodiversity for enjoyment by present and future generations is also recognised as a key element of making Cape Town a city of opportunity for everyone.

Safe city: Safety is essential to the public’s experience of the city. Sustainable development builds resilience and ensures that the city and its residents are protected from anticipated and unanticipated changes from both natural and human-induced sources. Therefore, sustainability is key to building a safe and resilient city.

Caring city: The primary purpose is to look after the health and well-being of citizens and visitors. Projects that meet sustainability criteria automatically contribute to a healthier urban landscape.

Inclusive city: This focus area recognises present and future generations’ right to access the resources that they need, which should also be protected in the pursuit of sustainability.

Well-run city: Institutional arrangements need to favour democratic and transparent processes. Best practice in

sustainability contributes to improved governance through efficient, effective and appropriate processes.

City strategies

The City’s Environmental Strategy, Economic Growth Strategy, and Social Development Strategy are pivotal to development. These three strategies also reflect the three dimensions of sustainability on which this portfolio is based, namely environmental, economic and social.

Environmental Strategy

The Mayor’s Portfolio aligns with and profiles projects that support the principles and directives of the Environmental Strategy. These include:

- adopting a long-term approach in decision making, operating and planning for the future;
- promoting and enhancing equity and accessibility to ecosystem goods and services, natural open spaces, and the social, educational, spiritual and recreational opportunities these provide;
- recognising, protecting and promoting the social, cultural and economic value of the natural environment to communities, businesses and individuals;
- focussing on resilience, enabling the city to withstand and mitigate the negative impacts of environmental

hazards, and proactively reducing Cape Town’s vulnerability;

- recognising, protecting and, where possible, proactively restoring ecological infrastructure and ecosystem goods and services;
- proactively preventing adverse environmental impacts, including pollution and waste generation, or minimising and managing those impacts where they cannot be avoided;
- ensuring that resource efficiency and low-carbon development are embedded in all aspects of the City’s work;
- adopting the methodology of environmentally sensitive and low-impact urban design, and ensuring the long-term functionality of key ecological infrastructure;
- prioritising and promoting the education and empowerment of all citizens; and
- ensuring that the value of both natural and cultural heritage is recognised, protected and promoted, and that the benefits and opportunities it offers communities are realised.

Project managers were challenged to reflect on how their projects, including project design and implementation, promoted best practice in sustainability with specific reference to the principles above.



Economic Growth Strategy

The principal objectives of the Economic Growth Strategy (EGS) are to grow the economy and create jobs, thereby establishing Cape Town as an “opportunity city”. The strategy presents the City’s response to the most fundamental challenges facing Cape Town: Too many people are poor and unemployed, and unless we shift gears and prioritise economic growth, this is unlikely to change.

While recognising the pressing need for rapid and inclusive economic growth, the EGS observes that “to build an opportunity city, economic growth ought to be environmentally sustainable in the green economy as a key growth area, both in terms of ‘eco-tourism’ and facilitating the development of green industries and sectors, particularly those with significant job creation potential”.

Objective 3.4 of the EGS promotes the protection of environmental assets, expansion of eco-tourism in a sustainable manner, as well as the establishment of green industries. It further encourages the profiling of Cape Town as a tourist destination and a global sustainability leader.

This portfolio’s emphasis on sustainable future growth is closely linked to these strategic elements of the EGS. Profiled projects that enhance urban sustainability are those where project design teams sought to create opportunities for investment and job creation.

Social Development Strategy

The Social Development Strategy (SDS) orientates the City’s work towards an improved quality of life for all Capetonians, especially those who are marginalised. At its core, the SDS focusses on addressing poverty, inequality and social ills, while simultaneously encouraging residents to be active citizens and take ownership of their own development.

According to the SDS, the City’s work should be underpinned by the five principles of:

- using the available resources and assets to promote social development;
- focussing on having an impact on the lives of the poor, vulnerable or marginalised;
- facilitating partnerships for maximum impact;
- assessing projects’ level of sustainability; and
- directing interventions at the areas of greatest need.

The SDS requires decision makers across the City to consider how their operations and procedures could help build a safer, more caring and inclusive city, where all people are able to achieve their potential and participate in their own development. This approach differs from previous approaches, which viewed social development as the domain of a specific directorate concerned with relatively small, discrete projects. The current SDS considers all the City’s work as geared towards improving the well-being of all people in Cape Town – a transversal approach that is reflected in this portfolio’s integrated approach to sustainable project assessment.



The Dido Valley housing project (page 42) seeks to address the legacy of apartheid by compensating those who suffered loss through land restitution. Beneficiaries of this project will live on prime property and within easy access of economic opportunity.





Projects at a glance

This edition of the Mayor's Portfolio of Urban Sustainability features 20 projects, which although managed and supported by various directorates, all demonstrate best practice in sustainability. For each of the 12 assessment objectives, every project was scored on a scale of 1 ("poor") to 5 ("excellent").

Moreover, in a newly added "Revisit portfolio", 10 projects assessed in the last three editions of the Mayor's Portfolio are reviewed, under the broad categories of integrated human settlements and the circular economy. These projects are not accompanied by an assessment; instead, the project profiles include a status update and highlight sustainability lessons that can be drawn from the projects since they were featured previously.

Portfolio projects

For each featured project, the Mayor's Portfolio presents a description of the project objective, design and implementation, as well as an evaluation of the project's contribution to sustainability mainstreaming in the City. Each project is assigned to a portfolio section – vision, social, economic or ecological – depending on what is judged to be its strongest element.

Yet, most of the projects relate to more than one dimension of sustainability. In fact, the portfolio intends to show how projects that would otherwise be limited to addressing social, economic or ecological problems in isolation can be planned, designed and developed to positively influence a range of elements of sustainability. The Station Deck is a good example. As one of Cape Town's major public transport facilities, the Station Deck plays an important part in promoting access to economic opportunities. The suite of refurbishments undertaken at the Station Deck improved commuters' experience and helped enhance safety and security. At the same time, the refurbishment incorporated a range of resource-efficiency interventions, such as placement of recycling bins and the installation of water-saving devices in ablution facilities.

Game-changer projects:

As in previous editions, the 2020 Mayor's Portfolio again uses the game-changer identifier. Game-changer projects are those that could activate massive sectoral shifts, both locally and nationally. Although not necessarily captured in the project assessments presented here, it is important to note that these projects will likely have a high long-term impact.



Since the Mayor's Portfolio programme focusses on projects co-ordinated by local government, there is often a discrepancy between innovative and mandatory projects. As a result, not all the projects featured here are new or novel in themselves; instead, each demonstrates unconventional, lateral thinking to build a more sustainable urban environment.



By raising awareness about water saving and the best retrofitting options, the water conservation drought campaign (page 72) empowered residents with the necessary information to comply with the City's water restrictions and, ultimately, reduce water demand.

Portfolio project sections

Vision portfolio		
Project	Description	Evaluation summary
1. Adaptive leadership training programme	Training programme aimed at embedding adaptive leadership skills across the organisation and equipping City officials with skills for their daily tasks.	Promotes improved governance and productivity by cultivating traits such as a deep sense of character, transparency and creativity, which are all required to face and recover from shocks and stresses.
2. Green infrastructure programme	Programme aimed at protecting and enhancing existing natural assets and creating new green infrastructure assets to enhance the living environment in Cape Town and improve resilience.	Challenges mindsets to do business differently, and to recognise that natural spaces are assets and that a green infrastructure approach can help address the impacts of urbanisation and climate change.
3. Maintenance Management Plan	A pre-emptive and cross-disciplinary approach to stormwater management and maintenance.	Detailed interventions developed to preserve institutional memory and guide cost-effective, sustainable, environmentally sound maintenance of the stormwater system.
4. Water Resilience Advisory Committee	Committee bringing together sector-specific knowledge and expertise to collaboratively manage the water crisis.	Supports the building of a community of practice, as well as meaningful engagement by promoting openness and inclusivity, with the objective of determining the most effective responses to water scarcity.

Social portfolio		
Project	Description	Evaluation summary
5. Brooklyn multipurpose court	High-quality recreational space with afternoon supervision and holiday programmes to encourage optimal use of the facility.	Improves residents' quality of life by promoting community health and well-being, and addresses safety concerns by providing oversight through Expanded Public Works Programme (EPWP) workers.
6. Cape Town Water Map	Innovative behaviour modification tool implemented to reduce water use in a drought-stricken region.	Emphasises public awareness, transparency and citizen empowerment by providing water use information, which effectively contributed to community building.
7. Dido Valley housing project	Housing development to accommodate the Redhill informal settlement and enable the Luyolo land claimants, who were forcefully removed in 1967, to return to Simon's Town.	Demonstrates the benefits and impact of community building and facilitating ongoing engagement throughout the long process of reintegration.
8. Maroela South housing project	Construction of subsidised housing units to create a more inclusive housing community.	Facilitates access to housing assets and supports the most vulnerable through the provision of infrastructure and services, thereby facilitating a vast improvement in quality of life.
9. Mobile office initiative 	Initiative taking customer services into marginalised parts of Cape Town to engage residents face to face.	Promotes improved service delivery by offering residents the opportunity to report issues, while giving City line functions a platform to raise awareness and add value to communities.
10. Morningstar housing project	Housing development comprising 152 double-storey and 14 single-storey Breaking New Ground units.	Facilitates vast improvement in quality of life by supporting the City's most vulnerable residents and enhancing access to infrastructure and services close to economic opportunities.
11. Refurbishment of the Cape Town Station Deck	Providing a facility that is safe, clean and crime-free to improve the customer experience.	Suite of measures implemented to address challenges faced by users of the taxi rank, practically demonstrating the City's customer-centric approach.
12. Strengthening Families programme	An evidence-based life skills programme aimed at improving family relationships and reducing vulnerability to substance abuse.	Enhances the quality of life and well-being of children by improving life skills, the ability to resist peer pressure and communication with their parents.

Economic portfolio

Project	Description	Evaluation summary
13. Borchers Quarry wastewater treatment plant (WWTP) faecal sludge management facility 	A mechanised system invented to clean chemical-toilet storage canisters.	Facilitates a vast improvement in the City's productivity and efficiency by using recycled water and only a third of the chemicals previously used.
14. Cape Town Green Map	An informative resource aimed at equipping visitors and residents with information to promote more sustainable lifestyle choices.	Helps conserve sensitive ecosystems and biodiversity by making green information easily accessible, and motivating people to reduce their impact on the environment.
15. Smart Driver programme 	Programme aimed at building fleet drivers' capacity through training and ongoing monitoring to establish behaviour change and cost savings.	Supports the attainment of health and environmental benefits, as well as a reduction in incidents and accidents as a result of safer driving habits.
16. SmartFacility	Web-based interface to integrate data relating to municipal facilities and their resource consumption in a user-friendly, accessible manner.	Facilitates a vast improvement in productivity and efficiency by informing the proactive monitoring and management of resource consumption at municipal facilities.

Revisit portfolio*

Project	Description	Evaluation summary
21. Dunoon local area planning initiative	Creative planning for development and service delivery, through community engagement.	Demonstrates the value of an integrated, evidence-based and phased approach to transforming urban settlements into well-functioning, sustainable and rate-paying communities.
22. Greenville Garden City	Mobilising a public-private partnership to build an integrated human settlement.	Challenges the current approach to subsidised housing delivery as a means of true upliftment and improving living standards.
23. Municipal electrification programme	Providing electricity connections to communities in underserved areas.	Improves socio-economic conditions by creating an enabling environment for households to develop their livelihoods.
24. Ocean View stone houses	Integrated housing and skills development project in Ocean View, Kommetjie.	Exemplifies sustainable, design-led innovation that involved critical stakeholders in framing solutions, and created work opportunities and skills development during implementation.
25. Pelican Park housing development	Integrated housing project that ensures that land uses support the daily functioning of communities and contribute to the overall character of the area.	Strong example of a housing development that strives to build mixed-income, diverse and integrated communities with minimal damage to sensitive scenic, cultural and historic landscapes.
26. Kraaifontein integrated waste management facility	A benchmark facility to handle and compact waste for transfer to landfills, as well as divert waste from landfills.	Strategic facility contributing significantly to the diversion of waste from landfill through, among others, chipping operations for organic bulky waste and diversion of reusable and recyclable waste.

* Projects revisited from the 2014 to 2018 editions of the Mayor's Portfolio of Urban Sustainability.

Revisit portfolio*		
Project	Description	Evaluation summary
27. Source to Sea river corridor project	Enhancing ecological and social resilience through river ecosystem restoration.	Seeks to maximise the potential of existing natural assets by integrating social and ecological interventions.
28. Sustainable public procurement	Mainstreaming the procurement of socially and environmentally responsible goods and services in the City.	Seeks to maximise resource efficiency and promote environmental sustainability while using public spending power to leverage environmental, social and local economic development benefits.
29. Treated effluent reuse	Formalising the use of alternative water sources for non-drinking needs, such as irrigating landscapes and flushing toilets.	Promotes resource efficiency by contributing to reduced water demand, and ensuring Cape Town has a secure water supply for the foreseeable future.
30. Western Cape Industrial Symbiosis Programme	Service that connects companies so that the underutilised or discarded resources of one company can be used by another.	Contributes to diverting waste from landfill by finding ways in which waste can be used as an input in other processes.





Vision portfolio

The vision portfolio recognises projects that have achieved substantial outcomes through innovative and visionary planning.

It also includes participatory initiatives and outreach programmes aimed at promoting sustainability, including behaviour changes and the application of innovative design-led processes that lead to a paradigm shift in urban sustainability and service delivery.

All of the projects in this section are characterised by:

- exemplary foresight;
- inclusive and thorough planning and design; and
- commitment to sustainability principles.

While these projects may lead to future “on-the-ground” developments, they currently still lack tangible outputs, and are not accompanied by a formal sustainability assessment.

Project 1: Adaptive leadership training programme



Problem statement

As the 21st century unfolds, most of the world's population will come to live in cities. Cities serve as centres of economic activity, opportunity and innovation. However, cities are also where chronic stresses such as unemployment and poverty can be pervasive, and acute shocks such as flooding, disease outbreaks and cyberattacks can strike the hardest.

When chronic stresses and acute shocks intersect, this leads to a complex interplay that can intensify the impact on people and the environment. This is a difficult environment for governance, making it increasingly important for officials to be equipped, both individually and collectively, with the ability to adapt and thrive under challenging conditions.

Project outline

In addition to having adopted its Resilience Strategy, the City strives to build a culture in which leaders can respond in a collaborative and agile manner when confronted with shocks and stresses.

The adaptive leadership training programme promotes the City and its leadership's ability to learn from past experiences and flourish under trying circumstances. This is done by teaching officials how to be adaptive leaders, equipping them with the necessary skills, and so embedding adaptive leadership in the organisation.

Project design

The City's adaptive leadership training programme is delivered in the form of masterclasses and shock simulations.

The aim is to create a large cohort of officials who are able to respond in collaborative, agile and adaptive ways in times of crisis, which, in turn, ensures that the entire organisation can respond quickly and effectively.

During the masterclasses, participants are taken through the key components of adaptive leadership and afforded the opportunity to learn practically through a range of insightful games. Participants then usually attend a shock simulation, which offers them a chance to practise their adaptive leadership capabilities. During the simulations, participants embark on a learning journey, with each being assigned an acting part to play for the duration of the simulation. The various parts are clustered to cover all sectors of society. Individuals are then grouped around thematic tables, and the scenario commences.

Participants are given prompts as the crisis escalates, and are asked to respond as a representative of their particular assigned role. While there are various ways in which the simulation can end, the aim is to show that collaboration, communication, being proactive and other adaptive leadership skills result in a better response to any crisis.

Project implementation

The Resilience Department, in partnership with the Economic Development Partnership (EDP) and the Organisational Effectiveness and Innovation departments, has been testing an innovative training programme to develop internal capabilities through system mapping, partnering and adaptive management methods and models.

By December 2019, more than 200 City employees had been trained in adaptive leadership. To embed the skills acquired, participants take part in a reflective activity, which involves an additional briefing on adaptive skills and how to apply them in day-to-day functions in the organisation. Participants are also invited to join an adaptive leadership community, where articles, tools and resources are shared on an ongoing basis.

To promote programme uptake, the training sessions are offered as an LSO module on the City's e-Learning portal.

Evaluation

This leadership model is all about experimenting, discovering new knowledge and making adjustments. It recognises that the City can sustain changes and thrive. The adaptive

leadership training programme equips participants with skills and knowledge to mitigate the impact of shocks and stresses, and ensures that the response to challenging events is improved, which ultimately benefits the residents of Cape Town.

Adaptive leadership promotes a deep sense of character, transparency and creativity so that leaders can weather storms and rise to the challenge when faced with shocks and stresses. Cultivating these traits contributes to improved governance across the organisation, as well as better productivity.

The practical leadership framework also fosters cross-sector integration and collaboration, thereby building a community that can co-create solutions and act collectively.



Project 2: Green Infrastructure Programme



Problem statement

Cape Town has a wealth of natural assets and green open spaces. These have the potential to provide ecosystem services and benefits that can enhance the city's economy, make it more resilient to climate change and render Cape Town more equitable and inclusive.

However, many of these natural assets and green open spaces are in a poor state due to inadequate maintenance and increased exposure to the pressures of urbanisation, being neither used optimally, nor strategically linked to one another and/or built infrastructure. This compromises their ability to deliver their potential supply of ecosystem services and enhance Cape Town's resilience in the face of climate change.

Just like poor maintenance of so-called grey infrastructure (i.e. concrete and steel structures), the failure to maintain green infrastructure has a significant detrimental impact on an urban area.

Project outline

Green infrastructure is defined as a "strategically planned, designed and managed network of multifunctional natural open spaces and 'engineered' ecological systems, with other environmental features, that provide ecological, community and infrastructure services". It promotes connectivity and the inclusion of nature to solve problems in the built environment of urban areas.

The City's Green Infrastructure Programme (GIP) prioritises the protection and enhancement of existing natural assets, as well as the creation of new green infrastructure assets, to promote sustainability, enhance the living environment in Cape Town and improve resilience to climate change effects.

Project design

As a key informant of the Municipal Spatial Development Framework (MSDF) for Cape Town, as well as the District Spatial Plans, the GIP will help shape the future

growth and development of Cape Town, supporting the provision of optimal social, economic and environmental benefits to its citizens, now and into the future.

To facilitate sustainable urban development, the GIP is designed to include a spatial component (a "green infrastructure network"), tools to support and enhance a green infrastructure approach (such as by-law provisions and guidelines), as well as implementation actions and projects.

Project implementation

There is a growing recognition of the value of green infrastructure, and the City's Resilience Strategy, identifies, as one of its 75 actions, the rejuvenation of our rivers to create liveable urban waterways.

To date, a two-pronged approach has been adopted to map green open spaces in Cape Town:

- (i) A scientific data-driven approach stemming from collaborative

engagements between the City and the Council for Scientific and Industrial Research (CSIR): The initial mapping has been completed for themes relating to water, coastal zone protection, active recreation, outdoor education and food security.

- (ii) An interrogative district mapping approach, which was developed in collaboration with colleagues from Water and Sanitation, and Recreation and Parks: This approach has helped build relationships between colleagues from different line functions. It has also enabled the sharing and dissemination of knowledge during mapping sessions, where spaces are evaluated in relation to predetermined questions on ecosystem services provision.

Furthermore, a series of guidelines outlining green infrastructure best practice are being developed. The project team plans to complete at least two sets of guidelines in the 2020/21 financial year.

To aid mainstreaming, the City has allocated R604 000 for a learnership programme to upskill and train previously disadvantaged persons to work in river corridors. The focus of this is the Source to Sea river corridor pilot on the Diep and Prinskasteel-Keysers rivers in the South Peninsula.

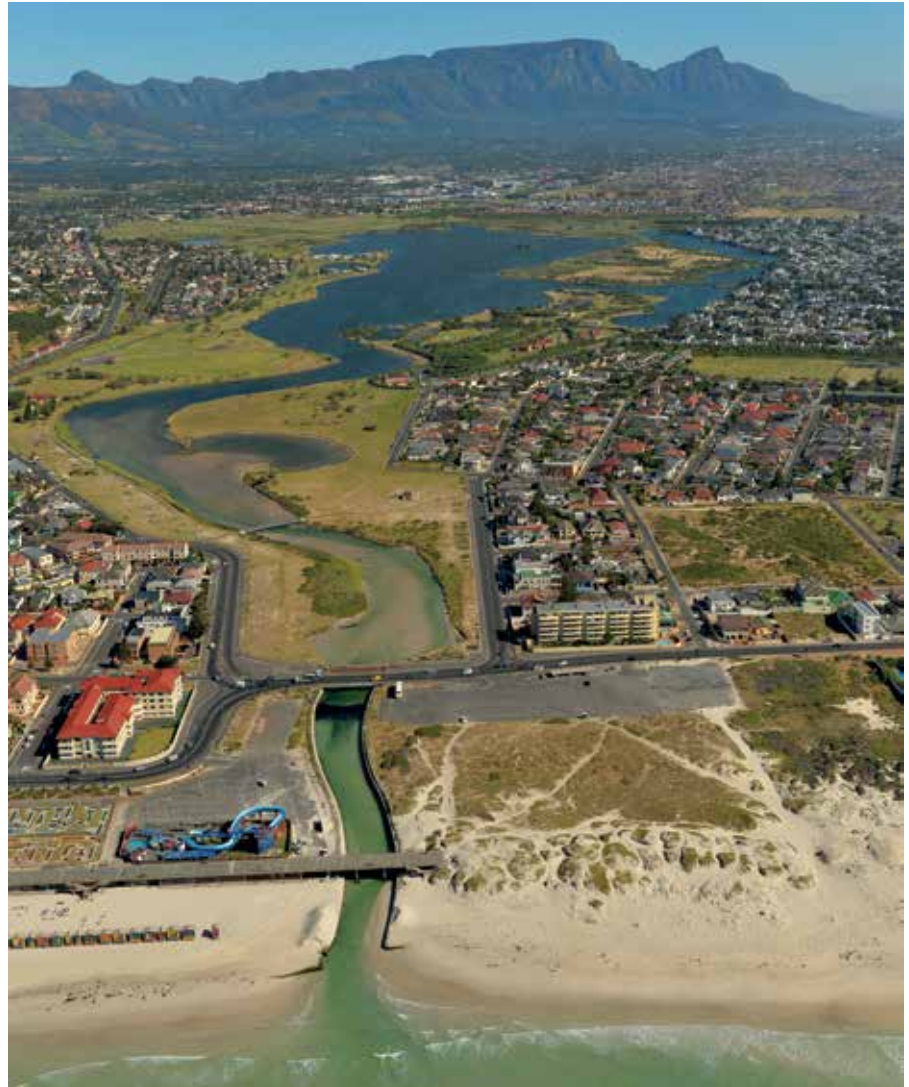
Evaluation

The GIP challenges mindsets and drives the City to do business differently and recognise that natural spaces are assets, and that a green infrastructure approach can help address the impacts of urbanisation and climate change. By investing in and maintaining Cape Town's natural assets, the City can achieve the

most efficient and effective levels of service delivery and returns, thereby maximising return on investment and reducing the cost of future capital "grey infrastructure" spend.

In addition to promoting cost-effective service delivery, functioning ecosystems

can self-regulate and, thus, continuously provide services that would otherwise be largely impossible to replicate. By protecting green infrastructure assets, the GIP promotes improved water management, human health and well-being, conservation of biodiversity, and sustainable land management.



Project 3: Maintenance Management Plans for watercourses and built stormwater infrastructure



Problem statement

The City is responsible for managing and maintaining Cape Town's natural and constructed stormwater infrastructure. This includes rivers, streams, wetlands, estuaries, canals, channels, flood protection berms, ponds, pipes, culverts, catch pits and stormwater pumping stations.

To benefit residents, business owners and visitors appropriately, the stormwater system needs to be maintained and upgraded in a holistic, systematic and strategic manner, which takes into consideration both engineering and ecological factors. Although there is extensive institutional knowledge in the City, this is often tacit knowledge held by specific experts. It is not easily accessible by all staff and does not explicitly make provision for knowledge transfer and succession planning.

Project outline

The Maintenance Management Plan (MMP) project comprises 62 detailed plans, of which 45 pertain to specific watercourses,

seven to estuaries within the City's boundaries, and 10 are generic. These detailed maintenance and management interventions support the stormwater maintenance programme. The MMPs focus specifically on environmental best-practice approaches that can be used in the stormwater maintenance programme to minimise negative impacts on the aquatic environment.

The MMPs will serve as a valuable resource to preserve institutional memory and guide the ongoing cost-effective, sustainable, environmentally sound maintenance of the stormwater system.

Project design

Each MMP describes manual and mechanical best practices needed to achieve optimal and sustainable maintenance of the stormwater system, while minimising environmental impacts. Plans address issues such as sedimentation, aquatic vegetation, litter, erosion, flood risk, water quality, ecological components, amenities and aesthetics.

A range of City stakeholders, including some community groups and businesses, were identified, and guidance and best practices for rehabilitation and maintenance of the specific stretch of river are provided. The MMPs have been submitted to the Western Cape Government's Department of Environmental Affairs and Development Planning for information, and to the national Department of Water and Sanitation (DWS) for approval. In the long run, this will significantly reduce the red tape that can at times delay municipal operations and rehabilitation work.

Project implementation

The development of the MMPs was completed over three years from 2016 to 2019 in collaboration with Aurecon, a consultancy appointed by the City to undertake the study. Since the MMPs cover cross-cutting themes, their development required the involvement of numerous City line functions. CapeNature and SANParks also participated in the project, as some sections of certain catchments fall within their ambit. They provided valid input into,

and approved, the respective MMPs. Eight workshops were held with various City stakeholders to facilitate both a top-down and bottom-up approach to gather baseline information, and a variety of techniques, including discourse and expert mapping, were used to draft the MMPs.

All the completed MMPs have been uploaded to a City SharePoint site that all employees involved with stormwater management will be able to access. External stakeholders needing information contained in the MMPs can also request access. The plans will be version-controlled and continually updated.

The Water and Sanitation Department is currently engaging the City's corporate GIS team to have the MMPs geospatially referenced and hyperlinked to the City

Map Viewer. It is envisaged that the MMP project will give rise to numerous secondary projects pertaining to the rehabilitation and maintenance of Cape Town's stormwater and river systems. Natural, labour-intensive approaches (such as river channel profile enhancements and other manual stormwater operations) that are endorsed by the plans will lead to opportunities for job creation and training.

Evaluation

Maintenance of the stormwater system is essential to keep it functioning as intended, and is instrumental in the sustainable management of flooding, water quality and the aquatic environment. As the stormwater network extends across the city, all residents stand to benefit from the management

and maintenance of the City's stormwater assets in terms of an overall improvement and enhancement in their quality of life. Prior to the MMP project, the City had difficulty ensuring common standards and best practices with respect to stormwater management across all regions of Cape Town.

This pre-emptive approach to stormwater management and maintenance will save the City money in the long run as it moves away from irregular, unsystematic assessments. The MMPs are founded on a multidisciplinary transversal approach, and each plan represents years of institutional knowledge. The project also highlights the need for an integrated stormwater system management approach. Traditional silos need to be broken down to make way for a more transversal approach that engages a range of skills.



Project 4: Water Resilience Advisory Committee



Problem statement

As the drought in Cape Town intensified in mid-2017, the City strengthened its efforts to respond to the unprecedented shock event. Council endorsed the creation of the water resilience programme, which initiated a portfolio response to the drought. This included increased efforts to drive down consumption, new augmentation projects, and preparations for critical water shortages if that scenario arose.

Cape Town has a strong community of practice, with well-established academic institutions such as the University of Cape Town, the University of the Western Cape, Stellenbosch University and the Cape Peninsula University of Technology. Yet, the water crisis exposed an untapped opportunity for more extensive partnering around water governance and future shock events that may test governance systems.

Project outline

Council endorsed the creation of the section 80 Water Resilience Advisory Committee (WRAC) to advise the Water

Resilience Task Team and the Executive Mayor during the water crisis. Chaired by the Mayoral Committee (Mayco) member for Water and Waste, WRAC comprises representatives from a wide range of sectors to facilitate a two-way flow of information between external experts and internal policymakers and technicians in support of the City's response to water-related crises.

By initiating this form of collaboration during the past drought, the City acknowledged the need for external input, as well as the value of critical engagement to inform decision making.

Project design

The Municipal Structures Act allows municipal councils to establish section 80 committees to engage external advisors on a specific topic. The terms of reference for the WRAC states: "Building a water resilient city ... requires supportive actions and knowledge sharing from a number of stakeholders outside of the municipal administration." As such, the committee

brings together sector-specific knowledge and expertise from different quarters of Cape Town to manage the water crisis collaboratively.

The WRAC is founded on the whole-of-society approach, which promotes partnership and contributions by a wide range of stakeholders for collective impact. This creates an environment for collaboration across sectors to address a critical local sustainability challenge.

Project implementation

Council established the WRAC in August 2017 to co-ordinate efforts more effectively and improve governance during the drought crisis. Council ratified 15 members co-opted from academia, business, the agricultural sector, non-governmental organisations (NGOs), Province and National Government, among others. Through regular meetings, the committee cultivated stronger relationships between key stakeholders by sharing expertise, information and best practice to ensure better planning and cost-effective investments.

The committee gave City officials a platform to share what they were doing, and to receive input from an external perspective. Furthermore, the engagement with civil society, academia and business partners contributed to a collective ownership of roles and responsibilities in water governance.

Although Cape Town successfully avoided Day Zero, building water resilience remains an important goal, given the city's climate future. The operations of the WRAC demonstrated the value of organised networks with academics and critical stakeholders in establishing a new understanding of, and respect for, water scarcity, as well as Cape Town's "new normal".

According to the City's Resilience Strategy, the administration is looking to mobilise the WRAC to consider a wider range of water-related shocks and stresses so as to achieve a water-resilient and water-sensitive city. This would include a special focus on the quality of water in our urban waterways. As such, the WRAC continues to meet at least once every two months.

Evaluation

The high level of uncertainty during the Cape Town drought called for a shift from a technocratic approach to a more collaborative one. The water crisis prompted changes in the way that the City works and responds to unfamiliar challenges. The crisis revealed the need for collaboration among water specialists and experts with a deep technical, social and financial understanding of the water sector.

By adopting a whole-of-society approach, the WRAC reinforces the role and value of partnerships,

communication and co-operation, and supports the local attainment of the United Nation's sustainable development goals. Furthermore, through meaningful engagement, the WRAC promotes openness and inclusivity with the objective of determining the most effective responses. This interaction continues to provide a basis for ongoing exchange, building trust and identifying opportunities for collaboration.



Finally, against the backdrop of the WRAC's success, the Resilience Strategy proposes a range of multi-stakeholder platforms to co-ordinate efforts and improve governance and decision making during any period of crisis. This demonstrates the replicability of the WRAC and its applicability in diverse circumstances.





Social portfolio

The projects in this section have a strong social component. Most of them have extensively involved communities in the development of processes and structures. While promoting sustainability as an overall outcome, the projects in this category were originally motivated by the need to address a social problem that had arisen from within the community or from the everyday dynamics of Cape Town neighbourhoods.

Project 5: Brooklyn multipurpose court



Problem statement

Good community parks and facilities provide exposure to, and opportunities for, various cultural and physical activities. They also foster a sense of pride in residents and help create pleasant living environments.

Although Brooklyn residents recognise and value community amenities and facilities, the sporting and recreational spaces available to them are underused due to their poor condition and prevailing personal safety concerns. With many parents at work during the day, many children are left playing unsupervised in the streets or home alone after school and during school holidays.

Project outline

The Brooklyn community identified the need for a safe, high-quality recreational space for youth and approached their ward councillor in 2018 to request the construction of a multipurpose court. To overcome space constraints, a multipurpose netball court was constructed on unused land that forms part of the pre-existing cricket complex.

To make the recreational space safer and more accessible, this project involved rejuvenating and fencing off of the sporting complex, improving lighting and, most importantly, providing afternoon supervision and holiday programmes to encourage optimal use of the facility.

Project design

The Brooklyn multipurpose court is located in close proximity to local schools to increase accessibility and address community safety concerns. Multipurpose courts not only accommodate a range of games and sports, but also cater to various age groups. In Brooklyn, for instance, the multipurpose court also serves the needs of local adult netball teams who train after hours.

In addition to 24-hour security, the floodlighting installed makes it unthreatening for community sports teams to use the court in the evenings, and the City will manage venue bookings to ensure equitable access for community organisations.

Project implementation

In addition to hard security measures, children playing at the Brooklyn multipurpose court will be supervised by EPWP workers who have an interest in childcare and sports management. These workers will provide some sports training, but focus mostly on ensuring that the children are safe, that there is no bullying, that all children get an equal opportunity to play on the court, and that the City’s assets are protected from vandalism and theft.

In addition to sport, the multipurpose court will be used for activities such as gross motor skills development and games for the after-school programme. During school holidays, the City will run a fun and educational holiday programme from the site. Alongside learning sports skills, the children will be taught valuable

life skills relating to fire and rescue, health and law enforcement. Similar to other holiday programmes, input will be invited from NGOs and other external role players, such as a snake and reptile park, as well as the Two Oceans Aquarium. Approximately 80 children can be accommodated in each holiday programme and will receive a daily meal, as Brooklyn faces high poverty and unemployment levels.

Evaluation

The Brooklyn multipurpose court is an excellent example of the value of community participation in developing and implementing solutions. Similarly, the initiative taken by the ward councillor to drive this project demonstrates the City’s responsiveness to public needs.

The rejuvenation and development of the Brooklyn sports complex improves

residents’ quality of life by promoting community health and well-being. In addition, oversight by EPWP workers and security goes a long way towards allaying parents’ safety concerns. The after-school and holiday programmes can turn otherwise idle hours after school into productive learning time, improve social skills and expose children to new interests.

Since multipurpose courts can be used by a variety of stakeholders and across seasons, they contribute to City productivity and efficiency. They also afford the community flexibility in their playing choices. Moreover, such facilities serve more people in one space, thereby making efficient use of land and reducing overall maintenance and repair costs for the City.



Project 6: Cape Town Water Map



Problem statement

In a dry climate, with rapid urbanisation and relatively high per-capita water consumption, Cape Town displayed all the signs of an imminent water crisis. After three years of poor rainfall, the City announced that drastic action was needed to avoid Day Zero – the point at which most of Cape Town's municipal water network would be switched off.

To reduce demand, the City introduced increasingly strict water restrictions, which limited volumes consumed, as well as uses of water. However, analysis of single-family residential homes, which accounted for more than 54% of all water consumption in the city, revealed large disparities in water use within neighbourhoods, indicating that households were responding very differently to the water crisis.

Project outline

The Cape Town Water Map is a behaviour change tool that helped reduce water consumption during the drought. The map provided information on household water use, treated-effluent collection points and water pressure management zones.

At the height of the city's drought crisis, the water map was used to publicly acknowledge households who were saving water, thereby normalising and incentivising water conservation behaviour. Additionally, by mapping household water use, the City sought to demonstrate that compliance with the severe water restrictions was indeed achievable.

Project design

The water map was highly effective in raising water-saving awareness and encouraging behaviour change. The tool was quick to implement, low-cost and effective in high and middle-income areas, which generally consume more water compared to low-income areas.

The map was designed as an online spatial viewer using GIS data to display colour-coded green dot symbols. Dark green dots represented single-residential properties using 6 000 or less litres of water per month, and light green dots represented those properties using between 6 000 and 10 500 litres per month. Properties where individual meter readings were unavailable, such as sectional title properties and group housing, or properties without accurate water-use information, were indicated by grey dot symbols.

Project implementation

Following the intensification of the City's drought response, including the map's launch in January 2018, residential water use dropped considerably, and Cape Town's overall water use declined by 55% from pre-drought levels – the greatest water saving ever achieved by a metropolitan-sized city. By March 2018, half of the city's households were using only 6 000 litres or less per month.

(equivalent to approximately 50 litres per person per day or less), and 80% were using 10 500 litres or less. In May 2018, the City awarded “green dot” status to 400 000 water-saving households – the highest number achieved to date.

The Cape Town Water Map was supported by a media campaign, “Let’s paint this city green”, which praised water-saving households and encouraged all households to achieve similar savings. A document with frequently asked questions and supporting information was prepared in order to contextualise the map, provide guidelines for its use and interpretation, and share information on how the thresholds for the green dots were calculated. Furthermore, the water map was promoted by press releases and social media posts on the total number of green dots achieved each month.

While the map played an important part in encouraging water-saving behaviour, Cape Town’s remarkable water-saving achievements can be attributed to a range of factors. These include Capetonians’ responsiveness, the City’s overall drought communication strategy, the Executive Mayor’s January 2018 announcement that Day Zero was likely to occur unless more people saved water, the introduction of higher water tariffs in February 2018 along with more stringent water restrictions, as well as the intensification of efforts to lower water network pressures from December 2017.

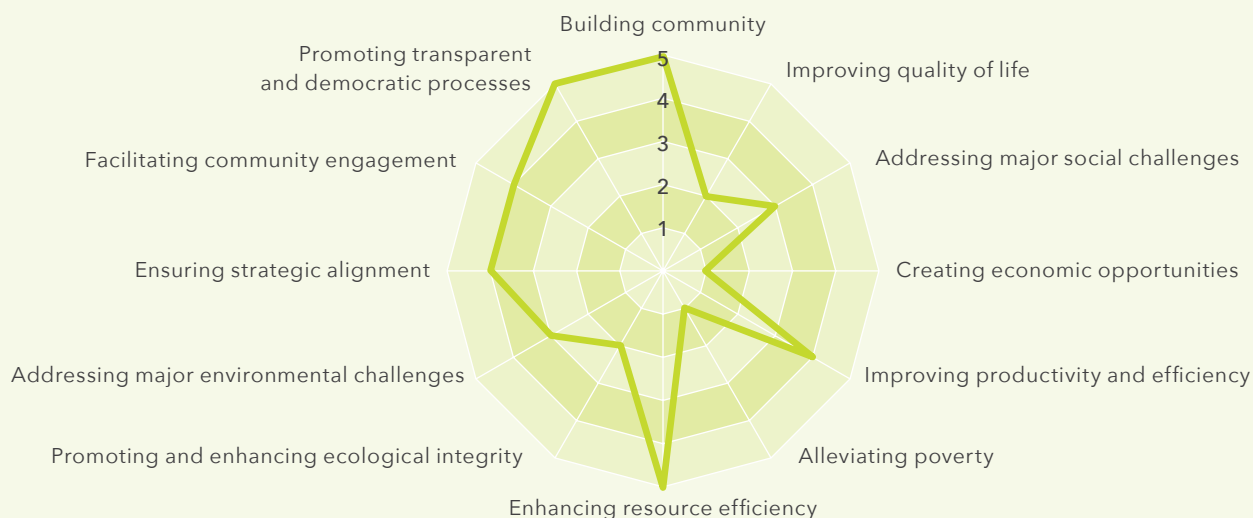
Evaluation

Aimed at public awareness, transparency and citizen empowerment through water-use information, the Cape Town Water Map was an integral part of the

City’s drought response strategy. The map encouraged residents to reduce water consumption, pull together and share tips on social media, which contributed to community building. By raising awareness of water conservation, the tool contributed to the dramatic reductions in domestic water use that ultimately prevented Cape Town from running out of water, and promoted resource efficiency.

The water map, as well as earlier Cape Town-based research, indicates that public acknowledgement and reward can be a powerful force for behaviour change. This makes the water map relevant to all cities in water-stressed regions. In addition to its replicability, the map’s quick-to-implement, low-cost and effective design maximises the return on investment.

Sustainability assessment: Cape Town Water Map



Project 7: Dido Valley housing project



Problem statement

In 1950, the apartheid regime passed the Group Areas Act, which turned South African towns and cities into segregated residential and business areas. The act led to many forced removals in the 1960s and 1970s, which uprooted families from their homes and communities. In the greater Simon's Town area, families were forcibly removed from parts of the South Peninsula town, including Seaforth, Dido Valley and Luyolo. Various communities were torn apart with some moved to Redhill and members of the Luyolo community moved to Gugulethu.

For the past 20 years, the national Department of Rural Development and Land Reform has been working to compensate those who were affected by the Group Areas Act, through land and financial compensation. Similarly, the City has been building a more inclusive city and promoting reconciliation in an effort

to correct the wrongs perpetuated by the legacy of apartheid.

Project outline

The Dido Valley housing project has undergone several years of planning. Although the project has faced a range of challenges over the years, the project steering committee, which consists of Simon's Town ratepayers, an environmental group and project beneficiaries, have been meeting regularly since 1996.

The housing project aims to accommodate the entire Redhill community, an informal settlement that has not been connected to bulk infrastructure. Furthermore, a key component of the project is to welcome the Luyolo land claimants, who were forcibly removed in 1967, back to Simon's Town. Beneficiaries of this project will live on prime property, overlooking the hills, mountain and sea, within easy reach of public transport and economic opportunities.

Project design

Dido Valley, approximately three kilometres north of Simon's Town, is a proposed mixed-use, integrated development driven by the City. Of the planned 600 units, 472 will be allocated to beneficiaries from Redhill informal settlement and 100 units will be for the Luyolo land claimants. Fifteen of the remaining units will be allocated to database applicants in the target area (the old Simon's Town waiting list), 10 to database applicants with old dates metro-wise and three to disabled applicants within the target area.

Although the project site is 21 ha, only 6,7 ha is suitable for development due to construction conditions and challenging terrain such as steep slopes and hard rock. High-density typologies have been designed to comply with the minimum standards prescribed for subsidised housing, providing two bedrooms, a bathroom and an open plan living room/kitchen. The design also maximises

shelter against windy conditions, provides views of the sea and also respects the architectural heritage of Simon's Town. This high-density model has a local aesthetic and considers the beneficiaries' needs.

To build a truly inclusive community, the project site has areas zoned for public open space. These spaces will be used for amenities and facilities such as an early childhood development centre, places of worship, parks and business development.

Project implementation

The installation of civil service infrastructure, including rock excavation, was successfully completed in 2017, and the construction of top structures commenced in March 2020. At the time of writing, a contractor was being appointed to undertake the installation of electrical reticulation, and is anticipated to be on

site in May 2020. Human Settlements are aiming to finish the first top structures within a two-year period, at a rate of 25 houses per month.

The project has faced a range of challenges over the years, including objections to the environmental impact assessment process. However, this objection was resolved through interaction and constructive discussion with the objectors, and an appeal was withdrawn in 2013.

With roads recently constructed, the committee was actively involved in naming the streets in the development, drawing on the names of local heroes, clan names and surnames of the beneficiaries.

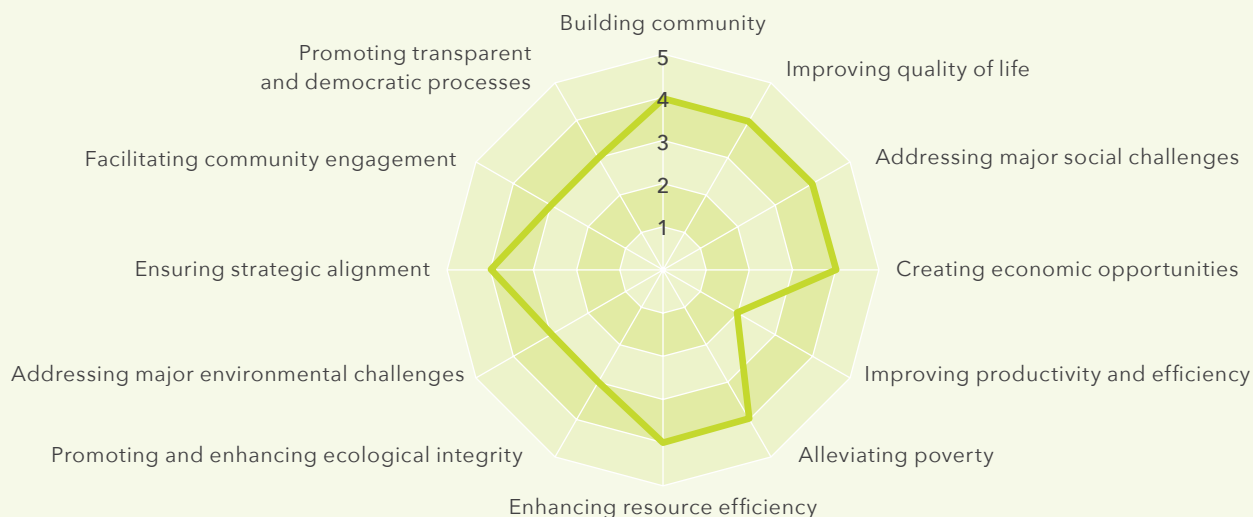
Evaluation

Given the long process of reintegration, this project has benefitted enormously from community building. In addition to

the active steering committee, the project will adopt a People's Housing Process (PHP) methodology to encourage community engagement in the development process.

The Dido Valley housing project will not only improve the living conditions of previously disadvantaged individuals, but will also address the legacy of apartheid by compensating those who suffered loss through land restitution, access to economic opportunities, and a return to their original community. A significant aspect of this project involves the integration of two communities that were torn apart by forced removals, which will offer key lessons on the intricate process of reintegration. Successfully achieving this, however, remains a challenge and calls for a holistic, partnered approach to identify and implement strategies for practical reintegration and inclusion.

Sustainability assessment: Dido Valley housing project



Project 8: Maroela South housing project



Problem statement

The lack of affordable housing in South African cities is a well-documented challenge. In Cape Town, the housing backlog stands at about 365 000 and continues to grow due to the ongoing influx of people from other parts of the country.

Government's primary approach to addressing the housing affordability challenge has been a comprehensive subsidised housing programme, with government as the delivery agent. In addition to delivering top structures, however, it is equally imperative to facilitate spatial transformation and ensure access to socio-economic opportunities to promote social inclusion and economic growth.

Project outline

The Maroela South housing project in Kraaifontein will provide 570 housing opportunities, including 395 state-subsidised Breaking New Ground (BNG) houses for qualifying beneficiaries on the City's housing database, and 175 units for the gap housing market.

The project promotes inclusion and access to equal opportunities by enhancing residents' living conditions. It further demonstrates the importance of community support and partnerships with relevant stakeholders to complete the project in the shortest possible timeframe.

Project design

In addition to addressing the challenge of housing affordability for people who earn below R3 500 a month, the project will enable beneficiaries to own both the structure and the land on which it is built, with no long-term lease arrangements. Despite budgetary constraints, each house is designed with indoor ablutions, a solid roof and a fitted ceiling to provide greater climatic insulation.

In the layout of the community, space has been allocated for the provision of social amenities such as a clinic, early childhood development centres and public open space once all houses have been constructed. The project team also made

a conscious decision to leave a seasonal pond in the development area uncovered so that the land may be used as a play area in the summer months. This will also be an important site for the collection of rainwater runoff in a way that allows for groundwater infiltration.

Project implementation

Construction of the Maroela South housing development began in 2018 with the installation of engineering services such as electric cables and water pipes. Collaboration between City departments has been essential in providing housing, water and sanitation infrastructure. Following the installation

of roads, stormwater, water and sewer infrastructure, construction of the houses will commence.

Beneficiaries of the BNG houses are currently being selected in accordance with the City's Housing Allocation Policy and Housing Database to ensure that housing opportunities are made available in a fair, transparent and equitable manner.

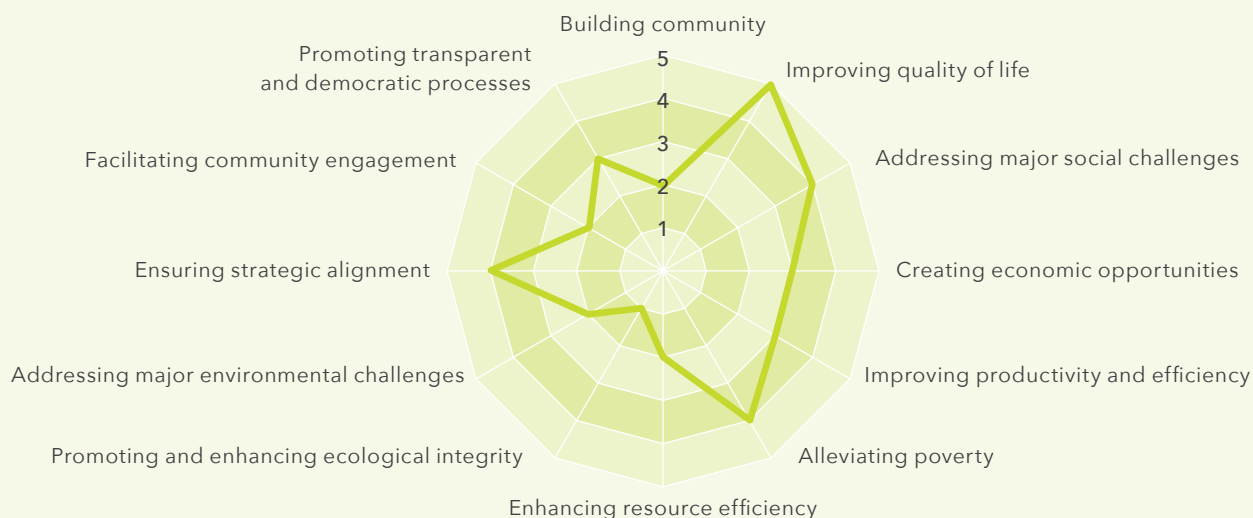
Evaluation

The provision of housing is key to promoting inclusion and access to equal opportunities in urban areas. Being intertwined with urbanisation, housing should play an integrative

role in urban planning. By transferring land ownership to homeowners, the Maroela South housing project supports poverty alleviation, helps address major social challenges and facilitates a vast improvement in quality of life for the most vulnerable.

The project is well aligned with national and provincial priorities, as well as the City's key strategies and frameworks to provide dignified human settlements. Beyond the City, both Eskom and Province's Department of Human Settlements have also played a strategic role in making Maroela South an inclusive housing community.

Sustainability assessment: Maroela South housing project



Project 9: Mobile office initiative



Game Changer



Problem statement

To be a caring, inclusive and well-run organisation, the City needs to ensure that all its residents have equal access to amenities and information. Through the years, the City has introduced a number of mechanisms to engage with residents, such as walk-in centres and call centres. However, Cape Town's poorest and most marginalised communities are often unable to access these due to a lack of information and other constraints, such as the cost associated with transport to municipal offices, as well as telephony. Similarly, although highly efficient, the City's C3 notification system for the logging of community service requests

is only as effective as the information it receives. It is therefore imperative that the City finds ways to engage equally with all of its residents, in a culturally and language-sensitive manner, to ensure equitable service delivery.

Project outline

The mobile office initiative takes customer services into communities. Under this service delivery model, trained City call centre employees, equipped with laptops and 3G cards, engage face to face with residents in marginalised parts of Cape Town. These customer relations teams can access full C3 functionality, as well as information about the City's departments and programmes.

The model enables residents to discuss issues of concern, flag maintenance needs and request information in a

friendly environment, close to home.

The mobile offices are operated from accessible community facilities in areas such as Joe Slovo, Hout Bay, Mamre, Langa, Fisantekraal, Kleinvlei, Khayelitsha and Westlake. Mobile office sessions are held at times that are convenient to residents, including on the same day as the administration of social grants by the South African Social Security Agency.

Project design

The mobile office initiative has evolved organically, having relied on the resources at the team's disposal. The customer relations team electronically logs queries and service requests on site and provides residents with a reference number for their records. The reference number also makes it easy for residents to follow up on their service requests.

Participating communities are nominated by ward councillors and subcouncil managers, who identify where the service is most needed. To ensure regional equity, the team operates one mobile office in at least one area per day, and covers all four service delivery areas of the City every month. These area visits are communicated through the City's social media channels and the distribution of flyers, which is undertaken by EPWP workers. Ward councillors and community leaders also serve as important points of contact between the community and the City, as they are able to specifically request the services of a mobile office in an area within their jurisdiction, and can help advertise the intervention on their community databases.

Project implementation

The pilot phase of the mobile office initiative began in March 2018 as a partnership between the City's Customer Relations Department and the Housing and Tenancy Agency, which facilitates "community engagement days". Now that the model is more established, it is operated independently by a team of over 40 call centre staff, who rotate weekly.

To date, the mobile unit has logged in excess of 1 000 queries. Queries commonly relate to issues with general accounts, water, electricity, sewerage, refuse collection, stolen and damaged bins, pensioner rebates, parks maintenance, illegal dumping, valuations, and roads and stormwater.

Evaluation

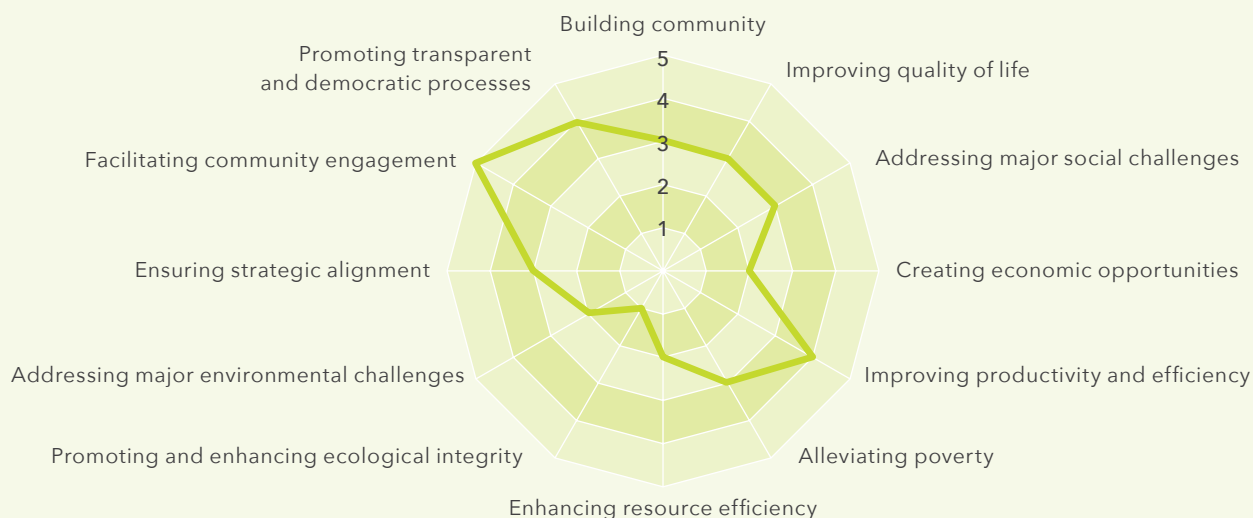
The mobile office initiative provides two-way communication by enabling residents to

report issues, and City line functions to raise awareness and add value to communities. Well aligned with the City's Organisational Development and Transformation Plans, the project promotes improved service delivery and is customer-centric.

It also addresses major social challenges by giving vulnerable individuals and groups a platform to raise concerns. In addition, the project improves the City's productivity and efficiency by providing a more accurate overview of service needs across town.

In future phases of the project, it is envisaged that the mobile office will evolve into a "one-stop shop" offering access to all interfaces between the City and the public. The intention is to gradually increase the frequency of visits to serviced communities and roll out the programme to additional areas.

Sustainability assessment: Mobile office initiative



Project 10: Morningstar housing project



Problem statement

The provision of formal housing is undeniably a priority for all tiers of government, and South Africa's subsidised housing programme has indeed been hugely successful in terms of the number of housing units built. However, many of these homes are located on the periphery of cities, far from economic opportunities and services, which further reinforces apartheid spatial configuration. As a result, lower-income households spend about 40% of their earnings on transport, which places them under even greater financial strain.

In this context, it is important to steer thinking towards establishing sustainable human settlements that include sociocultural amenities, employment opportunities, as well as easy access to transport infrastructure.

Project outline

As part of its five-year Integrated Human Settlements Plan, the City committed

to developing erven 13999 and 5643 in Morningstar (Durbanville) to address the existing public need for housing. By introducing double-storey row housing in different variations, a total density of 103 dwelling units per hectare was achieved. Compared to conventional housing projects, which offer an average of 50 dwelling units per hectare, this project demonstrates an innovative approach to promoting dense yet sustainable design.

The Morningstar housing development integrates transport, housing and urban development to improve residents' quality of life. Uniquely, this housing development is located close to the Durbanville central business district (CBD), and only 10 km from Bellville, Cape Town's second-largest CBD.

Project design

The Morningstar housing development comprises 152 double-storey and 14 single-storey BNG units that will benefit approximately 664 people. By incorporating double-storey units,

the development makes optimal use of the 1,6 ha of land available, while also allowing for open areas around each dwelling unit, which could for instance be used for food gardens.

The development has also been planned around courtyards designated as public open space. The scale of the courtyards is small enough to be intimate, while ensuring passive surveillance from multiple angles. The landscaping elements, including trees and seating, have been equally carefully designed. Low boundary walls add to the idea of having a low seating wall along the perimeter of the courtyards. To further facilitate placemaking, pre-existing assets have been accommodated in the development, such as a large yellowwood tree growing on the site.

Project implementation

Construction of the Morningstar housing development was undertaken by ACG Architects and Development Planners, with oversight by the City's Human Settlements

Directorate. Various City departments, as well as Province's Department of Human Settlements, provided funding and collaboration. Extensive public participation was undertaken throughout the project, and some community organisations also contributed financially to the development.

Despite budget constraints, each house has indoor ablutions, a solid roof and a fitted ceiling to provide thermal insulation. Recognising that community members have different needs, larger units have been designed to accommodate homeowners with disabilities, and space has been allocated for the provision of social facilities once all the homes have been constructed.

The beneficiaries of this housing project were identified in accordance with the City's Housing Allocation Policy and the

Housing Database to ensure fairness, transparency and equity in the allocation of housing opportunities. Moreover, in addition to owning their structures, the Morningstar housing beneficiaries will also own the land on which their homes are built. By enabling ownership of both land and property, the project contributes to poverty alleviation.

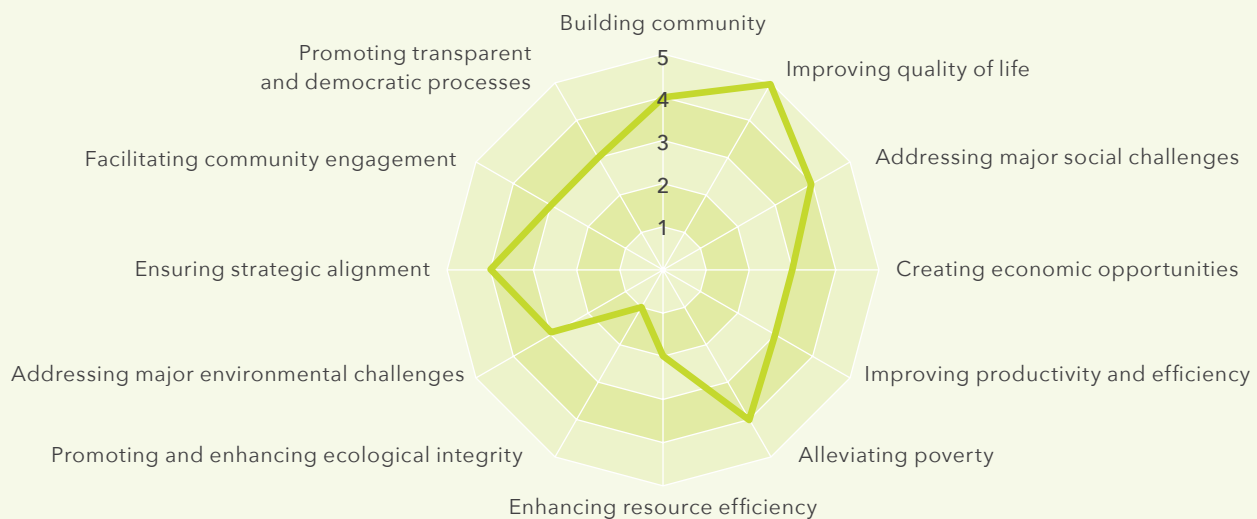
Evaluation

The Morningstar housing development improves the quality of life of some of the City's most vulnerable residents. This is achieved by enhancing access to infrastructure and services in a well-located area close to economic opportunities. The project facilitates access to housing assets and promotes and fosters social integration through the creation of what can be seen as a mixed-income area. This demonstrates

an effort to remedy the effects of segregated spatial planning. Similarly, the design of the homes and layout is sensitive to the natural and social context of the area, thereby demonstrating the City's responsiveness to public needs.

To build a sense of community and make effective use of outside space, the development is centred around a public open area. This layout also enables continuous surveillance and prioritises the safety of children playing outside. In addition, while the Morningstar housing development promotes urban densification, the placement of homes around a central open area creates the impression of space. The double-storey units free up more outdoor space within the available land footprint that can be used for a variety of activities, including the cultivation of food gardens.

Sustainability assessment: Morningstar housing project



Project 11: Refurbishment of the Cape Town Station Deck



Problem statement

Minibus taxis remain one of the major modes of transport by which Capetonians commute to and from work each day. Moreover, the number of minibus taxi commuters has grown significantly in recent times due to difficulties with the Metrorail network. The Station Deck minibus taxi rank is one of Cape Town's busiest public transport facilities, with thousands of commuters from across town getting on and off taxis here every day.

Because of the sheer number of commuters this rank accommodates, the Station Deck was becoming a health and safety hazard, with issues such as congestion, littering, inadequate ablution facilities, poor lighting and a lack of surveillance. The area also started attracting criminal elements, which further heightened the need for urgent repair and refurbishment.

Project outline

Recognising the important role of public transport facilities as places of congregation, the Station Deck project was aimed at refurbishing the facility so as to properly cater to customers' needs.

The project addressed plumbing issues, fixed the potholes in the existing asphalt surfacing, improved the ablution facilities, lighting, wayfinding signage and painting, and restored the destination boards to help commuters find the correct departure lanes to their destinations.

Project design

The project objective was to make the Station Deck more user-friendly for commuters and operators alike.

The ablution facilities were upgraded to promote water efficiency, with waterless urinals in the male facilities, hand basins

augmented with waterless hand sanitiser dispensers, a reduction in the water pressure, and taps that can be easily turned off when a leak is detected. To deter thieves and vandals, the facility upgrade also included protective caging around high-risk items, such as exposed pipes and light fittings, and the use of vandal-proof plastic toilets and basins.

To promote universal access, numerous wheelchair ramps have been installed and designated walkways have been marked to make the area safer for Cape Town's more vulnerable commuters.

New lighting and closed-circuit television (CCTV) cameras have been positioned so as to ensure maximum coverage and surveillance of the area. Access control booms that operate with a rank token have been installed to help clamp down on illegal operators, thereby permitting only

vehicles with a valid operating licence. This mechanism also assists in managing traffic volumes and enhancing safety and security.

Project implementation

The refurbishment of the Station Deck was logistically challenging for a number of reasons. Although the Grand Parade was identified as the most suitable interim site for commuters and minibus taxis, it was only available for five weeks due to another, prior booking. This tight timeframe compelled the project team to work in shifts through the night and over weekends.

The City used various methods to communicate with commuters about the planned maintenance work and interim taxi rank arrangements. Platforms such as social media, newspapers and radio announcements were employed.

As the City leases the Station Deck site and buildings from PRASA, this project required both interdepartmental and inter-organisational collaboration. To ensure sound stakeholder relations, weekly feedback sessions commenced at the design stage and continued throughout the project.

Evaluation

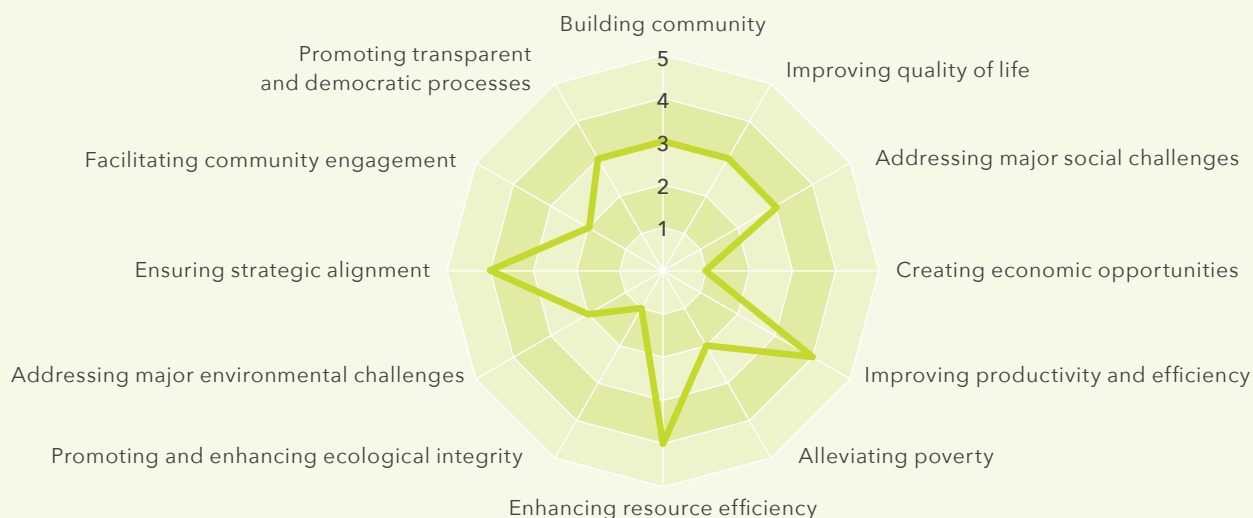
The Station Deck is one of the busiest public transport facilities in Cape Town and plays an important part in promoting access to economic opportunities. The series of refurbishments undertaken here have improved commuters' quality of life and enhanced safety and security for both commuters and operators.

The refurbishment of the Station Deck also promotes resource efficiency through ample provision of refuse and recycling bins to curb littering, as well as

the installation of water-saving devices in ablution facilities.

The suite of measures that were implemented at the Station Deck demonstrates the City's responsiveness to the challenges that users of the rank had faced, and reflects the organisation's customer-centric approach. The refurbishments took into account the high daily volumes of commuters and transport vehicles passing through the facility, pedestrians passing through to get to other destinations in close proximity to the Station Deck, as well as those who visit the facility for commercial reasons. Albeit on a small scale, this project demonstrates how small interventions can result in significant improvements in user experience.

Sustainability assessment: Refurbishment of the Cape Town Station Deck



Project 12: Strengthening Families programme



Problem statement

Families are the building blocks of communities. When families break down, a myriad of social ills start to emerge, such as substance abuse, gang involvement, truancy and other negative behaviours. This is because when the structure and discipline provided by parents are eroded, children are more likely to get entangled in negative behaviour, which ultimately spills over into the community.

Therefore, families need to be empowered to communicate and understand one another better, and make more informed and better choices to retain happiness in the home. Yet, existing initiatives aimed at restoring and maintaining familial bonds are often reactive and miss the opportunity to tackle social issues at the heart of the community.

Project outline

Since 2013, the City has been co-ordinating the Strengthening Families programme, an internationally recognised parenting and family skills initiative targeted at both high-risk and general-population families. A unique feature of the programme is that it engages the entire family and provides an environment to practise new relationship skills together as a family group.

The Strengthening Families programme forms part of the City's suite of prevention initiatives aimed at increasing family strengths, enhancing child development and reducing the likelihood of child abuse and neglect. This is done by improving communication and relationships in families and reinforcing social cohesion.

Project design

The Strengthening Families programme is targeted at families with children aged 6 to 11. It starts off by dealing with the child and parent individually, and then brings them

together to teach them how to function as a unit. This is achieved by guiding families through practical and interactive methods to address topics such as love and limits, house rules encouraging good behaviour, and the consequences of one's actions.

Each of the 10 sessions of the programme comprises a one-hour skills class for parents and children separately, which includes a review of the previous lesson, feedback on how the home practice went, and objectives for the new lesson. This is followed by an hour-long family practice class, which allows families to practise their newly acquired skills. Sessions are presented over eight weeks.

Moreover, in addition to meeting the need for improved social skills, the project team also recognises the great financial need in these communities. As a result, the Strengthening Families programme has an EPWP component targeted at no-income and low-income households.

Project implementation

Since the pilot in 2013, Strengthening Families has assisted 1 076 families. In the 2017/18 financial year, 85% of participants successfully completed the programme. Considering that the initiative extends over eight weeks, the high completion rate illustrates families' level of commitment and interest.

The programme is facilitated by trained staff members from the Social Development and Early Childhood Development Directorate based in the City's four service delivery areas, and is co-ordinated by the Central office. By internalising programme operations, the project team has ensured financial viability and sustainability. Facilitators are also efficient in directing families to the appropriate service platforms available through the three tiers of government.

To accommodate all participants and address language barriers, the programme manual is available in all three official languages of the Western Cape. Although the content of the programme cannot be modified, the project team has added complementary aspects, such as family fun days, beach clean-ups and refresher workshops, to strengthen familial bonds and reinforce positive behaviour change.

Evaluation

The Strengthening Families programme is designed to improve parenting skills, family relationships, social competencies and school performance, and address children's problem behaviour, delinquency and substance abuse.

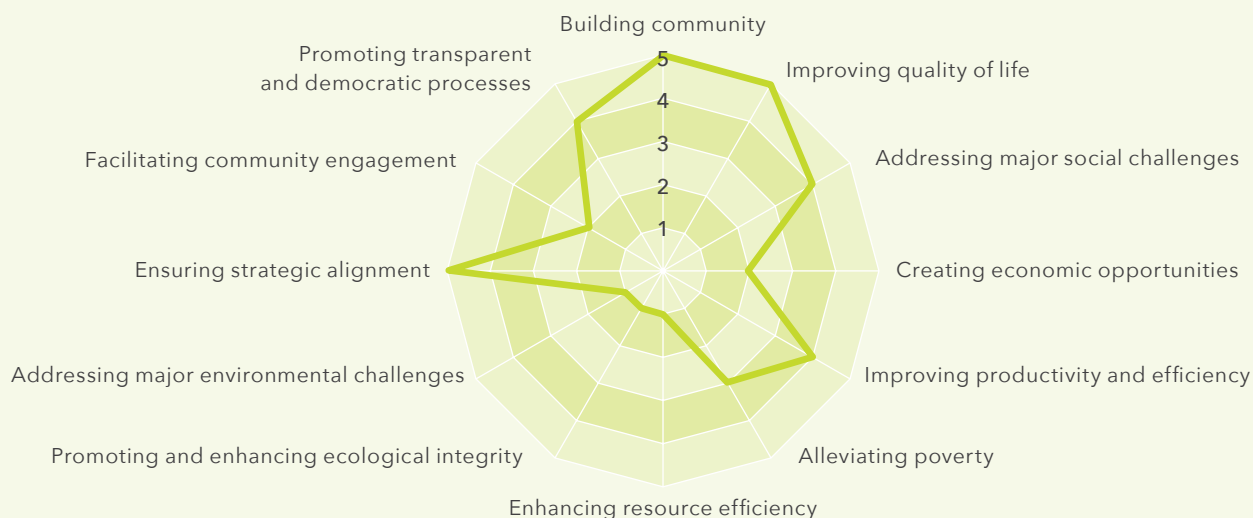
It aims to reduce child maltreatment, and actively discourages physical punishment.

The results are promising: In pre-programme evaluation, 27,3% of parents reported that they used physical punishment when a child misbehaved; by the post-programme evaluation, this percentage had decreased to 6,5%. Instead of physical punishment, the programme promotes healthy discipline, communication, and an understanding of the consequences of one's actions.

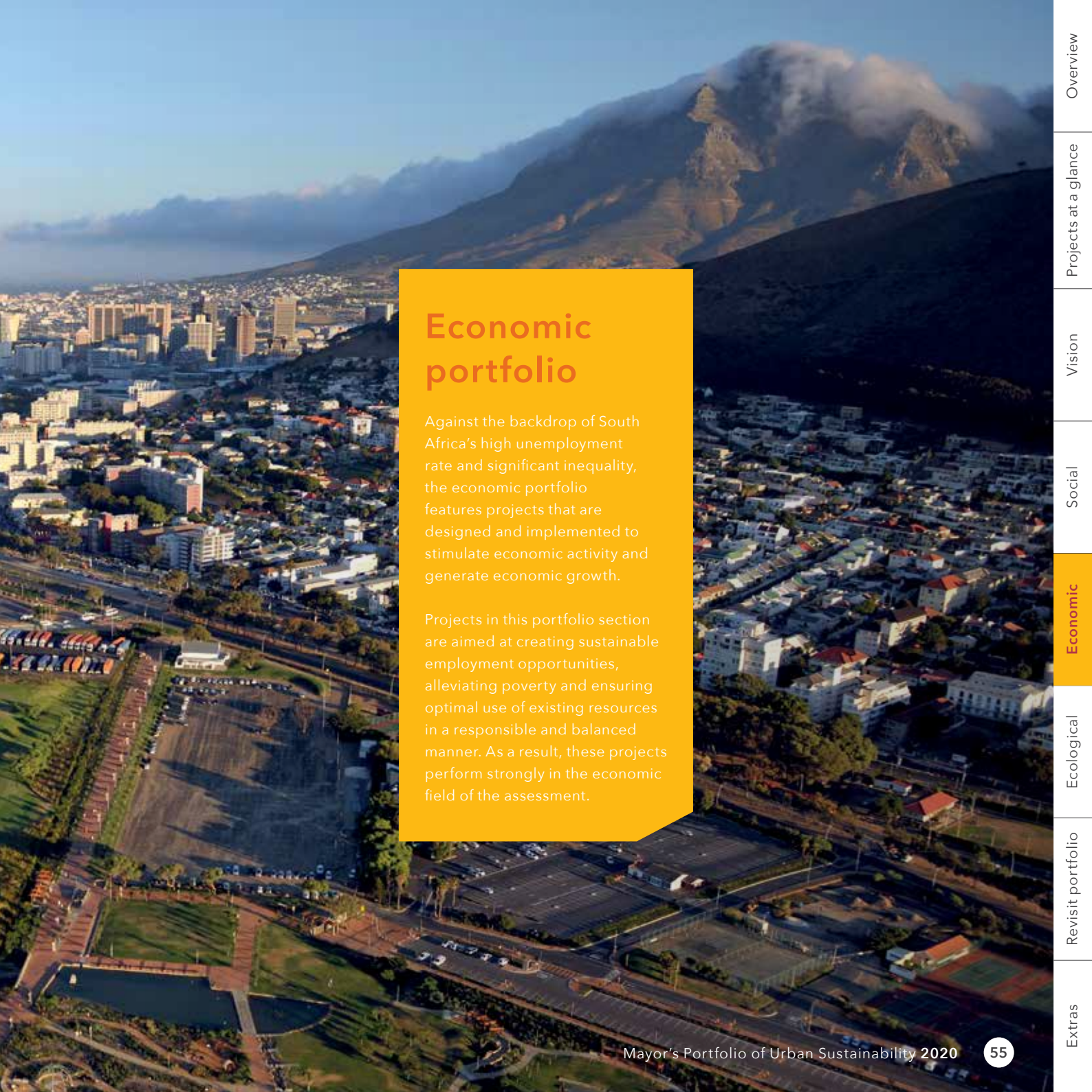
The programme also enhances children's quality of life and well-being by improving life skills and ability to resist peer pressure.

In addition, it promotes social cohesion by creating a platform for families in a community to connect and support one another. However, facilitators have identified the lack of participation by fathers as one of the key challenges of the programmes. The City is still searching for effective solutions to this problem.

Sustainability assessment: Strengthening Families programme







Economic portfolio

Against the backdrop of South Africa's high unemployment rate and significant inequality, the economic portfolio features projects that are designed and implemented to stimulate economic activity and generate economic growth.

Projects in this portfolio section are aimed at creating sustainable employment opportunities, alleviating poverty and ensuring optimal use of existing resources in a responsible and balanced manner. As a result, these projects perform strongly in the economic field of the assessment.

Project 13: Borchers Quarry WWTP faecal sludge management facility



Game Changer



Problem statement

Households in informal settlements lack piped wastewater infrastructure and rely on chemical toilet ablutions. The City provides and services over 20 000 portable flush toilets, 7 800 containerised toilets, 7 600 chemical toilets and other types of sanitation, including conservancy tanks and pour-flush toilets.

The weekly, manual system of cleaning and disinfecting toilet tanks is a slow and labour-intensive process that poses a significant occupational health and safety risk to cleaners by exposing them to raw sewage and high concentrations of chemicals. Similarly, handling sewage on site poses a higher risk of groundwater contamination if a spillage occurs.

Project outline

The faecal sludge management facility (FSMF) is a fully automated way of cleaning and disinfecting toilet containers that ensures efficiency, containment of faecal matter on site, and environmental sustainability.

The facility was designed to be water-wise, and operates on recycled water produced at the wastewater treatment plant (WWTP) instead of potable water. In addition, the FSMF requires lower chemical quantities in the disinfection process, which results in cost efficiencies. It also produces less odours that may have a negative impact on surrounding areas, and reduces the risk of chemical and faecal spillages.

Project design

Solutions from across the world were investigated to improve sanitation services

to informal settlements, but no suitable options were found. Local consultants came up with four different concepts, and the FSMF was eventually selected following a SWOT (strengths, weaknesses, opportunities, threats) analysis. Local civil contractor Ruwaccon Construction and mechanical and electrical contractor Inenzo Water built and commissioned the Borchers Quarry FSMF.

The final design comprises a series of conveyor belts onto which each sewage tank is manually placed from the truck. From here, within a series of sealed washing-machine-type contraptions, tanks are simultaneously weighed, emptied, cleaned, dried and restocked with the necessary chemical additives. The mechanisms can be adapted to service differently sized tanks ranging from 20 to 100 litres in capacity.

Project implementation

The FSMF at Borchers Quarry WWTP has been operating successfully since December 2018. Tanks are now cleaned and redeployed five times faster, which means that informal settlements can be serviced more regularly. Furthermore, each tank requires only a third of the amount of chemicals used previously (with direct cost and environmental implications), and instead of potable water, recycled water is used for the entire cleaning process.

The design of this facility offers a safer working environment for employees by eliminating contact with raw sewage. Moreover, odour is controlled and the risk of groundwater contamination is mitigated.

The technology allows for the exact weighing of each tank, which has a positive impact on the City, as contractors are paid per litre of sewage they process. The data from each tank and truckload will ultimately be available on ERP-SAP, allowing for greater contractual oversight. The number of mechanical parts in the process has been limited to essential components, and mechanisms have been locally procured, which allows for comparatively easy maintenance going forward.

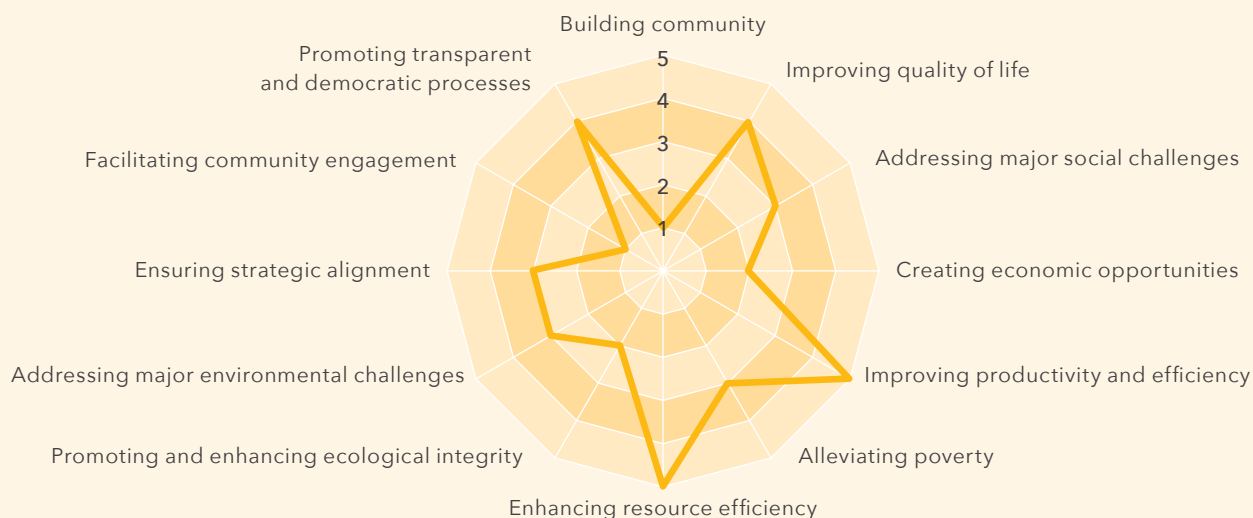
Evaluation

Having automated the cleaning process, the FSMF has facilitated an environment more conducive to the health and well-being of workers responsible for cleaning the toilet tanks. Furthermore, thanks to the efficiency of the new

system, the City can service each toilet more regularly, which improves the quality of ablutions provided in informal settlements.

The facility also improves the City's productivity and resource efficiency by using recycled water and only a third of the chemicals previously used. The ability to weigh the exact amount of faecal matter is another vast efficiency improvement. Previously, an exact measure of the amount per truck or contractor could not be established, which resulted in cost inefficiencies, considering that contractors are paid per litre of sewage processed. In addition, in the long term, the processed faecal matter will be used at a central biosolids beneficiation facility for the production of biogas and agricultural composting, which will promote energy efficiency.

Sustainability assessment: Borchers Quarry WWTP faecal sludge management facility



Project 14: Cape Town Green Map



Problem statement

Cape Town is located in the Cape Floristic Kingdom, the smallest and most diverse of the world's six floral kingdoms, and is surrounded by beautiful natural open spaces. It is a desirable place to work, live and play. The Mother City is a popular tourist destination, drawing over two million visitors every year. However, to ensure that the city grows sustainably, Cape Town residents and visitors need to approach urban challenges and the pressures on the city's natural resources differently. Although many people recognise the importance and value of natural heritage, they often do not know how, or where to begin, to make more sustainable, green lifestyle choices that will reduce their impact on the natural environment.

Project outline

The Cape Town Green Map is an informative resource that aims to equip both visitors and residents with information to reduce their impact on the environment by promoting more sustainable lifestyle choices. It identifies local "green" attractions and options in town, while encouraging responsible and ethical tourism practices.

The map promotes local assets in the categories of nature, sustainable living, and culture and society. The universal Green Map System icons used on the Cape Town Green Map are recognised in 65 countries and help identify, promote and connect local resources in an easy-to-understand and meaningful manner.

Project design

As a global partner to Green Map Systems, the Cape Town Green Map provides a platform and collaborative network to inform Cape Town residents and visitors about living responsibly, not only in our city, but also the world at large.

The Cape Town Green Map, which is available in both print and digital format, focusses on greening initiatives, water conservation, sustainable and non-motorised transport, integrated waste management, biodiversity awareness, green procurement, responsible tourism and environmental awareness. On the interactive website, users can access sites that promote and support nature, sustainable living, and culture and society. For example, since water is currently a critical issue in Cape Town, the Cape Town

Green Map informs users of ways to “save water like a local”.

Map users are assisted in making informed lifestyle choices. Visitors in particular are educated on responsible tourism and given practical ways to help protect the environment for current and future generations.

Project implementation

Over the past decade, the Cape Town Green Map has promoted a fresh view of the city’s natural environment, reminding residents and visitors alike to enjoy Cape Town’s wealth of natural resources responsibly. The map was initiated as part of Cape Town’s efforts as the host city for the 2010 FIFA World Cup™.

However, what started out as an initiative under the Green Goal 2010 Action Plan – the environmental programme for the World Cup event – has since evolved into a legacy project and an invaluable source of information for visitors and residents.

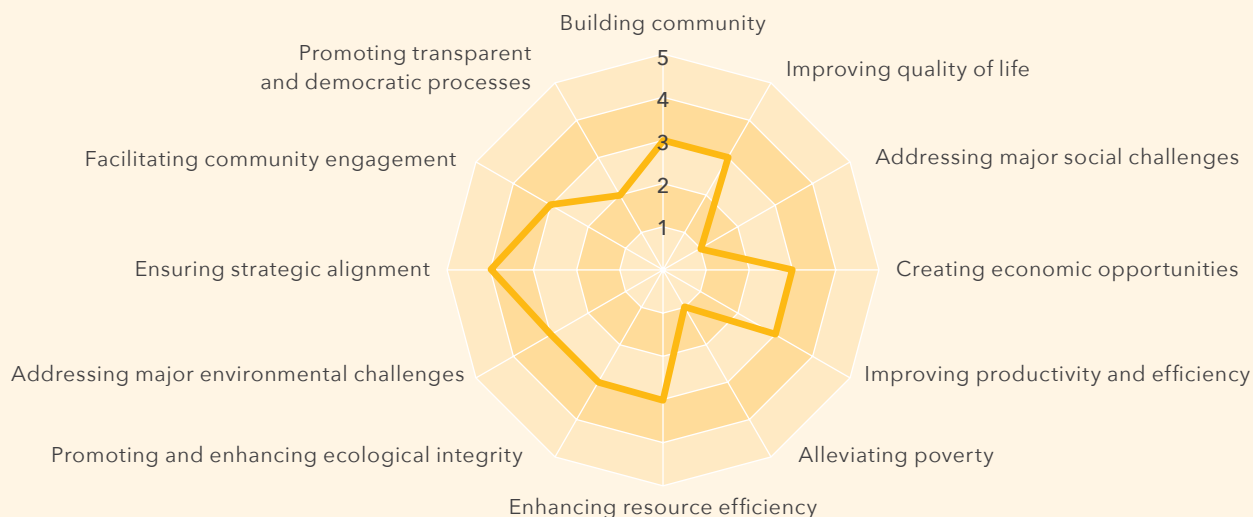
The target audience of the first two print editions were World Cup visitors, informing them of the opportunities available to experience and support Cape Town’s wealth of natural resources and sustainable “green” living options. Since then, the project has produced nine print editions covering topics such as smart living, waste and recycling, nature and green open spaces, green by design, responsible tourism, green wine, cycling and non-motorised transport, as well as water-wise conservation.

Evaluation

The Cape Town Green Map supports green and sustainable living by providing insight into sustainability initiatives across town through an easily accessible communication platform in both web and print format.

By making green information readily available and motivating people to reduce their impact on the environment, the map helps conserve Cape Town’s sensitive ecosystems and precious biodiversity. It also plays an important part in empowering citizens with information about environmental sustainability, and mobilising them to work together to sustain environmental resources. This, in turn, has proved effective in facilitating community engagement and involvement.

Sustainability assessment: Cape Town Green Map



Project 15: Smart Driver programme



Game Changer



Problem statement

To serve its residents efficiently, the City has an impressive fleet of approximately 8 500 vehicles operated by some 10 000 drivers. Most of these drivers are from the directorates of Economic Opportunities and Asset Management, Water and Waste, and Energy and Climate Change. In 2018 alone, this vehicle fleet consumed 17 364 756,19 litres of fuel (diesel and petrol combined), which cost the City R246 533 460 and emitted 44 418 tonnes of carbon dioxide (CO₂). Clearly, therefore, operating this fleet has a substantial impact on the environment and natural resources. To offset this, 51 008 trees will have to be planted annually, so a tree-planting programme next to sportsfields has been initiated in partnership with the Recreation and Parks Department.

Broadly speaking, more than half of the energy consumed in Cape Town is for transport, which accounts for 28% of the city's carbon emissions.

Project outline

The Smart Driver programme is aimed at establishing behaviour change through training and ongoing monitoring.

The Smart Driver training is rolled out transversally across City line functions. It is primarily targeted at fleet drivers with tags, supervisors and managers overseeing fleet drivers and transport, as well as MyCiTi and Dial-a-Ride bus drivers.

The fundamental premise of smart driving is that it keeps drivers safe on the roads, while also producing economic benefits through reduced fuel consumption. Vehicles driven in accordance with smart driver principles also emit less CO₂. Through ongoing skills development, training and monitoring of fleet drivers, the programme promotes safer, greener and more economical driving.

Project design

The three-day training programme for fleet drivers raises these drivers' environmental awareness and imparts theoretical smart driving knowledge. This is then tested during a practical assessment. To evaluate behaviour change and the

resultant savings, drivers are subsequently monitored for 18 months.

MyCiTi and Dial-a-Ride bus drivers, in turn, attend a one-day training session with assessments before and after.

The three-hour training intervention aimed at supervisors and managers (including managers of the MyCiTi and Dial-a-Ride vehicle operating companies) addresses the importance of optimal vehicle maintenance to enable smart driving. Therefore, supervisors of fleet and bus drivers are taught how to handle the risks and liability associated with fleet management.

Project implementation

Between January 2018 and December 2019, a total of 3 147 fleet drivers and 80 MyCiTi bus drivers completed the training and were found competent. With about 6 800 more drivers still to be trained, accelerating the rate of training has become critical. To address this, the City awarded a training tender for weekly sessions that were conducted from June 2018 to June 2020. A new, three-year tender will be awarded as from 1 July 2020.

This will be followed by an internal training programme for new fleet drivers who join the City in the future.

In line with the requirement of the National Road Traffic Act for the owner or operator of a vehicle to exercise proper control over the driver of such vehicle to ensure compliance with the act's provisions, the City has made the Smart Driver programme mandatory for all fleet drivers. Furthermore, driver identification tags, which must be renewed periodically, are processed only once fleet drivers have completed the training and been declared competent. Submission of a Smart Driver competency certificate is required upon renewal of the tag.

Monitoring is a critical aspect of behaviour change. The data required to assess driver behaviour change includes, for example, maintenance records, fuel consumption, accident

records and driver medical records. This information is currently collected by up to seven different City departments. To simplify matters, it was decided to focus on driver behaviour, fuel usage, CO₂ emissions and road safety for the first monitoring phase. A business intelligence tool for smart driving, developed by RAMM Technologies, was procured to enable easy access, management and reporting of the different data systems and calculations.

Evaluation

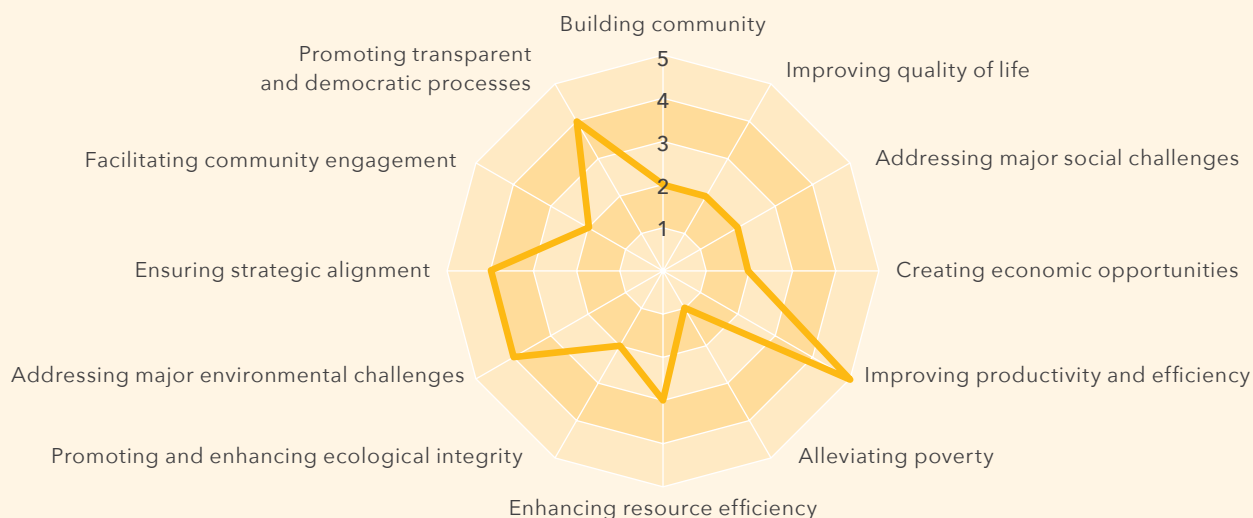
The Smart Driver programme was established to train all City fleet drivers in responsible driving behaviour, and to operate their vehicles in the safest and most efficient ways. As such, the programme supports the realisation of health and environmental benefits, as well as a reduction in incidents and accidents thanks to safer driving habits. By promoting better driving behaviour,

the City safeguards the well-being of its fleet drivers, which improves quality of life.

The training minimises the risk of liability and accident claims, and ensures compliance with industry norms and government regulations, thus maximising the City's return on investment. Furthermore, the Smart Driver training will stand drivers in good stead when the new Administrative Adjudication of Road Traffic Offences (AARTO) Act commences.

In addition, the programme advances the implementation of innovative technologies and behaviour change that promote resource efficiency, reduce carbon emissions and decrease the City's carbon footprint, thereby addressing major environmental challenges. This is complemented by the tree-planting programme next to sportsfields that was initiated to help offset City fleet vehicles' carbon emissions.

Sustainability assessment: Smart Driver programme



Project 16: SmartFacility



Problem statement

Through the City's smart metering programme, advanced metering infrastructure (AMI) has been installed in a third of municipal facilities to monitor electricity consumption. Smart electricity meters gather data for the live tracking of consumption, as well as the amount of solar generation from rooftop photovoltaic systems, where applicable. However, the ongoing manual extraction, analysis and monitoring of all the data collected from these meters for proactive management and reporting is challenging. As a result, the City experiences difficulty in identifying patterns of overuse and water leaks, and developing targeted measures to reduce use and improve efficiency.

The City's Data Strategy (2018) stresses the importance of data in evidence-based decision making and the development of policies, strategies, plans and implementation programmes. An efficient resource data management system tracks performance and progress, while also improving efficiency, effectiveness

and sustainability in facilities by monitoring consumption.

Project outline

SmartFacility, a web-based data application, integrates all data relating to municipal facilities and their resource consumption. The application interprets a facility's electricity and water consumption data in a user-friendly, accessible manner. This is then represented on several dashboards for facility managers and managerial staff to proactively monitor and manage the resource consumption of municipal facilities.

The system establishes baselines from historical data, targets and benchmarks to monitor and compare facility performance with that of other, similar facilities.

Project design

The SmartFacility application interprets and illustrates electricity consumption data in an accessible manner so that facility managers and managerial staff can use it for proactive monitoring and reporting. Facility consumption data can

be tracked every 30 minutes via the facility tracker dashboard.

The first phase of the collaborative development process integrated all the required systems relating to facilities (Systems and Procedures on SAP) and electricity (Plug and Play Scada MDUS metering system) to design an automated, integrated data management system. As SmartFacility is web-based, all City staff can access it via the intranet in the CITYweb application centre, which promotes access to information and raises awareness about resource use in facilities.

Project implementation

Between 2009 and 2019, the City's verified electricity savings tracked from the smart metering devices for all energy-efficiency and renewable-energy projects totalled over 170 000 MWh, which translates into R190 million and 170 000 metric tonnes of CO₂ equivalent.

Development of the SmartFacility application to complement the City's smart metering programme commenced

in 2017. Through a partnership with several internal line functions, the project team identified isolated subsystems in the City’s information technology infrastructure that needed to be integrated and automated for intelligent data analysis and interpretation. The SmartFacility application was eventually launched in November 2018. To date, 150 facility managers have been trained in using the tool for proactive monitoring and management of their facilities’ resource consumption.

Moreover, the City’s Sustainable Energy Markets Department collaborated with the Water and Sanitation Department to pilot smart water metering infrastructure at the Wale Street complex. Here, a metering sensor and data acquisition module were placed on the existing water meters to enable near-live water

consumption monitoring through SmartFacility. This pilot proved successful and is being rolled out to another seven large City facilities in 2020.

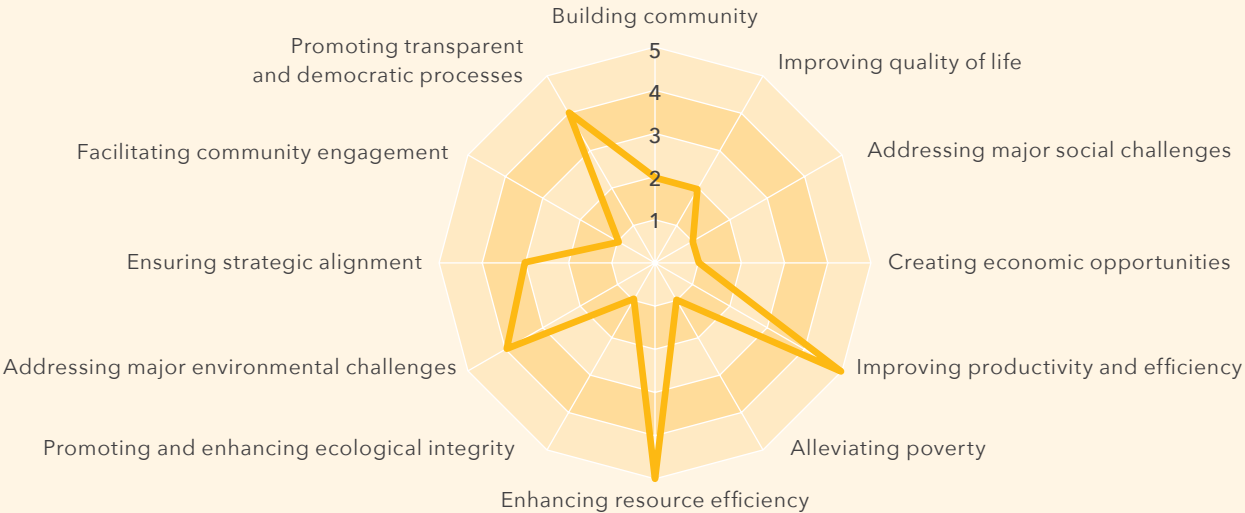
A second product of SmartFacility – live digital signage – was launched in October 2019 at Bellville and Parow municipal buildings. These facilities now feature live consumption dashboards alongside other relevant sustainable-resource content displayed on large screens. A third product – a geospatial mapping dashboard – is also scheduled to be launched in 2020. This dashboard, a collaboration with the City’s Geographic Information System (GIS) and Information Systems and Technology (IS&T) departments, represents the SmartFacility consumption data on a fun-to-use online map that will be accessible to all end users.

Evaluation

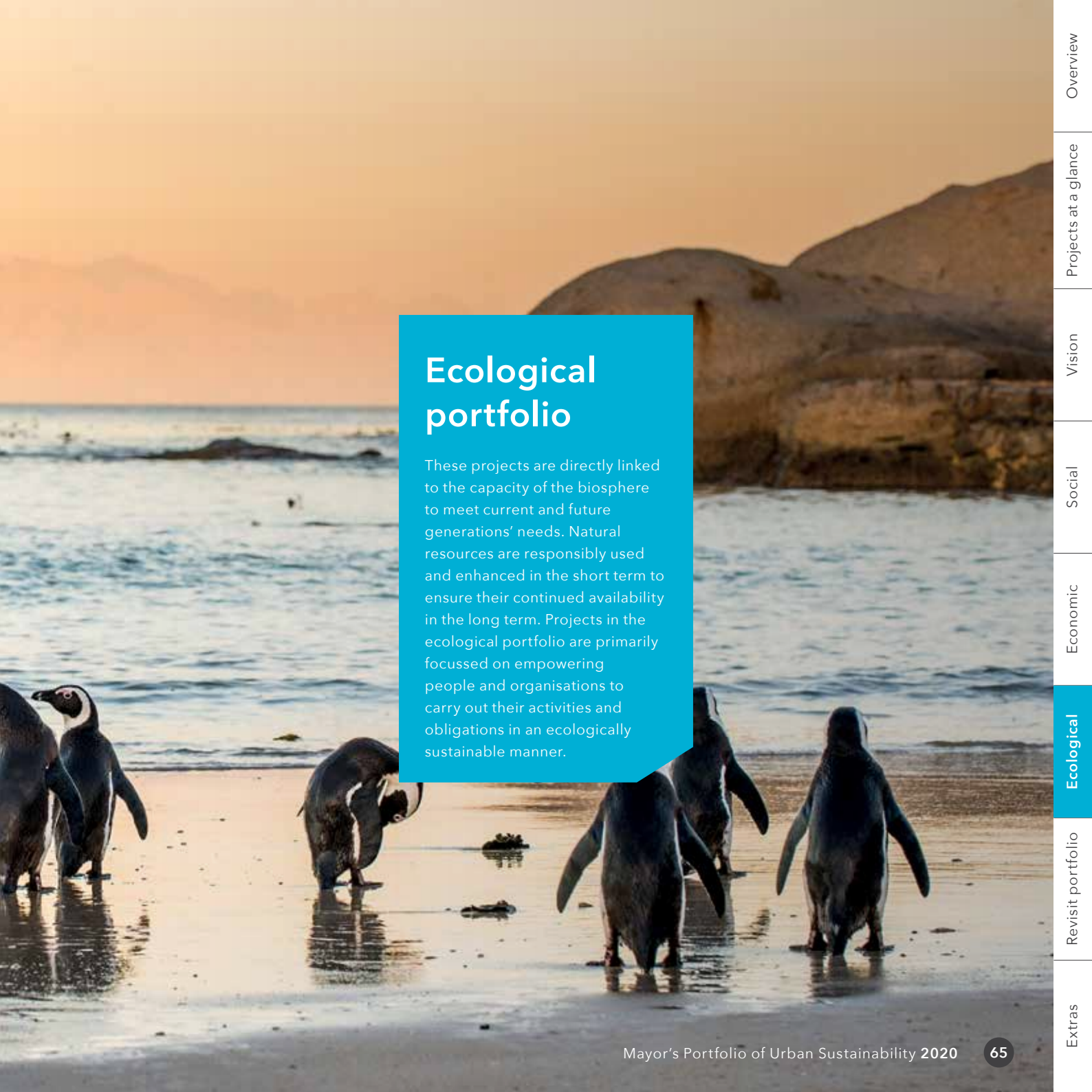
The SmartFacility tool has produced significant benefits in terms of energy efficiency, public-sector facility ranking and benchmarking, and data-led, evidence-based project development and implementation. It also supports the drafting of policy and strategy in line with climate mitigation goals and targets. By monitoring resource use, the project makes a major contribution to City productivity and efficiency.

SmartFacility is accessible to all end users, with no complicated restrictions. This promotes access to information and establishes transparent monitoring and reporting processes. Moreover, the web-based application enables the monitoring and tracking of individual facilities’ resource use in an innovative and accurate manner, which is essential for proactive facility management and reporting.

Sustainability assessment: SmartFacility







Ecological portfolio

These projects are directly linked to the capacity of the biosphere to meet current and future generations' needs. Natural resources are responsibly used and enhanced in the short term to ensure their continued availability in the long term. Projects in the ecological portfolio are primarily focussed on empowering people and organisations to carry out their activities and obligations in an ecologically sustainable manner.

Project 17: Dunoon library



Problem statement

Libraries play an important part in connecting communities in a mutually beneficial manner. By pooling resources, libraries bring people together to learn about, share and celebrate where they live, who they are and what they wish to become. Although the City has 102 libraries, delivering library services in densely populated areas such as Dunoon is challenging.

Established in 1995 as a post-apartheid township for 14 000 people, Dunoon has grown organically over the years and is now home to over 80 000 people. Due to the rapid increase in informality and high living densities, the provision of community facilities and amenities such as libraries started lagging behind.

Project outline

The Dunoon library is the first phase of a community learning and innovation

precinct – a multipurpose area with multi-storey buildings that offer residents an integrated educational and skills development experience, and fosters an inspiring and innovative learning culture. The library affords community members from a vulnerable part of town access to a world-class source of recreation and education.

In light of the limited space available in Dunoon, the library was designed as a three-storey, steel-framed concrete-and-glass building to optimise usable land, while delivering a fully equipped smart facility.

Project design

Through comprehensive engagement, the community identified and prioritised the need for a safe place for children to learn, employees and jobseekers to find resources, and technology users to access the internet.

In addition to making efficient use of the available land, the library is also designed for disassembly, which means that the entire building can be converted to accommodate future programme phases. This includes an easily removable roof over the central circulation void to allow expansion onto the third floor by adding a staircase.

To help library users reconnect with nature, the building also incorporates biophilic design, which is an innovative way of incorporating natural materials, natural light, vegetation and views into the built environment.

Project implementation

The Dunoon library is the result of a five-year joint venture that involved both active participation and funding by local, provincial and national government to deliver a high-quality learning resource.

The library's collection comprises over 15 000 items, including books, music CDs and DVDs. The facility is divided into two City SmartCape sections – one for children below 12 years of age (three terminals) and another for adults (eight terminals) – to provide access to digital resources. Library users have free online access via the City's SmartCape service, as well as free Wi-Fi with limited data downloads. In addition, the library offers reading programmes and storytelling sessions for young library users.

To further encourage social inclusion and a sense of belonging, the Dunoon library is designed to accommodate community meetings and private study sessions. It also has social spaces, such as comfortable seating and outdoor areas, that mothers can use while their children play.

Evaluation

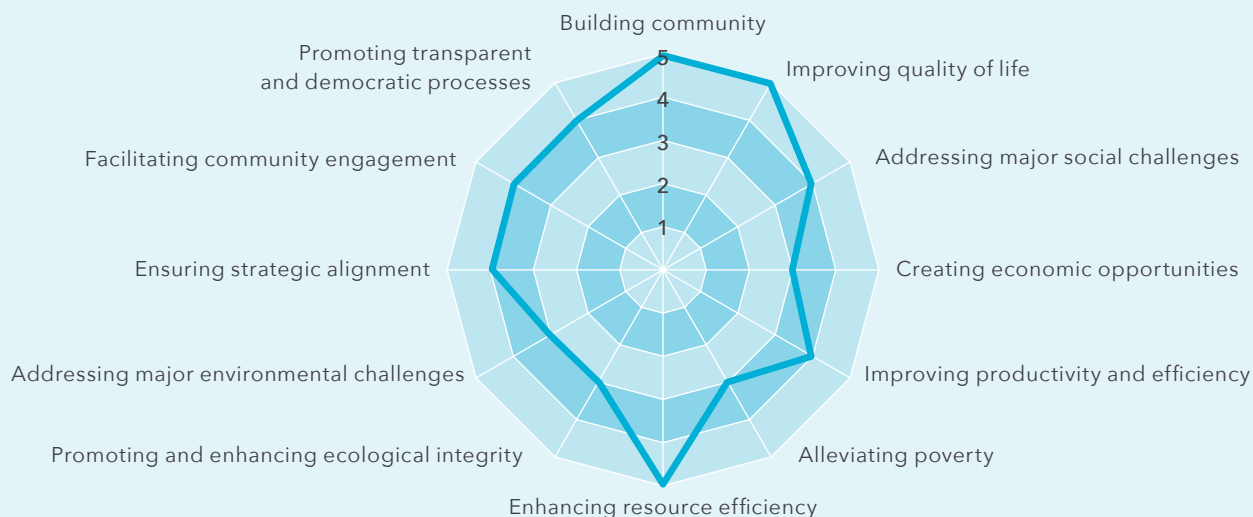
The Dunoon library is instrumental in community building by providing a safe and central space with high-quality resources that enrich residents' lives, improve quality of life, inspire learning and foster creativity. Furthermore, building this state-of-the-art facility in a previously disadvantaged part of Cape Town puts knowledge and technology within everyone's reach, not just those who can afford it. This raises the education levels of society as a whole and addresses major social challenges.

Various aspects of the library's design are consciously aimed at minimising resource use and wastage. The building is energy and water-efficient, making use of greywater and light-emitting diode (LED) motion sensor lights. An innovative

double-skin curtain wall system keeps the building cool by reducing heat gain in the internal spaces, while letting in maximum daylight. Good airflow also contributes to a cool environment in the summer months.

The Dunoon library effectively uses design to restore dignity and promote learning, development and overall well-being. Going forward, the learning and innovation precinct will be further developed with a five-storey building, which will include an early childhood development centre, ward councillor offices, and will even offer NGOs opportunities to occupy space in the building. This will help create a truly sustainable facility that offers a holistic range of training and empowerment opportunities for all.

Sustainability assessment: Dunoon library



Project 18: Pressure management programme



Problem statement

Reducing water usage became absolutely crucial when Cape Town faced its worst drought in over 100 years from 2017 to 2019. As the country's water custodian, the national Department of Water and Sanitation (DWS) issued a directive to the City, instructing it to institute a 40% saving across urbanised areas. This meant that Cape Town had to lower its collective water use to an estimated 500 megalitres (ML) daily.

With Day Zero drawing near, the City could not afford to exceed predefined water consumption limits. In addition to its leak detection and water management device programmes, the administration had to implement and intensify critical measures such as advanced pressure management to prevent the municipal water supply from running out.

Project outline

The City initiated pressure reduction more than a decade ago, making Cape Town one of the first major cities in the world to successfully commission a large-scale pressure management project aimed at reducing leakage during off-peak periods. Having this system in place prior to the drought made it easier to scale up water conservation efforts and adapt to Cape Town's "new normal".

During the water crisis, pressure management zones were introduced to optimise the delivery of potable water and reduce water loss. Most areas with pressure management received enough pressure to meet morning peak period demand, which was then reduced for the rest of the day to a minimum pressure to avoid partial supply.

The aggressive reduction of water pressure across town during the water crisis helped reduce overall demand, decrease water loss through leaks, and reduce the frequency of pipe bursts.

Project design

In an effort to further decrease demand and meet the daily water targets during level-6B water restrictions, the City commissioned existing and new pressure management zones across the municipal area. Since the City's water reticulation network is a continuous supply system that needs to remain pressurised 24 hours per day, water flow and pressure needed to be effectively managed. Furthermore, manual and automatic controls were needed to manage pressure reduction valves to reticulation subdistricts.

Through gradual pressure reduction, the City initiated water pressure rationing for

50% of the water reticulation network where pressure management zones existed. Recognising that there would be increased demand at critical points (typically between 05:00 and 10:00 and, in some areas, a second peak between 17:00 and 21:00), the water pressure was reduced to the required level to lower losses and usage at these times.

Project implementation

In 2016, the City introduced water restrictions to reduce demand. To further drive down demand in 2017, the City steadily reduced the pressure in 50% of the water reticulation network, which was controlled through a pressure reduction valve. As the drought intensified, the City initiated aggressive pressure management in January 2018, which resulted in a 10% reduction in overall municipal water consumption.

The City identified 25 additional pressure management zones that could benefit from pressure management during the drought, and contractors were appointed to speed up the programme rollout. Through management of these zones, the City realised savings of up to 70 million litres of water per day by August 2018.

The City's significant achievement of reducing water use while retaining a continuous pressurised system was recognised by the International Water Association.

Although Cape Town successfully avoided Day Zero, ongoing pressure management is part of the City's commitment to being a more water-wise city. This intervention will continue into the future as part of the water demand management strategy, which focusses

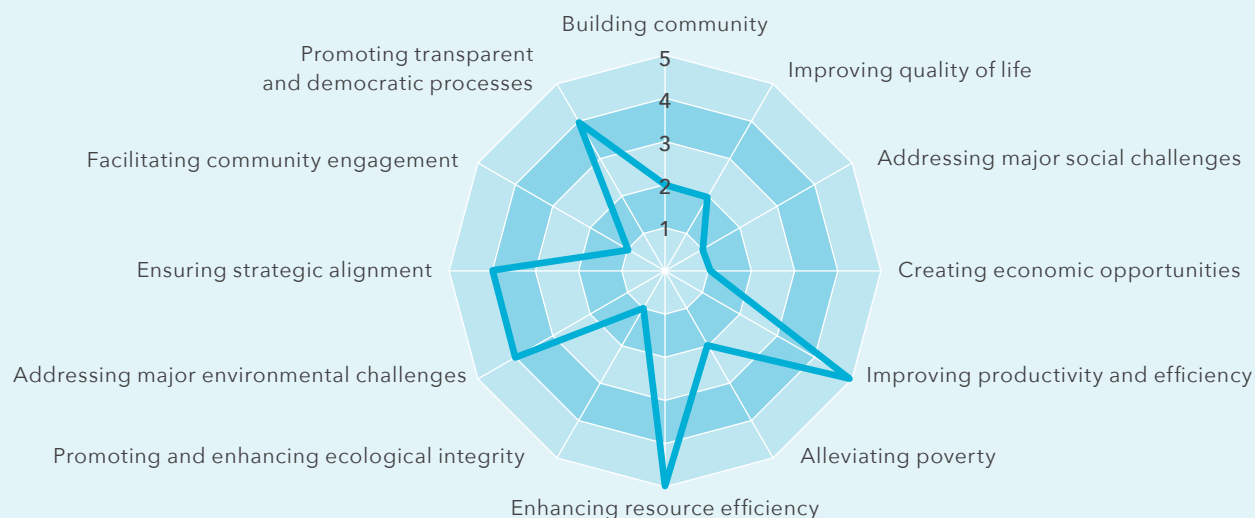
on a range of measures, including public awareness campaigns, replacement of old infrastructure, and the treatment and reuse of sewerage effluent.

Evaluation

Reducing water usage was critical to helping Capetonians through the drought. Lowering the rate at which water flowed to properties further pushed down water consumption and promoted water conservation.

Moreover, by better ensuring that pressure remains within levels that the pipework can tolerate, pressure management helps reduce leaks and pipe bursts. This, in turn, extends the life of infrastructure and reduces operation and maintenance costs. It also enhances resource efficiency by reducing demand for a scarce resource.

Sustainability assessment: Pressure management programme



Project 19: Simon's Town penguin management programme



Problem statement

Every year, a million tourists flock to Cape Town's "Far South" to see the comings and goings of the African penguin colony. As a result, Simon's Town and the City have benefitted significantly from the ecotourism revenue generated in this way.

However, in 2010, the African penguin was reclassified as "endangered" on the International Union for Conservation of Nature (IUCN) red list of threatened species. A global census showed that more than 80% of breeding pairs had been lost in just over 50 years. At Boulders Beach, the breeding numbers dropped from over 2 500 breeding pairs in 2005 to 550 in 2013.

The recent global decline is the result of a lack of sufficient food due to industrial fishing pressure, combined with environmental changes.

In Simon's Town, the main threats are predation by wild and domestic animals, human disturbance, road kills and at-sea threats, such as oil pollution and overall lack of adequate food.

Project outline

The penguin management programme aims to improve the conservation and protection of penguins living and breeding outside the national park (Boulders Beach section). Management of the penguins includes daily monitoring, rescue and rehabilitation of injured birds, and management of the public open space to reduce disturbance to the penguin colony.

In addition to protecting the penguins, the programme also seeks to ensure the sustainability of the colony in the long run as an economically beneficial ecotourism hotspot.

Project design

The Simon's Town penguin management programme is a partnership project between the City, South African National Parks (SANParks), the South African Foundation for the Conservation of Coastal Birds (SANCCOB) and the Cape Town Environmental Education Trust (CTEET). The programme seeks to protect and conserve the endangered African penguin colony and promotes the rehabilitation and rescue of injured penguins.

While the Boulders Beach section is managed by SANParks, some penguins live and breed in free-access areas between Seaforth and Water's Edge beaches, and from Burghers' Walk to Windmill Beach and Franks Bay. As the population has expanded, penguins have wandered off into residential areas and are

increasingly at risk of cars, predators and other threats.

Project implementation

Simon's Town is home to at least 930 penguin breeding pairs. At the start of the programme, 45% of the breeding population was living outside the national park, on City-owned land. To effectively conserve and protect these birds, the City entered into a three-year agreement with SANCCOB in July 2018 to assist with penguin monitoring and research, which includes the appointment of a site co-ordinator for the City's management of the Simon's Town penguin colony. In addition, a team of penguin rangers appointed by CTEET ensure that the seabirds are protected, and co-exist peacefully with residents and visitors in the Simon's Town coastal area. The penguin rangers work seven days a

week, 365 days a year, to ensure that the penguins are protected.

In addition to monitoring the penguin colony, the programme involves managing people-penguin conflict, as well as the rehabilitation of the dunes on Seaforth and Windmill beaches. The upgrade of Seaforth Beach includes creating a landward barrier to prevent penguins from entering the residential areas.

Evaluation

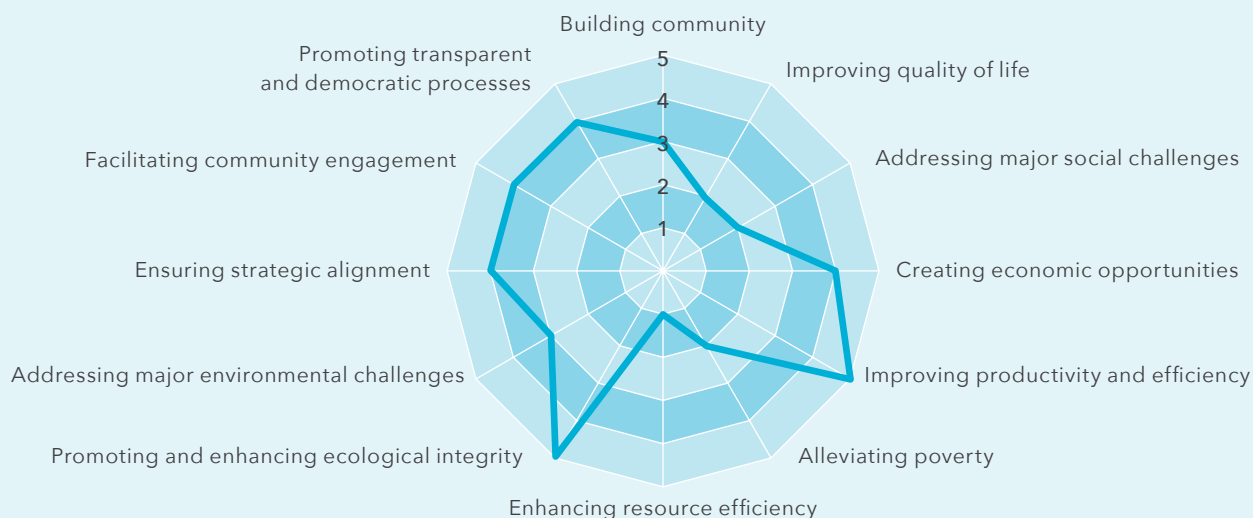
Thanks to a steadily increasing environmental consciousness, Cape Town communities have bought into penguin conservation. Considering that dealing with an endangered species in an urban context with many competing interests can be extremely challenging, this programme relies on partnerships.

It also follows an integrated approach, as the Simon's Town penguin colony stretches across various boundaries along the coastline and requires varied expertise and resources to manage.

Moreover, the programme helps create economic opportunities by providing employment and skills development for early-career conservationists, including SANCCOB training in first-response handling and managing of penguins. These penguin rangers play a critical part in communicating with visitors to the area, informing them of the relevant rules and regulations, and ensuring the least possible disturbance to the penguins.

To facilitate community engagement, a penguin advisory committee was established and a biannual newsletter is issued to keep the community informed of programme developments.

Sustainability assessment: Simon's Town penguin management programme



Project 20: Water conservation drought campaign



Problem statement

In 2017, the City started grappling with its worst drought in 100 years following three consecutive years of below-average rainfall. Projections indicate that more frequent droughts in Cape Town are increasingly likely going forward. This makes it important to improve urban water management, and also challenge Capetonians' relationship with water.

To reduce water demand and bring on-line alternative sources to augment water supplies, the City developed a range of measures to improve water resilience. Similarly, a number of private individuals and companies invented and marketed innovative water-saving products. Yet, there was no platform for the public to learn about these available retrofitting options, or about City water-saving initiatives.

Project outline

The City's water conservation drought campaign focussed on creating mass awareness and facilitating behaviour change to reduce water demand. The campaign involved expos in partnership with suppliers of water-saving devices, such as greywater systems, water displacement items for toilets, tap fittings and aerators, as well as rainwater tanks.

To complement the water-saving expos, EPWP graduates were also strategically assigned to targeted stores, including Builders Warehouse and some Builders Express outlets, Shoprite/Checkers and some garden centres, to conduct water awareness interviews and provide residents with information about the City's water-saving initiatives.

Project design

The provision of exhibition space to external stakeholders and businesses,

at no charge to exhibitors or the public, was a City innovation that removed barriers to entry. These expos were held in a range of venues.

Alongside private exhibitors, the City hosted stands with hands-on interactive displays that appealed to the whole family. These included giant snakes-and-ladders games, and demonstrations of how to control a toilet flush mechanism using an elastic band and a paper clip.

Over 800 trained EPWP workers were employed on a temporary basis to go door to door in different suburbs across town, conducting water awareness interviews and providing residents with vital information about the City's water-saving initiatives.

Project implementation

The City hosted exhibition events at 10 of the Mother City's large shopping malls,

for approximately two days at each venue. Through this intervention, over 200 000 members of the public were reached. Exhibitors were also invited to 11 private conferences and events that had stemmed from City-private partnerships. These included the Homemakers Expo, the Khayelitsha Science Week, the Mamre Wildflower Show, Ajax soccer games and the South African Cheese Festival. Through these events, another 150 000 residents and tourists were engaged. Moreover, corporate staff interventions and exhibitions were held at 13 of Cape Town's largest organisations, such as Old Mutual, Amazon, Eskom, Sanlam, HomeChoice and SAB, reaching an additional 100 000 Capetonians.

Between December 2017 and March 2018, 18 trained EPWP workers staffed information tables at Shoprite/Checkers

stores. Information was also shared at till points and on big screens at a number of Pick n Pay stores, and billboards such as the electronic boards at BP service stations were extensively used.

In addition, a water-saving mascot was deployed at a range of significant sports events. The City also invented a solar-run water demonstration trailer that could be taken to expos, schools and the like to demonstrate the science behind water-saving initiatives.

Evaluation

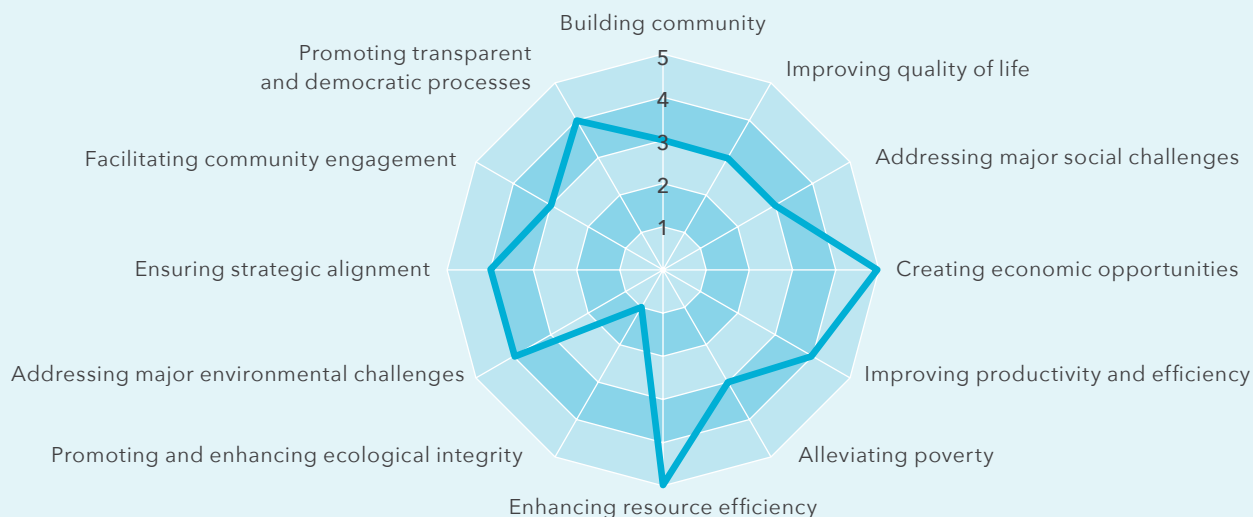
By raising awareness about water saving and the best retrofitting options, the campaign managed to empower residents with the necessary information to comply with the City's water restrictions and, ultimately, reduce water demand.

The provision of exhibition space to external stakeholders and businesses at no charge removed barriers to entry and created economic opportunities. Furthermore, a number of companies were able to start up or become more established in the market following the exposure that they had gained through this project.

The campaign enabled the City to form strong public-private partnerships with suppliers, the management teams of various expos in Cape Town, as well as shopping centres. This has facilitated sound collaborative partnerships and networking.

Although it is difficult to measure the success of this project in isolation from other water-saving interventions, Cape Town's water demand has remained low, which suggests that a deep water-saving culture has been established in Cape Town.

Sustainability assessment: Water conservation drought campaign







Revisit portfolio

In this section, we review and reflect on projects profiled in previous editions of the Mayor's Portfolio. Revisiting these projects is in line with the broader need for ongoing review and reflection on the journey towards sustainability. These projects fall under the broad categories of integrated human settlements and the circular economy.

Project 21: Dunoon local area planning initiative



Problem statement

Socio-spatial inequality remains a significant challenge in Cape Town. Due to rapid urbanisation, it is increasingly difficult to design, build and maintain functional settlements that deliver housing and socio-economic opportunities in line with other City objectives. In addition, the continued growth in informal settlements creates challenges for service delivery. Therefore, there is an acute need for guidance and support at the municipal level to enable innovative transformation and adequate service delivery for residents in low-income areas with unique contexts.

Project outline and design

The Dunoon local area planning initiative (Dunoon LAPI) involved three years of comprehensive and interactive community engagement, focussing on all phases

of sustainable urban planning. Findings from the initiative supported a variety of “transitions” to help build capacity and income potential, and create public and private investment opportunities. The Dunoon LAPI conducted a holistic mapping and fact-finding process between 2013 and 2015 to identify focus areas for project implementation. In 2017, a public investment framework was developed that summarised 12 key practical projects aimed at addressing basic needs, as well as a number of strategic projects that could help reimagine ways to achieve well-functioning, sustainable settlements in developmental contexts.

The overall aim was to position Dunoon as a case study for similar communities and settlements in Cape Town in general, in the context of the magnitude of in-migration to the Mother City. This is

important considering our limited land and financial resources. The Dunoon LAPI also highlighted the need to improve rates recovery to sustain investments in settlement development at the municipal level.

Dunoon was identified as the pilot location for this approach in the hope that the community would benefit from further project-related pilot opportunities later on. Bearing in mind the overarching objectives of the national Urban Settlements Development Grant (USDG), the initial Dunoon LAPI process undertook a phased approach to inclusive, innovative and sustainable planning.

This was underpinned by diverse and integrative public participation – from initial stakeholder identification and research, to themed workshops that helped identify practical

“low-hanging fruit”. The same level of engagement was then applied to City role players in workshoping the parameters of functional settlements and identifying gaps. These were subsequently translated into urgent and key opportunity projects, as well as processes, outcomes and outputs in the public investment framework. Throughout the engagement, progress was reported to the community via the local ward councillor.

Project status update

The Dunoon learning and innovation precinct is an initial implementation project of the LAPI process. Since many of the places and spaces initially planned for community amenities in Dunoon had since been occupied by informal residential structures, this left very limited space for additional facilities, which demanded an unconventional approach to ensure effective land use.

The learning and innovation precinct is intended as an innovative facility that can support community building and learning programmes.

The sports complex and the learning and innovation centre, of which the recently completed library was the first phase, will offer a broad range of services and resources. These include physical learning through sport, written and visual learning through the library, e-learning initiatives, and skills development and training programmes. It can further act as an employment information centre that can help link residents with employment and livelihood opportunities.

With a specific focus on the learning and innovation centre, a public-community partnership is proposed to manage and maintain the multi-use facility.

This partnership is intended to foster and strengthen partnerships and relationships between the City and the community, and at the same time contribute to capacity building in Dunoon.

The next phase of the centre is currently being planned, and will consist of an early childhood development centre and workspaces for local non-profit and non-governmental organisations.

Sustainability lessons

Although Dunoon is formally planned, with adequate land set aside for public facilities, development is challenged and municipal service delivery complicated and restricted by illegal encroachment. In addition, it is predominantly a non-rateable community that generates limited revenue for the City, but has substantial costs associated with the provision of existing services.

The process of rethinking and reshaping Dunoon into a well-functioning settlement requires co-ordinated support from various agencies and resources. Multiple partnerships, a flexible, mixed-use built environment and well-supported cultural programmes

are required to support medium and long-term sustained development programmes.

Furthermore, maintaining public infrastructure and facilities in partnership with communities can provide residents with a sense of ownership of, and pride in, their facilities.

Various projects are being implemented based on the information obtained from the Dunoon LAPI process. This demonstrates the value of an integrated, evidence-based and phased approach to transforming urban settlements into well-functioning, sustainable and rate-paying communities.

To achieve this transformation, the Dunoon LAPI promotes the establishment of a learning culture in a supportive environment to facilitate social upliftment.

Apart from the importance of partnerships with the community, another key lesson stemming from the Dunoon LAPI process is the need for transversal management across City line functions to deliver and maintain functional settlements.



Project 22: Greenville Garden City



Problem statement

The norm in South Africa is for government to provide subsidised housing opportunities. However, given the acute need for housing in Cape Town and the high rate of urbanisation, the current housing delivery model is unsustainable, and incapable of adequately addressing the housing backlog. Instead, the City needs to enlist private and civic parties' help to drive large-scale human settlement developments.

Project outline and design

The overall objective of the Greenville Garden City project is to build an integrated and sustainable human settlement that will serve as a development catalyst in the greater Fisantekraal area. Of the 17 000 homes that will be developed, 5 000 units have been allocated for BNG subsidised

housing. Other housing types will be gap housing, rental accommodation and bond homes. Plans also include school sites, retail developments, sports grounds and healthcare.

This project is not only the first low-cost housing development on privately-owned land, but it is also the first to make use of alternative building technologies to accelerate housing delivery for the 2 500 households currently living in the Fisantekraal informal settlement and surrounds.

It is a partnership project between the City, Province and Garden Cities. The City and Province provided planning, design and implementation input, standards, specification and approvals, while Garden Cities provided the land and assumed the role of the developer.

Due to the size of the undertaking, it has been divided into phases to make construction and the associated administration more manageable.

To efficiently deliver housing, the project team opted for the Benex masonry system, which is an innovative Australian material made from cement and polystyrene. Building with these blocks as opposed to traditional construction material is quicker, offers better durability and allows for the employment of low-skilled labour.

Project status update

Since the launch of the Greenville development in March 2016, 1 331 houses (868 units in first phase and 463 in second phase) have been handed over to new owners. The first phase, comprising 868 houses, was completed in October 2018.

A total of 507 houses are planned for the second phase, with 463 houses completed and the remaining 44 units planned for completion by August 2020.

The third phase has commenced with the construction of civil engineering infrastructure. The scope of work includes new distributor roads and associated non-motorised transport facilities, bulk sewer lines and internal municipal engineering services. Construction of 562 houses commenced in May 2020.

Garden Cities is currently negotiating a rental agreement to build a Shoprite Usave store once designs and costings have been finalised. A skills training school is also at an advanced stage of planning, with construction commencing as soon as approvals are granted.

Garden Cities has started pre-screening applicants under the finance-linked individual subsidy programme (FLISP), and four show homes are planned for construction before the end of 2020.

Two worship sites have become available, and the City intends publishing a request for proposals to the denominations who expressed interest in purchasing a piece of land. In addition, City Health procured a clinic site two years ago, and construction is planned for 2020. Garden Cities is also currently engaging with the Department of Public Works regarding the sale of the primary-school site.

As part of subphase 1 and 2, Garden Cities has built 12 business sites, eight of which are being rented out to local businesses that are supported through the City's enterprise and supplier development (ESD) programme.

The remaining four will be sold to local businesses, who will also form part of the ESD programme.

Due to the use of alternative building technologies, the project involves a high percentage of local labour. Since the start of the project, Garden Cities employed and trained local community members for various construction activities. To date, over 300 employment opportunities have been created.

Due to the scale of the project, extensive liaison has taken place between Garden Cities and affected residents and community and civic associations in the area.

A project steering committee has also been established to keep all role players and beneficiaries informed of the scope and effects of the development.

Sustainability lessons

The Greenville Garden City development aligns with the City's Densification Policy, Transport-Oriented Development Strategy and Integrated Human Settlements Framework, all of which highlight the importance of partnerships and innovative solutions to mitigate the challenges associated with increased urbanisation.



This public-private partnership approach challenges the status quo of BNG housing delivery as the only means of true upliftment and improving living standards.

The project provides a potential model for future public-private partnerships in the city and country. Furthermore, the use of alternative building technologies piloted in this project has the potential to be rolled out in other developments as well, which could see significant growth in the material production industry to allow for this.

While the building of bonded housing for sale to first-time buyers and middle-income homeowners is part of the entire strategy, the project team prioritises the needs of those in greatest need of decent housing. As a result, the project helps improve residents' quality of life and addresses major social challenges.

In addition to the social, economic and transport amenities, the Greenville Lifecycle Management Plan outlines plans to promote and enhance the ecological integrity of the site, among others by rehabilitating the river and wetlands on the site and incorporating the surrounding greenbelts into the development of Greenville.

Project 23: Municipal electrification programme



Problem statement

Access to electricity is a basic service that the City is mandated to provide to its residents. Nevertheless, some informal settlements in Cape Town, mainly those in the Eskom supply area, remain inadequately connected, if at all. Furthermore, some households present the added challenge of being located on encumbered land, such as on private property, under power lines or in close proximity to health or safety hazards, which prevents electrification. Since the current rate of urbanisation far exceeds the rate of formal housing provision, households in informal settlements with insufficient formal electrification infrastructure often turn to illegal and unsafe connections to nearby electrified areas to meet their power needs. Therefore, the need to extend the electricity network to serve residents in

informal settlements, as well as backyard dwellers, is urgent.

Project outline and design

The City's IDP commits the administration to mainstreaming basic service delivery to informal settlements and backyard dwellers in general, and providing electricity to qualifying informal settlements, backyards and subsidised housing developments in particular. The municipal electrification programme provides electricity connections to communities in underserved areas that meet policy criteria. It also includes the replacement and/or upgrade of electricity distribution infrastructure.

The infrastructure for backyard electrification, in turn, is designed to eventually serve backyard dwellings on private property, as well as up to three

backyarder connections per Council rental unit, to ensure effective planning and cost efficiency.

Areas to be electrified are prioritised according to project readiness and the sequence in which electrification requests are received. At the start of the electrification process, the project team liaises with residents and community leaders to explain the process, the timelines and the assistance required from the community to see the project succeed.

Based on the Informal Settlements Department's plans for future upgrades or re-blocking in the area, the Electricity Generation and Distribution Department then develops a design and implementation plan. Part of the implementation plan involves the removal of illegal connections and the creation

of access ways, both of which require co-operation from the community.

To sustain buy-in throughout the process, the community is engaged in each electrification phase. This effectively prevents disruptions after project commencement, especially where dwellings may need to be moved to install infrastructure or create access ways.

Education and awareness initiatives also provide a platform for communicating timeframes and key information about the electrification process.

Project status update

In terms of the Municipal Finance Management Act, the City may only install electricity connections in communities situated on City-owned land and replace electricity distribution infrastructure. The IDP includes a target of installing 1 500 new subsidised electricity connections per year in the City supply area. Against this backdrop, the City has met its electrification target for the past five years and is continuing its electrification drive. Moreover, the City is prioritising connection backlogs in informal areas serviced by Eskom, utilising both municipal and national resources.

Over the past three financial years, the City installed 6 209 meters in disadvantaged communities in its own supply area and, in partnership with Eskom, 17 429 meters in the Eskom supply area. Legally connecting households to the electricity network reduces electrical accidents. It also decreases the need to use wood and charcoal materials for heating and cooking, which are associated with

respiratory illnesses and an increased fire risk.

As part of the municipal electrification programme, up to three new backyarder connections are installed per yard in areas identified by the Informal Settlements Department. Giving backyarders their own electricity meters and connections effectively minimises the possible exploitation of backyard tenants by landlords. In addition, it improves the quality of life of those living in the backyards of established formal housing developments.

The programme now also has a dedicated community facilitator. This official assists with project liaison between line departments, councillors, community leaders and other project stakeholders to anticipate and avoid risks.

Sustainability lessons

Each electrification project is unique. However, most electrification projects offer residents their first experience of electricity in their homes. Access to affordable electricity improves socio-economic conditions, as it helps create an enabling environment for households to sustain their livelihoods, for youth to study, and for small businesses to start up or expand. A connection to the grid also reduces the risk of fire (as residents no longer need candles for lighting or paraffin stoves for cooking), financial exploitation, and illegal or unsafe connections. As a result, the electrification programme addresses major social challenges, helps restore human dignity, increases safety, and improves quality of life.

In addition, as communities sometimes participate in EPWP programmes linked to electrification projects, this further supports job creation, skills development and training.

The programme is aligned with the City's SFA of a caring city, as well as national and provincial priorities. As the existing service backlog decreases, the project team is initiating proactive engagements with other City line functions, state-owned enterprises, as well as private owners who have informal settlements on their land.

Nevertheless, the City also faces certain challenges in its electrification programme. These include staff and contractor safety, vandalism and theft of electrical infrastructure, and obtaining permission from other landowners or line departments where the area is not zoned for residential use.

The success of the municipal electrification programme relies on education and awareness, as well as obtaining (and reaffirming) community buy-in upfront and throughout the electrification process. Although beneficiaries are given some education and awareness training, this could be further strengthened by linking it to the Smart Living programme and the electricity savings campaign, both of which focus on sustainable energy use and behaviour. In this way, the project could help counter the environmental impact of increased electricity generation and minimise low-income households' electricity costs.

Project 24: Ocean View stone houses



Problem statement

The provision of low-cost housing in urban areas has been a key focus of housing policies in post-apartheid South Africa. Yet, simply addressing the housing backlog is no longer enough to address and mitigate the impacts of widespread urban poverty. Not only is the housing backlog increasing, but evidence suggests that typical Reconstruction and Development Programme (RDP) block houses do not provide adequate comfort and living standards. There are also increasing concerns as to the social and environmental sustainability of housing programmes, and the impact of housing developments on the surrounding environment and human health.

Project outline and design

The land on which the Ocean View development is situated was subdivided for a housing project in the late 1980s, but the cost of excavating the rock from the site was deemed too high. In 2006, the City appointed a contractor to remove the rock, and the crushed material was sold over a four-year period. During this process, the City realised that this housing project presented an ideal opportunity to deviate from conventional housing delivery models and innovate for sustainability. The strategic opportunity to address both housing and employment needs emerged from the PHP approach to the construction of human settlements, which has helped reduce unemployment and poverty in many communities. The PHP programme is extensively involved in the EPWP, which offers invaluable skills development, training and employment

opportunities to otherwise unemployed individuals. A support organisation is established for each PHP project to deal with beneficiary and project issues, as well as to integrate all active role players and stakeholders. In general, the Ocean View PHP project offered a more holistic, innovative and sustainable approach than conventional housing delivery models.

Setting the design of the Ocean View PHP project and its homes apart from the rest was the use of existing stone found on the project site as the primary building material. From a design point of view, the use of the stone offered multiple benefits, including its thermal mass and good insulation properties. It also created an upmarket feel to the subsidy housing development, which seamlessly blended in with the surrounding natural environment. Stone construction is extremely labour

intensive, which helped create numerous jobs for unemployed residents. The unique design has contributed to the Ocean View PHP project being a positive example of transforming the conceptualisation and implementation of subsidised housing. Design-led thinking has provided an innovative solution to the housing challenge, and empowered communities through sustainable livelihoods, education and training at the same time.

Project status update

Over 1 000 EPWP local labourers were employed at various stages of construction, including the prior sorting and preparation of stone for building. In addition, 40 local trainee stonemasons, including five women, underwent an intensive six-month training course and formed part of the main construction team. A major benefit during implementation was the use of stockpiled surplus material left behind from bulk earthworks. This surplus would have occupied 6 000 m³ of Cape Town's precious landfill space. Furthermore, the saving on transport costs was estimated at roughly R6 000 000. The project intends to construct a total of 543 comfortable, resource-efficient homes. To date, 393 houses have been constructed, leaving some 150 houses still to be built.

Sustainability lessons

Addressing challenges relating to human settlements in Cape Town has been a complex and delicate issue. The Ocean View stone houses project provides a strong example of sustainable, design-led innovation that involved critical stakeholders in the search for solutions. The housing project offered a unique model for both

the PHP programme and advancing Cape Town's green economy through the development of local skills in sustainable construction techniques. Through design-led thinking, what had originally been seen as a constraint to the development was converted into an opportunity. While the project itself created job and skills development opportunities, a number of the local trainee stonemasons have subsequently secured employment with the service provider, and others have found further job opportunities (such as brick-laying) on other projects in the area.

Nevertheless, since the City largely completed the housing project, the community has been facing a range

of challenges. These include limited employment opportunities in the surrounding areas, making it difficult for community members to find work outside Ocean View, a challenge exacerbated by limited access to public transport. Furthermore, there have been numerous recorded incidents of gang-related violence and safety concerns in the area since 2016.

Overall, therefore, the project highlights the need for the integration of ongoing social development programmes with housing projects, as well as for partnerships with the private sector to facilitate employment opportunities and build sustainable communities.



Project 25: Pelican Park housing development



Problem statement

Cape Town's urban form is characterised by persistent socio-spatial inequality, urban sprawl, limited access to urban goods and services for the poor, and a significant lack of affordable housing. In general, the poor continue to live in relatively high-density areas on the urban periphery, while the wealthy remain located in core and intermediate areas.

Project outline and design

Pelican Park is the City's second and largest integrated housing project. Situated between Zeekoevlei and Strandfontein Road, just north of the False Bay coast, the development includes subsidised and bonded housing, as well as a proposed commercial centre, green open spaces, and sites for a clinic, future schools and places of worship.

The Pelican Park housing project seeks to maximise innovation, integration and the economies of design and scale, and has been spearheaded by developers and integrated teams of built-environment professionals and contractors. It aims to create a safe and secure living environment with sufficient access to economic opportunities, a combination of housing and tenure types, reliable basic services, and various educational, environmental, cultural, health, welfare and other services.

The project is unique in that it caters for homeowners across a wide range of income levels. Over 2 000 of the units are fully subsidised (BNG), and were allocated to beneficiaries on the City's Housing Database. In addition, 700 gap housing units were constructed for families earning between R3 500 and R15 000 per month.

These cater to those who do not qualify for a government subsidy, but cannot afford to purchase their own homes without financial assistance either. Open-market houses priced from R480 000 were also included in the project to provide options for those earning above R15 000 per month to purchase their own homes.

Project status update

After a number of years of civil, electrical and building construction, the last units of the Pelican Park housing project were completed in August 2019. The show village units, which the developer used as offices since the inception of the project, have been sold as well. The housing project also includes double-storey gap units that were used as rental units with the intention of selling them to the tenants after a year of occupation. These units are in the process of being sold. The last

BNG units are in the process of being transferred to their rightful owners.

The sidewalk along the bus route has been completed and the developer is currently working with the City on finalising the planning of items and facilities that will be installed in the public open spaces.

Sustainability lessons

Housing developments need to properly consider the intended end users' circumstances to be economically sustainable. In the case of Pelican Park, the government-led FLISP could assist new homeowners with the purchase of their homes. Furthermore, various job opportunities were created during the construction phase, and the local shopping centre employs a number of Pelican Park residents.

The Pelican Park housing project aimed to minimise damage to sensitive scenic, cultural and historical landscapes. For instance, a fence was constructed between the new community and Zeekoevlei, with access points provided for community members to visit the vlei and nature reserve. A number of green public open spaces have also been identified for improvements, including netball and basketball courts, jungle gyms and outside gym equipment.

Locating housing close to urban services and facilities such as hospitals, schools, leisure facilities and, notably, work opportunities is vital in the development of sustainable human settlements. Pelican Park already accommodates various amenities, and two schools and a clinic are also being planned. Another important feature of the housing project is the fact that it is transit-oriented, being situated next to Strandfontein Road

with easily accessible transport options, including a bus route running through the development.

Pelican Park is a good example of a housing development that strives for mixed-income, diverse and integrated communities. It accommodates people from different backgrounds, supports a diverse housing market and provides affordable housing for low-income individuals and families.

In general, sustainable housing is measured by factors such as legal security of tenure, the availability

of services, materials, facilities and infrastructure, as well as affordability, habitability, accessibility, location and cultural adequacy. These factors were properly considered and integrated with the Pelican Park project.

Nevertheless, the project is not without its challenges. There are significant concerns about the impact of the project on the property and land values of neighbouring Pelican Park and Zeekoevlei residents. Consequently, extensive and ongoing community participation is key.



Project 26: Kraaifontein integrated waste management facility



Problem statement

On average, each Capetonian generates approximately 2 kg of waste every day. This translates into considerable volumes of waste, much of which could be recycled and reused. Therefore, it is of the utmost importance for both current and future generations to consider and address solid waste and its impact on the city in a sustainable manner.

Project outline and design

The primary purpose of the Kraaifontein waste management facility is to handle and compact waste for transfer to landfill, as well as to divert waste from landfill through, among others, greens-chipping operations, a materials recovery facility for recyclable waste, and a public drop-off for bulky residential waste.

The facility receives waste from local areas, but also from other, surrounding areas where the Think Twice campaign has been implemented. Segregated waste is collected at source and brought to the facility for sorting.

Project status update

In the past, illegal dumping has been a significant challenge in the Kraaifontein area. Therefore, locating the facility here has provided the local community with an opportunity to responsibly dispose of waste.

The facility has also employed numerous residents from the local community: While on-site contractors have been contracted to do the chipping operations, operate the materials recovery facility and transport waste from the facility to landfill sites, these contracts have been awarded

with local employment as an essential requirement for the tender.

In addition to managing waste, the facility is equipped with a conference room, which is used for meetings, training, workshops and public awareness initiatives. Interested parties may also arrange visits to the facility, during which they learn more about facility operations and other, broader initiatives in the Solid Waste Management Department.

This unique waste management facility has not only been identified as a benchmark for solid waste management, but was also recognised by the South African Institution of Civil Engineering in 2012 for being “the most outstanding civil engineering achievement in the technical excellence project category”.

Sustainability lessons

To facilitate community buy-in, a residents' monitoring committee was formed that meets regularly to resolve community concerns relating to plant operations. The project team furthermore prioritised local employment to construct the facility. In addition to promoting sustainable waste management, indigenous plants have been used for landscaping at the facility, and the project team also monitors adjacent water bodies (including groundwater and stormwater runoff) to prevent litter from entering these.

In general, the Kraaifontein waste management facility has seen an increase in volumes disposed at the public drop-off area. Nevertheless, the facility does experience certain challenges. In relation to the public drop-off, for instance, residents and businesses often fail to comply with facility rules, or arrive with incorrect waste types. Notably, in recent years, the waste economy has been negatively affected by challenges relating to oversupply and reduced demand in the export market for recyclable material, which have driven down the price of materials. This, in turn, has affected the materials recovery facility, which relies on the sale of recyclables. These changes have forced the service provider to store more material on and off site, while the facility has also started intensifying the separation-at-source programme. Other challenges include the management of wind-blown litter, as baled materials need to be stored and loaded outside the building, as well as ongoing vandalism of the facility fence and infrastructure. In addition, larger pieces of equipment at the materials recovery facility are in need of major repairs.

As the first facility of its kind, the challenges experienced at the Kraaifontein waste management facility have been considered and factored into the development of the Coastal Park integrated waste management facility, construction of which has commenced and is planned for completion by 2025 (the date at which the landfill is expected to reach capacity and close). Therefore, the approach and innovations undertaken at the Kraaifontein facility can be replicated at Coastal Park, and be standardised for future facilities.

Overall, the Kraaifontein waste management facility remains a strategically important facility that contributes significantly to the diversion of waste from landfill. It has created many local employment opportunities, with all labour for the materials recovery facility's operations, as well as collections being from the Kraaifontein area and surrounds. Overall, however, the sustainability of the Kraaifontein and other, similar facilities relies on the waste economy, provision of storage facilities for baled material, and the participation and compliance of residents utilising the site.



Project 27: Source to Sea river corridor project



Problem statement

Urban rivers are heavily engineered and polluted, resulting in degraded habitats and poor urban ecosystem services provision. Furthermore, climate change is challenging cities to transform socially and ecologically fragmented river corridors to improve resilience. Historically, limited access to natural assets, unemployment, safety and security concerns and the transformation of negative open spaces are all issues that could be addressed by reversing ecological degradation and implementing sound river management principles.

Project outline and design

The Source to Sea river corridor initiative focusses on river corridors in the Zandvlei catchment, specifically the Diep and Prinskasteel/Keysers rivers, which connect Table Mountain National Park with the

Zandvlei estuary nature reserve. The project seeks to enhance the quality of life for local communities, while protecting and enhancing environmental services. The management of water quality and quantity to support maximum biodiversity is an ecological priority. The founding partners of the Source to Sea river corridor initiative were the City, SANParks, ICLEI Local Governments for Sustainability, as well as the Wildlife and Environment Society of South Africa (WESSA).

The project aims to integrate stakeholder activities aimed at reversing pollution and solid waste dumping, building resilience to climate change, promoting access, enhancing recreational opportunities, and encouraging ongoing use of the river corridors. A river ambassador's programme, launched as part of the Source to Sea project, deploys workers

to help maintain and rehabilitate the rivers. The presence of these workers also serves as a crime deterrent in the catchment areas. The Source to Sea project ties in with the City's resilience and water strategies.

Project status update

In 2014, an ICLEI-supported workshop was held as part of the broader initiative to consider linking local, provincial and national parks. Based on available information, the Prinskasteel river system and Sand river (Zandvlei) catchment were selected as the focus for future work. The concept was presented at the BiodiversCities conference held in April 2014 under the auspices of UNPEC (Urban National Parks in Emerging Countries), where it was well supported.

A further think tank was hosted in 2015 as part of the ICLEI Urban Natural Assets Africa project, and a report entitled “Securing ecological infrastructure to enhance the value of, and returns from, the Zandvlei catchment: A pilot investment plan for Source to Sea” was prepared. This formed the basis of a draft investment and implementation strategy compiled by the City in 2016, which included the ecological rehabilitation and maintenance of key nodes, the sustainable use of river corridors, and the establishment of a dedicated project management unit as key recommendations. WESSA subsequently prepared a consolidation document, “Source to Sea: River corridor restoration for people and nature: Towards the development of an integrated implementation strategy”, which aimed to align different stakeholders’ efforts towards a common vision.

In 2019, curriculum-based materials for an “Adopt a river reach” educational programme aimed at grades 8 to 11 were developed and rolled out at five pilot schools. In addition, in the last financial year (2018/19), a section of the Diep river was included as a demonstration site for the liveable urban waterways project, and the river ambassador’s programme was launched with 18 ambassadors.

Sustainability lessons

The Source to Sea project has highlighted the importance of stakeholder involvement throughout the lifespan of a project, as well as the need to seek the broadest possible range of interested stakeholders. Moreover, the project has shown that it is essential for a project to have a designated project manager to keep driving the project forward, even during periods

of low activity. Furthermore, the lack of a dedicated project team could have hampered project delivery.

A project vision requires support from stakeholders prior to commencement, and linkages with other City and external projects and programmes need to be identified and widely communicated. “Low-hanging fruit” should be attended to first to encourage buy-in, before more challenging objectives are pursued.

For this reason, extensive consideration went into deciding which river catchment areas would form the first project of Source to Sea.

Community perceptions and apparent catch-22 scenarios need to be understood and addressed. For example, residents are currently reluctant to use

certain river stretches for recreational uses because of safety concerns. Ironically, though, if more residents were to make use of the area, the level of crime would likely drop. In this instance, the presence of river ambassadors could increase the sense of public security until such time as more residents feel comfortable using the catchment. Regular team meetings need to be held, even during quiet periods of the project rollout, to ensure that communication and momentum is maintained. Finally, also, although the use of contract EPWP workers is a viable option for the trial component of a project, it can create difficulties pertaining to high staff turnover, and incentives such as training opportunities should therefore be considered to encourage retention.



Project 28: Sustainable public procurement



Problem statement

Globally, societies face significant challenges that stem from unsustainable patterns of production and consumption, including rapid loss of natural resources, land degradation, waste and pollution. In developing countries, public procurement can account for up to 30% of gross domestic product (GDP), which makes governments key role players in influencing production and consumption patterns.

The City's extensive consumption of goods and services gives the administration substantial buying power and, therefore, the ability to drive the market towards more environmentally and socially responsible, locally manufactured products and services. This, in turn, promotes a shift towards more sustainable patterns of production and consumption,

and stimulates local economic development.

Project outline and design

Sustainable public procurement (which the City also refers to as "green procurement") is the procurement of goods and services in a manner that maximises resource efficiency and promotes environmental sustainability, while using public spending power to leverage environmental, social and local economic development benefits.

The City has committed to implementing sustainable public procurement in its operations. Green procurement is entrenched in the City's Environmental Strategy and incorporated as a principle into the Supply Chain Management Policy. This is in addition to the many provisions relating to socially responsible procurement that already

form part of the administration's Supply Chain Management Policy and processes, including provisions on preferential procurement for small, medium and micro-sized enterprises (SMMEs), broad-based black economic empowerment (BBBEE), and localisation criteria for certain sectors. Overall, sustainable public procurement is increasingly viewed as a critical aspect of the City's Supply Chain Management Policy because of its ability to reduce financial costs and environmental impact, promote urban sustainability and drive the green economy.

Nevertheless, adopting sound sustainable public procurement practices in the City has required complex considerations throughout the supply chain management process. These include demand management (considering

the need for an item), acquisition management (options to procure more resource-efficient and lower-impact goods and services), logistics planning (options to procure goods and services from local suppliers with less frequent deliveries), promoting a circular economy and waste management (considering durability, reuse, remanufacturing and recycling) and supply chain performance (measurement and communication of savings in terms of costs and environmental and socio-economic impact so as to encourage others to follow suit across City operations).

Project status update

In general, City line functions drive and facilitate sustainable public procurement by including sustainability criteria in their stipulations to the Supply Chain Management Department. The City has already adopted a number of successful green procurement projects and practices in a range of its operations. These include the incorporation of fuel efficiency and European standards in tenders, retrofitting all City traffic lights with energy-efficient LED lamps, energy-efficiency retrofits of many City-owned buildings, resource-efficiency measures for large low-cost housing development designs, solid waste minimisation and recycling initiatives, as well as the improvement of desktop power savings and IS&T remote services efficiencies.

However, to consolidate, upscale and mainstream sustainable public procurement, the City is developing a Green Procurement Action Plan. The objective is to maximise the City's purchasing of sustainable products and services, increase the number of green/sustainable buildings built by the City,

and facilitate green procurement in large capital projects. The plan will include the development of a wide range of guidelines and specifications for priority goods and services. Moreover, a strong focus of the draft Green Procurement Action Plan is stimulating the circular economy through a number of proposed actions to reduce waste and keep products and materials in use by purchasing with durability, remanufacture and reuse in mind.

Sustainability lessons

A member of the Global Lead City Network on Sustainable Public Procurement, the City is considered a frontrunner in the field of sustainable public procurement. Nevertheless, green procurement and its associated benefits still need to be fully mainstreamed and operationalised across City line functions. While there is strong support for sustainable public procurement at policy and strategic level, widespread implementation and adoption of green procurement practices still face certain challenges. These relate to prioritising goods and purchasing groups, monitoring the uptake of green procurement practices, conducting "green" audits, the availability of green

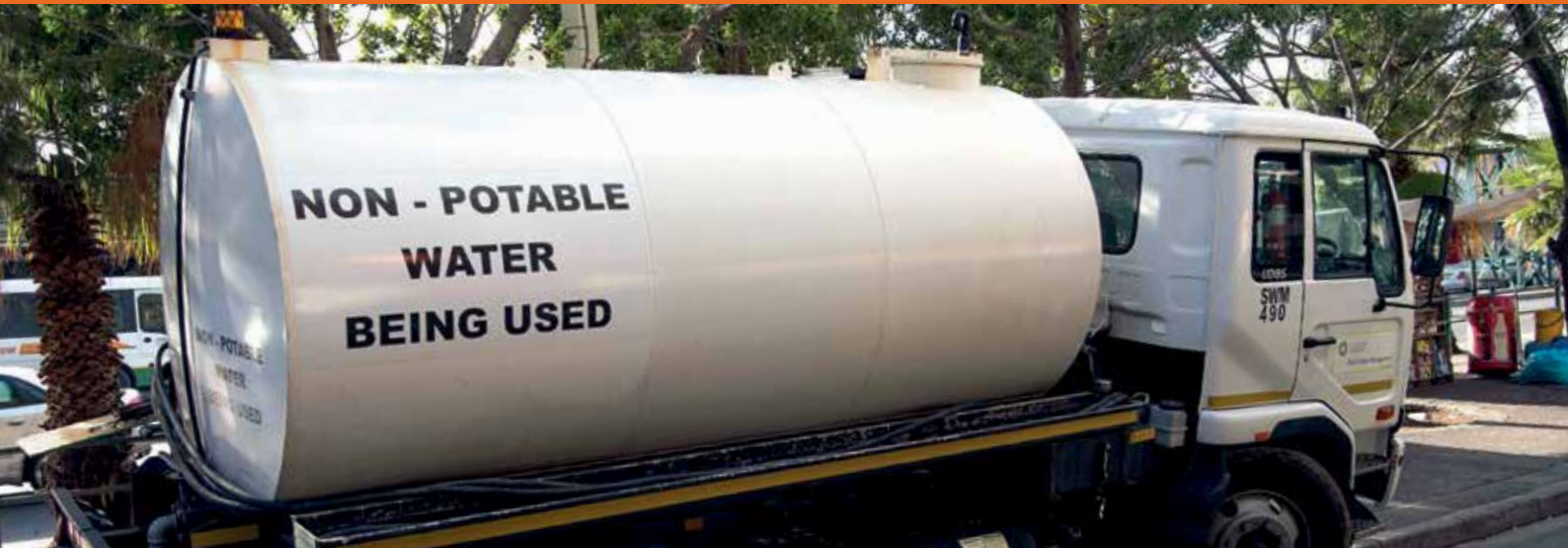
goods and services, and constraints in effectively evaluating the social and environmental performance of goods and services. Mainstreaming green procurement across line functions also requires considerable training and education in relation to the means, process and timing of green procurement considerations (the points at which green procurement should be considered in procurement/tender processes).

Finally, certain green goods and services may cost more, for which additional costs may not be budgeted into initial project costings. On the other hand, green goods and services may result in significant operational efficiencies and associated cost savings over time. Other green goods and services, in turn, although they may not result in cost savings, can have considerable citywide benefits, such as stimulating local markets for green goods and services, creating green jobs and improving suppliers' environmental compliance.

To achieve these benefits, City procurement and tender systems and processes should consider cost savings across the lifecycle of goods, as well as the broader social and environmental benefits of goods.



Project 29: Treated effluent reuse



Problem statement

Water service authorities in South Africa currently face a considerable challenge with the sustainable supply of sufficient quantities of good-quality potable water to the population. To address water shortages, it is increasingly important to investigate alternative water sources, including treated wastewater.

For Cape Town, treated effluent reuse offers an opportunity to reduce the use of potable water for non-potable purposes by supplying such treated effluent to schools, sports facilities, parks, industries, farms, golf clubs, new developments, shopping centres and construction companies through formal network infrastructure from the various wastewater treatment works situated in the metropolitan area. To guide the expansion of the treated effluent infrastructure, the

City developed a Treated Effluent Reuse Strategy (master plan), which continues to be updated as and when the need arises.

Project outline and design

The City identified the recycling of treated effluent as the most feasible option among the available alternatives to conventional surface water use. The use of treated effluent is a means to save potable water and encourage the use of non-potable water for non-potable purposes. In general, it serves as a key component of the City's strategy to help ensure that Cape Town, a water-scarce region, has a secure water supply for the foreseeable future.

In Cape Town, treated effluent is not treated to potable water drinking standards. As a result, the treated effluent network has to be kept completely

separate from the potable water system to prevent contamination. To avoid cross-coupling of water pipes, the piping used for effluent is bright orange, and there are also differences in the materials and construction methods used. Moreover, to prevent mixing, backflow preventers are installed on sites that have feeds from both the treated effluent and potable water supply.

Treated effluent can be supplied to consumers who have no formal supply pipelines to their properties or even by hiring a metered treated effluent standpipe and connecting to the treated effluent draw-off point situated along the network. Alternatively, treated effluent can be collected directly from the wastewater treatment works, where permanent standpipes have been constructed.

Project status update

The use of treated effluent is a key component of the City's strategy to ensure a secure water supply for Cape Town for the foreseeable future. To date, more than 260 km of treated effluent pipeline has been installed throughout town. The City has 27 wastewater treatment plants, nine of which have the facilities to extract treated wastewater before it is released into rivers, wetlands and the sea. This treated wastewater is further cleaned to produce treated effluent, which is then transported to the customer for irrigation purposes. Of all potable water consumed, approximately 70% ends up at wastewater treatment works. Up to 16% of the treated wastewater is further filtered and reused for non-potable purposes, such as irrigation, sewer pipeline flushing, cleaning of stormwater drains, industrial and construction activities, and toilet flushing in business parks such as the Aurecon head office in Century City.

Currently, the City is supplying treated effluent to over 200 connections or facilities. Users include schools, sports clubs, golf courses, farms, factories and commercial developments with large water features. The City also uses the water for irrigating its own parks. Furthermore, a treated effluent reticulation network is in place to convey this water to customers in certain parts of town.

Given the uptake of the service, the City is looking to expand the treated effluent reticulation network to other areas of the city. The Athlone, Bellville, Scottsdene and Macassar areas are most likely to benefit due to larger demand in these areas, as well as fewer infrastructure requirements in most instances.

Sustainability lessons

Using treated effluent is more than 50% cheaper than using potable water, which helps remove barriers to service delivery. However, this difference in tariffs also means that potable water and treated effluent use needs to be carefully balanced due to the potential implications for the City's revenue stream.

In relation to the City's treated effluent reuse initiative, there is room for broader community and stakeholder engagement. At present, potential users identified in the master plan are given an information flyer relating to treated

effluent reuse, although the connection to the network remains optional. Potential interested users complete an online application form to make use of the service. Communication and education on the benefits of treated effluent reuse could be extended to increase uptake among potential users.

Although still in the early stages, this project has significant potential. By using alternative water sources, the City can significantly reduce the use of drinking water for non-drinking needs. Therefore, water reuse and the associated reduced demand for potable water are critical for ensuring that Cape Town has a secure water supply for the foreseeable future.



Project 30: Western Cape Industrial Symbiosis Programme



Problem statement

Studies show that the Western Cape's current consumption patterns exceed the limits of the natural resources available. About 80% of all waste generated in the province ends up on landfill compared to less than 20% in best-practice regions. This points to a lack of resource efficiency, and missed opportunities to use materials productively for as long as possible before disposal.

Industrial waste presents a significant opportunity for diversion from landfill, as it occurs in large volumes, is centralised in urban areas, and is typically clean and segregated waste. Although the recycling sector is well established, there is a clear need to support industrial

waste generators to improve their waste management practices.

Project outline and design

The Western Cape Industrial Symbiosis Programme (WISP) is a free facilitation service that connects companies in Cape Town so that one business's underutilised or discarded resources can be used by another. WISP, which is delivered by GreenCape and funded by the City, creates a platform for a broad range of differently sized industries and companies to explore potential synergies that may result in increased profitability and sustainability.

To develop WISP, GreenCape partnered with International Synergies Limited, a firm based in the United Kingdom and a world leader in facilitated industrial

symbiosis programmes. As such, WISP was modelled on the United Kingdom's successful national industrial symbiosis programme, but adapted to suit the South African context.

GreenCape facilitates information exchange between businesses through business opportunity workshops, site visits and meetings. The business opportunity workshops bring together waste generators (manufacturing companies) and waste technology and service providers (recyclers, waste management companies, etc.) to rapidly identify potential synergies between companies. Furthermore, all underutilised resources identified through workshops, site visits and meetings are captured on an online database called SYNERGie™.

Project status update

WISP targets a wide range of manufacturers and service providers, including large international companies and local SMMEs, across as many industries as possible. The diversity of the network helps identify potential synergies, which are often found outside the industry where the underutilised resource is generated (e.g. paper sludge from the pulp and paper industry is used in clay brick manufacturing).

In some cases, the waste identified is best suited for reuse rather than recycling, or as an input into a manufacturing process (e.g. furniture, sample socks, fabric offcuts, etc.). If the waste presents an opportunity for a community organisation, GreenCape facilitates the connection between the manufacturer and civic organisation.

A synergy report is compiled for each industrial symbiosis resource exchange facilitated by GreenCape. From this information, details of the impact of WISP in terms of environmental, social and economic criteria are made available. The overall performance of WISP is monitored against the six indicators of additional revenue created, cost savings, private investment attracted, waste diversion from landfill, reduction in greenhouse gas emissions, and job creation.

Since 2013, the WISP network has grown to over 950 members. Cumulatively, the financial benefits to WISP members sit at R110 million, with additional revenue generated totalling R53,4 million, cost savings R36,1 million, and private investment R20,5 million.

The programme has been instrumental in job creation, with WISP activities

accounting for 69 permanent jobs, 34 temporary jobs and another 194 jobs in the broader economy.

Sustainability lessons

During the recent energy and water crisis, WISP was leveraged to support the work of the GreenCape energy and water teams, Province and the City. With its well-established business networks, WISP was a key platform to rapidly engage and assist industry and provide data and insights for strategic interventions and planning.

Through this work, the programme focus has evolved from primarily material inputs and waste to include other resources as well. Therefore, WISP can now provide a comprehensive service focussing on energy, water and materials/waste, as well as other business aspects, such as logistics and skills.

In addition to its business-as-usual industrial symbiosis activities, WISP also introduced enterprise development as an additional programme element

in 2017. The aim is to establish and identify businesses that can benefit from the opportunities and gaps identified through industrial symbiosis.

To date, the enterprise development programme has helped establish two businesses and provided business training to 12 entrepreneurs.

As the leading industrial symbiosis programme in South Africa, WISP aims to replicate its work in other provinces where there are no established programmes of this kind as yet, applying the lessons it has learnt and the best-practice methodologies it has developed.

This can be achieved by collaborating with organisations that are doing similar work in those provinces, or by building capacity in provinces where such organisations do not exist. Therefore, the ultimate objective is to forge links between various programmes countrywide to optimise industrial symbiosis at a national scale.





Relevant responses to wicked problems

Guest column by Zarina Patel

The City of Cape Town is a microcosm of the challenges facing the planet in the 21st century. In delivering services and infrastructure to its citizens, the decision makers and officials of the City must balance a number of threats, including to the natural environment, the economy, and high levels of inequality and unemployment. The recognition that these threats intersect in ways that present as “wicked problems” is also reflected in the institutional shift towards transversal management.

While these threats are not unique to Cape Town, the Mayor’s Portfolio demonstrates the City’s ability to respond to complex urban issues in ways that are relevant to local stakeholders, while also responding to global agendas, including the United Nations’ sustainable development goals and the Paris Agreement on Climate Change.

I have been part of the Mayor’s Portfolio as a member of the review panel since 2014. This time, two factors contributing to the City’s approach have stood out for me: Firstly, the emphasis on getting policy right to serve as a set of guiding principles, and, secondly, the diversity of partners that are being engaged in the delivery of services and infrastructure.

The Mayor’s Portfolio attests to the agility of the City in both policy development and implementation. While policy development is complex, it is critical for laying down the foundational values that inform delivery. Over the past decades, Cape Town has been a forerunner in developing local-level policies and strategies to guide sustainable development. The City’s Environmental

Strategy and Resilience Strategy are world-class and, together with the City’s Economic Growth Strategy and Social Development Strategy, form part of an overall sustainability model embedded in the City Development Strategy (CSD) and Integrated Development Plan (IDP). However, although good policies are critical, good policies that are not implemented are of no use. So, the proof of the pudding must lie in tangible social, economic and environmental benefits on the ground. Finding the evidence at a city scale to validate and justify the efforts being invested at a policy level is difficult. However, the Mayor’s Portfolio is a reminder of the pockets of innovation and success that are blossoming in different corners of the administration.

As a member of the review panel, I am always inspired by the diversity of projects being presented. This diversity reflects the wide-ranging scope and detail of how sustainability is interpreted by the City. This broad-scope approach means that the responsibility for strategy, planning and delivery of sustainable solutions for society does not lie with the traditional environment-related departments, but indeed with the entire administration. Innovation is demonstrated at numerous levels, including vision, technology, service delivery mechanisms and partnerships. The portfolio demonstrates that the delivery of sustainable solutions is as much a governance challenge as it is a technical one. The range of partnerships and the extent of stakeholder engagement in the conceptualisation and delivery of projects illustrate the City’s ability to partner beyond the administration, and to foster “good governance”.

Globally, the challenges faced by society seem intractable, including the climate crisis, displacement of people, disease

and pandemics, worsening inequality and political instability. It is easy to despair. However, what the portfolio inspires is hope that another future is possible. The seeds being planted in differently sized projects across the City are a product of the vision set through policy, strategy and implementation frameworks, as well as of creative and innovative thinking and design thanks to valuable partnerships. These partnerships, with community groups, business, industry, academics and others, allow the City to experiment and innovate by sharing risk and broadening opportunities.

Going forward, the portfolio has much to offer. It is a superb marketing tool, both internally and globally, of the innovation and creativity of City projects. It is a “live” illustration of how policy rhetoric translates into action on the ground. While the focus to date has been on the projects, profiling the people behind them – the project managers and teams – is an important next step in finding ways to support the partnerships and networks embodied in these individuals. To upscale projects to have a citywide impact, sustaining, diversifying and building relationships beyond the administration is critical. Responding relevantly in a city with multiple challenges, on a continent that is rapidly urbanising, and a planet that is in crisis, is indeed a tall order. In this context, the portfolio has played an important part in shining a light of hope, demonstrating the courage that is required to initiate a new era of sustainability.

This is a significant learning moment. How we take the lessons and insights gleaned from the success of these projects forward could be a turning point for Cape Town, the continent, and the planet.



Conclusion

The projects profiled in this edition of the Mayor's Portfolio form part of an ever-growing body of urban sustainability knowledge and practice in the City of Cape Town. As sustainability principles are increasingly being mainstreamed in City operations, it has become equally important to monitor and evaluate the extent to which projects showcased in the Mayor's Portfolio are performing in terms of sustainability criteria over time, and to continue building a strong evidence base for the portfolio. With this in mind, this edition revisited 10 projects featured in the 2014 to 2018 editions of the portfolio. This not only provides an opportunity to review projects in relation to temporal aspects of sustainability, but also affords project managers the space to reflect and build on their expertise and knowledge. This supports ongoing learning and dialogue.

Similarly, it is important to continue revisiting the broader vision, objectives and direction of the Mayor's Portfolio programme, and to adapt and modify activities and approaches accordingly, to ensure that the programme is indeed achieving its intended objectives. Therefore, in addition to revisiting projects, we intend to systematically monitor and evaluate the approach and implementation of the Mayor's Portfolio and, in doing so, will explore new platforms and tools for mainstreaming sustainability in project design,

implementation and management. This is at the heart of the Mayor's Portfolio.

Three valuable lessons relating to mainstreaming sustainability are highlighted in this edition of the Mayor's Portfolio.

First, successfully embedding sustainability in projects and programmes requires consideration, reflection and interventions throughout the lifecycle of a project or programme instead of retrospectively overlaying sustainability criteria onto projects.

Second, knowledge-based partnerships play a vital part in the pursuit of sustainable outcomes. In particular, knowledge institutions such as universities, colleges and vocational schools are incubators of new and innovative ideas, and can provide invaluable knowledge, data and information to inform projects and programmes. Although the City has a long-standing track record of successful knowledge partnerships, which is highlighted in, for instance, the Water Resilience Advisory Committee showcased in this edition, there is wide scope and opportunities to develop and build on existing knowledge co-production models in support of systemic change. Cultivating City-university collaboration not only widens the pool of problem-solvers, but also offers diverse forms of knowledge to address urban sustainability challenges.

Third, confronting sustainability challenges requires a change in how we think and behave. This is specifically demonstrated by the behaviour change programmes showcased in this edition, and is particularly relevant in times of increasing uncertainty and in confronting new shocks and disturbances. In general, these projects highlight ways in which the City is leading by example in changing behaviour. As such, they provide models for citizens, businesses and communities to replicate.

In responding to these lessons, the Mayor's Portfolio programme is exploring a number of tools. These include facilitating knowledge partnership opportunities that may help project managers identify and co-create solutions to sustainability challenges, establishing a mentorship programme, and building on the existing community of practice that has developed around the Mayor's Portfolio. These potential areas of development demand creative thinking and collaboration. Therefore, we invite project managers, partners and supporters of the Mayor's Portfolio to continue engaging with us in support of the objectives of the programme, to capacitate project managers across the City, and to facilitate sustainable change in City operations for the benefit of Cape Town communities, residents, businesses, as well as current and future generations.





Extras

Portfolio extra 1: More about the City's five strategic focus areas

Portfolio extra 2: Defining the 12 sustainability objectives of profiled projects

Portfolio extra 3: More about project evaluation

Portfolio extra 4: Abbreviations

Portfolio extra 5:
Acknowledgements
and resources



THE
OPPORTUNITY
CITY



THE
SAFE
CITY



THE
CARING
CITY



THE
INCLUSIVE
CITY



THE
WELL-RUN
CITY

Portfolio extra 1: More about the City's five strategic focus areas

The City of Cape Town's IDP provides the strategic framework that guides the municipality's planning and budgeting over the course of its political term.

When the new City administration was elected, a strong plan of action for Cape Town was developed. This plan is based on a clear understanding of what needs to be achieved during this term of office, and is built on the following five key pillars:

1. The opportunity city
2. The safe city
3. The caring city
4. The inclusive city
5. The well-run city

These five pillars help focus the City's message and purpose of delivery. They also help us translate our electoral mandate into effective organisational structures.

In the IDP, these pillars are called strategic focus areas (SFAs), as they are the key "themes" encompassing all the City's programmes and initiatives. The result is a detailed format that enables effective programme implementation and accurate performance measurement of the focus areas.

While these programmes and objectives often overlap across SFAs, classifying them under the five pillars allows the City to effectively measure their outcomes. They can then act together to produce the objectives of the administration, and help the City address the structural inequalities of the past. Being drivers of social and economic development,

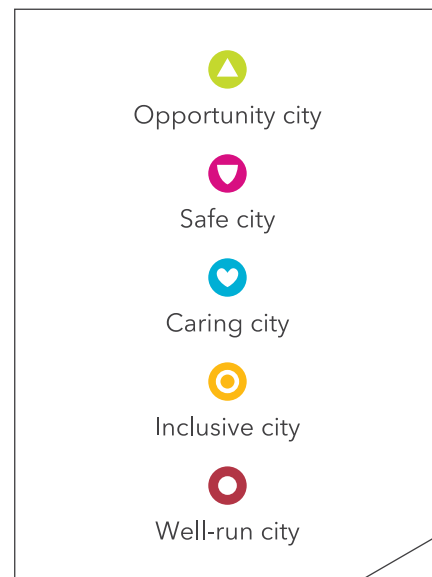
they help the City fulfil its constitutional mandate as local government and help change people's lives.

The IDP has been developed with maximum citizen participation. This has involved input from all levels of the administration, as well as the most extensive public participation process ever undertaken by the City. Based on this inclusive approach, the IDP describes the programmes under each SFA as informed by the overarching principle of infrastructure-led growth. A brief description of the five SFAs follows below:

1. The opportunity city

The core focus of the opportunity city is to create the economically enabling environment in which investment can grow and jobs can be created. Creating such an opportunity city involves the following:

- Using numerous levers to attract investment
- Providing adequate support to the market via efficient regulation, planning and infrastructure support
- Continued investment in infrastructure
- Ongoing development and strengthening of economic partnerships
- A focus on key projects that will promote growth and sustainability
- Making the most of City assets to aid development and growth
- Encouraging the growth of small businesses and entrepreneurs



- A focus on taking care of the natural environment and managing natural resources more efficiently

2. The safe city

Citizens need to be safe in their city. However, safety is a broader issue that goes beyond policing. A truly safe city manages disasters and risks, enforces traffic regulations, and provides fire and rescue services. Safety is essential to the public enjoyment of open spaces, city beaches and nature reserves. The City of Cape Town's focus on building a safe city includes the following:

- Continued dedication of resources and programmes to ensure effective safety provision
- Local and international partnerships to allow for training and education

- Ongoing rollout of neighbourhood watch programmes
- Increased public awareness of, and participation in, safety and security initiatives
- Alignment of staffing models with national and international best practice
- Investment in staff training and capacity building
- Enforcement of environmental compliance
- Investment in innovative safety policies, specialised units and programmes

3. The caring city

To be a world-class city, Cape Town must be welcoming to all people and make residents feel that their government is doing everything it can to provide for them so that they can truly access opportunities. Key to realising the vision of a caring city is the following:

- Continued implementation of the rates rebates policy to help reduce poverty
- Provision of amenities, such as parks, libraries, sports and recreational facilities, and community and youth centres
- Greater focus on more direct ways of promoting social development

- Offering effective substance abuse programmes to help minimise the number of people who are excluded from society
- Increased efforts to make all people feel that they are a part of their communities
- A focus on creating integrated human settlements by building communities, not just houses
- Ongoing review of the provision of services to informal settlements
- Investment in primary healthcare facilities

4. The inclusive city

An inclusive city is one where everyone has a stake in the future and enjoys a sense of belonging. While achieving this relies on the proper functioning of programmes, the City of Cape Town will also concentrate on the following:

- Developing effective public transportation programmes
- Ensuring greater recognition of culture and heritage
- Proper use of resources to address the backlog of community facilities in underdeveloped areas
- Responding effectively to the needs of its citizens

5. The well-run city

Citizens need to know that their government works for them, is accountable to them, and answers to them at all times. To achieve this, the City of Cape Town commits to the following:

- Keeping Council meetings open to the public to ensure that the actions and decisions of the City's political leaders are always transparent
- Publicly advertising all City tenders above a prescribed rand value
- Sticking to its budgets and programmes of debt collection and revenue projections
- Managing its staff structure to ensure service delivery
- Maximising staff potential through effective human resources management, staff training and staff development
- Strictly monitoring all services to ensure delivery
- Remaining open and transparent in all its dealings



Portfolio extra 2: Defining the 12 sustainability objectives of profiled projects



1. Building community

For example, through:

- facilitating community participation;
- promoting collaboration and building partnerships; and
- promoting social cohesion.

2. Improving quality of life

For example, through:

- promoting health and well-being;
- improving living and working conditions and promoting dignified human settlements; and
- enhancing participation in arts, culture, sports and heritage.

3. Addressing major social challenges

For example, through:

- addressing the legacy of apartheid;
- improving safety and security; and
- promoting education, training and awareness.

4. Creating economic opportunities

For example, through:

- creating jobs and promoting job creation;
- creating SMMEs; and
- supporting the informal economy.

5. Improving productivity and efficiency

For example, through:

- providing efficient utilisation of resources;
- removing barriers to service delivery; and
- promoting beneficial partnerships.

6. Alleviating poverty

For example, through:

- meeting basic needs;
- supporting livelihood development; and
- improving access to income.



Ensuring our urban growth is done responsibly, and in a sustainable manner, requires us to challenge the ways in which we think about urban issues and the ways in which people and institutions behave.

7. Enhancing resource efficiency

For example, through:

- improving water availability, reducing demand and increasing efficiency;
- promoting energy efficiency and increasing use of renewable energy; and
- promoting urban densification and efficient use of land.

8. Promoting and enhancing ecological integrity

For example, through:

- conserving sensitive ecosystems and biodiversity;
- promoting implementation of the biodiversity network; and
- conserving and enhancing ecosystem functions and benefits.

9. Addressing major environmental challenges

For example, through:

- reducing the incidence of invasive species;
- reducing waste and pollution and improving air and water quality; and
- addressing historical inequities in accessing natural resources.

10. Ensuring strategic alignment

For example, through:

- promoting co-operative governance and aligning with provincial, national and international priorities and responsibilities; and
- ensuring alignment with the Spatial Development Framework, IDP and other key strategies.

11. Facilitating community engagement

For example, through:

- building communities' capacity for engagement;
- facilitating public input into governance; and
- supporting existing community structures and initiatives.

12. Promoting transparent and democratic processes

For example, through:

- ensuring responsiveness to public needs and adaptive management in changing contexts;
- promoting access to information; and
- ensuring replicability of project principles/methods.

Portfolio extra 3: More about project evaluation

A custom-designed table was used to record and assess projects' performance according to sustainability objectives.

The table below is an extract from the Smart Driver programme evaluation (page 61). The objectives were broadly defined so that project managers could relate each objective to their respective

projects. A scale of 1 to 5 ("Poorly", "Partly", "Satisfactorily", "Very well", "Excellently") was employed to assess how well the projects met each objective.

Project title: Smart Driver programme			
How does the project address the following objectives?			
Sustainability objective	Project approach	Assessment	Scoring
Creating economic opportunities		Partly	2
ii. Facilitating skills development and training	The training gives fleet drivers an added qualification or differentiating skill when entering the job market.		
Improving productivity and efficiency		Excellently	5
i. Maximising return on investment	By promoting greener, more economical driving behaviour, the City benefits financially from less damage incurred to fleet vehicles and an associated reduction in insurance claims, costs and downtime, fewer traffic violations, reduced maintenance costs, significant fuel cost savings and a reduction in CO ₂ emissions if the programme is rolled out across the organisation.		
iii. Ensuring cost-effective use of funds	A complementary aspect of the programme is the training targeted at fleet supervisors and managers. The three-hour training intervention looks at managing risk and liability in dealing with fleet and bus drivers and vehicles.		

Portfolio extra 4: Abbreviations

BBBEE	broad-based black economic empowerment	LAPI	local area planning initiative
BNG	Breaking New Ground	LED	light-emitting diode
CBD	central business district	Mayco	Mayoral Committee
CCTV	closed-circuit television	MMP	maintenance management plan
City	City of Cape Town	MSDF	Municipal Spatial Development Framework
CO₂	carbon dioxide	NGO	non-governmental organisation
CSIR	Council for Scientific and Industrial Research	PHP	People's Housing Process
CTEET	Cape Town Environmental Education Trust	RDP	Reconstruction and Development Programme
EGS	Economic Growth Strategy	SANCCOB	South African Foundation for the Conservation of Coastal Birds
EPWP	Expanded Public Works Programme	SANParks	South African National Parks
ESD	enterprise and supplier development	SDS	Social Development Strategy
FLISP	finance-linked individual subsidy programme	SFA	strategic focus area
FSMF	faecal sludge management facility	SMME	small, medium and micro-sized enterprise
GDP	gross domestic product	UNPEC	Urban National Parks in Emerging Countries
GIP	Green Infrastructure Programme	USDG	Urban Settlements Development Grant
GIS	Geographic Information System (Department)	WESSA	Wildlife and Environment Society of South Africa
IDP	Integrated Development Plan	WISP	Western Cape Industrial Symbiosis Programme
IPCC	Intergovernmental Panel on Climate Change	WRAC	Water Resilience Advisory Committee
IS&T	Information Systems and Technology (Department)	WWTP	wastewater treatment plant
IUCN	International Union for Conservation of Nature		

Portfolio extra 5: Acknowledgements and resources

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*Projects revisited from the 2014 to 2018 editions of the Mayor's Portfolio of Urban Sustainability.





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