



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD



CAPE TOWN

(DRAFT)
CAPE TOWN
RESILIENCE STRATEGY

VERSION 1 | Public Participation | 13 March 2019

Making progress possible. **Together.**

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The Cape Town Resilience Strategy is being adopted in the aftermath of the worst drought that the city-region has confronted in recorded history. Three years of dramatically low rainfall, exacerbated by climate change¹, presented the possibility of Cape Town running out of water. This episode severely tested the resilience of our city and its residents. Through a comprehensive societal response, mainly due to the heroic efforts of households and businesses to reduce consumption, the worst-case scenario was avoided.

While Cape Town showed a strong capacity for resilience in the face of drought, it would be less easy to argue that the city is objectively resilient to drought. What if there had been a fourth year of low rainfall? What if certain sectors, already strained by chronic issues such as food insecurity and unemployment, suffered from an unprecedented collapse in the midst of the drought? We must reflect and learn from our challenges, take new actions to improve resilience, and apply new knowledge and innovative solutions to future shock events.

It is in this context that Resilient Cape Town offers a roadmap for a 21st Century metropolis. Cape Town is a vibrant city, home to a diversity of people, most of whom were born and raised here, and many of whom migrated here, drawn by the opportunities that our city has to offer. Cape Town is also the destination of hundreds of thousands of visitors every year who come to experience our world class beaches, mountain, vineyards and culture. Tempering this vibrancy and opportunity are a range of system-wide challenges posed by one-time shocks and continuous stresses. We see the legacy of Apartheid manifested in high inequality, spatial divides and a lack of social cohesion. At the tip of Africa, we are a city exposed to extreme weather and our 307km of coastline lies at the mercy of the ocean. As climate change intensifies, we are becoming increasingly vulnerable to weather-related shock events, in particular increased heat and decreased rainfall; chronic stresses in our city will exacerbate the effects of shocks when they do occur.

Since the dawn of democracy in 1994 we have made great collective progress as a city to improve the lives of Capetonians. Yet the future is ever-changing and more collaborative action is needed. A central focus of this strategy is the need to partner across government, business, community organisations, academia and households to build our collective resilience. This is a strategy for everyone, by everyone. It is a strategy which aims to strengthen Cape Town against the sudden potential shocks of the future – from storm surge and flooding to cyber-attack – while addressing the underlying chronic stresses which weaken our ability to respond – such as unemployment, climate change and trauma.

The pages that follow reflect the input of thousands of Capetonians who were consulted over the past two years. This is our invitation and our commitment to partner with each Capetonian as we build a more resilient future together.

Five pillars form the core of *Resilient Cape Town*:

PILLAR 1: Compassionate, holistically-healthy city

Apartheid, high crime rates, substance abuse, and poverty. The legacies of these challenges have culminated in a base level of trauma faced by Capetonians in all parts of society. This has resulted in a high incidence of mental health disorders – which often exacerbates the quadruple burden of disease. This pillar focuses on a collaborative and holistic approach to build a healthier city, including improving access to mental health services and nutritious food, strengthening social cohesion, and to ensuring that children have the best possible start to life, with the intention of disrupting the intergenerational transfer of trauma.

PILLAR 2: *Connected, climate-adaptive city*

Cape Town's unique geography makes our city very vulnerable to the impacts of climate change. These impacts, which can manifest as a variety of shock events, are known to be multiplied by existing societal stresses such as poverty, food insecurity and a lack of social cohesion. In this vein, the residents of informal settlements and backyards are often the most vulnerable to climate-related shock events. This pillar focuses on overcoming the spatial legacies of our divided past through partnership at all scales - community, city and regional – allowing us to enact climate adaptive measures that simultaneously build urban resilience, with co-benefits that include improved mobility, place-making and social cohesion.

PILLAR 3: *Capable, job-creating city*

The performance of the Cape Town economy, and its ability to create jobs, is heavily intertwined with national and global trends. The impacts of climate change can result in resource constraints, while a variety of shock events – from cyber-attack to infrastructure failure - can affect supply chains and productivity. Rapid technological change has the potential to exclude more work seekers from the economy, while globalisation and increased connectivity makes the environment for attracting new investment more competitive. This pillar focuses on building resilience for the purpose of sustaining and growing new opportunities in the context of change. A resilient city, working to overcome its risks and turning them into new market advantages, is an attractive city for growth and new investment.

PILLAR 4: *Collectively, shock-ready city*

The nature of a rapidly changing urban environment impacted by climate change, urbanisation, rapid technological change and globalisation means that the nature of shocks that can impact Cape Town are varied beyond those that we are commonly prepared for, and they can be more complex in terms of scale and impact considering the continuous stresses that are pervasive in our city. This pillar focuses on preparing capabilities for some new known shocks that could impact us in the future, but more broadly works to be build the capacity of individuals, households and communities to respond to shocks, no matter kind of shocks may occur, with particular focus on vulnerable households and communities.

PILLAR 5: *Collaborative, forward-looking City*

The City government operates in a complex legislative environment with limited resources. It has an extensive service offering to Capetonians and a number of transformational goals set out in the IDP, but is cognisant of the fact that shocks and stresses can negatively affect its ability to deliver on these services and goals. This pillar focuses on how the City government will work with other spheres of government to improve the functioning of certain key city systems. It also focuses on how the City government will work with partners such as data providers, technology partners, modelers and researchers, to be reflective after shock events and to mainstream resilience into planning and decision-making.

WHAT IS RESILIENCE?

Resilience is “the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and thrive² no matter what kind of chronic stresses and acute shocks they experience.”³

Chronic stresses weaken the fabric of a city on a day-to-day or cyclical basis, for example, high unemployment, inadequate public transport systems, endemic violence, food insecurity and substance abuse. **Acute shocks** are sudden sharp events that threaten a city, for example, drought, fires, floods, diseases outbreaks and infrastructure failure.⁴

Building resilience to shocks and stresses matters because disruptions or disasters of any sort, whether regional or distinctly local in scope, short or long in time scale, can be costly to those they impact. They can result in the loss of livelihoods, they can severely impact citizens' mental health, they can result in injuries and death, and they can drive apart communities.

Cape Town's Resilience Strategy is a commitment to ensure that we thrive in the future regardless of what shocks and stresses we face. Resilience is a guiding principle and expected outcome of the most recent Integrated Development Plan (IDP).⁵ The Resilience Strategy does not seek in itself to direct how resilience should be built across all systems or thematic areas in the city, nor does it replace any existing City government strategy. It is a commitment to work together, with a common vision, across government departments, spheres of government and with individuals and organisations across the city as a whole.

A resilient Cape Town is a compassionate, connected, and capable city, where Capetonians collaborate across households, communities and institutions, to build collective responses to the current and future social, environmental and economic challenges.

Capetonians are at the heart of building city resilience. We have emerged out of hundreds of years of racial oppression under colonialism and Apartheid, and continually grapple with overcoming the legacies of our traumatic past. There is much work still to be done, especially with regard to building city-wide social cohesion. Yet at times we have been able to come together to confront a collective challenge, like our city did to drive down water consumption during the drought.

Building resilience is an ever moving target in a reality where the only thing that can be predicted with certainty is constant change. In this sense resilience differs from sustainability, for which there are objective measures of attainment. Building resilience is hence better understood as a process. It cannot in reality be measured before a shock event and is best understood in the aftermath of such an event. A city, using all available knowledge and with the best available predictive capabilities, can only strive to overcome its vulnerabilities in order to be increasingly more resilient, making adjustments as and when new realities emerge.

Taking action to proactively manage city challenges and interdependencies offers access to multiple benefits, or what is referred to as “**the resilience dividend**”. This is the “sum of the benefits, over time, from project investment based on resilience principles compared to one that is not. It is the difference in value between a resilience approach and business-as-usual – The ‘bonus’ we receive from investing in a project designed to build resilience.”⁶ This means that planning for disruptions, even if they do not occur can create new opportunities that offer social, environmental and economic benefits.

OUR RESILIENCE CHALLENGE

A resilient Cape Town is a compassionate, connected, and capable city, where Capetonians collaborate across households, communities and institutions, to build collective responses to the current and future social, environmental and economic challenges.

5 PILLARS	VISIONS	20 GOALS
Pillar 1 Compassionate, holistically-healthy city	Capetonians feeling welcome, accepted and safe in our socially cohesive city, working together to continually enable healthy people, households and communities which are better able to respond to shocks and stresses.	Goal 1.1: Increase awareness, access to and uptake of mental health support
		Goal 1.2: Grow cross sectoral support and community participation for diversion, early detection and protection from crime
		Goal 1.3: Combat discrimination and build social cohesion
		Goal 1.4: Promote a culture of health that increases well-being and decreases trauma
Pillar 2: Connected, climate-adaptive city	Capetonians working together at the household, community, city and regional scales to overcome the spatial legacies of our divided past while building adaptive responses to the impacts of climate change that have multiple resilience dividends.	Goal 2.1: Grow partnerships that strengthen transportation systems and improve mobility
		Goal 2.2: Engage communities and the private sector to improve public spaces
		Goal 2.3: Build climate resilience
		Goal 2.4: Innovate for alternative methods of basic service delivery
Pillar 3: Capable, job-creating city	Capetonians aware of both the risks and opportunities of rapid change in the context of increased economic interconnectedness, working together to create a resilient local economy, able to turn challenges into new market opportunities.	Goal 3.1: Foster green economic growth
		Goal 3.2: Enable enterprise development in the informal economy
		Goal 3.3: Connect the workforce with a changing economy
		Goal 3.4: Collaborate with businesses to achieve a resilient local economy
Pillar 4: Collectively, shock-ready city	A city which is prepared on all levels to function in the face of uncertainty and future shocks, underpinned by individual, household and community resilience building efforts.	Goal 4.1: Future-proof urban systems
		Goal 4.2: Strengthen individual, household and community resilience
		Goal 4.3: Encourage responsible investment in household and business resilience
		Goal 4.4: Explore funding mechanisms for shock events
Pillar 5 Collaborative, forward-looking City	A City government, reflective after shock events, working with data providers, technology platform partners, modelers and researchers to improve resilience considerations in planning and decision-making.	Goal 5.1: Develop and approve portfolios of projects that maximise the resilience dividend
		Goal 5.2: Mainstream resilience in decision-making
		Goal 5.3: Enhance knowledge management and data-use
		Goal 5.4: Monitor resilience outcomes

PRIORITISED SHOCKS AND STRESSES

Urbanisation, globalisation, rapid technological advancement and climate change means that Cape Town's key systems are increasingly interdependent with other parts of the region, the country and the rest of the world, and therefore potentially more vulnerable to disruption. A holistic approach to risk is required – not simply preparing for shocks, but understanding the how stresses impact on the ability of our city to thrive and respond in moments of shock.

Below is a list of prioritised shocks and stresses to which the Resilience Strategy most acutely responds. A longer list of shocks and stresses, determined after extensive public participation at the beginning of the strategy development process features in the Preliminary Resilience Assessment (PRA) for Cape Town.

Prioritised shocks and stresses can change, and must be reviewed periodically or as the need arises. Particularly with regards to shocks, there are arguably several other categories of shock events that could occur in the future that are not accounted for below. This does not imply the Resilience Strategy has no response. Many of the actions in this strategy are intended to respond to both known and unknown shock or stress events.

PRIORITISED SHOCKS

Drought	From 2015 to 2018, Cape Town experienced the worst drought in its recorded history. Climate change has increased the likelihood of more frequent and intense drought in the future.
Fire	The threat and impact of fires in Cape Town are most acutely experienced through informal settlement fires, which displace large portions of communities, and through wildfires in the mountainous areas that surround Cape Town, on which the urban edge interacts frequently.
Financial / economic crises	Cape Town's economy is fully intertwined with the national and global economies. The direct impacts of financial crises in a globalised world are most acutely experienced by the poorest segments of our population through job losses and inflation.
Heat wave	Increased incidences of extreme heat events as a result of climate change are a distinct possibility for Cape Town. The impact of heat waves on vulnerable people, particularly the elderly and young children, can be particularly severe. Multi-day heat events can result in deaths and are a contributing factor to wildfires.
Infrastructure failure	Cape Town must maintain a balance between building new infrastructure for growth as well as servicing and replacing existing aging infrastructure. Some of this infrastructure is owned by spheres of government other than the City. At the moment the most critical failures in operations are being experienced by Metrorail.
Power outage	Cape Town has experienced the devastating effects of load shedding in recent years due to an inability of the national electricity utility, Eskom, to match supply with demand. Cape Town's electricity supply comes almost entirely from Eskom, hence it is vulnerable to that entity's chronic operational and sustainability issues.
Rainfall flooding	Flooding affects a large number of Capetonians living in informal settlements. Due to climate change Cape Town is expected to have more frequent and intense flood events in the future which can impact large tracts of the city.
Civil unrest	Service delivery-related issues, illegal land occupations, and income inequality between Capetonians can manifest in unrest and protest action. These protests are usually localised in their reach, but the prospect of widespread, simultaneous, multiple location protests is an increasing risk when one overlays a variety of shock events and continuous stresses at the same time.

PRIORITISED STRESSES

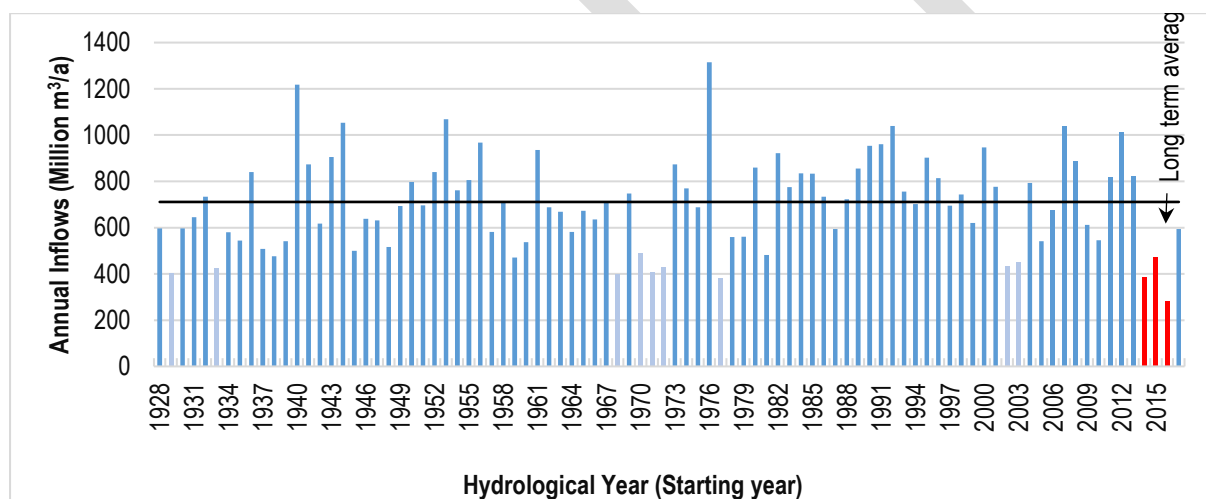
Climate change	Climate change impacts Cape Town in a number of ways and exacerbates the occurrence and severity of extreme weather events such as droughts, heatwaves and storms. Cape Town also has large coastal areas and low-lying residential areas that may be impacted by future sea level rise.
Crime & violence	Cape Town ranks among the top 20 most violent cities in the world. Areas in Cape Town like Nyanga and Khayelitsha have some of the highest murder rates in the country, while the levels of gang violence in the Cape Flats is a significant concern. Rape, murder and serious contact crimes are very high in the city.
Food insecurity	For many poor and vulnerable Capetonians, the ability to put food on the table is a daily challenge. At the same time, in light of climate change-related shocks, like the recent drought, ongoing food security is of crucial importance to Cape Town's resilience.
Insecure municipal finances	The sustainability of municipal revenue is a constant challenge and is impacted upon by city resource constraints, technological change and rapid urbanisation. Off-grid water and energy solutions, which are desirable for purposes of enhancing household and business resilience reduce revenue streams to City. Unfunded mandates from other spheres of government increase pressure on the City fiscus.
Informal settlements	A large portion of Cape Town's population resides in informal settlements. Providing formal housing opportunities is relatively slow, and there is a significant backlog, hence there is now a concerted effort going into upgrading informal settlements. However, informal settlements continue to expand and their residents are particularly prone to the negative impacts of shock events.
Lack of social cohesion	Cape Town's lack of social cohesion continues through the legacy of Apartheid spatial planning and high income inequality, making interaction between people of different races and socio-economic classes more challenging.
Rapid urbanisation	With sustained inward migration into Cape Town, more and more people are looking for opportunities in the urban centre. This puts additional strain on the ability of people to access services, jobs and housing opportunities.
Substance abuse	Drug and alcohol abuse are both very prevalent in Cape Town. This is especially true in poorer residential areas and is often linked to high levels of unemployment and poverty. Drug abuse also has a direct link to crime, while alcohol abuse is linked to domestic violence.
Traffic congestion	Cape Town is the most congested city in South Africa and ranks 48th in the world ⁷ . This is exacerbated by the fact that safe and reliable public transport is not offered uniformly across the city. It can be further worsened by shock events such as rainfall flooding and storm surges.
Trauma	Given the high rates of crime, violence and poverty experienced on a daily basis by many citizens, trauma and mental health conditions are prevalent. There is still a significant stigma associated with mental health challenges and there are insufficient support mechanisms in the public sector for people living with these challenges. As a result we have a lack of psychological resilience in our society.
Unemployment	Even though Cape Town's unemployment figure is slightly better than the national figure, when compared to global cities in developed countries it remains very high and is of significant concern.

A CASE STUDY OF THE DROUGHT: A WHOLE CITY RESPONDS

The extreme drought shock from which Cape Town is emerging has tested the adaptive capabilities of the city-region since 2015. It was during this period that the City government contemplated the prospect of turning off parts of the reticulation system, a scenario which came to be known as Day Zero. Capetonians responded to the challenge – driving down water consumption by more than 50% when compared with pre-drought levels, an overwhelming contribution to avoiding the projected Day Zero of 2018⁸. With the crisis contained, the entire experience has served as a strong wake-up call for the extremity of drought events that are expected to become more frequent in the south-western Cape in the years ahead, particularly under conditions of climate change. The drought also offers much to reflect upon when considering the broader resilience challenges of Cape Town.

The shock to Cape Town's water system can be traced back to a complex confluence of events. From 2015 to 2017, the dam catchment area, known as the Western Cape Water Supply System (WCWSS), suffered its driest three-year period since the 1930s (see figure 1). It was a particularly rare event in severity; the best estimate of the return interval of a similar drought is over 300 years.⁹ See figure 1 to locate the recent drought within other rainfall years.

Figure 1: Annual inflow into Cape Town's dams over 90 years from 1928 to 2018



Near exclusive reliance on surface water from rainfall makes Cape Town and its surrounds very vulnerable to drought shocks of this extremity. The City's predominant lever of response was to increase water restrictions, which were first instituted at the beginning of 2016 and which were progressively increased into early 2017.¹⁰ However, the drought increased in intensity, and by mid-2017 it was clear that there would be a third consecutive year of very low rainfall.

The City government began to grapple more intently with uncertainty in the system. Developing a portfolio response to the drought, the City analysed a wide variety of risks and proposed a comprehensive set of emergency, tactical and strategic actions, including interventions related to both water demand and supply. A highly ambitious consumption target of 500 mega litres a day was set and several new small-scale augmentation projects were packaged and implemented, which resulted in a small amount of additional water being brought into the system relatively quickly.

Meanwhile Capetonians, in households and businesses, were doing remarkable things to contribute to the drought response. We replaced lawns and water-sensitive plants with alternatives requiring less water. We took very short showers and collected the grey water for use in toilet flushing. We invested in water-saving devices such as low-flow taps, water-efficient shower heads, and smaller toilet cisterns. Capetonians who had the means to do so installed rainwater harvesting tanks and drilled boreholes. A few corporates even went entirely off-grid,

turning to groundwater or desalination. New businesses emerged that offered water saving solutions, demonstrating a noteworthy entrepreneurial spirit. This impressive collective response led to consumption levels below 600 mega litres a day towards the end of 2017.

The goal of 500 mega litre collective consumption nevertheless remained elusive and Day Zero marched forward. This necessitated business continuity planning by all spheres of government, businesses and communities for what would need to happen should the reticulation system be turned off. The City and provincial governments worked tirelessly with businesses to share available information, hear concerns and tweak plans. Business groups developed their own task teams. Neighbourhood watches and other community organisations developed responses unique to their own communities. Cape Town was becoming a shock-ready city.

Far from seamless, this process relied on Capetonians across the private sector, communities and government to operate under some degree of uncertainty. Information was not always readily available, and government accepted regular criticism. But the public sector was also becoming better at partnering.

Beginning in late 2017 and continuing through 2018, the City government increased its investment in mechanisms to manage water pressure on a zone-by-zone basis using smart process controllers. This led to a reduction in water consumption by a further 50 megalitres a day by early 2018, and as much as 70 megalitres a day by the end of that year. It was one of the final pieces of the response that enabled the consumption to drop below 550 megalitres a day by February 2018, a position held fairly consistently throughout 2018.

The Day Zero campaign – which heightened in intensity in January 2018, along with higher water tariffs – contributed to even further reductions in water consumption. At this point, improved information sharing on a weekly basis allowed Capetonians to understand dam behaviour and the relationships between consumption against various rainfall scenarios. This also coincided with the first publication of the Water Outlook, which allowed business in particular to make more improved investment decisions of their own. Capetonians were becoming more empowered, even though Day Zero was still a high possibility.

By February 2018 the adaptive capabilities of Cape Town were stretched to the maximum. Nearly every resident understood the implications. By partnering with other large users in the water system, the City received a considerable water transfer from a private agricultural association – good fortune that revealed the value of collaboration between different stakeholders. This, along with the regular attainment of daily water consumption of close to 500 mega litres, as well as a few early rains, resulted in the prospect of Day Zero being called off for 2018. And soon thereafter it was removed as a possibility for 2019 as well.

It was a trying time for all Capetonians. Negative international press hurt the city's investment profile, and tourist arrivals reduced. The City government's investment grade was downgraded by a major international credit rating agency off the back of driving down consumption and an expected revenue gap for the water utility.

We will never know how Cape Town would have responded if indeed Day Zero had arrived. Thankfully Capetonians working together helped to avoid it. Capetonians showed strong resilience during this time. During the whole of 2018, and into the early months of 2019, water-saving and efficiency behaviours endured, even as restrictions were gradually lessened. Water consumption is unlikely to ever return to pre-drought levels.

Many of the lessons from the drought are valuable for any shock or stress event. The challenge we face is whether Cape Town can become a permanently shock-ready city. Can we take lessons from the drought while they are still fresh and use them to address other societal stresses? Can we pivot off the drought while the experience is still fresh in our collective memory? In the below table, lessons from the drought are positioned against the 5 pillars of the Resilience Strategy.

Resilience Pillar	Drought impacts multiplied by stresses	Successful actions by Capetonians and government to prepare for and defeat Day Zero	Lessons learnt from the drought relevant to most shock events
Compassionate, holistically-healthy city	Trauma Poverty	Activation of neighbourhood watches, with focus on assisting vulnerable groups Donations of bottled water to vulnerable groups	Invest in people and communities
Connected, climate-adaptive city	Climate change Food insecurity Rapid urbanisation	Household installation of rainwater tanks and boreholes Capetonians driving down consumption in homes through conservation and use of grey water Creation of spring water collection points in communities Greater understanding of climate risk Advanced pressure management in the City reticulation system New water augmentation systems rapidly installed by the City	Integrate climate change into planning Build spare capacity for times of disruption
Capable, job-creating city	Unemployment	Business continuity planning by businesses Innovative water saving products brought to market for consumers Increased use of treated effluent water for business processes Business driving down consumption and encouraging customers to do so too	Understand resource constraints and turn them into opportunities
Collectively, shock-ready city	Lack of social cohesion	Critical Water Shortages Disaster Plan Disaster declarations and joint operations by local, provincial and national governments Day Zero communications campaign	Invest in partnerships Practice responding to worst case scenarios
Collaborative, forward-looking City	Insecure municipal finances	City communications materials made open-source for business & community use Water restrictions and high water consumption tariffs Partnering with agricultural users to receive emergency transfer of water Sharing of regularly updated Water Outlooks by the City for improved decision making by partners	Strengthen leadership to enable flexible, adaptive decision-making Share information to build public trust Build systems and relationships of mutual accountability between spheres of government

PROFILE OF CAPE TOWN

Cape Town, located in the Western Cape province, is the legislative capital of South Africa. World renowned for its stunning beauty and biodiversity, it is one of the most popular tourist destinations in the world. It is the location of the iconic Table Mountain, one of the New7Wonders¹⁶ of Nature and the location of two UNESCO World Heritage sites, the Cape Floral Region and Robben Island.

Figure 2: Western Cape province



It is the second most populous city in South Africa and the 10th most populous city in Africa. In 2018 the population of Cape Town was 4 322 031. From 2011 to 2016, Cape Town had the fourth highest annual population growth of all the metropolitan municipalities in South Africa, increasing from

1.5% between 2011 and 2012, to 1.6% between 2015 and 2016. This rapid urbanisation is largely the result of inward migration of South Africans, particularly from the Eastern Cape, Gauteng and other parts of the Western Cape¹⁷. A significant number of new migrants to Cape Town find residence in one of the city's many informal settlements.

Figure 3: Location of Cape Town communities



Cape Town's continued growth will intensify the range of challenges it already faces including high levels of unemployment, substance abuse and crime.

Simultaneously, Cape Town needs to overcome its inequity, which is a legacy of the former Apartheid system. Hence Cape Town requires a continued focus on physical and economic infrastructure as well as human capital development.

City size	2456 sq. km	2016
Population total	4 322 031 ¹¹	2018
Gender		2018
Male	2 129 594 (49.3%)	
Female	2 192 438 (50.7%)	
Languages		2017
Afrikaans	31.90%	
isiXhosa	31.00%	
English	30.80%	
Other	1.80%	
No. of households	1 264 849	2016
Household size	3.17	2016
Households living in poverty	20.2% ¹²	2017
Median Household Income	R8 000 ¹³	2017
Unemployment	21.2% ¹⁴	(Q4: 2018)
Life Expectancy (Western Cape ¹⁵)		2018
Males	66.2	
Females	72.1	
Gini coefficient for Cape Town	0.61	2017

100RC: A NETWORK OF CITIES BUILDING RESILIENCE

Cape Town was selected to be part of the 100 Resilient Cities (100RC) network, pioneered by the Rockefeller Foundation, in May 2016. This network comprises 100 cities from across the world that are each committed to building city resilience around the social, economic and physical challenges of the 21st century. Cape Town is one of ten African cities in the network. The other cities include Accra, Addis Ababa, Dakar, Durban, Kigali, Lagos, Luxor, Paynesville and Nairobi.

The 100RC network supports cities by financing and providing technical assistance, access to the services of global organisations, opportunities to exchange experiences and best practices among member cities, and access to tools for building resilience.

Figure 4: Map of cities in the 100 Resilient Cities Network



RESILIENCE IN CITIES AROUND THE WORLD

As a member of 100RC, Cape Town is exchanging ideas with cities worldwide about the most effective ways to build resilience.

The development of the Cape Town Resilience Strategy and its associated actions has been enriched by various collaborations with other cities across the network. Collaborations included co-developing the measures of urban water resilience, in a process called the City Water Resilience Framework and Approach, with several other cities including Amman, Greater Manchester, Mexico City, Miami, Rotterdam, and Thessaloniki. Also on the theme of water resilience, a collaboration laboratory (CoLab), was hosted in Cape Town during which local stakeholders engaged with stakeholders from Addis Ababa, Los Angeles and Mexico City and formulated several concrete actions that form part of this strategy.

Cape Town also participated in a Data CoLab in New York City along with San Francisco and Greater Manchester during which tangible data-related resilience actions were formulated.

Cape Town also benefited from collaboration with Accra, Addis Ababa, Chennai, Lagos, Paynesville, Montevideo and Salvador at a Network Exchange in Addis Ababa around building resilience in the informal sectors in cities. Cape Town has thus far led this conversation within the network, and several actions in the Resilience Strategy intend to impact positively on building resilience in informal settlements and in the informal economy.

Lastly, Cape Town has developed an ongoing partnership with The Hague, which was selected to join 100RC at the same time as Cape Town was. In particular, we have shared knowledge and learnings around cyber security and are committed to an ongoing engagement and partnership as we move into implementation of our respective strategies.

The cities listed below each have a resilience strategy in place and are taking actions relevant to the challenges we face in Cape Town.

Accra is developing supporting initiatives for enhancing the circular economy.
Amman is developing small-scale, low-cost place-making interventions that improve livability of the city and promote long-term change.
Atlanta is documenting and sharing the stories of its 242 neighborhoods.
Boston is launching the Racism, Equity and Resilience Leadership Programme to incorporate racial equity and resilience into City policies and processes.
Boulder is conducting a food security assessment to ensure the resilience of the local food system.
Cali is developing programmes that use sport as an educational tool to help children and young people build social-emotional skills, avoid violence and lead healthy, peaceful lives.
Christchurch is developing community events and local information resources to help new residents build connections with people in their immediate communities.
Glasgow is creating opportunities for young resilience ambassadors to develop leadership skills, share learning and champion new resilience ideas.
Los Angeles is advancing collaborative policies that ensure immigrants, migrants and refugees feel welcome in all neighborhoods.
Medellin is organising direct talks between communities and actors in conflict in order to strengthen scenarios of peace and achieve reconciliation.
Melbourne is undertaking urban greening and re-vegetation projects.
Mexico City is developing methodologies for the inclusion of resilience in large infrastructure projects such as allocating 10 percent of the expenditures budget to building resilience.
Montevideo is developing a sustainable drainage network that will contribute to managing urban waters with a drainage approach.
Rotterdam is developing a 21 st century skills curriculum provides a method for embedding resilience into key city curriculums.
Surat is developing urban design and landscape interventions for increased permeability, reducing water runoff and facilitating groundwater recharge.
Thessaloniki is establishing a safe routes to school scheme using e-participation tools to crowdsource data, a set of physical measures, and policies to improve urban conditions along school routes.

DEVELOPING THE RESILIENCE STRATEGY

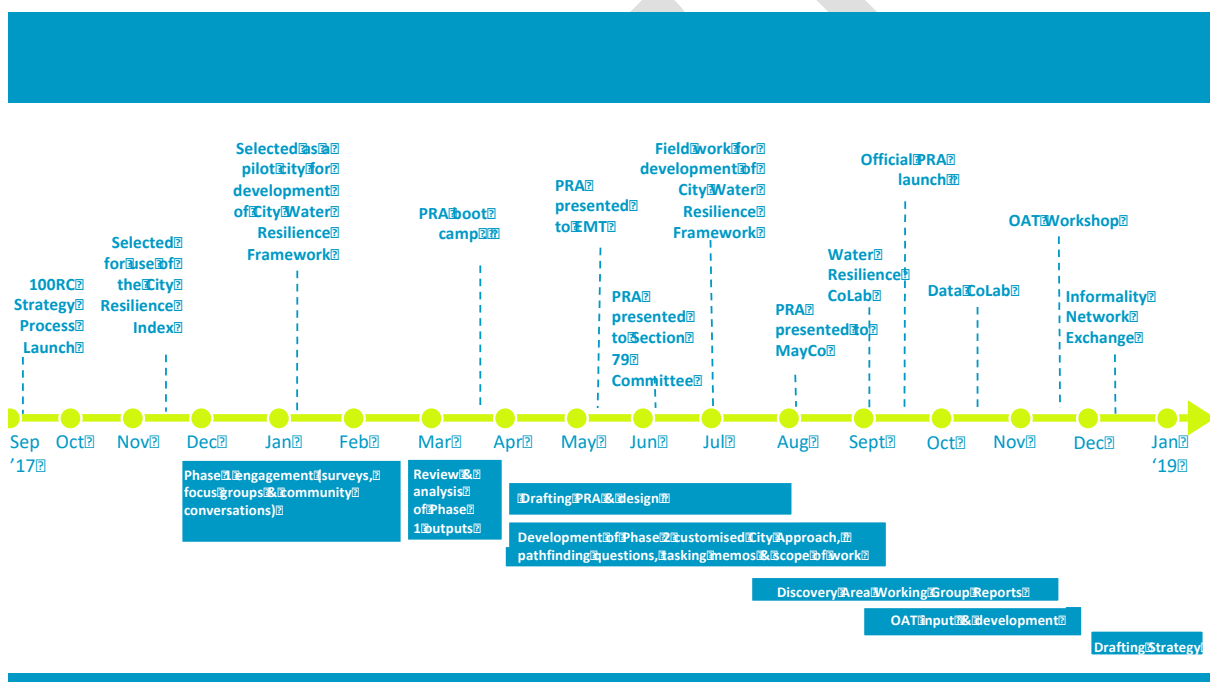
The development of the Resilience Strategy has gone through a number of milestones and phases. The process has been robust and inclusive. The processes and tools used in the development of the Strategy are similar to those used in other cities in the 100RC Network.

OVERVIEW OF THE STRATEGY DEVELOPMENT PROCESS

Cape Town's first Chief Resilience Officer (CRO) was appointed in March 2017. The CRO serves on the Executive Management Team of the City government, the team that reports to the City Manager. The CRO is the main champion of resilience, and has guided the development of the Resilience Strategy.

See figure 5 for an overview of the strategy development process.

Figure 5: Resilience Strategy timeline



Throughout the development of the Strategy, significant stakeholder engagement has been undertaken. At the start of the process over 11 000 face-to-face interviews were conducted with Capetonians living in informal settlements and backyard dwellings in order to understand the key shocks and stresses relevant to local citizens. In addition, over 140 thematic experts were engaged with across 9 focus groups and a number of one-on-one interviews. Further, 2 community conversations were held to obtain insight into how resilience challenges may differ from community to community. See Annexure 2 for more detail on stakeholder engagement conducted during the development of the PRA.

The PRA for Cape Town was publicly launched in September 2018. It identified four enablers and four discovery areas. This framework laid the foundation for the work conducted in the subsequent phase during which resilience-building actions and pillars were identified and prioritised.

THE CITY RESILIENCE FRAMEWORK

The City Resilience Framework (CRF) is the conceptual lens through which a city can assess its resilience challenges and opportunities.¹⁸ The CRF consists of 4 dimensions, 12 drivers and 50 sub-drivers. See Annexure 2 for a visual representation of the CRF. The dimensions and drivers are explained below:

DIMENSIONS		DRIVERS	
Health and Wellbeing:	The essential city services that safeguard human health and diverse and secure livelihoods	Meets basic needs	Particularly in times of crisis, ensure that people have access the basic resources necessary to survive.
		Supports livelihoods and employment	Assist individuals to access diverse livelihood and employment opportunities, including access to business investment and social welfare.
		Ensures public health services	Provide access to effective public healthcare and emergency services to safeguard physical and mental health.
Economy and Society:	The systems that enable urban populations to live peacefully, and act collectively	Promotes cohesive and engaged communities	Create a sense of collective identity and mutual support.
		Ensures social stability, security and justice	Ensure a comprehensive and inclusive approach to law enforcement and justice that fosters a stable, secure, and just society.
		Fosters economic prosperity	Ensure the availability of funding and a vibrant economy as a result of diverse revenue streams, the ability to attract business investment, and contingency plans.
Infrastructure and Environment:	The way in which built and natural assets provide critical services and protect	Provides and enhances natural and manmade assets	Maintain protective natural and man-made assets that reduce the physical vulnerability of city systems.
		Ensures continuity of critical services	Actively manage and enhance natural and man-made resources.
		Provides reliable communication and mobility	Provide a free flow of people, information, and goods.
Leadership and Strategy:	Effective leadership and management, empowered stakeholders and integrated planning.	Promotes leadership and effective management	Encourage capable leadership and effective urban management within government and civil society.
		Empowers a broad range of stakeholders	Ensure everybody is well informed, capable, and involved in their city.
		Fosters long-term and integrated planning	Align sectoral plans and individual projects with the city's vision to be coordinated and appropriate to address the city's needs.

The CRF has been a useful tool and methodology for Cape Town's resilience strategy development process. Its numerous applications, including an actions inventory and perceptions inventory can be viewed separately in the PRA.¹⁹ For the purposes of understanding the reasons for the focus areas in the Resilience Strategy, the City Resilience Index (CRI), a robust qualitative and quantitative assessment of the city based on CRF methodology, is detailed in the next section of the Strategy.

LEVERAGING CAPE TOWN'S EXISTING PLANS

Several strategies and plans that contribute to building resilience in Cape Town are already being implemented. These strategies and plans emanate from all three spheres of government. Besides newly identified resilience-building actions, the Strategy in some cases augments resilience-building actions identified in other plans by elevating them to demonstrable or flagship actions. Significantly, the Resilience Strategy attempts to influence future iterations of current plans and strategies to ensure that they account for building resilience. This is done by identifying certain actions intended to mainstream resilience in decision-making. Below is the alignment between the Resilience Strategy and the most relevant strategies and plans.

CITY PLANS	CORE PURPOSE AND OBJECTIVES OF THE PLAN
Integrated Development Plan	To provide a strategic planning instrument which guides and informs all planning, development and decisions in the municipality.
Environmental Strategy	To enhance, protect and manage Cape Town's natural and cultural resources for long-term prosperity, in a way that promotes access and social well-being, and optimises economic opportunities.
Economic Growth Strategy	To develop and grow the local economy.
Built Environment Performance Plan (BEPP)	To align the focus of existing planning instruments in order to reduce poverty and inequality and enable faster, more inclusive urban economic growth. It includes clear spatial targeting and restructuring initiatives, public investment programmes and regulatory reforms to achieve measurable improvements in urban productivity, inclusivity and sustainability.
Cape Town Municipal Spatial Development Framework	To provide a long-term vision of the desired spatial form and structure of Cape Town, and align the City's spatial development goals, strategies and policies with relevant national and provincial spatial principles, strategies and policies.
Municipal Disaster Risk Management Plan	To outline policy and procedures for both the pro-active hazard and risk assessment, followed by disaster prevention (if possible), risk reduction, preparedness, and the re-active disaster response, relief and rehabilitation phases of Disaster Risk Management.
Transit Orientated Development (TOD) Strategic Framework	To identify tools and mechanisms to be employed by various role-players who have a collective impact on development to ensure that they move progressively towards a more sustainable, compact and equitable urban form.
Medium Term Revenue And Expenditure Framework	To provide an overview of budget assumptions and projections for a three year period.
Social Development Strategy	To improve and enhance the quality of life of all people, especially the poor and marginalised.
NATIONAL PLANS	CORE PURPOSE AND OBJECTIVES OF THE PLAN
National Development Plan	To eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the State, and promoting leadership and partnerships throughout society.
New Growth Path Framework	To enhance growth, employment creation and equity. It identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda.
PROVINCIAL PLANS	CORE PURPOSE AND OBJECTIVES OF THE PLAN
Western Cape Climate Change Response Strategy	To guide the collective implementation of innovative projects as well as the search for opportunities that combine a low carbon development trajectory with increased climate resilience which includes enhancement of ecosystems and the services they provide, as well as economic growth and job creation.
Healthcare 2030 framework	To provide the vision, values and principles guiding the Provincial Department of Health to 2030. The strategy represents the third wave of health reform in the Western Cape since the Health Plan of 1995 and the Healthcare 2010.
Project Khulisa	To grow the economy and create jobs. This programme establishes a set of high priority, practical projects to unlock opportunities in sectors where the Western Cape has a clear but unrealised competitive advantage.
INTERNATIONAL PLANS	CORE PURPOSE AND OBJECTIVES OF THE PLAN
Sustainable Development Goals	To address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice.

A full alignment of the 5 pillars of the Resilience Strategy against more than thirty of the most relevant plans and strategies that impact on resilience-building efforts is contained in Annexure 5.

CITY RESILIENCE INDEX

The CRI provides a baseline understanding of the resilience of Cape Town at the present moment. Based on the same drivers and dimensions as the CRF, outlined earlier in the Resilience Strategy, it measures relative performance over time in a city rather than being a comparison between cities.²⁰ It thus does not deliver a single score against which cities can be rated or ranked in terms of resilience. Rather it provides a common basis of measurement and assessment to better facilitate dialogue and knowledge-sharing between cities and within cities. The CRI also provides an indication of the strength of each dimension in relation to the qualities of resilience.

The index is not only useful for the City government – it can also be used by business, academia and community based organisation for further analysis, understanding and information.

While the index enables cities to assess and measure their present-day performance, it also provides information on the areas of focus for improving future resilience. This is achieved by the assessment and measurement of a maximum of 156 qualitative and 156 quantitative data points.

The visual outputs for Cape Town's CRI can be seen below in figure 6 and figure 7 and should be viewed in relation to each other.

Figure 6: Qualitative Resilience Profile

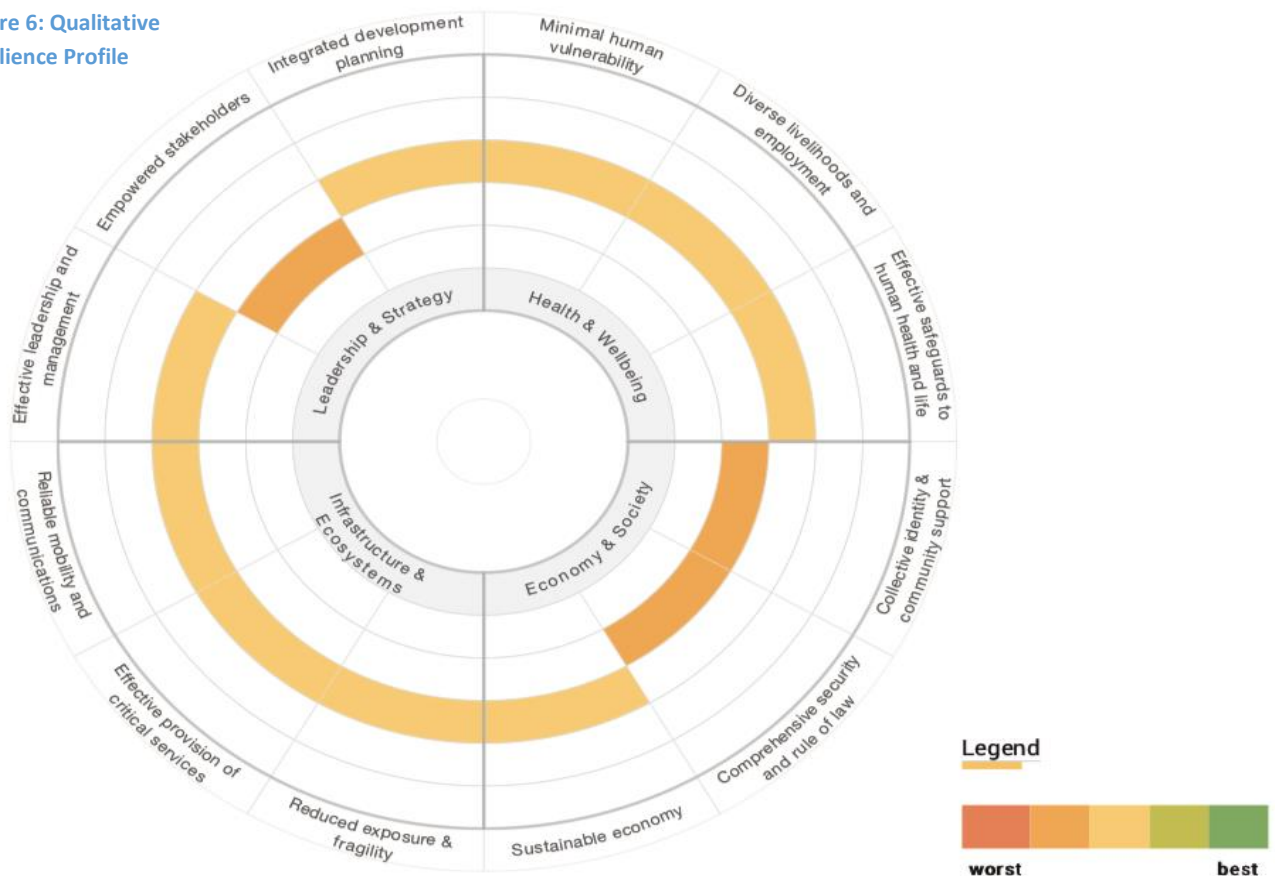
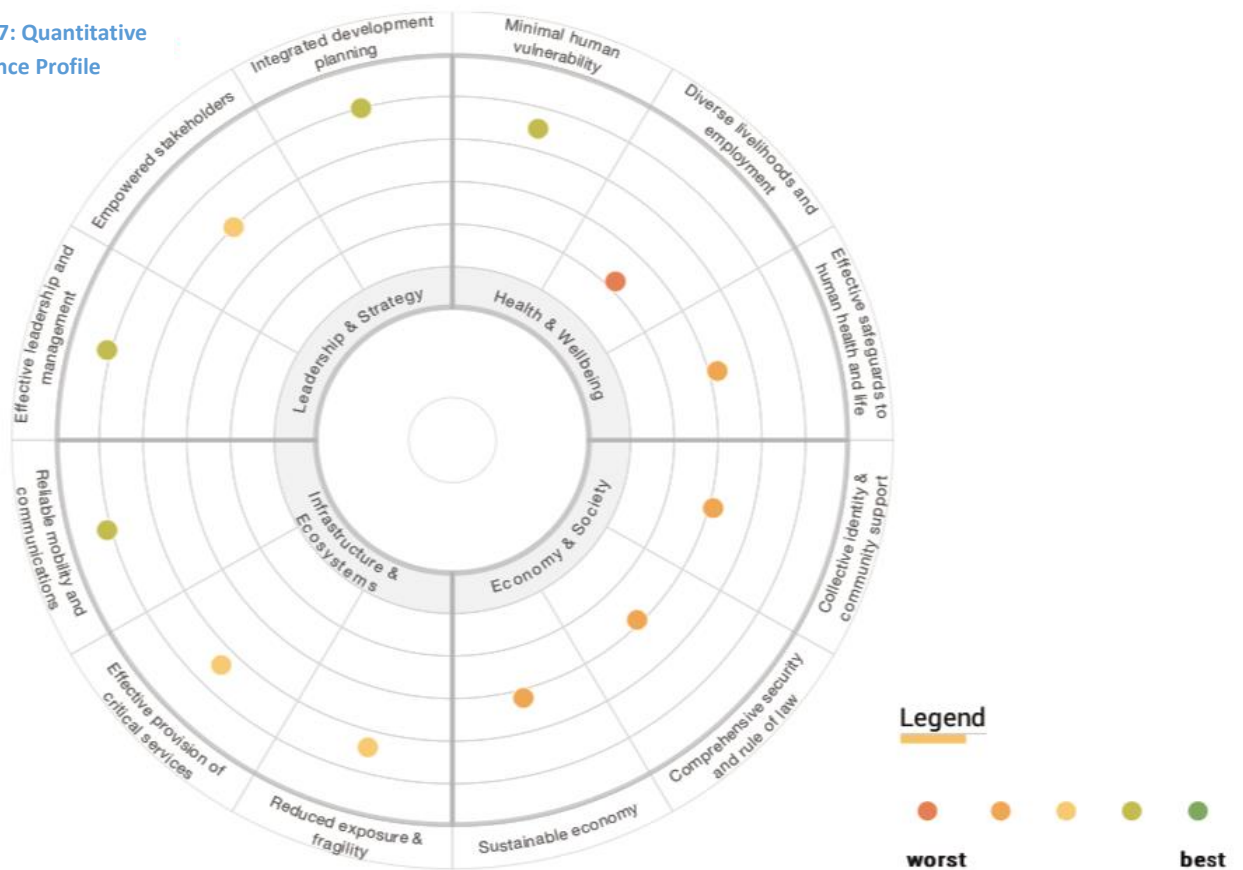


Figure 7: Quantitative Resilience Profile



There are several insights that can be gained from the qualitative and quantitative profiles. During the phase I of the strategy development process these were reviewed along with the outputs of other tools including the perceptions of residents of informal settlements and backyards who were surveyed. These can be viewed in the PRA.²¹

There is room for improvement in all drivers of resilience in Cape Town, particularly if one concentrates on the qualitative profile. While no driver of resilience is excluded from the Strategy, it is important to highlight certain drivers that present particularly high degrees of resilience vulnerability and which require a heightened focus to supplement existing plans and strategies of government and existing community and business actions. These include:

- **Livelihoods and employment**
- **Empowered stakeholders**
- **Security and rule of law**
- **Lack of collective identity and community support**

A number of actions in the Resilience Strategy attempt to improve these drivers of resilience so that Cape Town is better able to survive, adapt and thrive no matter what acute shocks and chronic stresses are experienced.

OUR RESILIENCE CHALLENGE

A resilient Cape Town is a compassionate, connected, and capable city, where Capetonians collaborate across households, communities and institutions, to build collective responses to the current and future social, environmental and economic challenges.

As we take up the challenge to build a resilient Cape Town, we are cognisant that Cape Town is a city with complex underlying challenges that play out in the form of continuous stresses in society. We need to continually understand how shocks intersect with these stresses, resulting in the magnification of the impacts of shocks, particularly for the most vulnerable Capetonians.

Capetonians are at the centre of building resilience in the city. There are particular roles and responsibilities for the various spheres of government, most notably the City government, for which a number of actions are committed to in this strategy. However, there are also roles for Capetonians coming together whether in individual households, businesses or communities. It is the collective effort of all stakeholders that contribute to overall city resilience.

Capetonians will be best prepared to respond to acute shocks and chronic stresses if there is stronger social cohesion in the city. This means Capetonians working together within communities and across communities, however those communities may be defined. Our city has emerged out of a turbulent and divided past, but many of the legacies of racial oppression under Apartheid live on today, manifested in spatial divides, inequality, poverty and racism. There is a huge collective effort required to overcome these legacies, but ultimately social cohesion is achieved by the actions and attitudes of Capetonians. It is the ability to see the humanity in each other, to appreciate the numerous ways our lives are intertwined and to understand that pulling in the same direction makes us collectively stronger. Building social cohesion means we have to make deliberate steps to break down real and perceived barriers that keep us apart.

Capetonians showed during the worst periods of the recent drought that they are capable of rising together to confront a significant city-wide shock. The totality of large efforts by households and businesses to reduce water consumption helped to avoid Day Zero. As a city we cannot afford to lose the lessons learnt in the drought, both good and bad. They are relevant to responding to any number of possible other shocks. Two key questions are therefore necessary to contemplate going forward:

- **How can we pivot off the drought to become a permanent shock-ready city?**
- **How can we replicate the same collective effort we displayed in responding to the drought shock to respond to continuous stresses in our city like poverty and unemployment?**

Hence our mission is for all Capetonians to understand and be prepared to contribute to collective resilience-building efforts.

ORGANISATIONAL COMMITMENT TO RESILIENCE

We invite all spheres of government, business, academia and community-based organisations to pledge to build their capacity to understand and manage vulnerabilities, interdependencies and risks for everyone in Cape Town.

By making this commitment you will ensure continuity and safety for local communities as well as customers and employees during disruptions. You will demonstrate innovation and leadership, and improve the wellbeing and prosperity of our city and its residents. You will reduce potential revenue and continuity impacts to your organisation arising from the prioritised shocks and stresses of Cape Town.

Organisational leaders are invited to lead these changes by taking up our 'city resilience commitment'. By adopting these directions you and your organisation will manage risks and potential impacts arising from the key shocks and stresses of Cape Town.

You will also contribute to building Cape Town's resilience your organisation acts to:

- **Investigate and understand how shocks and stresses create city-wide and local place-based risks for your organisation**
- **Engage with the people in the city who are most impacted by your decisions**
- **Clarify your role in building Cape Town's resilience**
- **Engage in training and capacity building across your organisation**
- **Develop an action plan for your organisation and adopt the directions for resilience**
- **Undertake action and investment**

CAPETONIAN COMMITMENT TO RESILIENCE

We invite all residents of Cape Town to actively participate in this strategy by taking simple actions to build our city's resilience. Everyone can understand and reduce their exposure to the risks arising from the shocks and stresses of Cape Town. You will contribute to building Cape Town's resilience when you:

- **Establish a quick and easy network of support with 3 key contacts and neighbours**
- **Review the risks relevant to where you live or work**
- **Use checklists of actions to make an emergency plan**
- **Share your emergency plans with other people in your support network**
- **Volunteer to support your community through joining a local community group**
- **Learn a new skill, such as first aid, that can help you, your family and community during a shock event**
- **Understand where vulnerable people in your community reside and reach out to them to offer support in times of shock events**

GUIDE TO READING THE RESILIENCE ACTIONS

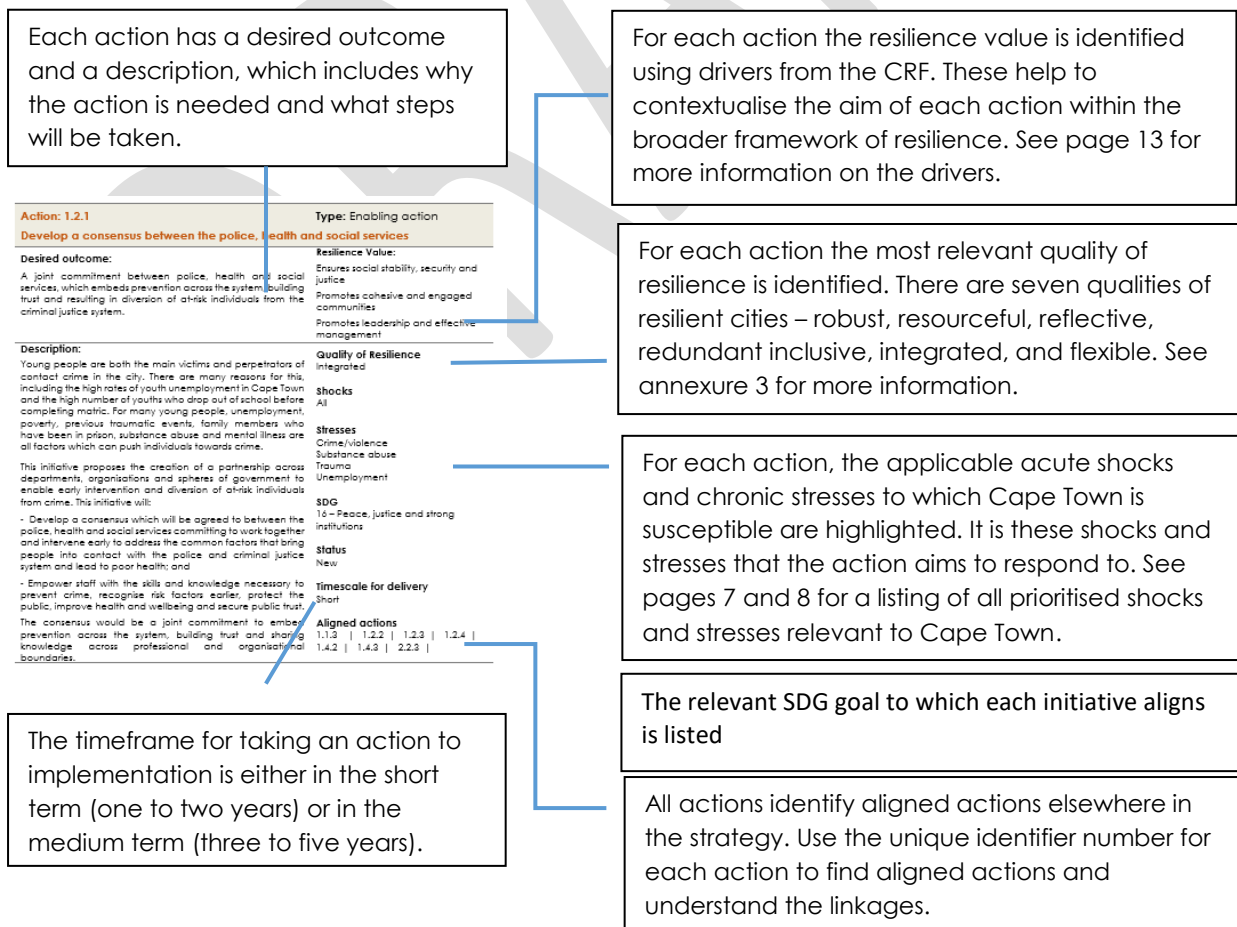
The Resilience Strategy is comprised of 5 pillars, 20 goals and 65 actions. These actions are varied in intent and scope. Some actions are new, others have already been piloted and are worthy of further support and upscaling, while others are pre-existing and are being reframed to increase the resilience dividend.

There are three types of action in the strategy:

- **Flagship Action:** An action which has the potential to significantly change the resilience value of a whole system.
- **Demonstrable Action:** An action which serves to show the value and impact of a concept or idea with high resilience value that has the potential to be replicated or scaled in the future. Often these ideas have been passed over before because of difficulty to assess the value or because they lack champions.
- **Enabling Action:** An action which seeks to mainstream a resilience lens or other resilience application across an existing system or thematic area.

The 65 actions in the Resilience Strategy follow a consistent format. Each action has a title, desired outcome, a description and identifies the relevant acute shocks and chronic stresses it is responding to. Each pillar is presented in a separate section, with the associated goals and actions thereunder. Actions are presented in individual tables. See figure 8 for guidance on how to read an action.

Figure 8: How to read an action in the Strategy



PILLAR 1: COMPASSIONATE, HOLISTICALLY-HEALTHY CITY

Vision: Capetonians feeling welcome, accepted and safe in our socially cohesive city, working together to continually enable healthy people, households and communities which are better able to respond to shocks and stresses.

The health of Capetonians, inclusive of both physical and mental well-being, is a critical component of building a resilient city. At the very heart of Cape Town's resilience capabilities are its people, its households and its communities. The best measure of how we are doing in building resilient Capetonians is the extent to which our children are nurtured, included, active, healthy, achieving and safe. The thriving child is a good indication that we are overcoming intergenerational trauma in our city.

Particularly during times of extreme shock events, it is the strength of a city's social fabric that allows the city to survive, adapt and thrive. No matter how capacitated the state is to respond to shocks, it is ultimately ordinary people doing extraordinary things that determines how resilient a city is.

Various spheres of government, most notably the Western Cape Provincial Government (WCG) for which health is one of its formal constitutional mandates, have extended access to quality primary, secondary and tertiary healthcare in Cape Town since 1994. The Healthcare 2030 vision of the WCG lays out the future provision of health services in the province. This pillar therefore does not focus on secondary and tertiary healthcare, which is addressed in other strategies, however it does touch on basic health care due to the need for increased efforts in health promotion and disease prevention at the household and community level.

This pillar places a strong emphasis on trauma and the need for improved mental well-being. For a variety of reasons, including the injustices of Apartheid, the high exposure of Capetonians to crime and violence, and the pervasiveness of poverty and high unemployment, the burden of trauma and mental disorders is high and unacknowledged by most Capetonians. We need to find more creative ways to use resources and to increase access to support networks.

This pillar also includes goals on improving the safety and diverting young people away from crime for the purpose of building healthy communities in the broader sense. Policing resources of the South African Police Service (SAPS) in Cape Town are too small, and in many cases are inequitably distributed. While the inequitable allocation of resources must be addressed, we need to focus on innovatively harnessing the power of people, networks and societal resources to make our communities safer.

While healthy people and communities will contribute to building social cohesion in our city, we need to be more deliberate about addressing some of the other barriers to cohesion including various forms of discrimination that keep us apart. There is an urgent need for Capetonians to get to know each other, to understand each other's stories and to have empathy for each other's life experiences. Social cohesion, the agglomeration of healthy people, working together across healthy communities is the cornerstone of a resilient Cape Town.

RELEVANT GOALS

1.1 Increase awareness, access to and uptake of mental health support

1.2 Grow cross sectoral support and community participation for diversion, early detection and protection from crime

1.4. Combat discrimination and build social cohesion

1.5. Promote a culture of health that increases well-being and decreases trauma

GOAL 1.1: INCREASE AWARENESS, ACCESS TO AND UPTAKE OF MENTAL HEALTH SUPPORT

Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps to determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood.²² Strong psychosocial resilience is an important building block of a resilient Cape Town.

Studies²³ suggest that the prevalence of mental disorders is relatively high in South Africa, reporting a 12-month prevalence of 16.5% and a lifetime prevalence of 30.3% for depression and anxiety disorder in the adult South African population.²⁴ Many of the prioritised stresses faced by Capetonians, including trauma, crime and violence, poverty, unemployment and food insecurity can both contribute to or exacerbate mental disorders. However, there is a severe treatment gap for mental health in South Africa. This gap in health provision most especially affects vulnerable Capetonians who cannot afford access to private healthcare.

Under HealthCare 2030, mental health services will be integrated into community-based, primary healthcare and acute hospital platforms. This is a significant new vision for the city and province and will go some way to bridging the treatment gap. Nevertheless, there are multiple opportunities to augment both these efforts by government and the numerous existing, ongoing contributions by non-governmental organisations (NGOs) and community-based organisations (CBOs).

In order to counter the stigma around mental health, all Capetonians are challenged to confront this issue and to raise awareness and acceptance around mental health. This will go hand in hand with efforts to find innovative solutions to bridge the treatment gap, which will be done in partnership with communities and will include improving referrals mechanisms to professional health practitioners. If we can confront mental illness together, increase awareness, bolster access and ensure greater uptake of services, then we can make a significant contribution towards building Cape Town's resilience.

Action: 1.1.1

Type: Flagship action

Develop an anti-stigma, mental health public messaging campaign

Desired outcome:

Decreased stigma of mental disorders in Cape Town and more awareness, education and community support around the issue for the purpose of building psychological resilience in society

Resilience Value:

Promotes cohesive and engaged communities
Ensures public health services
Promotes leadership and effective management

Description:

There is a lack of awareness around mental health challenges in our city. For many, mental disorders, particularly depression, is viewed as a sign of weakness and disgrace. Further, depression and mental disorders are generally under-recognised by men because of the large stigma attached. Research suggests that men are less likely to seek treatment and also shows that while women may make more attempts at suicide, men die by suicide at four times the rate of women.²⁵ The effects of depression are seen in an uptick of

Quality of Resilience:

Flexible

Shocks

All

Stresses

Trauma
Substance abuse
Poverty

substance abuse, especially harmful alcohol use by adult men.

Analyses show the positive impact of education (countering myths with facts) and contact with persons with lived experience of mental illness on public stigma toward mental disorders.²⁶ In this initiative, various departments in the City will partner with NGOs and CBOs to:

- Design and develop an anti-stigma communication strategy that can educate Capetonians about mental disorders and also speak to the linkages between depression and anxiety and the abuse of alcohol and other drugs;
- Identify individuals who are living with mental disorders to become spokespersons for the campaign;
- Develop practical questions and conversation guides that Capetonians can use to check in with each other in order to scale impact and ensure wide-scale ownership; and
- Roll-out the campaign through digital advertising, local newspapers, radio, community organisations and events.

Food insecurity

SDG

3 – Good health and well-being

Status

New

Timescale for delivery

Short

Aligned actions

1.1.2 | 1.1.3 | 1.2.2 | 1.3.1 |
1.4.1 | 3.3.1 |

Action: 1.1.2

Type: Enabling action

Extend mental health training to include traditional healers and unlicensed herbalists

Desired outcome:

Increased mental health literacy amongst traditional healers and unlicensed herbalists, resulting in decreased stigma around non-psychotic mental illness and greater access to treatment for patients.

Resilience Value:

- Ensures public health services
- Empowers a broad range of stakeholders
- Promotes cohesive and engaged communities

Description:

Traditional healers and unlicensed herbalists are for many the first choice of health care for both cultural and economic reasons. Results of small studies conducted in South Africa investigating individuals with a mental illness report that approximately one-half (41–61%) of patients have consulted a traditional healer.²⁷ Studies have also shown that traditional healers often recognise psychotic illness as mental disorders, and treat with traditional medicines, but disregard non-psychotic illnesses, such as depression, and therefore do not provide treatment.²⁸ Given the significant burden of mental disorders in South Africa, interventions aimed at increasing the mental health literacy of traditional healers are essential.

The Knowledge Translation Unit provides health literacy training and resources in primary health clinics in partnership with the City of Cape Town and the WCG. It has trained 30,000 health workers since it was established in 2005.

In this initiative, City Health will further its existing partnership with the Knowledge Translation Unit (KTU) to:

- Identify traditional healers for outreach;
- Develop a tailored set of diagnostic guidelines; and
- Develop and roll out a training program and follow-up support for traditional healers.

Quality of Resilience

Integrated

Shocks

All

Stresses

- Trauma
- Substance abuse
- Crime/violence
- Poverty
- Unemployment

SDG

3 – Good health and well-being

Status

New

Timescale for delivery

Short

Aligned actions

1.1.1 | 1.1.3 | 1.2.2 |

Action: 1.1.3**Type:** Enabling action**Expand mental health training for primary health clinics and lay counsellors****Desired outcome:**

An increased number of community healthcare workers and lay counsellors who are trained and equipped to diagnose and provide support for Capetonians living with mental disorders, resulting in a reduction of the mental health treatment gap and a reduction in the co-morbidity impacts of mental disorders.

Resilience Value:

Promotes public health
Empowers a broad range of stakeholders
Promotes cohesive and engaged communities

Description:

It is estimated that 75% of people with a mental disorder in South Africa do not receive mental health services. This is commonly referred to as 'the mental health treatment gap'. Addressing this treatment gap is key to ensuring equitable access to health care for people with mental illness.

In response to this gap, there are growing calls for integrating mental health care into the primary health care system, and the training and use of lay counsellors – working under the guidance of psychiatric nurses and doctors – in order to extend the reach of mental health service access.

At present HIV training is given priority in primary health clinics despite the link between diseases like HIV and mental illness. This initiative will seek to increase and broaden the number of health workers who are trained on mental illness. This will be done through partnership between City Health, the KTU and the WCG to:

The Practical Approach to Care Kit (PACK) is a diagnostic training resource designed by the KTU to support the work of primary care health workers (like doctors, nurses, midwives, health officers and community health practitioners) in underserved communities to strengthen the health services in which they work and thereby achieve the best possible patient outcomes.

- Expand the roll-out of the PACK "mental health training and diagnosis" module in all primary health clinics; and
- Scale up the KTU's mental health integration programme (Mhint) to extend training to lay counsellors.

Quality of Resilience

Resourceful

Shocks

All

Stresses

Trauma
Substance abuse
Crime/violence
Poverty
Unemployment

SDG

3 – Good health and well-being

Status

Existing

Timescale for delivery

Short

Aligned actions

1.1.1 | 1.1.2 | 1.2.1 | 1.2.2 |
1.3.2 | 1.5.3

GOAL 1.2: GROW CROSS SECTORAL SUPPORT AND COMMUNITY PARTICIPATION FOR DIVERSION, EARLY DETECTION AND PROTECTION FROM CRIME

By partnering across neighbourhoods, CBOs, and government departments and agencies there is an opportunity to increasingly divert the youth from crime and to strengthen our resilience in times of shock. We need to break the cycle of violence by preventing people from entering the criminal justice system in the first place. If we want to lower our rates of recidivism and of trauma, in general, then we need to take a more holistic approach to policing.

Policing should not be seen as a stand-alone intervention but rather as a pivotal cog in a much larger wheel together with health and social services. Instead of taking a silo-like approach, a consensus needs to be developed between the police, health and social services focused

around diversionary support for at-risk individuals, especially the youth. There is ample evidence to show that the police and law enforcement officials can play an important diversionary role as an early intervention mechanism – linking individuals in-need to health and social support networks, such as mental health support or substance abuse rehabilitation.

Cape Town has an active network of registered neighbourhood watches and other safety-related organisations which play a very important role in the fight against crime at the local level. These networks provide an opportunity to build resilience by creating formal connections in order to pool resources in times of shock and for responding to continuous stresses. Given the direct interactions that members of these grassroots organisations have with at-risk individuals, they are well positioned to be of assistance in diverting at-risk individuals to support services if networks are well established and if adequate training is in place.

Key to disrupting intergenerational trauma is the way we protect and develop our children, especially those in vulnerable communities. Our children must be able access education without becoming victims of crime or being targets for recruitment into criminal activity.

<p>Action: 1.2.1 Develop a consensus between the police, health and social services</p>	<p>Type: Enabling action</p>
<p>Desired outcome: A joint commitment between police, health and social services, which embeds prevention across the system, building trust and resulting in diversion of at-risk individuals from the criminal justice system.</p>	<p>Resilience Value: Ensures social stability, security and justice Promotes cohesive and engaged communities Promotes leadership and effective management</p>
<p>Description: Young people are both the main victims and perpetrators of contact crime in the city. There are many reasons for this, including the high rates of youth unemployment in Cape Town and the high number of youths who drop out of school before completing matric. For many young people, unemployment, poverty, previous traumatic events, family members who have been in prison, substance abuse and mental illness are all factors which can push individuals towards crime.</p> <p>This initiative proposes the creation of a partnership across departments, organisations and spheres of government to enable early intervention and diversion of at-risk individuals from crime. This initiative will:</p> <ul style="list-style-type: none"> - Develop a consensus which will be agreed to between the police, health and social services committing to work together and intervene early to address the common factors that bring people into contact with the police and criminal justice system and lead to poor health; and - Empower staff with the skills and knowledge necessary to prevent crime, recognise risk factors earlier, protect the public, improve health and wellbeing and secure public trust. <p>The consensus would be a joint commitment to embed prevention across the system, building trust and sharing knowledge across professional and organisational boundaries.</p>	<p>Quality of Resilience Integrated</p> <p>Shocks All</p> <p>Stresses Crime/violence Substance abuse Trauma Unemployment</p> <p>SDG 16 – Peace, justice and strong institutions</p> <p>Status New</p> <p>Timescale for delivery Short</p> <p>Aligned actions 1.1.3 1.2.2 1.2.3 1.2.4 1.4.2 1.4.3 2.2.3 </p>

Action: 1.2.2**Type:** Enabling action**Create a live database of referral networks****Desired outcome:**

Easily accessible, up-to-date information of referral networks for at-risk individuals, victims of crime and Capetonians living with substance abuse or mental illness.

Resilience Value:

Ensures social stability, security and justice
 Promotes cohesive and engaged communities
 Promotes leadership and effective management

Description:

While there are many referral network databases across the city there is no central coordination of these and as such it can be difficult to source information. This is especially important for front line responders, including the police, health and social services. Alongside professional services, it is also difficult for ordinary citizens to know where to look for referral networks.

This initiative proposes a partnership between the City's Social Services department, the WCG and NGO's to:

- Develop a central database of referral information;
- Create a live online portal which is accessible to professionals and citizens alike; and
- Promote the availability and usefulness of this resource.

If law enforcement, social workers and teachers are empowered with information and materials to provide at-risk individuals, especially youths, the higher the likelihood of early intervention and therefore deferral from entry into the criminal justice system.

Quality of Resilience

Resourceful

Shocks

All

Stresses

Crime/violence
 Substance abuse
 Trauma

SDG

3 – Good health and well-being

Status

New

Timescale for delivery

Short

Aligned actions

1.1.1 | 1.1.2 | 1.1.3 | 1.2.1 |
 1.2.3 | 1.2.4 | 1.3.2 | 1.4.2 |
 1.4.3 | 3.3.1

Action: 1.2.3**Type:** Enabling action**Establish a Neighbourhood Watch pairing programme across diverse communities****Desired outcome:**

Pooling of resources and information between neighbourhood watches, strengthening cohesion between different communities and enabling a greater response during times of shock.

Resilience Value:

Ensures social stability, security and justice
 Promotes cohesive and engaged communities
 Provides leadership and effective management

Description:

Accredited neighbourhood watches working in partnership with the SAPS, WCG, and the City's Safety and Security department are becoming increasingly well established and resourced. In some cases, neighbourhood watches are partnering with each other within specific clusters, although with varying success. There is an opportunity to create, broader networks or partnerships for the purpose of activating greater collective responses during times of shock. This initiative will:

Quality of Resilience

Resourceful

Shocks

All

Stresses

Crime/violence
 Substance abuse
 Trauma

- Establish a voluntary neighbourhood watch pairing programme which will connect neighbourhood organisations from communities with different socio-economic profiles to enable the cross sharing of knowledge;
- Enable resources, mostly human, to be pooled in times of emergency; and
- Actively drive awareness about the live referral network database mentioned above so that volunteers in neighbourhood watches can also easily access support networks for diversionary purposes.

This initiative will prove beneficial during times of shock, and will provide mechanisms to bridge divides between communities, thus contributing to building social cohesion.

SDG

17 – Partnerships for the goals

Status

New

Timescale for delivery

Short

Aligned actions

1.2.1 | 1.2.2 | 1.2.5 |

Action: 1.2.4

Increase the number of School Resource Officers across the city

Type: Enabling action

Desired outcome:

Increased ability for children to safely access learning opportunities and increased identification and diversion of at-risk individuals from negative influences within the school environment.

Resilience Value:

- Ensures social stability, security and justice
- Promotes leadership and effective management
- Promotes cohesive and engaged communities

Description:

A safe learning environment for children is crucial to ensuring that learners can reach their full potential without being exposed to violence, intimidation or gang recruitment. However, for many children across Cape Town, particularly in the most vulnerable areas, schools are not a safe environment for learning.

This initiative will continue and expand the existing partnership between the City, the WCG Education Department and the SAPS to:

- Increase the number of SROs around the city, focusing on schools in the most vulnerable areas first.

Not only do SROs help secure the school precinct and surrounds, but they help create positive interactions between learners and law enforcement with the goal of reducing crimes committed by juveniles and young adults.

School Resource Officers (SROs) are an existing initiative run through a partnership between the City, the Provincial Department of Education and the SAPS. It allocates law enforcement officers to schools to help address the causes of ill behaviour, ill-discipline and crime. They also play a role in identifying at-risk youths ensuring early intervention and diversion from crime. Additionally, they play a social support role in schools where a permanent social worker is not available.

Quality of Resilience

Resourceful

Shocks

- Fire
- Heat wave
- Drought
- Civil unrest

Stresses

- Crime/violence
- Lack of social cohesion
- Substance abuse

SDG

4 – Quality education

Status

Existing

Timescale for delivery

Medium

Aligned actions

1.2.1 | 1.2.2 | 1.2.5 | 1.3.1 | 1.3.2 |

Action: 1.2.5**Type:** Enabling action**Increase the number of walking buses around the city****Desired outcome:**

A greater number of children in vulnerable communities are able to safely walk to and from school without being affected by crime, gang activity, and sexual violence through joint efforts of community members to occupy space.

Resilience Value:

Ensures social stability, security and justice
 Promotes leadership and effective management
 Promotes cohesive and engaged communities

Description:

For many children, walking to school is the only means available and due to economic pressures, their parents or guardians are often not able to accompany them. The journey to and from school can often be an unsafe one, making school children vulnerable to become victims of crime.

Through the involvement of various City departments, this initiative will:

- Increase the number of communities where Walking Buses are operational;
- Increase the volunteer base for these Walking Buses; and
- Provide training and support to volunteers.

Not only will this improve the safety of school children, but it will result in improved social cohesion among communities who participate.

The Walking Bus is a community initiative which operates in areas where children have to walk to school but where that walk makes them vulnerable to becoming victims of crime or violence. To help ensure safety on school routes parents and community members take it in turns to physically walk children to and from school- providing safety in numbers. This has been piloted by the WCG with high levels of involvement to date.

Quality of Resilience

Resourceful

Shocks

Civil unrest

Stresses

Crime/violence
 Lack of social cohesion
 Substance abuse

SDG

11 – Sustainable cities and communities

Status

Existing

Timescale for delivery

Short

Aligned actions

1.2.3 | 1.2.4 | 1.3.2 |

GOAL 1.3: COMBAT DISCRIMINATION AND BUILD SOCIAL COHESION

Various forms of prejudice and discrimination are prevalent in our city, including racism, sexism, xenophobia and homophobia. All forms of discrimination, in whatever form they may take, weaken the fabric of society and undermine efforts to build social cohesion, a vital enabler for any societal responses to stresses and shocks.

While the democratic State post the demise of Apartheid has entrenched in both the Constitution of the Republic and in a swath of empowering legislation the right to equality, various measures to overcome discrimination, and actions to achieve redress and correct the injustices of the past, greater effort needs to be made by Capetonians to live the values of the Constitution in their households and workplaces. A 'whole of society' effort is required to fight discrimination, and ordinary Capetonians, from wherever they stand, need to lead this fight.

Fighting discrimination in all its forms cannot and should not be led by spheres of government, although government can play a role in empowering Capetonians with knowledge of legal rights and protections, and of what to do when rights are violated, and to enable opportunities where Capetonians can come together to address issues that divide us. However, these same roles can be amplified by CBOs, schools and businesses.

There is a need to create more spaces across society and within organisations for dialogue and storytelling which seeks to break down misperceptions, defeat confirmation bias and build greater understanding and acceptance between people and communities in Cape Town.

Action: 1.3.1

Type: Enabling action

Launch public messaging campaign and public dialogue series to address discrimination.

Desired outcome:

Increased awareness of discrimination and its negative impacts on individual Capetonians and efforts to build a cohesive city, and more emboldened Capetonians willing and able to stand up against discrimination where it impacts themselves and others.

Resilience Value:

Promotes cohesive and engaged communities
 Supports livelihoods and employment
 Empowers a broad range of stakeholders

Description:

Too many Capetonians stay silent when they encounter discriminatory behaviour, in whatever form it takes, whether it be in public, the workplace or in households. Some Capetonians are even blind to their own discriminatory views and practices. We need more Capetonians to take a stand against such behaviour, and to call it out and confront those people or institutions perpetuating it. Victims of discrimination need to know they are not alone in this battle.

Quality of Resilience

Reflective

Shocks

None

Stresses

Racism
 Lack of social cohesion
 Trauma

This initiative will build on the lessons learnt from a previous City campaign titled "Don't Let Racists Speak for You" which lost momentum by not sufficiently sharing roles and responsibilities for action in Cape Town. This initiative will:

SDG

10 – Reduced inequalities

- Build a coalition of organisations across sectors which wish to be part of an anti-discriminatory campaign;

Status

New

- Co-design messaging, toolkits and actions that help build momentum with concrete actions ordinary Capetonians can take;

Timescale for delivery

Short

- Launch a public campaign to increase awareness and encourage action against discrimination; and

Aligned actions

1.2.4 | 1.3.3 | 1.3.4 | 3.4.1 |

- Encourage the hosting of various public dialogues across and between communities aimed at sharing stories and co-building actions that people, communities and organisations can take.

Action: 1.3.2**Type:** Enabling action**Launch a campaign to reduce violence against women and children through education & early intervention****Desired outcome:**

Increased awareness of the legal rights and protections around violence against women and children, and knowledge of avenues and support available when responding to this violence.

Resilience Value:

Promotes cohesive and engaged communities
Ensures social stability, security and justice
Empowers a broad range of stakeholders

Description:

Violence against women and children is widespread. In a recent study it was found that 99% of the children in the sample had experienced or witnessed some form of violence and more than 40% had multiple experiences of violence in their homes, schools and communities. At the same time, there is growing evidence that violence against women and children co-occur in the same households and share the same drivers, and that sexual abuse is prevalent among boys as well as girls. The intergeneration transfer of trauma is also clear, with childhood trauma increasing the risk of men perpetrating physical/sexual inter-personal violence (IPV) and women experiencing IPV.

There is a need to empower Capetonians with greater knowledge of their legal and Constitutional rights and to intervene and risk-screen as early as possible. In this initiative the City will:

- Work in partnership with the Provincial Department of Education, NGOs and CBOs to provide information and knowledge sharing from early childhood development (ECD) level right through school. This will cover issues of consent, differentiation between different types of violence or abuse and avenues for support;
- Establish a gender-based violence (GBV) ambassador programme where victims of abuse can volunteer to become ambassadors in their communities, speaking out and providing support to other victims; and
- combine screening for risk factors with other regular interventions for pregnant women, young children and adolescents.

Quality of Resilience

Resourceful

Shocks

None

Stresses

Racism
Lack of social cohesion
Trauma
Crime/violence

SDG

5 – Gender equality
16 – Peace, justice and strong institutions

Status

New

Timescale for delivery

Short

Aligned actions

1.1.3 | 1.2.2 | 1.2.4 | 1.2.5 |

Action: 1.3.3**Type:** Enabling action**Celebrate diversity and build cohesion through art and community storytelling.****Desired outcome:**

Increased appreciation for the different cultures and histories of the diverse people of Cape Town as a contributor to greater social cohesion for the purpose of responding to acute shocks and chronic stresses that confront us.

Resilience Value:

Promotes cohesive and engaged communities
Supports livelihoods and employment
Empowers a broad range of stakeholders

Description:

The spatial legacies of Apartheid and pervasive high degrees of inequality are contributing factors to Cape Town's lack of social cohesion. We are a richly diverse city, yet we do not have sufficient knowledge and appreciation for each other's stories or for how people different to ourselves confront the daily challenges of life.

Through this initiative, the City's Arts and Culture Department will work with societal partners to:

- Capture through inclusive engagement stories told by communities in multi-media formats;
- Facilitate engagements between communities for mutual storytelling and appreciation; and
- Work with artists and performers to turn these stories into pieces of artwork, including murals in public spaces.

Increased social cohesion means that we are more likely to pull together during times of shock, and to provide each other with support during day to day stresses.

Quality of Resilience

Inclusive

Shocks

None

Stresses

Racism
Lack of social cohesion
Trauma

SDG

4 – Quality education

Status

New

Timescale for delivery

Short

Aligned actions

1.3.1 | 1.3.4 | 2.2.3 | 2.2.4 |

Action: 1.3.4**Type:** Enabling action**Develop programmes that foster welcoming neighbourhoods****Desired outcome:**

Increased sense of belonging and acceptance for foreign nationals who choose to make Cape Town home, and a greater degree of social cohesion.

Resilience Value:

Promotes cohesive and engaged communities
Supports livelihoods and employment
Empowers a broad range of stakeholders

Description:

More and more foreign nationals are migrating to Cape Town to pursue new lives. Our city is an attractive destination for large numbers of Zimbabweans, Malawians, Ethiopians, Somalis, Bangladeshi and Pakistanis as well as people from other countries of origin. These foreign nationals are making a significant contribution to the local economy, and enrich our already diverse city with new skills, cultures and traditions.

Xenophobia has, however, flared up on occasion in the city's recent past, leading to violence and displacement of foreign nationals. The worst violence was recorded in 2008. Misconceptions about foreign nationals are widespread and in some cases are actively propagated through the rhetoric of organisations.

This initiative will involve the City working in partnership with CBOs, neighbourhood watches, faith-based organisations, small business associations and school governing bodies to foster a culture that is welcoming to foreign nationals. The initiative will:

- Counter misconceptions by showing the value of investments and job-creating opportunities created by foreign nationals;

Quality of Resilience

Inclusive

Shocks

Civil unrest

Stresses

Racism
Lack of social cohesion
Trauma

SDG

10 – Reduced inequalities

Status

New

Timescale for delivery

Medium

Aligned actions

1.3.1 | 1.3.3 | 3.2.1 |

- Work with foreign-trader and business associations to help their members navigate City by-laws and approval processes for business activity;
- Work consciously to include foreign nationals in community networks and organisations that focus on safety and crime prevention; and
- Celebrate the rich diversity and traditions of foreign nationals through storytelling, festivals and events.

GOAL 1.4: PROMOTE A CULTURE OF HEALTH THAT INCREASES WELL-BEING AND DECREASES TRAUMA

Healthy Capetonians are best positioned to confront acute shocks and chronic stresses. There have been great strides since 1994 in providing access to quality healthcare. The WCG has a long term strategy to further improve access and quality in line with demographic shifts in the city. We need to however increase our efforts to address the underlying causes that reduce well-being and increase illness in our city.

Food insecurity is a significant stress facing many Capetonians which multiplies in magnitude in a variety of ways – from links to increased incidence of mental illness to decreased cognitive development in children. Several shocks and stresses, including drought, poverty, and unemployment impact upon the ability of Capetonians to access affordable and nutritious food. The complexities of the food system are not fully understood by government and societal partners which means we are highly vulnerable to food system failure, particularly in vulnerable communities, during certain shock scenarios. Building our understanding of the food system and designing targeted interventions is a pivotal resilience building action.

We also need to enable a greater culture of well-being, improving access to facilities and information on exercise and healthy nutrition and providing early intervention for health risks and negative behaviours like substance abuse. Increased well-being will decrease the incidence of non-communicable diseases (NCDs) in Cape Town, will provide additional avenues to decrease the levels of trauma in our city and will help to bolster the mental health and quality of life of Capetonians.

**Action: 1.4.1
Establish a food systems programme**

Type: Flagship action

Desired outcome:

Strengthen the Cape Town food system by focusing on improving access to affordable and nutritious food for Capetonians, particularly those living in vulnerable communities, using high quality data and focused interventions.

Resilience Value:

- Meets basic needs
- Fosters long-term and integrated planning
- Promotes cohesive and engaged communities

Description:

Despite a growing body of food systems knowledge being produced by regional universities, the City of Cape Town does not have a governance approach to food systems. The various parts of the food value chain that the City does contribute to including safety, disposal and urban agriculture are not brought

Quality of Resilience

Redundant

Shocks

- Financial/economic crises
- Drought
- Flood

together under a consolidated vision, and there is little appreciation for systemic risks, including the possible disruptions to food supply that could be caused by a range of shock events, such as flooding, infrastructure failure, drought or civil unrest.

This initiative will:

- Research the feasibility, gaps and resourcing requirements of a food systems programme within the City;
- Work with societal partners and other spheres of government to agree on a vision and strategy for food in Cape Town;
- Consolidate previous research to identify relevant practical interventions that City should be taking to improve the food system; and
- Improve disaster responses relating to food for a number of shock scenarios.

Infrastructure failure

Stresses

Food insecurity
Poverty
Unemployment
Informal settlements

SDG

2 – Zero hunger

Status

New

Timescale for delivery

Short

Aligned actions

1.4.1 | 3.2.1 | 4.1.3 | 4.1.4 |
4.2.1 | 4.2.2 | 5.3.4 |

Action: 1.4.2

Scale up the Live Well Challenge through promotion and partnerships

Type: Enabling action

Desired outcome:

More Capetonians participating in regular exercise and healthy eating, who thus have increased overall levels of health, with improved ability to confront the challenges of shocks and stresses when they occur.

Resilience Value:

Ensures public health services
Meets Basic Needs
Promotes cohesive and engaged communities

Description:

NCD's like cancer, diabetes and heart disease are on the rise in South Africa and the Western Cape and are playing an increasing role in defining our health profile. In 2010, NCDs accounted for 36% of the total number of deaths in South Africa, comparable to the number of deaths from HIV, AIDS and TB combined. NCDs also accounted for a much larger proportion of deaths in the Western Cape than nationally, with current estimates indicating that NCDs account for 38.9% of all deaths nationally and 61% in the Western Cape.²⁹

This initiative will:

- scale up the existing 'Live Well Challenge' programme so that more people can be reached;

The 'Live Well Challenge' is an existing initiative run by the Social Development Directorate which integrates all four of its departments in running a holistic 8-week programme for communities, including exercise, education and support to promote healthy living. This integrated approach allows for example for City Health to provide educational materials and training, while Parks and Recreation facilities are used for organised exercise routines.

Quality of Resilience

Integrated

Shocks

Financial/economic crises
Drought
Flood
Infrastructure failure

Stresses

Food insecurity
Poverty
Informal settlements

SDG

3 – Good health and well-being

Status

New

Timescale for delivery

Short

Aligned actions

1.1.1 | 1.2.1 | 1.2.2 | 1.4.1 |
3.4.1 | 4.2.1

- augment the 'Live Well Challenge' programme with resources from other initiatives, such as mental health awareness and support materials; and
- explore partnerships with business and philanthropic organisations to create incentive schemes for participants to complete the 8-week challenge.

Increasing exercise and healthy eating habits are crucial to decreasing the burden of NCDs in our city. Improved healthy living will lower the overall burden of disease and will have multiple additional benefits such as improved mental health.

Action: 1.4.3

Type: Enabling action

Increase the number of Matrix clinics in Cape Town

Desired outcome:

Increased opportunities for Capetonians to access programmes to support treatment and recovery from substance abuse.

Resilience Value:

- Ensures public health services
- Fosters long-term and integrated planning
- Promotes cohesive and engaged communities

Description:

Substance abuse is a significant stress in Cape Town and is linked to other stresses including poverty, unemployment and crime, most notably gangsterism. Substance abuse causes negative social, economic, health and crime impacts. For instance, 67% of domestic violence in the Cape metropolitan area is alcohol related. Of women abused by their spouses, 69% identified alcohol and/or harmful drug use as the main cause of conflict leading to the incident of physical abuse. Further, more than half of all male prisoners had consumed alcohol or drugs at the time of, or before committing, their most recent crime.

At present there are only six Matrix sites and there is a need to expand the sites to further areas of need.

This initiative will:

- Scale up the Matrix programme by increasing the rate at which new Matrix sites are opened; and
- Promote the availability of the Matrix programme as a treatment option to a larger audience of Capetonians.

There are many benefits to decreasing substance abuse, including associated reductions in crime, ensuring individuals can positively contribute to their families and the economy, and strengthening our social fabric in responding to shocks and stresses.

The Matrix programme is an outpatient substance abuse programme currently run by the City of Cape Town. Through a facilitated programme patients are given support and guidance to quit their substance abuse and dependency.

Quality of Resilience

Robust

Shocks

Financial/economic crises

Stresses

- Food insecurity
- Poverty
- Unemployment
- Informal settlements

SDG

3 – Good health and well-being

Status

Existing

Timescale for delivery

Medium

Aligned actions

1.2.1 | 1.2.2 |

Vision: Capetonians working together at the household, community, city and regional scales to overcome the spatial legacies of our divided past while building adaptive responses to the impacts of climate change that have multiple resilience dividends.

Cape Town's natural assets and biological diversity are part of what makes the city a unique and desirable place to live, work and visit. However, the benefits thereof are not equitably shared between Capetonians, due to, among other things, the spatial legacies of Apartheid which have positioned many communities, largely inhabited by poorer Capetonians, far away from opportunities for leisure and work. At the same time, the city is very vulnerable to the impacts of climate change. The recent drought revealed just how severe the impacts of climate change can be, causing significant disruption across a wide variety of city systems. Similar extreme climatic events are expected to become more frequent and intense in the future. The impacts of climate change, which can manifest as a variety of shock events, have the ability to be multiplied by existing societal stresses such as poverty, food insecurity and a lack of social cohesion. These impacts, as they manifest, will be most severe in poorer communities, particularly informal settlements.

Although the City has been taking steps to reduce its climate vulnerability and carbon emissions, these have been insufficient to address the pace of climate change impacts increasingly affecting Cape Town.

Several long-term city-wide transformations are underway, each with unique goals, that are delivering new investments and actions each year. Many deliver co-benefits that contribute to building adaptive capacity to climate change. For example, the BEPP is guiding a variety of spatial targeting initiatives, public investment programmes and regulatory reforms in order to improve urban productivity and inclusivity. The TOD Strategic Framework is implementing mechanisms for a variety of role players to have a collective impact on urban development in order to progressively move towards a more sustainable, compact and equitable urban form.

However, while long-term city-wide transformations are underway, shocks, including climatic events, can strike at any time and continuous societal stresses such as traffic congestion and unemployment persist. There are hence opportunities to ramp up ambition in supporting actions that build resilience. Many of these opportunities rely heavily on partnering between the City government and Capetonians, while others seek to maximise community or city-wide impact by relying on the agglomeration of actions by households, businesses and communities.

PILLAR GOALS

2.1. Grow partnerships that strengthen transportation systems and improve mobility

2.2 Engage communities and the private sector to improve public spaces

2.3. Build climate resilience

2.4. Innovate for alternative methods of basic service

Climatic changes confronting Cape Town:

- a decrease in annual average rainfall and changed seasonality of rainfall.
- an increase in mean annual temperature: higher maximum temperatures, more hot days, and more frequent and intense heat waves.
- an increase in average wind speed and maximum wind strength.
- an increase in both the intensity and frequency of storms: short, high-intensity rainfall events and increased size and duration of coastal storms.

GOAL 2.1: GROW PARTNERSHIPS THAT STRENGTHEN TRANSPORTATION SYSTEMS AND IMPROVE MOBILITY

The spatial form and social fabric of the city has been negatively affected by the legacy of Apartheid urban planning and the racially divisive policies of the country's past. As a result, poorer Capetonians largely reside further away from economic hubs, with uneven access to a variety of services. The ability of Capetonians to easily move between places in Cape Town in order to access work opportunities, leisure and personal human connections is negatively affected by a number of chronic stresses including traffic congestion and an inadequate public transport system. The rail system, which falls under the control of a national government entity, is decreasing in efficiency, and fails on occasion due to vandalism and security issues. When the rail system does fail it adds to the burden of traffic congestion. Climatic shocks, most notably localised flooding and power outages, also have the ability to disrupt transport networks and contribute to further traffic congestion.

Action: 2.1.1

Type: Enabling action

Grow partnerships to change commuter behaviour and deliver sustainable mobility

Desired outcome:

Increased commitment from large institutions to alleviating traffic congestion through innovative working arrangements and behavioural change resulting in the reduction in single occupancy vehicles on the roads during peak times, with a resilience dividend of decreased carbon emissions.

Resilience Value:

- Provides reliable communication and mobility
- Promotes cohesive and engaged communities
- Ensures continuity of critical services

Description:

Cape Town is the most congested city in South Africa, and the 48th most congested city in the world³⁰. This is due to a historic lack of substantial investment in public transport and, as a result, overreliance on the private car. This means that as the population grows, so does vehicle ownership. With 80% of the peak traffic currently made up of private car users, and peak travelling hours in the morning now recognised to be between 06:00 and 10:00, this stress negatively affects productivity.

Leveraging off the City government's own implementation of various Travel Demand Management interventions for its own staff, the City is in a position to show increased leadership on partnering for alleviating traffic congestion with other employers in Cape Town.

The City will:

- Work with partners like the local chamber of commerce, business associations, and large public and private sector employers to create a coalition of change;
- Develop tools to help employers understand the travel patterns of their employees and to assess the feasibility and acceptability of alternative travel arrangements;
- Obtain increased commitments from employers to promote flexi-time work conditions and remote working models for employees, and to promote the use of car-pooling, public transport and non-motorised transport such as cycling; and
- Work with partners to track outcomes, share best practice and celebrate success.

Quality of Resilience:

Resourceful

Shocks

- Infrastructure failure
- Rainfall flooding
- Power outage

Stresses

- Traffic congestion
- Climate change
- Inadequate public transport systems

SDG

11 – Sustainable cities & communities

Status

New

Timescale for delivery

Medium

Aligned actions

2.1.2 | 2.1.3 | 3.4.1 |

Action: 2.1.2**Type:** Flagship action**Collaborate with other spheres of government to ensure the safe and reliable operation of local trains****Desired outcome:**

Safe, reliable and efficient commuting for Capetonians using Metrorail through a reduction in vandalism and arson attacks on trains and improved operational efficiency, thus contributing to improved productivity, an increased number of train commuters and less traffic congestion.

Resilience Value:

Ensures social stability, security and justice
Fosters economic prosperity
Provides reliable communication and mobility

Description:

Rail is the most efficient mode of transport in Cape Town when operating optimally. Sustained attacks on rail infrastructure and rolling stock assets, acts of sabotage of the urban rail network and thefts and violence affecting commuters and rail staff have seriously compromised the operations of the rail service,³¹ sometimes resulting in entire lines being closed for extended periods of time.³² This contributes to increased traffic during peak times as affected commuters have to find alternative transport.

Metrorail is run by the Passenger Rail Agency of South Africa (PRASA), a national government entity, however the City has a keen interest in the functioning of the rail system as it is a vital component of the developing an integrated transport system. This initiative intends to:

- Extend the life of the Rail Enforcement Unit

The City, WCG and PRASA partnered to form the Rail Enforcement Unit in 2018. 100 additional law enforcement officers have been brought into service to complement PRASA's regional Protection Services Unit. In the first months of operation, the unit has been lauded for dozens of arrests and confiscation of several hundreds of kilograms of stolen signalling cable.³³ The long-term existence of the unit is insecure, as funding commitments to date are for one year. The City will work with the project partners to ensure the partnership is extended and scaled.

- Explore the implications of the devolution of the rail service

The City will explore the feasibility of devolution of the rail service to a sub-national sphere of government. Devolution will help to improve the achievement of a fully integrated transport system and investment into new rail connections between underserved parts of the city. A feasibility study will consider the legal implications, operational and funding requirements and partnering mandates for the purpose of developing a case to national government for devolution.

Quality of Resilience:

Integrated

Shocks

Infrastructure failure

Stresses

Inadequate public transport system
Crime/violence
Traffic congestion

SDG

11 – Sustainable cities & communities

Status

Pilot

Timescale for delivery

Medium

Aligned actions

2.1.1 | 5.2.2 |

Action: 2.1.3**Type:** Enabling action**Leverage the tech sector to improve integration of informal transportation systems****Desired outcome:**

Improved integration of all forms of transport in Cape Town, with an emphasis on integrating informal minibus taxis with rail, bus, cycling and walking routes in order to bring down the cost

Resilience Value:

Provides reliable communication and mobility
Fosters economic prosperity

of public transport and lure more commuters away from private cars.

Provides leadership and effective management

Description:

About 12% of passenger journeys in Cape Town are performed by minibus taxis. They make up an informal transport network of over 12 000 licenced taxis, transporting about 300 000 passengers along more than 1350 routes.³⁴ They perform a vital role of transporting commuters to work opportunities, particularly those commuters who live in areas not sufficiently serviced by public transport.

In addition, minibus taxis perform an important role, not often acknowledged, of absorbing extra capacity of passengers when other modes of transport fail, for example when the rail lines cease to operate, or when there are bus strikes.

The City's transport plans intend for the City to become the single authority over all road-based transport. Currently responsibilities are shared between the City and the WCG. Integration efforts are concentrated on integrating the bus services and rail.

Cape Town is the first city in the world to have both its informal and formal transport sectors mapped. There is significant data available but it is not being optimally leveraged to improve transport outcomes. There is an opportunity to further integrate informal transport, made up of minibus taxis, into the public transport network by using data and tech applications.

The City will:

- Work with tech providers and minibus taxi operators to encourage the development of useful products, based on reliable data, that can improve the integration of formal and informal transport networks by providing real time information to plan journeys,³⁵ thus positively improving the commuter experience; and
 - Use data derived from the informal transport network to determine future investments in supporting infrastructure.
-

Quality of Resilience:

Resourceful

Shocks

Infrastructure failure
Power outage

Stresses

Inadequate public transport system
Traffic congestion
Poverty

SDG

11 – Sustainable cities & communities

Status

New

Timescale for delivery

Medium

Aligned actions

2.1.1

GOAL 2.2 ENGAGE COMMUNITIES AND THE PRIVATE SECTOR TO IMPROVE PUBLIC SPACES

Place-making can inspire people to collectively re-imagine and re-invent public spaces in communities. Cape Town has a significant number of public and private space where people gather. However, in many cases spaces are not being optimally used. Some spaces are degraded or unsafe, others are not well connected to transport or walkways. Most are designed with only one or two primary objectives in mind, missing out on the numerous functions that spaces can perform, and few spaces are effectively activated.

Whether the spaces are parks, CBDs, markets, streets, rivers, public buildings, campuses, or sports fields, there are multiple opportunities to improve resilient place-making. Well-designed places can bring people together from different communities to improve social cohesion, they can create economic opportunities, they can reduce crime, and they can ameliorate shock events such as floods and heat waves.

Place-making presents opportunities for partnerships between community organisations, businesses and the City government.

Action 2.2.1**Type:** Enabling action**Grow the Urban Regeneration Programme to all parts of the city****Desired outcome:**

Infrastructure improvements in large urban areas like CBDs, including transport linkages, safety enhancements, and trading and leisure spaces, created in partnership with local stakeholders, which result in multiple resilience dividends including improved safety and economic opportunities, and adaptive capabilities to flooding and heat waves.

Resilience Value:

Promotes cohesion and engaged communities
Ensures social stability, security and justice
Fosters economic prosperity

Description:

The Mayoral Urban Regeneration Unit (MURP) in the City of Cape Town has a strong history of co-creating comprehensive, transversal urban regeneration interventions with stakeholders in approximately 13 identified neighbourhoods in the city. One of the primary focuses has been on violence prevention through urban upgrading, although a multitude of co-benefits are realised during such transformations.

Key to urban regeneration is the co-creation of a Community Action Plan (CAP) for the targeted area, identifying required investment into both people and infrastructure. MURP then works to coordinate various line departments within the City government to ensure the delivery of the CAP through initiatives such as co-location of public facilities, improved lighting, trading spaces and the like.

MURP is a key component of building a resilient city because it is people and place focused. The City will:

- Integrate a broader resilience lens into the programme, in order to maximise the resilience dividends, with a particular focus on improving safety and creating an enabling environment for job creation;
- Work with sub-councils to identify and establish 24 MURP areas in the city; and
- Evolve each MURP area into a flagship project within 5 years

Quality of Resilience:

Integrated

Shocks

Rainfall flooding
Heat wave

Stresses

Lack of social cohesion
Crime/violence
Rapid urbanisation
Unemployment

SDG

11 – Sustainable cities & communities

Status

Pre-existing

Timescale for delivery

Medium

Aligned actions

1.2.1 | 1.3.3 | 2.2.2 | 2.2.4 |
2.4.2 | 3.2.1 | 3.2.2 | 4.2.1 |
5.2.5 | 5.4.3 |

Action: 2.2.2**Type:** Flagship action**Address social ills and create opportunities in Manenberg through a Youth and Lifestyle Campus****Desired outcome:**

Increased economic opportunities and decreased social ills such as gangsterism, crime, violence, and substance abuse for the youth of Manenberg by way of improved place-making, infrastructure upgrades, and social support, which achieves multiple resilience dividends.

Resilience Value:

Promotes cohesive and engaged communities
Ensures social stability, security and justice
Supports livelihoods and employment

Description:

Manenberg is a community located approximately 20km from the Cape Town CBD. Many of its inhabitants were moved to the area during the period of brutal forced removals under Apartheid. The community lives with a number of social ills including a high murder rate and high

Quality of Resilience:

Inclusive

Shocks

Financial / economic crises

Stresses

Lack of social cohesion

substance abuse. Of the adult population only about 33% of people are employed and only 20% have completed matric or a higher qualification.

Following extensive consultation, a CAP was agreed to by the City of Cape Town, the WCG and the Manenberg Steering Committee in November 2018. The CAP commits to a number of infrastructure upgrades and makes a strong commitment to youth empowerment, most tangibly expressed through the concept of a Youth and Lifestyle Campus. It will take considerable effort and alignment of multiple partners to realise this vision which connects multiple precincts in the community into a zone of opportunity and safety.

Government and community partners, working together, will:

- Develop up to 6 precincts in the community including an ecological precinct, innovation, economic and skills development precinct, a wellness precinct and a sports precinct and connect them with safe, vibrant walkways;
- Increase the scope of and improve interconnections between a number of supporting programmes including ECD centres, counselling services and SROs.
- Apply a resilience lens to all efforts to ensure a maximisation of the resilience dividend; and
- Monitor and evaluate the impacts of interventions using high quality data.

Crime/violence
Substance abuse
Trauma

SDG

11 – Sustainable cities & communities

Status

New

Timescale for delivery

Medium

Aligned actions

1.2.4 | 1.3.3 | 2.2.1 | 2.4.2 |

Action: 2.2.3

Type: Demonstrable action

Rejuvenate our rivers to create liveable urban waterways

Desired outcome:

Healthy, safe and productive urban waterways which produce multiple resilience dividends, including flood attenuation, bringing people together for recreation, creating new work opportunities, and reducing crime.

Resilience Value:

Promotes cohesive and engaged communities

Ensures continuity of critical services

Provides and enhances natural and manmade assets

Description:

Cape Town has 21 river catchments. Most of these rivers, if not all, have been negatively affected over many years by development, urbanisation, pollution and land use in the catchments. In particular, many of what were once natural rivers have been modified into concrete lined channels or canals or buried in pipes and culverts. The total length of rivers and streams in Cape Town is 1900 km and the total length of canals and channels is 480 km.

A demonstration project will be developed along a part of the Diep River building on the conceptual work of the 'Source to Sea' initiative. The initiative will:

- De-canalise part of a river and rehabilitate a surrounding wetland in partnership with the local community;
- Re-connect the river with the groundwater and the surrounding wetland; and

Quality of Resilience:

Redundant

Shocks

Rainfall flooding
Heat wave

Stresses

Lack of social cohesion
Crime/violence
Climate change

SDG

6 – Clean water and sanitation

Status

New

Timescale for delivery

- Foster long-term engagement, collaboration, and educational opportunities together with the surrounding community.

The demonstration action will identify specific locations to replicate and scale similar projects around the city. This action aligns with the long-term vision of the city to become a water sensitive city, as outlined in the new Cape Town Water Strategy.

Medium

Aligned actions

2.3.4 | 2.3.4 | 2.4.2 | 4.1.1 | 4.1.3 |

Action: 2.2.4

Establish a transversal public spaces work group

Type: Enabling action

Desired outcome:

Increased private investment and collaboration in the design and use of public spaces for the purpose of realising multiple resilience dividends, including adaptation to climate change and improved social cohesion.

Resilience Value:

Promotes leadership and effective management
Fosters economic prosperity
Promotes cohesive and engaged communities

Description:

It can be frustrating for community organisations, developers, and urbanists to contribute both ideas and investment for the upgrading or redesign of public spaces. Red tape, unclear decision-making, and restrictive municipal legislation and policy can result in the goodwill from Capetonians wanting to contribute being diminished.

Cape Town has a huge opportunity to maximise the resilience dividend of public spaces. Just considering parks, there are over 3500 community parks in the city.

The City has a strategic intent to crowd in private investment into places, particularly in places aligned with the new public transport investments. There need to be more mechanisms for facilitating private support.

A new public spaces transversal work group, inclusive of all relevant departments, will be established in the City government to create mechanisms to harness private investment and collaboration in place-making and public facility investment.

The workgroup will:

- Review barriers to private investment and relevant processes and by-laws by consulting with key stakeholders;
- Provide advice on approval mechanisms, and develop easily understood guidelines for Capetonians who want to collaborate in place-making in public spaces;
- Celebrate and share success stories through case studies and presentations at urbanist events seeking constant feedback from stakeholders; and
- Embrace reflective learning for a constantly changing environment.

Emphasis will be placed on encouraging investment into spaces that can enhance cultural activities for the purpose of enhancing social cohesion, while at the same time contributing to climate adaption and other resilience challenges.

Resilience Quality:

Integrated

Shocks

Heat wave
Rainfall flooding

Stresses

Insecure municipal finances
Crime/violence
Lack of social cohesion

SDG

11 – Sustainable cities & communities

Status

New

Timescale for delivery

Short

Aligned Actions

1.3.3 | 2.2.1 | 2.2.3 | 4.1.1 | 2.3.5

GOAL 2.3: BUILD CLIMATE RESILIENCE

Adaptive responses to the impacts of climate change are spread across a multitude of government, organisational, and community plans. Building climate resilience requires cross-sectoral and multi-scale responses. While there is a moral imperative to mitigate climate change, and Cape Town must deliver its fair contribution to the global effort, we need to understand that a considerable number of the impacts of human-induced climate change are already locked into the climatic system. We have no choice but to adapt to the impacts that are already occurring and to those that will occur in the future, while at the same time contributing to national and global targets to stabilise and reduce greenhouse gas (GHG) emissions.

Irrespective of the magnitude or frequency of the impacts of climate change, Cape Town's greatest vulnerability to climate change is that its impacts will be multiplied due to the high degree of chronic stresses that weaken the fabric of society. There are a multitude of actions across the pillars of the Resilience Strategy that seek to address these vulnerabilities and which will produce dividends of enhanced climate resilience. Due to the often universal applicability of resilience building actions to any shock, there are additionally a multitude of actions in this strategy that respond specifically to climatic shocks like drought, flooding and heat waves.

This goal, and its associated actions, highlights areas that require particular focus in building climate resilience, with an emphasis on areas of high vulnerability identified in the context of the recent drought.

Action: 2.3.1

Type: Enabling action

Strengthen the capacity to interpret and integrate climate impacts into planning

Desired outcome:

Improved data and insights of likely climate change impacts and projections applicable to the city-region level for the purpose of improving the robustness of long-term planning, and the associated benefit of reducing vulnerability and increasing adaptive capacity to climate change.

Resilience Value:

Fosters long-term and integrated planning
Ensures continuity of critical services
Empowers a broad range of stakeholders

Description:

For Cape Town to be able to prioritise and invest in climate adaptation and mitigation measures that are suitable to our context, relevant information is needed about climate patterns impacting on the city and GHG emissions profiles over time, historically and into the future.

Climate change models and projections have steadily increased in sophistication and downscaled applicability over the years. Critical to its use in decision-making is the translation of climate and GHG emissions information into knowledge of the knock-on effects of climate impacts on the economic, social and physical functioning of the city and an understanding how significant (and costly) these cumulative effects might be under various scenarios.³⁶ There is a need at the city-region level to attempt further downscaling in order to bridge the gap between global and local effects by layering local-level data over larger-scale climate models.³⁷

There is a wealth of scientific and technical abilities in forecasting and modelling that has been developed in regional universities and research institutions which the City

Quality of Resilience:

Robust

Shocks

Drought
Rainfall flooding
Heatwave

Stresses

Climate change
Unemployment
Informal settlements
Poverty

SDG

13 – Climate action

Status

New

Timescale for delivery

Short

Aligned actions

can tap into, however there is value in developing internal resources to supplement external efforts.

2.3.4 | 2.3.5 | 4.1.1 | 4.1.3 |
4.1.4 | 4.2.1 | 4.2.2 | 4.4.1 |
4.4.2 | 5.2.1 | 5.3.2 | 5.3.4 |

The City will:

- Develop an internal resource to develop scenarios on impacts of climate change at a downscaled level using a range of data sets important for long-term City planning; and
- Collaborate with universities and research institutions to turn climate change projections into useful policy briefs for local decision-makers working in urban management.

Action: 2.3.2

Type: Enabling action

Enhance partnerships for improved water governance and holistic water resilience

Desired outcome:

Strengthened relationships with large water users in the WCWSS and ongoing collaboration and engagement with civil society, academic, and business partners in the urban water system for the purpose of collective ownership of roles and responsibilities in water governance.

Resilience Value:

Promotes leadership and effective management
Empowers a broad range of stakeholders
Meets basic needs

Description:

The recent drought experienced by Cape Town brought to the fore the need for extensive partnering around water governance. This is true for both the urban water system and the broader WCWSS, the latter of which includes a range of large water users.

Significant efforts to build trust need to be pursued as we exit the drought period and there needs to be greater partnering across the system to become better prepared for future shocks.

The City will:

- Extend the life of the Section 80 Water Resilience Advisory Committee.

This committee which was specifically created by Council to support the various City efforts to respond to the recent drought. The committee, which is unique in terms of committees of Council, is made up of both councillors and external experts from academia, NGOs, business and commercial agriculture. The committee will going forward work on the broader suite of responses to achieving a water resilient and water sensitive city, including a special focus on the quality of water in our urban waterways.

- Use partnering solutions to improve trust building and benefit sharing among users of the WCWSS.

The WCWSS steering committee is administered by the national Department of Water and Sanitation, and includes large users like commercial agriculture, the City and neighbouring municipalities. It is an inclusive system based on rules, which sets abstraction amounts based on dam level projections. Outside of the formality of steering committee meetings, there exists an opportunity to partner with other large users in the system to agree understand each other's needs, to solve problems before they arise and to agree on shared benefits and risks.

Quality of Resilience:

Inclusive

Shocks

Drought
Rainfall flooding
Infrastructure failure

Stresses

Climate change
Insecure municipal finances
Rapid urbanisation

SDG

6 – Clean water and sanitation

Status

Pilot

Timescale for delivery

Short

Aligned actions

2.3.3 | 3.4.1 | 5.2.2 | 5.4.2

Action: 2.3.3**Type:** Flagship action**Protect water sources by supporting the Greater Cape Town Water Fund****Desired outcome:**

Increased collective support by a range of stakeholders to clear alien invasive vegetation from the catchments around the large dam system for the purpose of augmenting water supply in the bulk water system.

Resilience Value:

Promotes leadership and effective management
 Enhances natural and manmade assets
 Supports livelihoods and employment

Description:

Over two-thirds of the sub-catchments supplying the WCWSS are affected by alien plant invasions, reducing the amount of water that reaches the rivers and dams that feed the region by 55 billion litres (55 Mm3) per year.³⁸ Invasive alien plants alter soil ecology, increase the frequency and severity of wildfires and significantly impact river flow and aquifer recharge.

Contributing towards the clearing of catchments, particularly in high mountainous areas, is not easily possible for the City because these areas fall out of the City's municipal jurisdiction and hence the City cannot expend funds in these areas. This makes this resilience challenge a complex one because it must be confronted at a regional level with the support of multiple partners. Alien invasive clearing is however acknowledged as a necessary and cost-effective way of augmenting water supply in the new Cape Town Water Strategy.

A Water Fund is a funding and governance mechanism that enables water users to provide financial and technical support collectively in catchment restoration alongside upstream communities.³⁹ The Nature Conservancy, a global platform partner of 100RC, has established launched such a fund in November 2018, called the Greater Cape Town Water Fund, to address the problem of alien invasive species at scale.

In this initiative, the City will:

- Join other partners such as CapeNature, the National Department of Water and Sanitation, and World Wildlife Foundation (WWF) in serving on the steering committee of the Fund.
- Contribute to collective efforts to clear catchments around its own dams in the large system; and
- Support efforts of the Fund to raise donations from corporate donors and philanthropic organisations.

Quality of Resilience:

Resourceful

Shocks

Drought
 Fire

Stresses

Climate change
 Unemployment
 Insecure municipal finances

SDG

6 – Clean water and sanitation

Status

New

Timescale for delivery

Short

Aligned actions

2.3.2 | 3.4.1 |

Action: 2.3.4**Type:** Flagship action**Protect water sources through managed aquifer recharge****Desired outcome:**

The long-term health and sustainability of the Cape Flats Aquifer through the responsible recharge thereof as a complementary action to the limited abstraction from the aquifer to augment bulk water supplies.

Resilience Value:

Ensures continuity of critical services
Provides and enhances natural and manmade assets
Fosters long-term and integrated planning

Description:

The City is planning to abstract water from the Cape Flats Aquifer by up to 45 mega litres per day by 2020. This is part of the City's plan as outlined in the new Cape Town Water Strategy to reduce the reliance of the city on surface water in the dam system which is susceptible to low rainfall during drought shocks. Key to maintaining a sustainable yield from the aquifer and reducing the possibility of salt water intrusion is a programme of managed aquifer recharge.

The City will:

- Deliver the required capital infrastructure to conduct safe and responsible aquifer recharge using effluent water treated to the required standard;
- Use the opportunity of recharge to grow awareness among Capetonians about the critical value of the aquifer and how to protect it; and
- Subject itself to rigorous scrutiny from the National Department of Water and Sanitation regarding the terms of the licences relating to abstraction and recharge.

Quality of Resilience:

Redundant

Shocks

Rainfall flooding
Infrastructure failure
Drought

Stresses

Climate change
Rapid urbanisation
Food insecurity

SDG

6 – Clean water and sanitation

Status

New

Timescale for delivery

Medium

Aligned actions

2.2.3 | 2.3.1 | 4.1.3 | 4.3.1 |
5.2.2 | 5.4.2 |

Action: 2.3.5**Type:** Enabling action**Create multiple coastal management forums****Desired outcome:**

Empowering partnerships between coastal stakeholders to co-own risks related to impacts on the coast and surrounding infrastructure, and networks of resources able to both prepare for and respond to coastal shocks.

Resilience Value:

Empowers a broad range of stakeholders
Provides and enhances natural and manmade assets
Ensures continuity of critical services

Description:

The integrity and value of Cape Town's 307km coastline is dependent upon the interaction of numerous biophysical processes. Storms are drivers of rapid coastal change, often leading to abrupt erosion events and inundation of coastal areas.⁴⁰

Historic planning decisions made without the guidance of a City-wide integrated coastal management framework have resulted in the interference with dynamic coastal processes and degraded coastal environments which now form a source of risk to human settlements located in these spaces. Risk may be physical, social or financial and can be

Quality of Resilience:

Inclusive

Shocks

Storm surge

Stresses

Climate change
Rapid urbanisation
Insecure municipal finances

SDG

14 – Life below water

transferred to coastal stakeholders over periods of time and over space.⁴¹

The City has a comprehensive Coastal Management Programme, informed by a Coastal Management Policy. Interventions to reduce risk and secure the safety of the coast for all stakeholders are costly, and requires ongoing work over multiple years. However, the coast is prone to shock events such as storm surge at any time.

The City will:

- Work with relevant stakeholders, including coastal property owners, to create coastal management forums;
- Use the forums to allow stakeholders to share risks, and co-design preparedness for and responses following shocks; and
- Use the forums to assign roles and responsibilities to all stakeholders for the mutual protection of the coast and those impacted upon by shock events.

Status

New

Timescale for delivery

Medium

Aligned actions

2.2.4 | 2.3.1 | 4.2.3 | 5.2.1 |
5.3.4 | 5.4.2 |

GOAL 2.4: INNOVATE FOR ALTERNATIVE METHODS OF BASIC SERVICE DELIVERY

There are at least 204 informal settlements in Cape Town that have been established in response to rapid inward migration. They are mostly located on City-owned land. The challenges of daily stresses and intermittent shocks are exponentially higher for Capetonians living in these settlements.

Informal settlements are characterised by a lack of formal tenure, insufficient public space and facilities, inadequate access to municipal services and poor access ways. Some informal settlements are built on dangerous sites such as unplanned landfills, wetlands or retention and detention ponds which intensify the likelihood of disasters such as flooding. From a social point of view, these areas often overlap with high social vulnerability such as poverty, unemployment and high crime rates.

The City has various initiatives to re-block informal settlements that will, among other things, aim to create a safer public realm, access for emergency vehicles, safe and convenient paths for movement on foot, and where possible, open space for essential community facilities that precede formal upgrading processes. This requires intensive participation processes in order to achieve outcomes that are acceptable to communities.

The City provides access to basic services in informal settlements, including electricity, water and waste services. This provision of basic services is however legally complex when informal settlements are located on privately owned land. There is significant scope to innovate with mechanisms to deliver basic services, particularly on privately owned land.

Action: 2.4.1

Type: Demonstrable action

Explore alternative, innovative and acceptable mechanisms of service delivery in informal settlements

Desired outcome:

Innovative means of provision of basic services in informal settlements including energy, water and waste services, that have multiple resilience dividends including empowering residents, improving health outcomes and

Resilience Value:

Meets basic needs
Provides and enhances natural and manmade assets
Ensures continuity of critical services

reducing the occurrence of shocks such as fire and flooding.

Description:

The number of new home builds in informal settlements in Cape Town is nowadays almost equivalent in number to the number of home builds provided by the private and public sectors. The extent of required basic services to informal settlements is hence growing in extent and complexity, particularly where new settlements are being established on private land or far away from bulk infrastructure. This places major pressure on municipal finances, particularly as the services to informal settlements are free, and hence do not generate income.

There is a need to innovate with multiple different methodologies of basic service provision in informal settlements, including de-centralised solutions, in order to ensure continued supply of acceptable basic services in way that ensures the sustainability of municipal finances.

The City will:

- Embrace demonstration projects to test methodologies of alternative, innovative and acceptable basic service delivery in informal settlements;
 - Work with receiving communities to ensure that methodologies are socially, technically and financially feasible;
 - Explore whether it is possible to more holistically integrate water, renewable energy, waste treatment, and food technologies and processes in the delivery of services;
 - Explore whether it is possible to enable new job opportunities in the informal economy through processes related to provision of basic services;
 - Adopt new solutions once proved to be feasible for wider delivery across informal settlements.
-

Quality of Resilience:

Resourceful

Shocks

- Fire
- Power outage
- Disease outbreak

Stresses

- Informal settlements
- Poverty
- Insecure municipal finances

SDG

11 – Sustainable cities and communities

Status

In development

Timescale for delivery

Medium

Aligned actions

2.4.2 | 3.1.4 | 4.1.3 | 4.3.2 |

Action: 2.4.2

Type: Enabling action

Co-design for informal settlement upgrading projects

Desired outcome:

Empowered residents of informal settlements working in collaboration with the City and other societal partners to design acceptable, safe and dignified informal settlement upgrading projects.

Resilience Value:

- Empowers a broad range of stakeholders
 - Promotes cohesive and engaged communities
 - Fosters long term and integrated planning
-

Description:

Informal settlements are expanding rapidly, and the pace and complexity of basic service provision and upgrading is difficult to address. Projects move more quickly when Capetonians living in informal settlements and the City find alignment on goals and methods.

People living in informal settlements understand the risks and vulnerabilities of these areas best. They therefore must be as fully integrated and empowered as possible to participate in

Quality of Resilience:

Inclusive

Shocks

- Rainfall flooding
- Fire
- Civil unrest

Stresses

Informal settlements

decisions that affect them. Central to empowering people is good quality data that all decision-makers can agree on as a starting point of design and implementation.

The City will:

- Collaborate with NGOs working in informal settlements to build accurate, mutually agreed upon data sets of relevant information in informal settlements and work together to interpret the data;
 - Use geospatial information systems (GIS) technology to create powerful spatial interpretation of data for engagement purposes;
 - Improve facilitation capabilities of staff to ensure engagement and participation processes for projects can more easily move to co-design and co-ownership of upgrading projects; and
 - Explore the possibility of rolling out Community Register Offices in Cape Town. Such offices have been piloted by VPUU, a locally-based NGO. The office functions as a database driven tenure administration system allowing residents of informal settlements to register their personal details on the database.
-

Poverty
Insecure municipal finances

SDG

11 – Sustainable cities and communities

Status

Pilot

Timescale for delivery

Short

Aligned Actions

2.2.1 | 2.2.2 | 2.2.3 | 2.4.1 |
4.1.1 | 4.1.3 | 5.2.5 | 5.3.2 |

DRAFT

Vision: Capetonians aware of both the risks and opportunities of rapid change in the context of increased economic interconnectedness, working together to create a resilient local economy, able to turn challenges into new market opportunities.

Cape Town's economy has progressively shifted towards a predominantly service-driven one with growth in tertiary sector industries outpacing growth in both primary and secondary sector industries in the last decade. The local economy has recently grown faster than the national economy primarily because it is not heavily dependent on the mineral sector, which has experienced a recent downturn.

RELEVANT GOALS

3.1: Foster green economic growth

3.2: Enable enterprise development in the informal economy

3.3: Connect the workforce with a changing economy

3.4: Collaborate with businesses to achieve a resilient local economy

Cape Town's unemployment rate at the end of 2018 was 21.2% on the narrow definition and 23.1% on the broad definition.⁴² While Cape Town's narrow unemployment rate is significantly lower than the country as a whole, and the broad unemployment rate is the lowest out of all metropolitan municipalities, the hard truth is that 429 000 Capetonians are unemployed.⁴³ High unemployment is a significant stress in Cape Town, and is a contributing factor to high levels of poverty and inequality. Unemployment levels are stubbornly stuck. Increasing employment Cape Town is a crucial component of building resilience to shocks.

We need to be aware of the risks to our economy, emanating from regional, national and even global sources. While the local economy has outperformed the national economy, it is still inextricably linked to the national economy and international investor sentiment. Policy uncertainty at the national level and the weakening of state institutions have been sighted in recent times by ratings agencies for declining credit ratings. The recent drought placed an international spotlight on water constraints in Cape Town, compromising the city's international image. Other resource constraints, such as occasional load shedding by Eskom, is unable to match electricity supply with demand, places further pressure on local businesses to maintain productivity. Globally, dollar strength⁴⁴, emerging protectionism⁴⁵, and possible trade wars⁴⁶ are all risks to emerging economies like South Africa.

We need to build resilience to risks facing our local economy. Both government and businesses have limited levers to do this within an interconnected economy subject to the impacts of globalisation, climate change, rapid technological change and urbanisation. There are however several actions that can be taken. On the upside, in collectively understanding our risks we can create new opportunities for Capetonians, and can improve our economic performance relative to other cities in South Africa and around the world.

For Cape Town, the key opportunities include the creation of a cross-section of jobs from highly skilled to semi-skilled and unskilled; addressing the skills mismatch and high youth unemployment; overcoming our resource constraints; establishing infrastructure for a knowledge economy; attracting foreign direct investment; and supporting SMMEs within the local economy.

GOAL 3.1: FOSTER GREEN ECONOMIC GROWTH

While there are many constraints facing Cape Town and the region's resources, specifically water and energy, these can also be capitalised upon to create new economic opportunities in the green economy.

There are numerous opportunities to facilitate an increase in domestic and foreign investment in the local production and assembly of green products, and the provision of green services, and there are a multitude of resilience dividends in doing so. Besides creating new jobs and helping to ensure a just transition for workers who may be negatively affected by changes in the future economy, the new products and services produced can contribute to ensuring the ongoing sustainability and cost-competitiveness of local businesses.

What is the Green Economy?

The working definition for the green economy as it relates to Cape Town is: "expanded economic opportunities created through the provision of goods and services and the use of production processes that are more resource efficient, enhance environmental resilience, optimise the use of natural assets and promote social inclusivity."

Action: 3.1.1

Type: Flagship Action

Leverage the newly created Atlantis Special Economic Zone to cultivate the green economy while promoting economic mobility

Desired outcome:

Increased local manufacture of green technology by capitalising on new local and regional market opportunities, with the associated creation of new jobs, particularly for Capetonians displaced from fading economic sectors.

Resilience Value:

Fosters economic prosperity
Supports livelihoods and employment
Provides and enhances natural and manmade assets

Description:

Atlantis, 40km north of the Cape Town CBD, was previously a major manufacturing hub for textiles, but this sector was negatively affected by trade liberalisation, resulting in thousands of job losses in the area. The Atlantis Special Economic Zone (SEZ) is therefore an important project for uplifting the Atlantis community, building on an existing skills base and strong local infrastructure. It has the potential to create 1200 direct jobs by 2022.⁴⁷

Importantly this project must ensure shared benefits for the community of Atlantis.

This initiative will:

- Develop long-term engagement mechanisms with the local community to promote opportunities;
- Provide skills training and aspirational experiences for local school children to encourage participation in the green economy; and
- Foster local enterprise development that provides goods and services to large manufacturers in the SEZ.

The Atlantis SEZ

The 124-hectare site, specifically declared a green technology SEZ, was launched in December 2018. It is a partnership between the City of Cape Town, the WCG, and the National Department of Trade and Industry. Both the City and the national government have a suite of investment incentives for the zone. A One-Stop-Shop for investors works to reduce red-tape.

Quality of Resilience:

Integrated

Shocks

Financial/economic crises
Power outage
Drought

Stresses

Unemployment
Climate change
Poverty

SDG

8 – Decent work and economic growth

Status

New

Timescale for delivery

Medium

Aligned actions

3.1.2 | 3.1.3 | 3.1.4 | 3.3.1 | 3.4.2 | 4.3.2 |

Action: 3.1.2**Type:** Enabling action**Mainstream sustainable procurement in supply chain management****Desired outcome:**

An increase in public spending on green goods and services, ensuring that public procurement becomes increasingly environmentally and socially responsible, thus contributing to market innovation and potentially the increased local production and provision of green goods and services, with associated benefits for job creation.

Resilience Value:

Fosters economic prosperity
 Supports livelihoods and employment
 Provides and enhances natural and manmade assets

Description:

Many socially-responsible provisions have already been incorporated into the City's supply chain management policy and processes, including provisions related to preferential procurement for Small, Medium and Micro-Enterprises (SMMEs) and broad-based black economic empowerment (BBBEE). Sustainable procurement is included in the supply chain policy as a principle, but requires significant scaling up in order to deliver the desired outcomes.

Procurement officials have the opportunity to create new demand for green products and services in the market by considering a life-cycle approach to products, resource efficiency requirements and the imperative to minimise or mitigate the impacts of products and services on the environment.

This initiative will:

- Ensure that tools and procedures are in place to support sustainable procurement;
- Develop guidelines and specifications for each goods commodity group;
- Establish the feasibility of developing guidelines and specifications for each utilities and transport-related materials group within the City's stock items; and
- Create a community of practice with the WCG and other metropolitan local government so that learnings can be shared, and the impact of sustainable procurement can be scaled, thus increasing the incentive for the local production of green products.

Quality of Resilience:

Resourceful

Shocks

Financial/economic crises
 Power outage
 Drought

Stresses

Unemployment
 Climate change
 Food insecurity
 Poverty

SDG

12 – Responsible consumption and production

Status

In development

Timescale for delivery

Short

Aligned actions

3.1.1 | 3.1.3 | 3.1.4 | 5.1.3 | 5.2.2 |

Action: 3.1.3**Type:** Demonstrable Action**Develop eco-industrial parks using industrial symbiosis methodology****Desired outcome:**

Improved resource efficiency, inclusive of materials, water, energy, logistics and expertise, within specific industrial areas using industrial symbiosis methodology, for the purpose of increasing resilience to resource constraints, and sustaining and creating jobs.

Resilience Value:

Fosters economic prosperity
 Supports livelihoods and employment
 Provides and enhances natural and manmade assets

Description:

While industrial symbiosis (IS) methodologies have been successfully implemented in a number of ways across the city-region, there are many opportunities to increase efforts, specifically by applying a spatial lens, targeting brownfield and greenfield zones towards the creation of eco-industrial parks.

This evolution will focus on high job potential industries to reduce their economic vulnerability, their legal and environmental liabilities, and their carbon intensity, while building resilience to resource-related shocks.

This initiative will:

- Select a particular industrial or light industrial area for a demonstration project;
- Work with business owners in the area to map and categorise resources going into individual production processes and waste streams produced by those processes;
- Determine whether there are potential new synergies between business owners that can be capitalised upon, and encourage action where feasible; and
- Develop a profile for the area which can be used to attract new investment into the area based on co-located resources.

WISP

The Western Cape Industrial Symbiosis Programme (WISP) is a free service that connects companies so that they can identify and realise the business opportunities enabled by utilising unused or residual resources, enhancing business profitability and sustainability. Since 2013, the WISP has developed a network of 621 companies (70% of which are SMMEs), creating an average of 30 synergies per year (a synergy is a mutually beneficial business relationship) and diverting a total 25,000 tonnes of waste from going to landfill in the 2017-2018 financial year. The return in value to WISP's members from government funding is estimated to be 5:1.

Quality of Resilience:

Resourceful

Shocks

Financial/economic crises
Drought
Infrastructure failure
Power outage

Stresses

Unemployment
Climate change
Insecure municipal finances

SDG

9 – Industry innovation and infrastructure

Status

New

Timescale for delivery

Medium

Aligned actions

3.1.1 | 3.1.2 | 3.1.4 | 3.4.2 | 4.3.2 |

Action: 3.1.4
Undertake a waste economy study

Type: Enabling action

Desired outcome:

Detailed understanding of the multitude of waste streams in the city-region, including type, quantity, and projected changes over time, for the purpose of identifying risks to the sustainability of the waste service and new opportunities in the economy that can build resilience to resource constraints.

Resilience Value:

Ensures continuity of critical services
Supports livelihoods and employment
Fosters economic prosperity

Description:

A multitude of different waste streams are produced in the city-region, which place pressure on diminishing landfill space. Improved knowledge about waste streams will enable the City government to more readily make decisions in liaison with societal partners and neighbouring municipalities about

Quality of Resilience:

Resourceful

Shocks

Infrastructure failure
Financial/economic crises

minimising waste production, ensuring recycling services are widely available, ensuring large-scale composting of garden and organic waste is in place, optimising waste diversion, and maximising beneficiation within the economy.

Improved knowledge about waste streams will result in a common understanding of economic and environmental risks, particularly under conditions of climate change and rapid urbanisation.

This action will result in:

- the commissioning of a waste economy study which will inform a better understanding of risks and opportunities related to waste streams in the city-region.

Stresses

Unemployment
Climate change
Rapid urbanisation
Informal housing/settlements

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Short

Aligned actions

2.4.1 | 3.1.1 | 3.1.2 | 3.1.3 |

GOAL 3.2: ENABLE ENTERPRISE DEVELOPMENT IN THE INFORMAL ECONOMY

The informal sector is a crucial and frequently overlooked part of Cape Town's economy. It incorporates a broad range of economic activities and business typologies in a diverse range of geographic locations across the city, with varying intensities of relationships with formal business.

While the informal economy in Cape Town is smaller than in other South African metropolitan areas, and significantly smaller than in large cities elsewhere on the African continent, its contribution to generating income for the most vulnerable households and its impact in terms of poverty reduction are disproportionately large.⁴⁸ This makes it very important from a resilience perspective as job losses within this sector can have significant ramifications for food security and the incidence of poverty within the city.

The informal sector can be regarded as being more resilient than the formal sector in times of economic down turn, often acting as an 'employer of last resort' when formal job opportunities dry up. During the last economic recession, employment in the informal economy in South Africa declined by only 1.5% compared with a decline of 3.5% in the formal economy.⁴⁹ However, recent research has suggested that informal sector employment can be more vulnerable than formal employment in the event of a prolonged recession or in the event of climatic shocks such as drought.⁵⁰

Consideration of both the opportunities and vulnerabilities of the informal sector in Cape Town requires a measured and informed approach to working with the sector. The City needs to move beyond simply viewing the informal sector as synonymous with informal trading.

What is the informal economy?

Statistics South Africa (StatsSA) uses an employment-based definition for the sector, defining it broadly as comprising of employees working in establishments employing less than 5 employees who do not pay income tax, as well as own-account workers whose businesses are not registered for either income tax or value-added tax.

New perspectives on the informal economy in Africa:

- 'here to stay' and expanding with modern, industrial growth.
- a major provider of employment, goods and services for lower-income groups.
- linked to the informal economy – it produces for, trades with, distributes for and provides services to the formal economy.
- is made up of a wide-range of informal occupations – both 'resilient old forms' such as casual day labour in construction as well as 'emerging new ones' such as temporary and part-time jobs.
- includes not only survival activities but also stable enterprises and dynamic growing businesses.

SALGA (2012), 'Managing Informality: Local government practices and approaches

Action: 3.2.1**Type:** Flagship action**Promote the clustering of informal growth industries in well-located hubs****Desired outcome:**

The creation of informal economy activity hubs which are supported by enabling zoning regulations where light manufacturing businesses can benefit from a pooling of resources.

Resilience Value:

Supports livelihoods and employment
Fosters economic prosperity
Fosters long-term and integrated planning

Description:

Industries like manufacturing in the informal economy remain relatively undeveloped in Cape Town. The majority of economic activity in the township and informal economies revolves around trade, wholesale and services. Light manufacturing activities, including metal and wood-related work are often crowded out by restrictive zoning regulations and a lack of economies of scale. However, these types of industries have significant job-creating potential, usually more so than trading enterprises. These industries, as in the formal sector, all have unique requirements, which must be acknowledged.

Some of these industries, such as metal workers and builders would benefit from having access to work spaces where storage space, tools and facilities could be shared.

The City will:

- Identify suitable local facilities or areas of land, within or close to residential areas, for development of specialised informal economic activity hubs; and
- Ensure that clustered industries in these facilities do not clash with zoning rules, and where necessary amend zoning regulations to permit such facilities.

Quality of Resilience:

Resourceful

Shocks

Financial/Economic crises

Stresses

Unemployment
Informal housing/settlements
Poverty

SDG

8 – Decent work and economic growth

Status

New

Timescale for delivery

Medium

Aligned actions

1.3.4 | 1.4.1 | 2.2.1 | 2.2.4 | 2.4.2 |

Action: 3.2.2**Type:** Enabling action**Develop an informal enterprise survey to gain richer data on the informal economy****Desired outcome:**

Improved insights and knowledge about enterprise-level activity in the informal economy in Cape Town, including its value, opportunities and challenges, for the purpose of designing interventions that will make the informal economy more resilient to stresses and shocks.

Resilience Value:

Empowers a broad range of stakeholders
Fosters long-term and integrated planning
Fosters economic prosperity

Description:

While StatsSA provides regular data on informal employment at a metropolitan level there is paucity of enterprise-level information for the informal economy. In contrast, the formal economy has a range of confidence and climate surveys which aid economic policy makers to better understand the challenges facing formal businesses.

Quality of Resilience:

Flexible

Shocks

Financial/economic crises
Riot/civil unrest
Infrastructure failure

Stresses

There is little prospect of fully understanding both the challenges and opportunities of the informal economy in Cape Town if we lack an understanding of its dynamism.

Crime/violence
Unemployment
Lack of social cohesion

The City will:

- Undertake, in collaboration with the WCG and national government, a biennial large-scale informal economy survey for Cape Town. It will be a first of its kind in South Africa;

- Include a focus in the survey on trader business confidence to obtain unique insights necessary for improved decision making on the trader permitting system;

- Include a focus on identifying why female participation in the informal economy in Cape Town is relatively low;

- Use insights from the survey to drive powerful engagement with Capetonians participating in the informal economy;

- Use insights from the survey to show the value and opportunities of the informal economy in Cape Town.

SDG

8 – Decent work and economic growth

Status

New

Timescale for delivery

Short

Aligned actions

1.4.1 | 3.2.1 | 5.2.2 |

GOAL 3.3: CONNECT THE WORKFORCE WITH A CHANGING ECONOMY

Rapid technological change and the increasing application of digital technologies across the workplace and within households, creates new opportunities for societal advancement but also places more challenges on all us, particularly those people at risk of being marginalised by the impact of new technologies.

Artificial intelligence, robotics and cloud computing “were mere experiment(s) or visions of idealistic visionaries a few decades ago, but have now become part of day to day life.”⁵¹ A recent World Economic Forum report placed South Africa in a group of ‘nascent countries’ which are ‘least ready for the future of production’. With regards to digital skills in the population it ranked South Africa 91st in the world.⁵² We are thus already far behind the curve as a country.

A bleak future awaits workers who cannot learn new skills, adapt to new technologies, or for whom whole job functions will disappear. Rapid technological change can exacerbate existing inequality in our city. When someone’s job is automated they could be unemployed for months before they retrain and find another job. Older workers may never find another job.⁵³ However, it is not just about workers in the economy. Capetonians who are already discouraged work seekers, may find it even more difficult to find work if they do not have the requisite skills. While Capetonians who are consumers in the economy and do not have the necessary digital skills may lose out on the benefits and potential cost savings of technological advancement.

At a minimum we need more digital literacy skills among Capetonians, inclusive of the whole population from the youth to the elderly. There needs to be a deliberate emphasis on providing digital skills to Capetonians who are vulnerable and who have historically found it difficult to be full participants in the economy, whether as a worker or a consumer. Such skills would provide a ladder to other skills offerings including ICT practitioner skills, digital leadership skills and sector user skills.⁵⁴

Action: 3.3.1**Type:** Enabling action**Expand the reach of digital literacy programmes so that Capetonians are able to adapt to rapid technological change****Desired outcome:**

A greater number of Capetonians capable of participating in the digital economy as entrepreneurs, workers and customers, and able to adapt to rapid change when it occurs, in order to build economic resilience.

Resilience Value:

Empowers a broad range of stakeholders
Support livelihoods and employment
Promotes cohesive and engaged communities

Description:

Cape Town is widely regarded as the technology capital of Africa.⁵⁵ It is also a major hub for business and financial services, business process outsourcing, film and media, animation, and tourism. All of these sectors require digital skills, even if their exact requirements may differ.

There are a range of advanced digital skills initiatives being implemented in Cape Town by the tertiary education sector, spheres of government, NGOs and business. The demand for digital skills is high and there is a necessity to scale these skills even further. However, these digital skills are built on the back of a certain competence in basic digital literacy. There is an urgent need to extend digital literacy training across the city to enable a greater number of Capetonians to become job-ready for most sectors, with the possibility of building on those digital literacy capabilities at a later stage.

A wide-reaching intervention in improving digital literacy will contribute to reducing inequality between Capetonians, and will ensure that a greater number of people are not left behind in these times of rapid technological change. It will also contribute to more people being able to participate in the digital economy as consumers and digital citizens with an increased ability to access training, knowledge, and services.

This initiative will:

- Work collaboratively with NGOs and business to expand the reach of digital literacy training to Capetonians, with a focus on communities with high levels of poverty and unemployment;
- Ensure that recipients of digital literacy training are able to use digital technology to communicate, manage information, collaborate, and create and share information in all aspects of everyday life and work; and
- Ensure that training includes basic media literacy and data literacy which is increasingly being reported by employers for entry-level digital literacy.⁵⁶

Quality of Resilience:

Integrated

Shocks

Financial/economic crises
Cyber-attack
Infrastructure failure

Stresses

Unemployment
Poverty

SDG

8 – Decent work and economic growth

Status

New

Timescale for delivery

Medium

Aligned actions

3.1.1 | 3.3.2 |

Action: 3.3.2

Type: Demonstrable action

Extend the incentivised employee retention programme

Desired outcome:

Increased retention of previously unemployed Capetonians through deliberate interventions by employers and NGOs including the provision of support networks.

Resilience Value:

Supports livelihoods and employment
Fosters economic prosperity
Empowers a broad range of stakeholders

Description:

Capetonians living in vulnerable communities can find it difficult to find work and training opportunities for a number of reasons. Due to a weaker social fabric and spatial dislocation, work seekers may not know about opportunities, may not know how to prepare for such opportunities, and may not be able to attend interviews due to inhibitive transport costs. Other social ills such as substance abuse can make the prospect of finding and securing opportunities even more challenging.

The City will:

- Extend and scale the outcomes based workforce programme, by working with NGO and business implementing partners to connect Capetonians, particularly young people from marginalised communities, with employment, education and training opportunities;
- Ensure implementing partners identify a large pool of job seekers, screen them for skills, help with CV creation and interview preparation, and assist with scheduling interviews and getting candidates to interviews; and
- Ensure implementing partners track results in order to monitor the extent to which successful candidates stick with opportunities secured.

Outcomes-based workforce tender

The City established an outcomes based workforce tender in 2017. This innovative approach to skills development and connecting people to job opportunities, focuses on the extent to which Capetonians are placed in work, education and training opportunities, and more importantly, the extent to which they stick with those opportunities once secured. In this way the City is focused on results, while the implementing partner must focus on the associated activities that ensure the best results. The more sustained placements made, the greater the remuneration from the City.

Quality of Resilience:

Resourceful

Shocks

Financial/economic crises

Stresses

Unemployment
Poverty
Substance abuse

SDG

8 – Decent work and economic growth

Status

Pilot

Timescale for delivery

Short

Aligned actions

1.1.1 | 1.2.2 | 3.1.1 | 3.3.1 |

GOAL 3.4: COLLABORATE WITH BUSINESS TO ACHIEVE A RESILIENT LOCAL ECONOMY

During the recent drought, the City, WCG and businesses collaborated extensively to share information and drive down consumption of water, contributing to the 'whole-of-society' approach that ultimately helped to the defeat of 'Day Zero'. Pivoting off the drought there is an opportunity to formalise these partnerships so that business can optimise its contribution to building a resilient city.

There are a multitude of opportunities that business and government can work on together, including the alleviation of traffic congestion, connecting work seekers with job opportunities, skills training, maintaining wise water use, building energy security, developing tech solutions for urban challenges, improving cyber-security, fighting all forms of discrimination, building social cohesion, and collectively responding to humanitarian crises when they occur.

Sustained collective action directed at responding to acute shocks and chronic stresses will help to build trust between partners, it will create a more risk aware local business eco-system, and it will ultimately ensure that Cape Town bounces forward after shock events. This level of collective action will contribute to improved destination management, which will ultimately contribute to the city being a more attractive place to invest in and visit, thus sustaining and potentially growing new job opportunities in the city.

Action: 3.4.1

Type: Flagship action

Build a corporate commitment to resilience in the city

Desired outcome:

Increased commitment by corporates to partner with the City government in building resilience both for their businesses and their employees so that they can collectively and rapidly respond to shocks and stresses.

Resilience Value:

Fosters economic prosperity
Empowers a broad range of stakeholders
Promotes leadership and effective management

Description:

It is important to capitalise on the lessons learnt through the partnering initiatives between government and business during the drought, and to leverage these capabilities in various directions as and when great societal challenges requires collective effort.

Businesses have considerable reach in terms of influence, as they have both customers and employees. They hence are influential in supporting resilience-building efforts even if only done informally. They are more flexible than government, have greater capacity for innovation and have a predisposition towards survival.

When working together towards commons goals, business can be massively impactful. This initiative will:

- Establish a corporate forum on urban resilience including in the first instance the largest employers in Cape Town, and expanding over time. The forum will convene twice a year, or more frequently when the need arises;
- Develop a pledge that corporates can sign up to that will include commitments to responding to shocks and stresses;
- Co-design collective responses to the impacts of local, national and global risks on the urban environment; and
- Contribute to the positive resilience narrative in investment and destination marketing management of Cape Town.

Quality of Resilience:

Integrated

Shocks

All

Stresses

All

SDG

17 – Partnerships for the goals

Status

New

Timescale for delivery

Short

Aligned actions

1.1.1 | 1.4.2 | 2.1.1 | 2.3.2 |
2.3.3 | 3.4.2 | 4.1.4 |

Action: 3.4.2**Type:** Enabling action**Promote Cape Town as a resilient destination to visit and invest in****Desired outcome:**

Increased investor and visitor confidence in Cape Town as a destination as a result of global awareness of the city's efforts to understand its own risk profile and to build collective responses that strengthen urban resilience.

Resilience Value

Fosters economic prosperity
Empowers a broad range of stakeholders
Promotes leadership and effective management

Description:

In the midst of the worst periods of the drought towards the end of 2017 and the beginning of 2018, Cape Town's international reputation took a knock despite the heroic efforts by ordinary Capetonians that were underway to defeat 'Day Zero'. Hotel reservations in peak season were significantly lower than normal⁵⁷ and Moody's, the investment ratings agency, cited the impact of the drought on several sectors of the economy as a risk.⁵⁸ Interestingly, the business confidence of local businesses in the Western Cape grew at the same time, suggesting an asymmetry of knowledge and awareness about Cape Town from foreign investors and travellers when compared with local stakeholders.⁵⁹

Many lessons have been learnt in Cape Town about how to communicate with interested stakeholders beyond the city during an extreme shock period. There will be other large shocks that will strike the city for the which we need to be proactive about communicating with international economic stakeholders. Further, we need to be proactive about pointing out our resilience building efforts in the face of many ongoing stresses that negatively impact on international confidence in South Africa, and by implication in cities, including periodic load-shedding from the national utility and the operational inefficiencies of local rail.

Proactive communication is important because investor confidence is important if we are to bounce forward after shock events.

In this initiative, the City's Place Marketing branch will:

- Work with Wesgro, Cape Town Tourism, Invest Cape Town, InvestSA and South African Tourism to develop a compelling and authentic resilience narrative about Cape Town;
- Develop marketing material in a variety of formats that show Cape Town's growing resilience; and
- Leverage Cape Town's resilience capabilities and the actions of the Resilience Strategy to national and international audiences using promotional campaigns and event activations;

Qualities of Resilience:

Resourceful

Shocks

Financial/economic crises
Drought
Power outage
Infrastructure failure

Stresses

Unemployment
Crime/violence
Climate change

SDG

8 – Decent work and economic growth

Status

New

Timescale for delivery

Short

Aligned actions

3.1.1 | 3.1.3 | 3.4.1 | 4.1.3 |
4.4.2 | 5.2.1 |

PILLAR 4: COLLECTIVELY, SHOCK-READY CITY

Vision: A city which is prepared on all levels to function in the face of uncertainty and future shocks, underpinned by individual, household and community resilience building efforts.

Enhancing city-wide resilience to shocks and stresses serves to complement the legislated mandates of the City's Disaster Risk Management Centre which coordinates efforts to prevent disasters from occurring and to lessen the impact of those hazards that cannot be avoided. It is an opportunity to create awareness about risks to a much larger number of Capetonians, and it takes a far wider systems views of what drives vulnerability in the city.

The City of Cape Town has more than twenty hazard specific Disaster Risk Management (DRM) plans and an overarching Municipal DRM Plan which serves to confirm the organisational and institutional arrangements within the City⁶⁰. The DRM Plan is intended to facilitate multi-agency and multi-jurisdictional co-ordination in both pro-active and re-active related programmes and creates obligations for all departments in the City. At a minimum, all departments are expected to compile pro-active DRM programmes to support disaster risk reduction or elimination and disaster preparedness.

On the DRM Continuum for the City (see figure 9) efforts to build resilience are most closely relevant to actions that relate to rehabilitation, reconstruction, mitigation and preparedness.

RELEVANT GOALS

4.1 Future-proof urban systems

4.2 Strengthen individual, family and community resilience

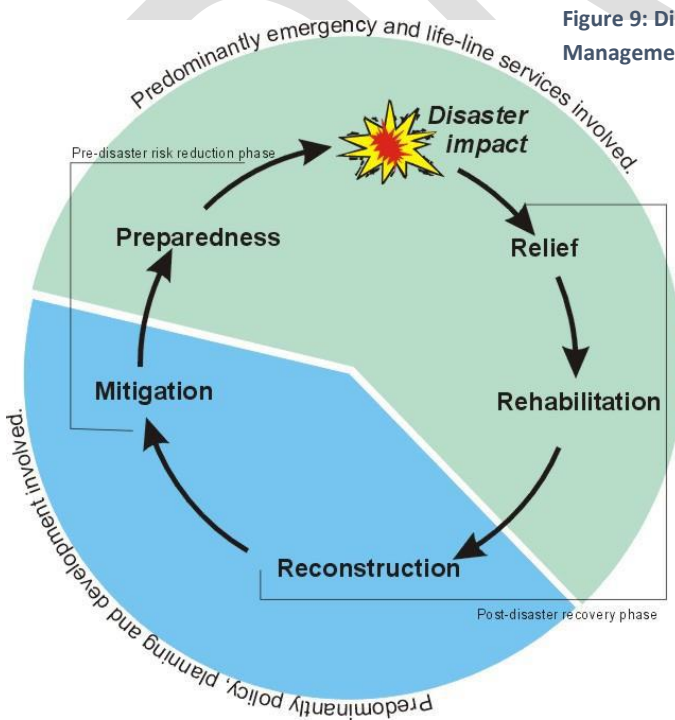
4.3 Encourage responsible investment in household and business resilience

4.4 Explore funding mechanisms for shock events

Selection of Hazard Specific DRM plans

- Wildfire
- Human Communicable Disease Outbreak
- Pest Infestation
- Earthquake
- Cosmic Impact
- Flooding and storms
- Climate change and coastal zone process
- Social Disorder
- Aerial cableway incident
- Koeberg Nuclear Power Station radiological release
- Accidental hazmat release
- Coastal oil spill

Figure 9: Disaster Risk Management



Building resilience also challenges us to think about how we will respond to unknown shocks or known shocks that present themselves at a scale not easily responded to by the DRM Centre.

This requires the wide-reaching preparedness of Capetonians for any number of eventualities. It also means that where systemic vulnerabilities present themselves, for example in energy supply or in municipal financial regulations for shock events, we must do everything possible to collectively improve those systems.

GOAL 4.1: FUTURE-PROOF URBAN SYSTEMS

While many of the shocks that confront Cape Town are known and are experienced regularly, such as localised flooding, fire and power outages, there are many potential shocks on the horizon for which Capetonians have little experience in responding to or recovering from.

One such shock is cyber-attack. The World Economic Forum has identified cyber-attack as one of the top three major risks likely to occur in cities.⁶¹ In March 2018, Cape Town's American sister-city, Atlanta, fell victim to a massive ransomware attack that destroyed data, disabled software and negatively affected millions of residents of that city.⁶²

At the same time, Cape Town is particularly vulnerable to a range of climate change impacts. An emerging risk is the potential of sustained heat waves, such as those experienced by several Australian cities as recently as January 2019.⁶³

The City's disaster plans and responses thus need to be aware of and prepared for future shock events like a cyber-attack or a heatwave. Equally, the whole of society needs to be prepared for such shocks, particularly because of the possible large scale impact of them.

Finally, after shocks occur we need to be more deliberate about rejuvenating affected infrastructure using amended risk profiles so that it is more capable of withstanding return shock events.

Action: 4.1.1

Type: Flagship action

Develop and implement a comprehensive city-wide heat plan

Desired outcome:

Decreased impact of heat waves when they occur through a city-wide plan, understood and owned by individuals, households, communities and businesses, allowing for the city and its economy to thrive under the circumstances, and for human life to be protected.

Resilience Value:

Provides and enhances natural and manmade assets
Ensures continuity of critical services
Empowers a broad range of stakeholder

Description:

It is imperative that Cape Town understands the risk of heat waves. Temperature increases over the south-western Cape are projected to range between 4 and 5 °C over the interior by the end of the century. Temperature increases may plausibly reach 3 °C by the 2040s. Drastic increases in the number of high fire-danger days, very hot days and heat-wave days are projected across the south-western Cape under a low mitigation scenario.⁶⁴

There is a need to construct a response to heat waves as they have the potential to disrupt commerce, destroy infrastructure, and can result in fatalities, particularly when they intersect with other stresses such as poverty.

This action proposes the development and implementation of a City Heat Plan, co-designed with societal partners. It would supplement the existing DRM plan on Climate Change and Coastal Process Hazards which includes heat waves. The plan will:

- Identify gaps in knowledge;
- Develop a heat vulnerability map of people and places;

Quality of Resilience:

Resourceful

Shocks

Heat wave
Infrastructure failure
Fires

Stresses

Lack of social cohesion
Climate change
Poverty
Informal settlements

SDG

13 – Climate action

Status

New

Timescale for delivery

Medium

- Make recommendations on infrastructure improvements including the retrofitting of public facilities as cooling centres;
- Make recommendations on place-making, including tree coverage; and
- Develop education, awareness and communication protocols.

Aligned actions

1.4.1 | 2.2.1 | 2.2.3 | 2.2.4 |
 2.3.1 | 2.4.2 | 4.1.3 | 4.1.4 |
 4.2.2 | 4.2.3 | 4.4.2

Action: 4.1.2

Type: Enabling action

Develop ‘whole of society’ collaboration on preparing for and reducing the risks of cyber-attacks.

Desired outcome:

Secure systems across government, utilities, SOEs, business and households able to prevent cyber-attacks and capable of responding when they do occur, for the purpose of maintaining the optimal functioning of the city at all levels.

Resilience Value:

Provides and enhances natural and manmade assets
 Ensure continuity of critical services
 Empowers a broad range of stakeholders

Description:

Recent reports have estimated that cyber-attacks cost the South African economy R2.2 billion a year.⁶⁵ While this is spread across individuals and companies, it is clear that the potential impact of cyber-attacks is vast.

The impacts of cyber-attack can include damaged or lost data, loss of reputation, loss of revenue, and the undermining of critical systems required to support the functions of organisations or the city as whole. A resilient Cape Town needs to confront cyber-attack together as the impacts of such attacks, whether it be at the scale of a small business or a utility, affect vulnerable citizens most acutely.

This initiative will:

- Develop a community of practice around cybersecurity in Cape Town for the purpose of understanding risks and sharing best practice;
- Raise awareness across the city about the prevalence and risks of cyber-attack, and methods to reduce risk;
- Encourage the development of incident response plans to cyber-attack in organisations;
- Conduct regular cyber-vulnerability assessments of the City government systems; and
- Facilitate ethical hacking events to discover vulnerabilities in online web environments of organisations and government departments.

In March 2018 the City of Atlanta suffered a major cyber-attack. It affected internal- and external-facing applications alike, forcing the manual processing of cases at the Municipal Court and stopping online or in-person payment of tickets, water bills, and business licenses. The City refused to pay the ransom and took days to restore functionality and months to recover fully. Some reports estimated that the attack cost taxpayers as much as \$17 million.

Quality of Resilience:

Robust

Shocks

Cyber-attack
 Infrastructure failure
 Power outage

Stresses

Crime/violence
 Unemployment

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Short

Aligned actions

4.1.4 | 4.4.2 | 5.2.1

Action: 4.1.3**Type:** Enabling action**Prepare for the procurement of utility-scale renewable energy from IPPs****Desired outcome:**

A clear and realistic understanding of the financing, procurement and legal implications of a City commitment to purchase electricity from utility scale renewable energy IPPs for the purpose of improved decision-making.

Resilience Value:

Meets basic needs
Fosters economic prosperity
Ensures continuity of critical services

Description:

Recent load-shedding by Eskom have had a negative effect on households and businesses in Cape Town. Load-shedding decreases economic productivity, damages local infrastructure and increases traffic congestion and societal stress. The City uses a variety of means to reduce the impacts of load-shedding, but its options are constrained when Eskom removes large loads from the national grid. To build improved energy security in Cape Town, there needs to be increased local or regional generation of energy. A significant boost to local energy security would be the supply to the City of electricity produced by a regional independent power producers (IPPs).

The City requested the National Department of Energy as far back as 2015 for permission to purchase electricity from IPPs.⁶⁶ As no response was forthcoming, the City has gone to court to seek a determination, and hence legal certainty, on whether it can do so.⁶⁷ This matter is ongoing. With a number of policy developments happening in the energy landscape as of early 2019, it is reasonable to expect that the right to purchase electricity from IPPs may be forthcoming in the near future. This will increase the ability of the City to ensure stable supply of energy and therefore the City needs to get ahead of these policy changes.

The City will:

- Prepare for the likelihood of being able to procure directly from IPPs by establishing a functional area in the City's Energy and Climate Change Directorate to establish the implications of an IPP project;
- Consult with the National IPP office to learn best practice;
- Examine the financing and tariff implications for Capetonians with an aim to ensuring affordability; and
- Examine the possible methodologies of procurement and contracting to ensure cost effectiveness and the minimisation of legal risk.

Quality of Resilience:

Redundant

Shocks

Financial/economic crises
Power outage
Infrastructure failure

Stresses

Insecure municipal finances
Rapid urbanisation
Climate change

SDG

7 – Affordable and clean energy

Status

New

Timescale for delivery

Medium

Aligned actions

3.1.1 | 5.1.3 | 5.2.2 |

Action: 4.1.4**Type:** Enabling action**Develop Build Back Better protocols for infrastructure damaged in shock events****Desired outcome:**

Transversal commitments across City departments and other spheres of government that build infrastructure and homes in Cape Town to ensure that infrastructure damaged by shock events is built back stronger and is more capable of surviving, adapting to and thriving under shock events thereafter.

Resilience Value:

Provides and enhances natural and manmade infrastructure
 Fosters long-term and integrated planning
 Fosters economic prosperity

Description:

On the tragic occasions that public infrastructure and homes in informal settlements are damaged or destroyed during shock events, there is an opportunity to rebuild in a way that strengthens resilience to future shock events. In Cape Town infrastructure is most commonly destroyed by fire and floods, and to a lesser extent vandalism and arson. Homes in informal settlements are particularly susceptible to damage from floods and fire.

Recovery from shock events is more than just the responsibility of DRM. All City departments, other spheres of government and societal partners can play a part in developing resilience building initiatives to ensure that destroyed infrastructure and homes are rebuilt in a way that is more robust and safer.

This initiative will:

- Develop 'Build Back Better' protocols for the rebuilding of infrastructure damaged in shock events that includes the consideration of new risk profiles;
- Ensure a transversal commitment by all City departments to apply a resilience lens when considering rebuilding plans;
- Encourage the consideration of green design elements and soft engineering solutions in rebuilding; and
- Work collaboratively with other spheres of government, private developers and CBOs to scale 'Build Back Better' interventions.

Quality of Resilience:

Robust

Shocks

All

Stresses

Insecure municipal finances
 Climate change

SDG

9 – Industry innovation and infrastructure

Status

New

Timescale for delivery

Medium

Aligned actions

1.4.1 | 2.2.1 | 2.2.3 | 2.3.1 |
 2.3.4 | 2.3.5 | 2.4.1 | 2.4.2 |
 3.4.2 | 4.1.1 | 4.4.2 | 5.1.3 |

Action: 4.1.5**Type:** Enabling action**Roll out simulations to prepare for shock events****Desired outcome:**

Increased awareness of and preparation for a wide range of shock scenarios by a broad range of Capetonians resulting in improved business continuity and recovery plans.

Resilience Value:

Empowers a broad range of stakeholders
 Promotes leadership and effective management
 Fosters long-term and integrated planning

Description:

Due to uncertainty regarding the likely impacts of future shock events many Capetonians do not actively contemplate what it would mean to survive, adapt and thrive in such contexts. It is often easier for people to downplay the likelihood of any particular shock occurring. Hence it makes sense to practice operating during a shock scenario.

Quality of Resilience:

Robust

Shocks

All

Stresses

Disaster simulations are common occurrences for DRM practitioners across spheres of government and for supporting NGOs working in the disaster response space. These are vitally important interventions where organisations test their capabilities and coordination for very specific disaster events. There is however an opportunity to multiply the number of people thinking about how shock events could affect their households, communities and businesses.

All

SDG

13 – Sustainable cities and communities

Status

Pilot

This initiative will:

- Develop a range of gamified open-source simulations of shock events relevant to Cape Town that can be conducted by organisations in their own work spaces;
 - Develop an evaluation tool so that the lessons learnt from each simulation can be captured and operationalised to strengthen systems based on the gaps and vulnerabilities identified for organisational responses.
 - Organise an annual multi-organisational simulation event for the purpose of profiling the impacts of possible shocks and displaying the value of 'whole of society' responses.
-

Timescale for delivery

Short

Aligned actions

1.4.1 | 2.3.1 | 3.4.1 | 4.1.1 |
4.1.2 | 5.2.3 | 5.3.4

GOAL 4.2: STRENGTHEN INDIVIDUAL, FAMILY & COMMUNITY RESILIENCE

During times of shock, particularly acute natural disasters in urban areas such as fire and flooding, the State, has particular roles to play through its DRM responses. But the reach and capabilities of the State can be severely stretched if shocks are citywide in scale. Hence, the capabilities of people to survive, adapt and thrive in the face of shock events is critically important. The dominant story that emerged after Hurricane Harvey hit Cape Town's American sister city, Houston, and inundated the city with flood water, was one of ordinary people doing extraordinary things to rescue each other.⁶⁸

Pulling together in times of shock is vitally important for the resilience of a city. Capetonians did extraordinary things during the recent drought in coming together to defeat 'Day Zero', however we cannot be sure how we would have responded if the worst case scenario had arrived and parts of the reticulation had been turned off. Hopefully we would have maintained the collective effort. We need to be shock-ready at multiple scales, with the ability to be cohesive across those divisions that cause us to be divided in daily life.

Shock events do not make decisions, but people certainly can and do.⁶⁹ The decisions people make during shock events depends on their capabilities and the resources available to them. It is understood worldwide that people's vulnerability to risks depends to a large extent on the assets they have available, including physical, financial, human and social assets.⁷⁰ Building individual, family and community resilience requires enhancing these assets. In Cape Town, we need to place a strong emphasis on supporting the resilience-building capabilities of those people who are most vulnerable.

Action: 4.2.1**Type:** Flagship action**Develop the Neighbourhood Resilience Assessment****Desired outcome:**

Greater awareness at a local level of shocks and vulnerabilities, more prepared communities for shock events, and the production of standardised data for guiding and monitoring the effectiveness of localised SDG interventions.

Resilience Value:

Empowers a broad range of stakeholders
 Promotes leadership and effective management
 Promotes cohesive and engaged communities

Description:

In order to devise accurate interventions to build resilience at the neighbourhood level Capetonians need to understand their neighbourhood-specific issues. In some cases, this is already being done by CBOs and by specific City departments but there is an opportunity to strengthen this through standardisation and augmentation.

In moments of shock, neighbours can provide vital support to one another – this ability can be strengthened with deeper knowledge and understanding of relevant local vulnerabilities. This information can result in the development of new partnerships, co-design and investment in new resilience building-initiatives, and an increase in community participation and volunteerism.

The City will:

- Work collaboratively with CBOs and academics to develop a Neighbourhood Resilience Assessment (NRA) which can be tailored to specific community profiles and needs;
- Develop both qualitative and quantitative indicators to take stock of the social fabric, access to public facilities and emergency services and relevant demographic markers. It will also include analysis of shocks and stresses most relevant to individual neighbourhoods;
- Create a tool to generate data which can help guide and monitor local level implementation of the SDGs; and
- Work with CBOs in the roll-out of the NRA to communities, linking them to appropriate line departments and resources based on the vulnerabilities which arise through the assessment.

Quality of Resilience:

Integrated

Shocks

All

Stresses

All

SDG

1 – No poverty

Status

Existing

Timescale for delivery

Short

Aligned actions

1.4.1 | 2.2.1 | 2.3.1 | 2.4.2 |
 4.2.2 | 4.2.3 | 4.2.4 | 5.4.1 |

Action: 4.2.2**Type:** Enabling action**Expand the women and girls resilience programme****Desired outcome:**

The empowerment of women and girls, particularly those living in vulnerable communities, with knowledge and skills that are important for surviving, adapting to, and thriving in the context of shock events.

Resilience Value:

Empowers a broad range of stakeholders
 Promotes cohesive and engaged communities
 Promotes leadership and effective management

Description:

Women and girls often bear an unequal burden of carrying their households and communities during and after shock events. Global research has shown that, in general, women's workload, their limited decision-making power, and unequal access to and control of resources, reduces their ability prepare, adapt and respond to shock events.⁷¹ There is evidence to suggest that even during the recent drought in Cape Town, women played a disproportionately large role in water saving initiatives.⁷²

Women may be considered the most vulnerable and discriminated group in shock events. For shock events that cause displacement for example, there is an increased risk of physical abuse to women.⁷³

A targeted approach to improving the skills and capacities of women and girls, particularly from vulnerable communities, in preparing and responding to shocks events can have a multitude of resilience dividends, including improving the resilience of households and communities against a wide array of shocks and stresses,

This initiative will:

- Expand the 'Women and Girl's Resilience Programme' currently run by the City's DRM Department through partnerships with NGOs and CBOs;
- Enhance the programme by adding new resources on empowerment, gender rights, and accessing education and training; and
- Celebrate the role played by women and girls in responding to shock events in Cape Town by elevating their stories into the mainstream media.

The 'Women and Girls Resilience Programme' aims to train girls and women in vulnerable communities in disaster first response like first aid, fire safety and burn treatment. The programme extends further to cover topics like biodiversity, climate change, food security, leadership and career goals. In this way participants are empowered with skills that go beyond disaster response.

Quality of Resilience:

Inclusive

Shocks

Fire
Rainfall flooding
Disease outbreak
Heat wave

Stresses

Informal housing/settlements
Poverty
Climate change

SDG

1 – No poverty

Status

Existing

Timescale for delivery

Short

Aligned actions

| 1.3.2 | 1.4.1 | 1.4.2 | 2.3.1 |
4.1.1 | 4.2.1 | 4.2.4 |

Action: 4.2.3
Improve risk awareness through technology**Type:** Enabling action**Desired outcome:**

Better early warning systems for shock events and better information on response measures following shock events by utilising smart technology, empowered by stronger predictive analytics.

Resilience Value:

Empowers a broad range of stakeholders
Provides leadership and effective management
Promotes cohesive and engaged communities

Description:

Raising alerts in Cape Town, whether it be about traffic gridlock or risks about storms and flooding, is most commonly done through mass media, mostly radio. As the potential shocks facing Cape Town, most notably weather-related shocks, grow in likelihood and intensity, we need to improve our ability to warn Capetonians, particularly in the most vulnerable communities about potential risks so that households and communities can be better prepared. This means attempting to increase the reach of existing efforts to raise alerts, and communicate with the public before, during and after disasters.

Capetonians in different communities currently receive their information relating to shock events in very different ways, including newspapers, radio, television and social media.⁷⁴ None of these forms of media offer a reliable way for the City in general, and DRM in particular, to communicate regularly, in real time.

The proliferation of smart phones in Cape Town, even among poorer Capetonians, provides an opportunity for augmenting the messaging around general risk awareness and early warnings for potential natural disasters.

This initiative will:

- Develop a risk alert and emergency information system linked through a City 'app', downloadable by smartphone, that is able to push messages to users;
 - Incorporate an emergency contact function into the app so that there is an alternative to calling the City's existing emergency landline number. This will allow people who are deaf and/or cannot communicate verbally to report emergencies and access help if they are in need; and
 - Develop improved indicators for predictive analytics specifically linked to the most vulnerable areas in the city for the purpose of improving targeted and spatial alerts.
-

Quality of Resilience:

Integrated

Shocks

All

Stresses

All

SDG

13 – Climate action

Status

New

Timescale for delivery

Medium

Aligned actions

2.2.1 | 2.3.5 | 4.1.1 | 4.2.2 |
4.2.4 | 5.3.2 |

Action: 4.2.4
Launch the 'Be a Buddy' programme

Type: Enabling action

Desired outcome:

Increased social networks, volunteerism and active citizenry that results in Capetonians pulling together in times of shock especially to support the most vulnerable residents.

Resilience Value:

Promotes cohesive and engaged communities
 Promotes leadership and effective management
 Supports livelihoods and employment

Description:

There are many vulnerable Capetonians across our city, including marginal, excluded or destitute people, young children, unaccompanied children, elderly people without family support and disabled persons. In times of extreme shock events these individuals are most at risk of harm and yet there is little to no coordinated information of who they are or where they live.

There are a multitude of community organisations such as neighbourhood watches, NGOs, CBOs, special interest groups, safety forums and the like that perform primary mandates, but which could be capacitated with new tools and strategies to aid in response and preparedness for shock events.

This initiative will:

- Launch the 'Be a Buddy' programme, similar to that of NYC, and encourage residents to sign-up with local organisations to become a 'Buddy' in their respective neighbourhoods;
- Develop training modules on how to 'Be a Buddy' and how to connect to a wide array of information and resources; and
- Assist organisations to identify the most vulnerable residents in their area so there is knowledge of where they live and what help they would need in a time of shock.

The 'Be a Buddy' is a community-led preparedness model that promotes social cohesion in New York City. In each neighbourhood the City is working to foster buddy systems between social service and community organisations, volunteers, and vulnerable New Yorkers, to be deployed during emergencies to conduct telephone and, if necessary, door-to-door and building level checks on vulnerable individuals.

Quality of Resilience:

Redundant

Shocks

All

Stresses

All

SDG

13 – Climate action

Status

New

Timescale for delivery

Short

Aligned actions

1.2.1 | 1.2.3 | 4.2.1 | 4.2.2 |
 4.2.3 | 5.2.5 |

GOAL 4.3: ENCOURAGE RESPONSIBLE INVESTMENT IN HOUSEHOLD AND BUSINESS RESILIENCE

Some shock events, like drought and power outages, result in a scarcity of resources like water and electricity. It is not uncommon during and after such events, for households and businesses to invest in alternative methods to secure these resources. For example, during recent periods of load shedding, many households and businesses invested in diesel generators and solar-power systems. Similarly, during the recent drought, some businesses went entirely off-grid and produced potable water using a variety of technologies, while many households invested in rainwater tanks, boreholes and well points to augment water supply for certain uses like watering gardens and flushing toilets.

Investments into alternative resource provision for households and businesses that can afford to do so help them to withstand and even thrive during times of shock. Viewed together, the agglomeration of these investments creates redundancies for the whole system as well.

There are however associated complexities with such private investments that pose challenges for the utilities responsible for managing water and electricity. There are safety concerns for individual users, and there are safety and integrity concerns for the respective utility systems, such as, for example, grey water contamination of drinking water. Further, there are implications for the sustainability of the revenue base for each of these utilities. Substituting municipal water and electricity with private generation results in loss of revenue to the utilities, affecting the overall ability to maintain and expand the services. This is a challenge faced by cities all around the world. For this reason, there is a need to encourage responsible investment in household and business resilience, in a way that achieves multiple benefits, including redundancies, safety and sustainability.

Action: 4.3.1

Launch a borehole data and awareness project

Type: Demonstrable action

Desired outcome:

Responsible use of boreholes and well-points by private owners for the purpose of protecting and sustaining groundwater by using innovate data and awareness campaigns, and collective action during times of shock to leverage individual resources for the public good.

Resilience Value:

Provides and enhances natural and manmade assets
Meets basic needs
Empowers a broad range of stakeholders

Description:

Cape Town has a wealth of underground water which many households and businesses make use of through boreholes and well-points. During the drought hundreds if not thousands more were drilled, and the City itself is developing an abstraction programme in the Cape Flats Aquifer to augment the bulk water system.

However, there is incomplete data on the number of boreholes and well-points, and there is little understanding of usage patterns. This situation is complicated by the fact that the mandate to approve and monitor boreholes and well-points lies with the national Department of Water and Sanitation, although borehole owners are expected to register the existence of their boreholes with the City.

Regardless of the intergovernmental complexities, there is an urgent need to ensure that our underground water sources are protected from over-abstraction and that appropriate recharge is done. This initiative will:

- Find innovative solutions to the data challenge in order to develop a comprehensive database of well-points and borehole locations and usage;
- Seek to achieve the devolution of the authorising and monitoring functions of well-points and boreholes to the City;
- Drive awareness campaigns on appropriate and safe use of well-points and boreholes; and
- Explore the feasibility of a community borehole demonstration project, building on an initial feasibility study funded by the Danish Government in 2018.

Quality of Resilience:

Redundant

Shocks

Drought
Infrastructure failure

Stresses

Climate change
Insecure municipal finances
Lack of social cohesion

SDG

6 – Clean water and sanitation

Status

New

Timescale for delivery

Medium

Aligned actions

2.3.2 | 2.3.4 | 5.2.2 | 5.3.2 |

Action: 4.3.2**Type:** Demonstrable action**Launch a Property Assessed Clean Energy Programme****Desired outcome:**

Increased ability of households and businesses to build energy security for the purposes of improving resilience to load shedding with the associated benefit of improving Cape Town's contribution to mitigating GHG emissions.

Resilience Value:

Ensure continuity of critical services
Provides and enhances natural and manmade assets
Meets basic needs

Description:

There has been a growing uptake of small-scale embedded generation (SSEG) on residential, commercial and industrial sites in Cape Town in recent years. SSEG refers to power generation under 1 megawatt, and in the case of Cape Town, is usually generated from solar photovoltaic (PV)⁷⁵. Regulations require the majority of electricity generated to be consumed on site.

The uptake in SSEG has been predominantly driven by increased load shedding events caused by Eskom. As Capetonians seek to improve their resilience to load shedding more and more property owners are likely to install SSEG. However, the up-front capital costs are expensive, and hence many property owners will not readily consider investments into this technology.

Innovative financing mechanisms need to be explored that allow for a greater number of properties to improve energy security against shock events, while at the same time protecting City revenue streams. One possible option is Property Assessed Clean Energy (PACE), which is widely used in the United States. PACE programs allow a property owner to finance the up-front cost of improvements on a property and then pay the costs back over time through a voluntary ratings assessment.⁷⁶ The SSEG system is linked to the property, similar to a bond, which allows financing of the system to occur over a long period of time.

This initiative will:

- Explore the feasibility of amending the Special Ratings Areas (SRA) By-law and Policy to allow for PACE SRAs.
- Develop PACE implementation criteria; and
- Trial the implementation of a PACE model.

Quality of Resilience:

Redundant

Shocks

Power outage
Infrastructure failure

Stresses

Climate change
Insecure municipal finances

SDG

7 – Affordable and clean energy

Status

New

Timescale for delivery

Medium

Aligned actions

2.4.1 | 3.1.1 | 3.1.3 |

GOAL 4:2: EXPLORE FUNDING MECHANISMS FOR SHOCK EVENTS

The recent drought has shone a light on how vulnerable Cape Town can be during shock events from the point of view of funding emergency and tactical responses quickly. The City was not easily able to make budgetary provision for temporary water augmentation schemes as it does not have the power to significantly adjust the budget and tariffs outside of the formal legislated time periods, as provided by the Municipal Finance Management Act (MFMA), without the prior approval of the National Minister of Finance.

City-wide and catastrophic shocks events, as unlikely as they may seem, are very different in terms of resourcing requirements compared to localised shocks for which budgetary provision is made on an annual basis. Typically, municipalities, even metropolitan municipalities, would

rely on disaster relief funding from the National Department of Cooperative Governance and Traditional Affairs and the relevant provincial government to provide disaster funds, but this is limited in amount, and is not necessarily able to be paid quickly. Shock events pose a risk to the whole of South Africa, and hence there are competing needs across the country, meaning funding relief from other spheres of government cannot be relied upon.

The City cannot provide in its budget or long-term financial plan for reserves for events that might occur as this would result in taxing Capetonians for events that might not occur during their lifetime and is therefore not financially accepted practice.

Yet the issue of funding for city-wide and catastrophic shock events cannot remain unaddressed. The multitude of possible weather-related shocks due to climate change pose a real risk to Cape Town, but so do unforeseen shocks which increase in probability as the world becomes more connected.

Action: 4.4.1

Type: Enabling action

Lobby national government for budget flexibility for shock events

Desired outcome:

Increased ability of the City of Cape Town metropolitan municipality to, in cases of extreme emergency during or following a shock event, commit to unforeseeable and unavoidable expenditure for the purposes of protecting human life and improving adaptive responses of the city.

Resilience Value:

Ensures continuity of critical services
Fosters economic prosperity
Promotes leadership and effective management

Description:

The MFMA, section 29, allows in the case of an emergency, for the approval by the Executive Mayor of unforeseeable and unavoidable expenditure for which no provision has been made in an approved budget. In addition, the Municipal Budget and Reporting Regulations set out the prescribed percentage of the annual approved budget which can be authorised by the Executive Mayor in such an event. This limit, based on the City's total revenue, is set at R15 million. Based on the size of Cape Town, in almost every instance of a city-wide shock event, emergency expenditure would far exceed R15 million. This then requires the City to apply to the National Minister of Finance for a departure from this regulation. This cumbersome process means that the City cannot act in an agile way in times of large scale crisis.

Quality of Resilience:

Resourceful

Shocks

All

Stresses

Insecure municipal finances

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Medium

Aligned actions

2.3.1 | 5.2.2 |

This initiative will:

- Engage the National Treasury and the National Minister of Finance on the current approval process for expenditure during times of extreme emergency, and seek amendments thereof; and
- Work collaboratively with the WCG, South African Local Government Association and other metropolitan municipalities to build a coalition of support for possible amendments to the MFMA.

Action: 4.4.2
Explore innovative insurance products

Type: Enabling action

Desired outcome:

Reach an understanding on the efficacy, viability and practicality of investing in innovative insurance products for catastrophic shock events such as long-term drought or city-wide flooding for the purpose of generating emergency funding, and use insights gained to determine whether or not such products should be pursued.

Resilience Value:

Ensures continuity of critical services
Fosters economic prosperity
Promotes leadership and effective management

Description:

Insurance products for recovery from extreme shock events have been developed by insurance companies for many decades, but more recently they have begun to be developed by government agencies around the world. They are particularly popular in the USA and Japan for purposes of insuring against hurricanes and earthquakes.

Catastrophe bonds (CAT bonds) and other types of insurance linked securities have boomed over the last decade, with the amount invested in them globally rising from US\$22bn in 2007 to US\$98bn in 2017.⁷⁷ Such products are very useful for funding recovery operations that cannot be provided from budgetary provisions or from relief sources from other spheres of government.

CAT bonds are risk-linked securities that transfer a specified set of risks from a sponsor to investors. The structure of the CAT bond provides for a pay-out to the sponsor if a defined event which can be objectively measured occurs, such as a certain magnitude earthquake.

Quality of Resilience:

Resourceful

Shocks

All

Stresses

Insecure municipal finances

Status

New

Timescale for delivery

Medium

Aligned actions

2.3.1 | 3.4.2 | 4.1.1 | 4.1.2 |
4.1.3 |

There is value in exploring the feasibility of such products when one considers the scale of shock events that could possibly strike Cape Town in the future.

The City will:

- Explore the use of innovative insurance products for city-wide shock events that could result in pay-outs able to fund recovery efforts;
- Contract actuarial projections of risk to quantify City-amenity and infrastructure loss, as well as potential revenue loss (through lost tax revenue) for future shock types; and
- Consider packaging risk and tendering for insurance products for the City thus covering the payment burden incrementally over time instead of at the moment of a shock event.

Vision: A City government, reflective after shock events, working with data providers, technology platform partners and researchers to improve resilience considerations in planning and decision-making.

The preceding pillars of the Resilience Strategy contain a multitude of actions with very specific outcomes, intended to improve the resilience of individual Capetonians, communities, space and place, mobility, and the economy and jobs. The Resilience Strategy, however, cannot be exhaustive in targeting all areas requiring resilience-building efforts. Hence the preceding pillars focus on areas of most need.

This pillar is about the enabling processes and behaviours required by the City government to improve resilience across a much wider portfolio of projects, and in so doing impact on the resilience of Cape Town as a whole. It is intended to build resilience considerations into the processes of municipal government, as determined by the empowering municipal legislation and to hotwire resilience thinking into decisions and planning.

This mainstreaming of resilience considerations is what is expected by the inclusion of 'Resilience' as one of the guiding principles of the IDP. Getting the whole City government to consider resilience in all that it does is not an intervention that can be delivered in the short term. However, we must move urgently considering the burden of large forces that are confronting Cape Town, including rapid urbanisation, climate change, globalisation and rapid technological change. Achieving the required changes in internal governance will require a significant change management effort on the part of all officials in the organisation who already operate in a complex legislative environment. The aim is not to add new areas of work for officials, but rather to make adjustments to existing areas of work, in a way that will deliver a greater number of resilience dividends to Capetonians.

Mainstreaming resilience considerations into City processes will no doubt result in its own iterative learning journey as we try new approaches and adjust those approaches when we do not achieve desired outcomes. Key to success will be enhancing the capabilities of staff, most notably the adaptive management capabilities of staff. In a future of uncertainty and increased disruption, the ability to solve complex problems will be even higher. While we will strive to have improved data and information to make better, more informed decisions, there will be occasions when decisions will need to be made based on an array of uncertain futures.

The recent drought, and the response thereto, offers an excellent starting point for officials in the City to consider what it means to manage a system under stress with an imperfect conception of future states, which in this case of the drought was rainfall. We cannot afford to lose the learnings from the drought as an organisation. All officials need to give consideration to how they will make City interventions more resilient, and how they will work with Capetonians through partnerships and collaboration to improve the outcomes of interventions.

RELEVANT GOALS

5.1. Develop and approve portfolios of projects that maximise the resilience dividend

5.2. Mainstream resilience in decision-making

5.3 Enhance knowledge management and data use

5.4 Monitor resilience outcomes

GOAL 5.1: DEVELOP AND APPROVE PORTFOLIOS OF PROJECTS THAT MAXIMISE THE RESILIENCE DIVIDEND

In recent years the City has developed a sophisticated Corporate Project Portfolio Management system. It enables the alignment of projects, mostly capital projects, with organisational strategy, thus enabling effective allocation of resources to projects and thereby improving service delivery. It achieves this by being a mechanism for decision-support, screening, assessment and advice to senior management on the composition of the portfolio, its progress against plans and any conflicting priorities.

With the approval of the Resilience Strategy there is an opportunity to consider resilience building benefits across whole portfolio of projects rather than for individual projects. This means for example that City the can build a pipeline of projects in a portfolio intended to address a particular shock or combination of shocks. A multi-year pipeline of projects allows for decision-makers to make quicker choices, within the context of constrained municipal budgets, to pursue new strategic directions as new information or risks emerge.

Action: 5.1.1

Type: Flagship action

Screening for resilience in the management of portfolios of capital projects

Desired outcome:

Improved alignment of major infrastructure programmes so that the resilience dividend in the built urban environment is maximised over the long-term.

Resilience Value:

- Promotes leadership and effective management
- Fosters long-term and integrated planning
- Fosters economic prosperity

Description:

Investment in infrastructure is a core part of the City's business. In the past, infrastructure programmes have focused on largely traditional plans of isolated utility maintenance, upgrades, and expansion. Coordination requires understanding the future urban requirements of the city, especially adaptations that will be needed to manage the impacts of major shocks such as floods and fire, and stresses such as rapid urbanisation.

The City will:

- Utilise a resilience lens to inform programme and design principles for long-term infrastructure plans;
- Conduct analysis across portfolios of projects to search for commonalities, gaps and potential dividends in infrastructure plans that seek to address prioritised shocks and stresses; and
- Ensure that each budget submission to the Council is based on a 15 year detailed projection of infrastructure needs focused on each sector with vetting by related infrastructure sectors and managed by a central strategy analysis team.

Quality of Resilience:

Robust

Shocks

All

Stresses

All

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Medium

Aligned actions

Action: 5.1.2**Type:** Enabling action**Maximising the resilience dividend at the project conceptualisation stage****Desired outcome:**

Every project initiative in the City will have resilience planning as part of its methodological approach, thus increasing the opportunity for maximising the resilience dividends.

Resilience Value:

Promotes leadership and effective management
 Fosters long-term and integrated planning
 Fosters economic prosperity

Description:

The conceptualisation phase of a project occurs in the initial design activity when the scope of the project is drafted and a list of the desired design features and requirements is created.

Every project, no matter what type, follows a methodology of one kind or another. Every project also requires a means for understanding whether its original objectives have been realised beyond financial or execution performance. The means of doing this is by carefully defining the value that projects wish to create.

The City will:

- Ensure that careful mapping of the benefits which need to be realised during the course of and after a project's completion is conducted;
- Seek to maximise the resilience value of projects, one of the definable categories of benefits that can be identified for projects, by searching for project co-dependencies, mechanisms for community collaboration, and inter-departmental or inter-organisational project collaboration; and
- Assess the resilience benefits during the course of a project and at its completion, with key knowledge outcomes of what worked and what didn't work feeding back iteratively into successive benefit network concepts.

Quality of Resilience:

Robust

Shock

All

Stresses

All

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Medium

Aligned actions**GOAL 5.2: MAINSTREAM RESILIENCE IN CITY DECISION-MAKING**

There are a number of governance processes that the City must follow when delivering on its mandates. They are already rigorous in nature for the purpose of ensuring that projects and programmes are delivered on time, and so that the annual approved municipal budget is expended in the way that it was intended. There is an opportunity to run a resilience lens through these processes for the purpose of improving the resilience dividend.

An area of urgent focus needs to be on improving intergovernmental relations for the purpose of delivering increased resilience in the urban environment. For the City, being fully able to respond to the prioritised shocks and stresses is sometimes hampered by certain functions in the urban environment being held by another sphere of government. There are relevant arguments for why certain functions should be devolved to the sub-national level, most notably the rail system and the ability to purchase electricity from IPPs. These matters may take some time to resolve, and hence we simply have to make the existing allocation of functions between spheres of government work, for the interests of all Capetonians

Action: 5.2.1**Type:** Enabling action**Integrating resilience considerations into integrated risk management****Desired outcome:**

Productive use of the data generated by the City's extensive Integrated Risk Management System to generate a multitude of new resilience-building actions and strong consideration by City risk champions of how the wide variety of shocks and stresses relevant to Cape Town can impact on operations.

Resilience Value:

Empowers a broad range of stakeholders

Promotes leadership and effective management

Ensures continuity of critical services

Description:

Integrated risk management includes the process designed to identify potential events that may affect the City and to identify ways of managing these, in order to provide reasonable assurance that the City is able to achieve its objectives. The City generates a significant amount of data points as part of this annual risk management process which is reviewed every quarter.

While this conventional style of risk management planning is effective for dealing with isolated departmental risks, it has limited application at the organisational level. There is hence an opportunity for innovation that enhances our resilience building efforts.

The City will:

- Use data analytics, from word recognition in risk plans to neural networking, to extract undetected system-wide risks by searching for commonalities and interdependencies that have yet to be explored or unpacked, and then developing approaches and responses to them; and
- Conduct an annual review of prioritised shocks and stresses in partnership with societal stakeholders and integrate these into the Integrated Risk Management System for regular consideration by City risk champions.

Quality of Resilience:

Integrated

Shocks

All

Stresses

All

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Short

Aligned actions

2.3.1 | 2.3.5 | 3.4.2 | 4.1.2 |

Action: 5.2.2**Type:** Enabling action**Improving intergovernmental relations for resilience****Desired outcome:**

Effective and streamlined intergovernmental relations for the purpose of building resilience to prioritised shocks and stresses, particularly where the effectiveness of Cape Town's responses relies on powers and competencies beyond the control of the City government.

Resilience Value:

Promotes leadership and effective management

Ensures continuity of critical services

Promotes social stability, security and justice

Description:

Intergovernmental relations refers to the relations that arise between different governments or between organs of state from different governments in the conduct of their affairs and is governed by the Intergovernmental Framework Act (Act 13 of 2005).⁷⁸

Both the national and provincial governments have significant control over functions implemented in the urban environment

Quality of Resilience:

Integrated

Shocks

All

Stresses

All

that contribute to city resilience. For example, the provincial government controls the provision of basic education and national government controls SAPS.

The City has found itself at odds with the national government on a number of occasions in recent years, including the functioning of and developmental plans for Metrorail, the supply of bulk water during the context of the drought, and the inability of the City to purchase renewable energy directly from IPPs.

The City will:

- Develop an Intergovernmental Relations Framework for the purpose of guiding City approaches to intergovernmental relations; and
- Create a prioritisation list of urgent intergovernmental matters that impact upon Cape Town's resilience capabilities and design tailor-made tactical responses to each issue.

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Status

New

Timescale for delivery

Short

Aligned actions

2.1.2 | 2.3.2 | 2.3.3 | 2.3.4 |
3.1.2 | 3.2.2 | 4.1.3 | 4.3.1 |
4.4.1 |

**Action: 5.2.3
Adaptive management capabilities for resilience**

Type: Enabling action

Desired outcome:

A cohort of leaders in the City government capable of managing in volatile, uncertain, complex and ambiguous environments, who are acutely aware of the shocks and stresses that confront Cape Town and how these affect their functional responsibilities, and who are committed to finding solutions to problems rooted in reflective learning and adaptation.

Resilience Value:

- Empowers a broad range of stakeholders
- Promotes leadership and effective management
- Ensures continuity of critical services

Description:

Adaptive management focuses on changing a system, either by improving the existing trajectory, or by changing the trajectory altogether.

Adaptive management includes a high level of experimentation, where some initiatives will work while others will not. It includes strong monitoring processes that feed a continual flow of information that sheds light on the operating environment and the ability of the organisation to change strategies, plans and activities rapidly in response to this new information.⁷⁹

The City will:

- Include adaptive management competencies in its City Leadership Development Framework;
- Provide training and coaching to staff on adaptive management; and
- Develop a community of practice to allow leaders at all levels of the organisation to reflect and learn together.

Quality of Resilience:

Flexible

Shocks

All

Stresses

All

SDG

11 – Sustainable cities and communities

Status

New

Timescale for delivery

Short

Aligned actions

4.1.5 |

Action: 5.2.4
Improved decision-making for systems in stress

Type: Enabling action

Desired outcome:

Improved decision-making for systems in stress based on trigger points that deliberately require consideration of whether alternative strategies or action plans need to be implemented in order to ensure the integrity of such systems.

Resilience Value:

Promotes leadership and effective management
Empowers a broad range of stakeholders
Ensures continuity of critical services

Description:

Cape Town has many complex urban systems managed by the City government. These include public utility services like the water service, the waste management service, and the electricity generation and distribution service. Others systems include stormwater management, traffic management, and primary health care management.

Shocks and stresses can severely disrupt the normal operations of systems. For example, rapid demographic shifts due to spikes in urbanisation, severe weather-related shocks as a result of climate change, or quick rises in local poverty levels as a result of national or even global economic crises can change the functioning of systems quicker than might have been anticipated.

The past performance of systems under stress is not necessarily a good predictor of future performance under similar stresses, particularly as complexity can be heightened multiple shocks and stresses intersect at the same time.

The City will:

- Identify trigger points for the most critical urban systems that determine when alternative courses of action need to be considered for implementation; and
- Develop the measures of accountability for the nature of decisions taken and the information and assumptions used to arrive at the decisions.

Quality of Resilience:

Robust

Shocks

All

Stresses

All

SDG

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Status

New

Timescale for delivery

Medium

Aligned actions

5.2.3 | 5.3.1 | 5.4.1 |

Action: 5.2.5

Engage in inclusive public participation processes that empower Capetonians

Type: Enabling action

Desired outcome:

Improved methods of public participation and engagement that empower Capetonians to actively contribute to City decision-making processes, and which result in the co-design and co-ownership of projects and plans that have multiple resilience dividends.

Resilience Value:

Promotes leadership and effective management
Empowers a broad range of stakeholders
Promotes cohesive and engaged communities

Description:

Meaningful public engagement and public participation processes can produce multiple resilience dividends. Capetonians understand the shocks and stresses relevant to their respective communities better than anyone else, hence

Quality of Resilience:

Inclusive

Shocks

All

Stresses

they are best place to co-design and co-own the initiatives, programmes and policies that affect them.

All

There needs to be a focus on increasing points of engagement throughout planning and project lifecycles. Trust-building is a long process, and hence the City and its officials must be prepared to invest time into achieving better outcomes at the community level.

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Status

New

The City will:

- Develop a framework that sets out the rationale, mechanisms, tools, institutional structure and arrangements to develop and support the building of lasting and beneficial partnerships between the City and Capetonians;

Timescale for delivery

Medium

- Innovate with different engagement and participation methodologies to determine what delivers the best results in different circumstances;

Aligned actions

2.2.1 | 2.4.2 | 4.2.4 |

- Invest in the training of staff to be skilled facilitators of engagement and participation processes; and

- Build a community of practice for engagement and participation by facilitators for reflective learning.

GOAL 5.3: ENHANCE KNOWLEDGE MANAGEMENT AND DATA USE

High quality data is important for robust decision-making. It is especially important in the complex urban environment, confronted by rapid urbanisation, climate change, globalisation and rapid technological change. Under these circumstances changes in the urban environment and the systems that comprise it can happen quickly. Data that generates rapid insight for decision makers is important for developing resilient actions.

The City has become increasingly data savvy in recent years. In 2015 it launched its Open Data Portal, joining a large number of prominent global cities that share data sets with the public for social and economic benefit. In 2018 the City approved its first Data Strategy and began to develop its competencies in data science. We now have an opportunity to develop even more sophisticated insights into changes in the urban environment, with a growing emphasis on improving our predictive capabilities.

Due to growing complexity in the urban environment, there is also a need to consider how multiple futures can play out, and the effect of these futures on the City's long term plans. Planning to deliver on outcomes in the future can be impacted upon by a range of shocks and stresses. These need to be fully considered, and plans need to be flexible enough to withstand a range of scenarios.

When shocks do strike, we need to be prepared to reflect and learn from the events, in order to adjust plans and strategies accordingly. Surviving shock events should never result in us resting on our laurels. Sometimes catastrophe is avoided through good fortune, and it can be misdiagnosed as being as a result of solid responses. Reflective learning allows for behaviours and actions during and after shock events to be deeply interrogated, for the purpose of improving responses to future shocks.

Action: 5.3.1**Type:** Flagship action**Use data for resilient decision-making****Desired outcome:**

Enhanced use of data science to improve decision support systems, helping to make more informed decisions in a future which is expected to be increasingly complex with regard to the intersection of shocks and stresses.

Resilience Value:

Ensures continuity of critical services
Provides and enhances natural and manmade assets
Fosters long-term and integrated planning

Description:

Data science is a multi-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms, both structured and unstructured.⁸⁰ It is in the early stages of development in the City.

Data science has significant potential to complement resilience-building initiatives. It can be used to determine the probability of certain outcomes - which is important when managing large systems like the water reticulation system. It can also be used to determine risks and the possible behaviour of systems, for example early warnings for abnormal flow of traffic, which can result in quicker response times from traffic officials thereby decreasing the impact of shocks and stresses.

The City will:

- Develop its data science capabilities so that multiple projects can be pursued simultaneously;
- Catalogue all data sets in the organisation and source data sets from societal partners. Data sets will be cleaned and prepared for use in predictive analytics and cost-benefit analyses;
- Build or use data driven models to understand the dynamics of urban, social, and economic conditions, helping to inform our future investment and programmatic decisions; and
- Prepare its data sets for easy remote access, improving their accessibility to researchers and outside organisation, thereby improving the scope of knowledge our predictions and probability models have access to and can benefit from.

Quality of Resilience:

Resourceful

Shocks

All

Stresses

All

SDG

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Status

Pilot

Timescale for delivery

Short

Aligned actions

2.3.2 | 2.5.2 | 5.4.3 |

Action: 5.3.2**Type:** Enabling action**Develop resilient technology platforms to enhance service delivery and improve cyber security****Desired outcome:**

Improved robustness of the transactional and analytical platforms that the City uses to conduct its business and deliver its services, in order to reduce the risk of cyber-attack and promote new innovations.

Resilience Value:

Ensures continuity of critical services
Provides and enhances natural and manmade assets
Fosters long-term and integrated planning

Description:

The City operates a number of legacy systems. These are computer systems or application programmes that have been in operation for a long time, and which will attract significant costs if they are to be redesigned or replaced.

The risk of multiple legacy systems makes the City more vulnerable to operational failures and exposes the City to risks of cyber-attack.

It is imperative that the City consider its past and future technology platforms for transactions and data analysis.

The City will:

- Conduct a risk based audit using a resilience lens of the legacy systems. The risks of neglecting the systems replacement and upgrade will be quantified and will be used to motivate for future funding proposals, especially within operating expenditure which is where future technology needs will receive a majority of their funding from; and

- Explore what the balance should be between cloud-based data sets and physical data centres, aiming to achieve a balance between transactional needs, security needs, and the capabilities required for advanced analytics.

Quality of Resilience:

Resourceful

Shocks

Cyber attack
Infrastructure failure
Power outage

Stresses

Insecure municipal finances

SDG

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Status

New

Timescale for delivery

Medium

Aligned actions

4.1.2 | 5.2.4 | 5.3.1 |

Action: 5.3.3**Type:** Enabling action**Utilise robust scenario planning for improved resilience****Desired outcome:**

Improved anticipation of a multitude of futures when considering the development of strategies and plans for the purpose of developing resilient actions in the urban environment.

Resilience Value:

Promotes leadership and effective management

Fosters long-term and integrated planning

Empowers a broad range of stakeholders

Description:

The best laid strategies and plans must consider a variety of plausible, possible futures. The urban environment is impacted upon by a number of global and local shocks and stresses that can impact on the achievement of organisational goals. Scenario planning can be used to guide decision making, ensuring strategies and plans are robust and stress tested against possible futures.

The City will:

- Build models of future scenarios in the urban environment, using data science and qualitative methods of analysis and interrogation. These will use parameters for potential future likelihoods which will be modelled at a relatively simple scale;

- Consider the theoretical possibilities of changes in conditions and parameters within the urban environment which may be extrapolated from without trying to build complete models; and

Quality of Resilience:

Robust

Shocks

All

Stresses

All

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Status

New

Timescale for delivery

Short

Aligned actions

- Compute the effect of changes in order to assess patterns and possible eventualities at a multitude of scales, including the ward, neighbourhood or city-level, as required.

Action: 5.3.4

Conduct reflective learning after shock events

Type: **Enabling action**

Desired outcome:

A culture of reflective learning after shock events to allow decision makers and affected stakeholders to outline what happened, how decisions were made and the consequences thereof, and lessons learnt - for the purpose of improving performance next time a similar shock occurs.

Resilience Value:

Empowers a broad range of stakeholder
 Promotes leadership and effective management
 Promotes cohesive and engaged communities

Description:

Reflection and learning are vitally important parts of building a resilient city. There is for example much that needs to be reflected upon following the recent drought, especially as our drought periods are expected to become more frequent and intense in the future.

Quality of Resilience:

Reflective

The City will:

- Develop an open source reflective learning tool with associated training methodologies on how to deploy it;
- Use the tool after shock events to allow relevant stakeholders to share their recollections of shock events and to document learnings for the purpose of amending strategies, policies and plans in preparation for future shock events. Wherever feasible, academic partners will be invited to join in reflective learning sessions;
- Develop case studies and share them with the community of practice on resilience both regionally and globally; and
- Make the reflective learnings available to organisations across Cape Town and encourage their use after shock events.

Shocks

All

Stresses

All

SDG

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Status

New

Timescale for delivery

Short

Aligned actions

4.14 | 5.2.4 | 5.2.3 |

GOAL 5.4: MONITOR RESILIENCE OUTCOMES

Monitoring and evaluation is a critical component of strategy implementation. For this reason, the Resilience Strategy will be accompanied by an implementation plan that will be subject to oversight by the relevant Section 79 committee in the City Council. It will focus on both the outputs and outcomes of the individual actions in the Strategy that will contribute to building resilience in Cape Town.

It is acknowledged, however, that it is difficult to objectively measure resilience in any context. Resilience is best understood after a shock event, and even then it is complex, as shock events can play out in different ways. We operate under uncertainty, and the most we can do is build resilience using the best available information. It is thus important to have resilience evaluation tools available that provide insight into the resilience of systems or communities in

advance of shocks. These tools are mostly reflective in nature, and can be populated with both quantitative data and personal insights of community members or thematic experts.

Correctly deployed, these evaluation tools can help to build a common understanding of resilience at a multitude of scales among multiple affected stakeholders. They can be used to measure progression or regression, and to guide the development of new actions and investments.

<p>Action: 5.4.1 Evaluate city-wide resilience</p>	<p>Type: Enabling action</p>
<p>Desired outcome:</p> <p>Provision of quality data and insights for the purpose of assessing progress in the attainment of resilience goals in the Resilience Strategy, to understand relative progression or regression of city-wide resilience over time, and to inform decision-making on new or amended programmes and projects.</p>	<p>Resilience Value:</p> <p>Fosters long-term and integrated planning Provides leadership and effective management Empowers a broad range of stakeholders</p>
<p>Description:</p> <p>Cape Town has had an association with the City Resilience Index (CRI) since 2015 when it was a pilot city during the development thereof. The first full CRI for Cape Town was conducted in 2018. The next iteration of the CRI will be able to produce the first comparison over time.</p> <p>The City will:</p> <ul style="list-style-type: none"> - Evaluate the city-wide urban resilience using the CRI by no later than the end of 2021 in order to assess the relative progress or regression of resilience-building outcomes; - Ensure that the process of populating the next CRI is done through a widely consultative process; and - Amend and add relevant indicators to the CRI in the short-term to more accurately reflect the contribution that the informal sector makes to resilience in Cape Town including for the informal economy, informal transport and informal settlements. This will be done in partnership with CBOs working in informal settlements to ensure that the most appropriate qualitative and quantitative indicators are identified. 	<p>Quality of Resilience: Reflective</p> <p>Shocks All</p> <p>Stresses All</p> <p>SDG 11 – Sustainable cities and communities</p> <p>Status Pre-existing</p> <p>Timescale for delivery Medium</p> <p>Aligned Actions 5.4.2 </p>

<p>Action: 5.4.2 Determine progress towards attainment of improved water resilience</p>	<p>Type: Enabling action</p>
<p>Desired outcome:</p> <p>Production of a fully populated city water resilience framework for Cape Town, outlining relative strengths and vulnerabilities of the city water system against the drivers of water resilience, for the purpose of supporting decision making.</p>	<p>Resilience Value:</p> <p>Fosters long-term and integrated planning Ensures continuity of critical services Empowers a broad range of stakeholders</p>

Description:

In 2018 Cape Town joined a select group of 100RC member cities, including Mexico City, Miami, Amman, Greater Manchester, and Thessaloniki in developing the City Water Resilience Framework (CWRF). Developed by engineering consultancy Arup and funded by the Rockefeller Foundation, the cities sought to identify the drivers of water resilience.

The tool will become available for deployment in cities around the world in 2019. Once deployed in Cape Town, it will perform a necessary function of assessing changes in the urban water system during the implementation of the Cape Town Water Strategy (2019), which sets out to make Cape Town water resilient by approximately 2030 and water sensitive by 2040.

This initiative will:

- Conduct a full assessment of Cape Town's water resilience using the CWRF, providing information on the city's relative water resilience strengths and vulnerabilities;
- Ensure that the process of completing the assessment includes stakeholders from all spheres of government, academia, community based organisation, agriculture and business;
- Share the results so that a common understanding of water resilience can be attained, and so that organisations in the city can use the information to determine their own water-related actions and investments; and
- Repeat the assessment every three years to determine changes, which will be used to inform future decision-making.

Quality of Resilience:

Reflective

Shocks

Drought
Rainfall flooding

Stresses

Climate change
Informal settlements
Rapid urbanisation

SDG

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Status

New

Timescale for delivery

Short

Aligned Actions

2.3.2 | 5.4.1

INTERDEPENDENCIES OF THE RESILIENCE-BUILDING ACTIONS

Cape Town, like any major city, is a complex organism made up of individuals, communities, institutions, businesses and systems. If we are to survive, adapt and thrive no matter what kind of chronic stresses and acute shocks we experience, then the range of resilience-building actions need to be as broad and complex as the city is. These actions need to be owned by a multitude of partners at all scales in the city.


In the analysis of the outputs of the CRI (see page 19), areas of vulnerability requiring particular focus were highlighted. These include: empowered stakeholders; social stability, security and justice; livelihoods and employment; and cohesive and engagement communities. In figure 10, the interdependencies of the values of each action in the Resilience Strategy are mapped.





The interdependencies map shows a broad range of actions when viewed together. The actions in the Resilience Strategy contribute to building resilience across all drivers of city resilience. The map, however, also shows that the actions disproportionately respond to the four areas of particular vulnerability that are highlighted in the CRI.


ANNEXURES




ANNEXURE 1: SUMMARY OF ACTIONS INCLUDING ALIGNMENT WITH SDGS


Name of action	Desired outcome	Type of action	Time Frame	Quality of Resilience	SDG Alignment
Goal 1.1: Increase awareness, access to and uptake of mental health support					
Action: 1.1.1 Develop an Anti-stigma, Mental Health Public Messaging Campaign	Decreased stigma in Cape Town regarding mental health illness and more awareness, education and community support around the issue.	Flagship action 	Short	Flexible	Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being
Action: 1.1.2 Extend mental health training to include traditional healers and unlicensed herbalists	Increased mental health literacy amongst traditional healers and unlicensed herbalists, resulting in decreased stigma around non-psychotic mental illness and greater access to treatment for patients.	Enabling action	Short	Integrated	Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being
Action: 1.1.3 Expand mental health training for primary health clinics and lay counsellors	An increased number of community healthcare workers and lay counsellors who are trained and equipped to diagnose and provide support for Capetonians living with mental illness, resulting in a reduction of the mental health treatment gap and a reduction in the co-morbidity impacts of mental illness.	Enabling action	Short	Resourceful	Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
Goal 2.2: Grow cross sectoral support and community participation for diversion, early detection and protection from crime					
Action: 1.2.1 Develop a consensus between the police, health and social services	A joint commitment between police, health and social services, which embeds prevention across the system, building trust and resulting in diversion of at-risk individuals from the criminal justice system.	Enabling action	Short	Integrated	Target 16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime
Action: 1.2.2 Create a live database of referral networks	Easily accessible, up-to-date information of referral networks for at-risk individuals, victims or crime and Capetonians living with substance abuse or mental illness.	Enabling action	Short	Resourceful	Target 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
Action: 1.2.3 Establish a Neighbourhood Watch pairing programme across diverse communities	Pooling of resources and information between neighbourhood watches, strengthening cohesion between different communities and enabling a pooling of resources during times of shock.	Enabling action	Short	Resourceful	Target 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships



Action: 1.2.4 Increase the number of School Resource Officers across the city	Increased ability for children to safely access learning opportunities and increased identification and diversion of at-risk individuals from negative influences within the school environment.	Enabling action	Medium	Resourceful	Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
Action: 1.2.5 Increase the number of walking buses around the city	A greater number of children in vulnerable communities are able to safely walk to and from school without being affected by crime, gang activity, and sexual violence through joint efforts of community members to occupy space.	Enabling action	Short	Resourceful	Target 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
Goal 1.3: Combat discrimination and build social cohesion					
Action: 1.3.1 Launch public messaging campaign and public dialogue series to address discrimination.	Increased awareness of discrimination and its negative impacts on individual Capetonians and efforts to build a cohesive city, and more emboldened Capetonians willing and able to stand up against discrimination where it impacts themselves and others.	Enabling action	Short	Reflective	Target 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard
Action: 1.3.2 Launch a campaign to reduce violence against women and children through education & early intervention	Increased awareness of the legal rights and protections around violence against women and children, and knowledge of avenues and support available when responding to this violence.	Enabling action	Short	Resourceful	Target 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation Target 16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children
Action: 1.3.3 Celebrate diversity and build cohesion through art and community storytelling.	Increased appreciation for the different cultures and histories of the diverse people of Cape Town as a contributor to greater social cohesion for the purpose of responding to acute shocks and chronic stresses that confront us.	Enabling action	Short	Inclusive	Target 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
Action: 1.3.4 Develop programmes that foster welcoming neighbourhoods	Increased sense of belonging and acceptance for foreign nationals who choose to make Cape Town home, and a greater degree of social cohesion.	Enabling action	Medium	Inclusive	Target 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status


Goal 1.4: Promote a culture of health that increases well-being and decreases trauma					
Action: 1.4.1 Establish a food systems programme	Strengthen the Cape Town food system by focusing on improving access to affordable and nutritious food for Capetonians, particularly those living in vulnerable communities, using high quality data and focused interventions.	Flagship action 	Short	Redundant	Target 2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
Action: 1.4.2 Scale up the Live Well Challenge through promotion and partnerships	More Capetonians participating in regular exercise and healthy eating, who thus have increased overall levels of health, with improved ability to confront the challenges of shocks and stresses when they occur.	Enabling action	Short	Integrated	Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being
Action: 1.4.3 Increase the number of Matrix clinics in Cape Town	Increased opportunities for Capetonians to access programmes to support treatment and recovery from substance abuse.	Enabling action	Medium	Robust	Target 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
Name of action	Desired outcome	Type of action	Time Frame	Quality of Resilience	SDG Alignment
Goal 2.1: Grow partnerships that strengthen transportation systems and improve mobility					
Action: 2.1.1 Grow partnerships to change commuter behaviour and deliver sustainable mobility	Increased commitment from large institutions to alleviating traffic congestion through innovative working arrangements and behavioural change resulting in the reduction in single occupancy vehicles on the roads during peak times, with a resilience dividend of decreased carbon emissions.	Enabling action	Short	Resourceful	Target 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
Action: 2.1.2 Collaborate with other spheres of government to ensure the safe and reliable operation of local trains	Safe, reliable and efficient commuting for Capetonians using Metrorail through a reduction in vandalism and arson attacks on trains and improved operational efficiency, thus contributing to improved productivity, an increased number of train commuters and less traffic congestion.	Flagship action 	Medium	Integrated	Target 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
Action: 2.1.3 Leverage the tech sector to improve integration of informal transportation systems	Improved integration of all forms of transport in Cape Town, with an emphasis on integrating informal minibus taxis with rail, bus, cycling and walking routes in order to bring down the cost of public transport and lure more commuters away from private cars.	Enabling action	Medium	Resourceful	Target 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
Goal 2.2: Engage communities and the private sector to improve public spaces					
Action 2.2.1	Infrastructure improvements in large urban areas like	Enabling action	Medium	Integrated	Target 11.3 By 2030, enhance inclusive and sustainable


Grow the Urban Regeneration Programme to all parts of the city	CBDs, including transport linkages, safety enhancements, and trading and leisure spaces, created in partnership with local stakeholders, which result in multiple resilience dividends including improved safety and economic opportunities, and adaptive capabilities to flooding and heat waves.				urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Action: 2.2.2 Address social ills and create opportunities in Manenberg through a Youth and Lifestyle Campus	Increased economic opportunities and decreased social ills such as gangsterism, crime, violence, and substance abuse for the youth of Manenberg by way of improved place-making, infrastructure upgrades, and social support, which achieves multiple resilience dividends.	Flagship action 	Medium	Inclusive	Target 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Action: 2.2.3 Rejuvenate our rivers to create liveable urban waterways	Healthy, safe and productive urban waterways which produce multiple resilience dividends, including flood attenuation, bringing people together for recreation, creating new work opportunities, and reducing crime.	Demonstrable action	Medium	Redundant	Target 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
Action: 2.2.4 Establish a transversal public spaces work group	Increased private investment and collaboration in the design and use of public spaces for the purpose of realising multiple resilience dividends, including adaptation to climate change and improved social cohesion.	Enabling action	Short	Integrated	Target 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities
Goal 2.3: Build climate resilience					
Action: 2.3.1 Strengthen the capacity to interpret and integrate climate impacts into planning	Improved data and insights of likely climate change impacts and projections applicable to the city-region level for the purpose of improving the robustness of long-term planning, and the associated benefit of reducing vulnerability and increasing adaptive capacity to climate change.	Enabling action	Short	Robust	Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Action: 2.3.2 Enhance partnerships for improved water governance and holistic water resilience	Strengthened relationships with large water users in the Western Cape Water Supply System (WCWSS) and ongoing collaboration and engagement with civil society, academic, and business partners in the urban water system for the purpose of collective ownership of roles and responsibilities in water governance.	Enabling action	Short	Inclusive	Target 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

Action: 2.3.3 Protect water sources by supporting the Greater Cape Town Water Fund	Increased collective support by a range of stakeholders to clear alien invasive vegetation from the catchments around the large dam system for the purpose of augmenting water supply in the bulk water system.	Flagship action 	Short	Resourceful	Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
Action: 2.3.4 Protect water sources through managed aquifer recharge	The long-term health and sustainability of the Cape Flats Aquifer through the responsible recharge thereof as a complementary action to the limited abstraction from the aquifer to augment bulk water supplies.	Flagship action 	Medium	Redundant	Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
Action: 2.3.5 Create multiple coastal management forums	Empowering partnerships between coastal stakeholders to co-own risks related to impacts on the coast and surrounding infrastructure, and networks of resources able to both prepare for and respond to coastal shocks.	Enabling action	Medium	Inclusive	Target 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
Goal 2.4: Innovate for alternative methods of basic service delivery					
Action: 2.4.1 Explore alternative, innovative and acceptable mechanisms of service delivery in informal settlements	Innovative means of provision of basic services in informal settlements including energy, water and waste services, that have multiple resilience dividends including empowering residents, improving health outcomes and reducing the occurrence of shocks such as fire and flooding.	Demonstrable action	Medium	Resourceful	Target 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Action: 2.4.2 Co-design for informal settlement upgrading projects	Empowered residents of informal settlements working in collaboration with the City and other societal partners to design acceptable, safe and dignified informal settlement upgrading projects.	Enabling action	Short	Inclusive	Target 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Name of action	Desired outcome	Type of action	Time Frame	Quality of Resilience	SDG Alignment
Goal 3.1: Foster green economic growth					
Action: 3.1.1 Leverage the newly created Atlantis Special Economic Zone to cultivate the green economy while promoting economic mobility	Increased local manufacture of green technology by capitalising on new local and regional market opportunities, with the associated creation of new jobs, particularly for Capetonians displaced from fading economic sectors.	Flagship Action 	Medium	Integrated	Target 8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on highvalue added and labour-intensive sectors
Action: 3.1.2 Mainstream sustainable	An increase in public spending on green goods and services, ensuring that public procurement becomes	Enabling action	Medium	Resourceful	Target 12.7 Promote public procurement practices that are sustainable, in accordance

procurement in supply chain management	increasingly environmentally and socially responsible, thus contributing to market innovation and potentially the increased local production and provision of green goods and services, with associated benefits for job creation.				with national policies and priorities
Action: 3.1.3 Develop eco-industrial parks using industrial symbiosis methodology	Improved resource efficiency, inclusive of materials, water, energy, logistics and expertise, within specific industrial areas using industrial symbiosis methodology, for the purpose of increasing resilience to resource constraints, and sustaining and creating jobs.	Demonstrable action	Medium	Resourceful	Target 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Action: 3.1.4 Undertake a waste economy study	Detailed understanding of the multitude of waste streams in the city-region, including type, quantity, and projected changes over time, for the purpose of identifying risks to the sustainability of the waste service and new opportunities in the economy that can build resilience to resource constraints.	Enabling action	Short	Resourceful	Target 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
Goal 3.2: Enable enterprise development in the informal economy					
Action: 3.2.1 Promote the clustering of informal growth industries in well-located hubs	The creation of informal economy activity hubs which are supported by enabling zoning regulations where light manufacturing businesses can benefit from a pooling of resources.	Flagship action 	Medium	Resourceful	Target 8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services
Action: 3.2.2 Develop an informal enterprise survey to gain richer data on the informal economy	Improved insights and knowledge about enterprise-level activity in the informal economy in Cape Town, including its value, opportunities and challenges, for the purpose of designing interventions that will make the informal economy more resilient to stresses and shocks.	Enabling action	Short	Flexible	Target 8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on highvalue added and labour-intensive sectors
Goal 3.3: Connect the workforce with a changing economy					
Action: 3.3.1 Expand the reach of digital literacy programmes so that Capetonians are able to adapt to rapid	A greater number of Capetonians capable of participating in the digital economy as entrepreneurs, workers and customers, and able to adapt to rapid change when it occurs, in	Enabling action	Medium	Integrated	Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

technological change	order to build economic resilience.				
Action: 3.3.2 Extend the incentivised employee retention programme	Increased retention of previously unemployed Capetonians through deliberate interventions by employers and NGOs including the provision of support networks.	Demonstrable action	Short	Resourceful	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
Goal 3.4: Collaborate with business to achieve a resilient local economy					
Action: 3.4.1 Build a corporate commitment to resilience in the city	Increased commitment by corporates to partner with the City government in building resilience both for their businesses and their employees so that they can collectively and rapidly respond to shocks.	Flagship action 	Short	Integrated	Target 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships
Action: 3.4.2 Promote Cape Town as resilient destination to visit and invest in	Increased investor and visitor confidence in Cape Town as a destination as a result of global awareness of the city's efforts to understand its own risk profile and to build collective responses that strengthen urban resilience.	Enabling action	Short	Resourceful	Target 8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products
Name of action	Desired outcome	Type of action	Time Frame	Quality of Resilience	SDG Alignment
Goal 4.1: Future-proof urban systems					
Action: 4.1.1 Develop and implement a comprehensive city-wide heat plan	Decreased impact of heat waves when they occur through a city-wide plan, understood and owned by individuals, households, communities and businesses, allowing for the city and its economy to thrive under the circumstances, and for human life to be protected.	Flagship action 	Medium	Resourceful	Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Action: 4.1.2 Develop 'whole of society' collaboration on preparing for and reducing the risks of cyber-attacks.	Secure systems across government, utilities, SOEs, business and households able to prevent cyber-attacks and capable of responding when they do occur, for the purpose of maintaining the optimal functioning of the city at all levels.	Enabling action	Short	Robust	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 4.1.3 Prepare for the procurement of utility-scale renewable energy from IPPs	A clear and realistic understanding of the financing, procurement and legal implications of a City commitment to purchase electricity from utility scale renewable energy IPPs for the purpose of improved decision-making.	Enabling action	Medium	Redundant	Target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

Action: 4.1.4 Develop Build Back Better protocols for infrastructure damaged in shock events.	Transversal commitments across City departments and other spheres of government that build infrastructure and homes in Cape Town to ensure that infrastructure damaged by shock events is built back stronger and is more capable of surviving, adapting to and thriving under shock events thereafter.	Enabling action	Medium	Reflective	Target 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Action: 4.1.5 Roll out simulations to prepare for shock events	Increased awareness of and preparation for a wide range of shock scenarios by a broad range of Capetonians resulting in improved business continuity and recovery plans.	Enabling action	Short	Robust	Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Goal 4.2: Strengthen individual, household and community resilience					
Action: 4.2.1 Develop the Neighbourhood Resilience Assessment	Greater awareness at a local level of shocks and vulnerabilities, more prepared communities for shock events, and the production of standardised data for guiding and monitoring the effectiveness of localised SDG interventions.	Flagship action 	Short	Integrated	Target 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
Action: 4.2.2 Expand the women and girls resilience programme	The empowerment of women and girls, particularly those living in vulnerable communities, with knowledge and skills that are important for surviving, adapting to, and thriving in the context of shock events.	Enabling action	Short	Inclusive	Target 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
Action: 4.2.3 Improve risk awareness through technology	Better early warning systems for shock events and better information on response measures following shock events by utilising smart technology, empowered by stronger predictive analytics.	Enabling action	Medium	Integrated	Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Action: 4.2.4 Launch the 'Be a Buddy' programme	Increased social networks, volunteerism and active citizenry that results in Capetonians pulling together in times of shock especially to support the most vulnerable residents.	Enabling action	Short	Redundant	Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Goal 4.3: Encourage responsible investment in household and business resilience					
Action: 4.3.1 Launch a borehole data and awareness project	Responsible use of boreholes and well-points by private owners for the purpose of protecting and sustaining groundwater by using innovate data and awareness campaigns, and collective action during times of shock to leverage individual resources for the public good.	Demonstrable action	Medium	Redundant	Target 6.b Support and strengthen the participation of local communities in improving water and sanitation management

Action: 4.3.2 Launch a Property Assessed Clean Energy Project	Increased ability of households and businesses to build energy security for the purposes of improving resilience to load shedding with the associated benefit of improving Cape Town's contribution to mitigating GHG emissions.	Demonstrable action	Medium	Redundant	Target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
Goal 4.4: Explore funding mechanisms for shock events					
Action: 4.4.1 Lobby national government for budget flexibility for shock events	Increased ability of the City of Cape Town metropolitan municipality to, in cases of extreme emergency during or following a shock event, commit to unforeseeable and unavoidable expenditure for the purposes of protecting human life and improving adaptive responses of the city.	Enabling action	Medium	Resourceful	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 4.4.2 Explore innovative insurance products	Reach an understanding on the efficacy, viability and practicality of investing in innovative insurance products for catastrophic shock events such as long-term drought or city-wide flooding for the purpose of generating emergency funding, and use insights gained to determine whether or not such products should be pursued.	Enabling action	Medium	Resourceful	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Name of action	Desired outcome	Type of action	Time Frame	Quality of Resilience	SDG Alignment
Goal 5.1: Develop and approve portfolios of projects that maximise the resilience dividend					
Action: 5.1.1 Screen for resilience in the management of portfolios of capital projects	Improved alignment of major infrastructure programmes so that the resilience dividend in the built urban environment is maximised over the long-term.	Flagship action 	Medium	Robust	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.1.2 Maximise the resilience dividend	Every project initiative in the City will have resilience planning as part of its methodological approach, thus increasing the	Enabling action	Medium	Robust	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and

at the project conceptualisation stage	opportunity for maximising the resilience dividends.				implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Goal 5.2: Mainstream resilience in decision-making					
Action: 5.2.1 Integrating resilience considerations into integrated risk management	Productive use of the data generated by the City's extensive Integrated Risk Management System to generate a multitude of new resilience-building actions and strong consideration by City risk champions of how the wide variety of shocks and stresses relevant to Cape Town can impact on operations.	Enabling action	Short	Integrated	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.2.2 Improving intergovernmental relations for resilience	Effective and streamlined intergovernmental relations for the purpose of building resilience to prioritised shocks and stresses, particularly where the effectiveness of Cape Town's responses relies on powers and competencies beyond the control of the City government.	Enabling action	Short	Integrated	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.2.3 Adaptive management capabilities for resilience	A cohort of leaders in the City government capable of managing in volatile, uncertain, complex and ambiguous environments, who are acutely aware of the shocks and stresses that confront Cape Town and how these affect their functional responsibilities, and who are committed to finding solutions to problems rooted in reflective learning and adaptation.	Enabling action	Short	Flexible	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.2.4 Improved decision-making for systems in stress	Improved decision-making for systems in stress based on trigger points that deliberately require consideration of whether alternative strategies or action plans need to be implemented in order to	Enabling action	Medium	Robust	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to

	ensure the integrity of such systems				climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.2.5 Engage in inclusive public participation processes that empower Capetonians	Improved methods of public participation and engagement that empower Capetonians to actively contribute to City decision-making processes, and which result in the co-design and co-ownership of projects and plans that have multiple resilience dividends.	Enabling action	Medium	Inclusive	Target 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Goal 5.3: Enhance knowledge management and data-use					
Action: 5.3.1 Use data for resilient decision-making	Enhanced use of data science to improve decision support systems, helping to make more informed decisions in a future which is expected to be increasingly complex with regard to the intersection of shocks and stresses.	Flagship action 	Short	Resourceful	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.3.2 Develop resilient technology platforms to enhance service delivery and improve cyber security	Improved robustness of the transactional and analytical platforms that the City uses to conduct its business and deliver its services, in order to reduce the risk of cyber-attack and promote new innovations.	Enabling action	Medium	Resourceful	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels
Action: 5.3.3 Utilise robust scenario planning for improved resilience	Improved anticipation of a multitude of futures when considering the development of strategies and plans for the purpose of developing resilient actions in the urban environment.	Enabling action	Short	Robust	Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

<p>Action: 5.3.4</p> <p>Conduct reflective learning after shock events</p>	<p>A culture of reflective learning after shock events to allow decision makers and affected stakeholders to outline what happened, how decisions were made and the consequences thereof, and lessons learnt - for the purpose of improving performance next time a similar shock occurs</p>	<p>Enabling action</p>	<p>Short</p>	<p>Reflective</p>	<p>Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels</p>
<p>Goal 5.4: Monitor and evaluate resilience outcomes</p>					
<p>Action: 5.4.1</p> <p>Evaluate city-wide resilience</p>	<p>Provision of quality data and insights for the purpose of assessing progress in the attainment of resilience goals in the Resilience Strategy, to understand relative progression or regression of city-wide resilience over time, and to inform decision-making on new or amended programmes and projects.</p>	<p>Enabling action</p>	<p>Medium</p>	<p>Reflective</p>	<p>Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels</p>
<p>Action: 5.4.2</p> <p>Determine progress towards attainment of improved water resilience</p>	<p>Production of a fully populated city water resilience framework for Cape Town, outlining relative strengths and vulnerabilities of the city water system against the drivers of water resilience, for the purpose of supporting decision making.</p>	<p>Enabling action</p>	<p>Short</p>	<p>Reflective</p>	<p>Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels</p>

ANNEXURE 2: THE CITY RESILIENCE FRAMEWORK

4 x Dimensions

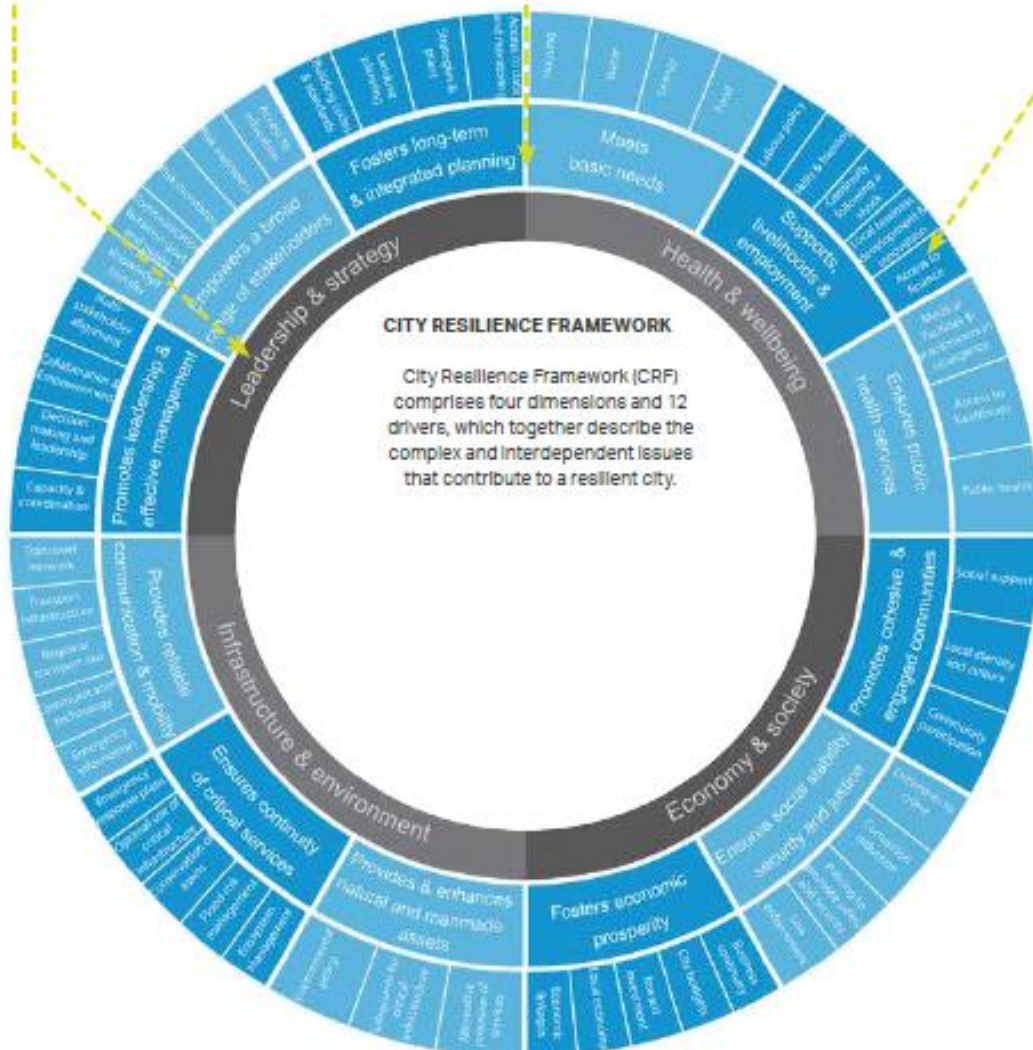
The CRF is built on four essential dimensions of urban resilience.

12 x Drivers

Each dimension contains three drivers which reflect more specific characteristics of resilient cities can take to improve their resilience. The drivers from the core of the CRF, and when taken together they represent a city's resilience to a wide range of shocks and stresses.

50 x Sub-Drivers

Each driver comprises a number of sub-drivers which identify specific and more detailed actions to aid assessment.



ANNEXURE 3: QUALITIES OF A RESILIENT CITY

A resilient city works to enhance, preserve or build the below qualities of resilience into the numerous complex systems that make up the urban environment. Identifying the presence of these qualities and incorporating them into programmes and projects is important for all decision-makers, both inside and outside of government, that make decisions that impact on the city. The Cape Town Resilience Strategy endeavours to identify and promote relevant qualities of resilience in the actions proposed in this strategy. The qualities are:

- Reflective:** Using past experiences to inform future decisions.
- Resourceful:** Recognising alternative ways to use resources.
- Robust:** Well-conceived, constructed and managed systems.
- Redundant:** Spare capacity, purposefully created to accommodate disruption.
- Flexible:** Willingness and ability to adopt alternative strategies in response to changing circumstances.
- Inclusive:** Prioritise broad consultation to create a sense of shared ownership in decision-making.
- Integrated:** Bring together a range of distinct systems and institutions.

ANNEXURE 4: MAPPING SUSTAINABLE DEVELOPMENT GOALS TO RESILIENCE ACTIONS

Building resilience is acknowledged as an important aspect of the Sustainable Development Goals (SDGs) and underpins several targets, including:

- **Target 1.5:** “build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.”
- **Target 9.1:** “develop quality, reliable, sustainable and resilient infrastructure...”
- **Target 2.4:** “ensure sustainable food production systems and implement resilient agricultural practices...”
- **Target 11.5:** “significantly reduce the number of deaths and the number of people affected and decrease by [x] per cent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations...”
- **Target 11.b:** “substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement, in line with the Sendai Framework for Disaster Reduction holistic disaster management at all levels.”⁸¹

Resilience can however be regarded as important for achieving all SDGs. Indeed, it is important for achieving any goal set by a society at large. This is the reason why ‘resilience’ is a guiding principle of the IDP. Not addressing shocks and stresses relevant in the urban environment can undermine the achievement of other city goals.

ANNEXURE 5: ALIGNMENT WITH OTHER PLANS AND STRATEGIES

In the below table the 5 pillars of the Resilience Strategy are aligned with the most relevant strategies and plans that contribute to building resilience in Cape Town.

	Pillar 1: Compassionate, holistically- healthy city	Pillar 2: Connected, climate- adaptive city	Pillar 3: Capable, job- creating city	Pillar 4: Collectively, shock-ready city	Pillar 5: Collaborative, forward- looking City
City Plans					
Integrated Development Plan (2017-2022)	⊙	⊙	⊙	⊙	⊙
Environmental Strategy (2017)		⊙	⊙	⊙	
Coastal Management Programme (2014)		⊙	⊙	⊙	
Municipal Disaster Risk Management Plan		⊙		⊙	⊙
Economic Growth Strategy (2013)	⊙		⊙		
Cape Town Energy and Climate Action Plan (2011)		⊙	⊙	⊙	
Organisational Development & Transformation Plan (2016)	⊙	⊙	⊙	⊙	⊙
Built Environment Performance Plan (2018/2019)		⊙		⊙	⊙
Municipal Spatial Development Framework (2018-2023)	⊙	⊙	⊙	⊙	⊙
Social Development Strategy (2012)	⊙	⊙	⊙	⊙	
Integrated Waste Management Plan (2017-2022)		⊙	⊙		⊙
Water Services Development Plan (2017-2022)		⊙		⊙	⊙
Water Strategy (2019)		⊙	⊙	⊙	
Air Quality Management Plan (2017-2022)		⊙		⊙	
Comprehensive Integrated Transport Plan (2018-2023)		⊙	⊙	⊙	
Transit Orientated Development Strategic Framework (2016)		⊙	⊙	⊙	⊙
Medium Term Revenue and Expenditure Framework (2018/2019 – 2021/2022)	⊙	⊙	⊙	⊙	⊙
Electricity Generation and Distribution Plan (2017 – 2022)		⊙	⊙	⊙	⊙
Alcohol and other Drug Strategy (2014 – 2017)	⊙				
Integrated Human Settlements Plan	⊙	⊙		⊙	⊙
Transversal Youth Development Strategy (2015)	⊙		⊙		
Travel Demand Management Strategy (2017)		⊙	⊙		
Provincial Plans					
Cape Metro District Health Plan (2018/2019-2020/21)	⊙			⊙	⊙
Healthcare 2030 Framework (2014)	⊙				⊙
OneCape2040 (2012)	⊙	⊙	⊙		⊙
Project Khulisa (2015)		⊙	⊙		⊙

Western Cape Climate Change Response Strategy (2014)	⦿	⦿		⦿	⦿
Western Cape Disaster Management Framework (2007)	⦿	⦿		⦿	⦿
Western Cape Government Green Economy Strategy Framework		⦿	⦿		⦿
Western Cape Strategic Framework for Fire and Burn Injury Prevention	⦿	⦿		⦿	⦿
National Plans					
National Development Plan (2012)	⦿	⦿	⦿	⦿	⦿
National Disaster Management Framework (2005)	⦿	⦿		⦿	⦿
New Growth Path Framework (2010)		⦿	⦿		⦿
International Plan					
UN Sendai Framework for Disaster Risk Reduction (2015)	⦿	⦿		⦿	⦿
UN Sustainable Development Goals (2015)	⦿	⦿	⦿	⦿	⦿

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ANNEXURE 6: LIST OF ABBREVIATIONS

100RC –	100 Resilient Cities
BBBEE –	Broad-Based Black Economic Empowerment
BEPP –	Built Environment Performance Plan
CAP -	Community Action Plan
CBO –	Community Based Organisation
CBD –	Central Business District
CoLab –	Collaboration Laboratory
CRF –	City Resilience Framework
CRI –	City Resilience Index
CRO –	Chief Resilience Officer
CWRF -	City Water Resilience Framework
DRM –	Disaster Risk Management/ Disaster Response Management
ECD -	Early Childhood Development
GBV -	Gender-based violence
GHG -	Greenhouse gas
GIS -	Geospatial information system
IDP –	Integrated Development Plan
IPP -	Independent Power Producer
IPV -	Inter-personal violence
IS -	Industrial Symbiosis
KTU -	Knowledge Translation Unit
MFMA –	Municipal Finance Management Act
Mhint –	Mental Health Integration Programme
MURP -	Mayoral Urban Regeneration Programme
NCD-	Non-communicable disease
NGO –	Non-governmental organisation
PACE -	Property Assessed Clean Energy
PACK -	Practical Approach to Care Kit
PRA –	Preliminary Resilience Assessment
PRASA –	Passenger Rail Agency of South Africa
PV -	Photovoltaic
SAPS –	South African Police Service
SDG –	Sustainable Development Goals
SEZ -	Special Economic Zone
SMME -	Small, Medium and Micro-enterprises
SRA -	Special Ratings Area
SRO -	School Resource Officer
SSEG -	Small-scale embedded generation
StatsSA-	Statistics South Africa
TOD –	Transit Oriented Development
WCG -	Western Cape Government
WCWSS -	Western Cape Water Supply System

- ¹ New, M; Otto, F; & Wolski, P. (2018), 'Global warming has already raised the risk of more severe droughts in Cape Town'. Conversation, 19 December. Available at: <http://theconversation.com/global-warming-has-already-raised-the-risk-of-more-severe-droughts-in-cape-town-107625>. [Accessed 7 March 2019].
- ² The IDP definition refers to 'grow'. After consideration of inputs during stakeholder consultation during the development of this strategy it was decided that the word 'thrive' was more appropriate. In future iterations of the IDP it will be recommended that the IDP definition falls line with the definition in the Resilience Strategy
- ³ 100 Resilient Cities (2019). *Home Page*. Available at: <http://www.100resilientcities.org> (Accessed 11 January 2019)
- ⁴ Ibid
- ⁵ City of Cape Town (2017). 'Five-year Integrated Development Plan: July 2017 to June 2022'. City of Cape Town.
- ⁶ Bridgett-Jones, S (2017). 'Valuing the resilience dividend: A new way forward'. *Zilient.org*, 2 August. Available at: <https://www.zilient.org/article/valuing-resilience-dividend-new-way-forward> (Accessed 14 January 2019)
- ⁷ Tom Tom (2016). 'Tom Tom Traffic Index'. Available at: https://www.tomtom.com/en_gb/trafficindex/list?citySize=LARGE&continent=ALL&country=ALL [Accessed: 20 January 2019]
- ⁸ De Villiers, J. (2018), 'How Cape Town avoided Day Zero and cut its water usage by 50% in 3 years – it took Melbourne 12 years to do the same', Business Insider, 7 March. Available at: <https://www.businessinsider.co.za/how-cape-town-cut-its-water-usage-by-50-in-3-years-it-took-melbourne-12-years-to-do-the-same-2018-3> [Accessed: 21 January 2019]
- ⁹ Wolski, P (2018), 'Fact are few, opinions are plenty...on drought severity again', CSAG. 22 January. Available at: <http://www.csag.uct.ac.za/2018/01/22/facts-are-few-opinions-plenty-on-drought-severity-again/> [Accessed 20 January 2019].
- ¹⁰ City of Cape Town (2016). 'City's Mayco recommends implementation of Level 3 water restrictions', City of Cape Town, 18 October. Available at: <http://www.capetown.gov.za/Media-and-news/City's%20Mayco%20recommends%20implementation%20of%20Level%203%20water%20restrictions>. [Accessed 21 January 2019]
- ¹¹ StatsSA (2018), '2018 Mid-year Population Estimates', Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P0302/P03022018.pdf>. [Accessed: 21 January 2019].
- ¹² This is the percentage of households with a monthly income of R3 500 or less. Source: 2017 General Household Survey, Statistics South Africa
- ¹³ StatsSA (2018), '2017 - General Household Survey', Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P0318/P03182017.pdf>. [Accessed 21 January 2019].
- ¹⁴ StatsSA (2018), 'Quarterly Labour Force Survey – Quarter 4: 2018', Statistics South Africa, 31 July. Available at: <http://www.statssa.gov.za/publications/P0211/P02114thQuarter2018.pdf> [Accessed: 28 February 2019]
- ¹⁵ StatsSA (2018), '2018 Mid-year Population Estimates', Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P0302/P03022018.pdf>. [Accessed: 21 January 2019].
- ¹⁶ New 7 Wonders (2019), 'New Seven Wonder of Nature'. Available at: <https://nature.new7wonders.com/> [Accessed 20 January 2019].
- ¹⁷ Stats SA (2018), 'Mid-year population estimates 2018', Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P0302/P03022018.pdf> [Accessed 20 January 2019]
- ¹⁸ Rockefeller Foundation (2014), 'City Resilience Framework', Rockefeller Foundation website, 10 April. Available at: <https://www.rockefellerfoundation.org/report/city-resilience-framework/> [Accessed: 21 January 2019]
- ¹⁹ City of Cape Town (2017), 'Preliminary Resilience Assessment for Cape Town'. *City of Cape Town*. Available at: <https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/CCT%20PreliminaryResilienceAssessment.pdf>. [Accessed 20 January 2019]
- ²⁰ The CRI shares the same drivers of resilience as the CRF, although the descriptions are slightly different.
- ²¹ City of Cape Town (2017), 'Preliminary Resilience Assessment for Cape Town'. *City of Cape Town*. Available at: <https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/CCT%20PreliminaryResilienceAssessment.pdf>. [Accessed 20 January 2019]
- ²² MentalHealth.gov (2019), 'What is mental health?', MentalHealth.gov. Available at: <https://www.mentalhealth.gov/basics/what-is-mental-health>. [Accessed 29 January 2019].
- ²³ This study remains the main source of mental health prevalence data for South Africa. There is limited Western Cape or Cape Town specific prevalence data.
- ²⁴ For more recent study see health Systems Trust, "Integrating mental health into South Africa's health system: current status and way forward." In the *South African Health Review* 2016, pp153-163
- ²⁵ In 2018 especially, the plight of depression among Black African males was highlighted by two suicides – that of Prof Mayosi at UCT and local hiphop artist HHP.
- ²⁶ Patrick Corrigan et al, 2015. Do the Effects of Antistigma Programs Persist Over Time? Findings From a Meta-Analysis. *Psychiatric Services* 2015; 66:543–546; doi: 10.1176/appi.ps.201400291

-
- ²⁷ Freeman et al., 1994; Ensink and Robertson, 1999.
- ²⁸ Sorsdahl KR, et al. 2010, Explanatory models of mental disorders and treatment practices among traditional healers in Mpumalanga, South Africa. *African Journal of Psychiatry* • September 2010
- ²⁹ Sheik, S, Evans, J, Morden, E. & Coetzee, D. (2016). 'Non-communicable diseases in the Western Cape: Burden of disease update', Available at:
https://www.westerncape.gov.za/assets/departments/health/burden_of_disease_update_ncds_.pdf. [Accessed: 4 March 2019].
- ³⁰ Tom Tom (2016). 'Tom Tom Traffic Index'. Available at:
https://www.tomtom.com/en_gb/trafficindex/list?citySize=LARGE&continent=ALL&country=ALL [Accessed: 20 January 2019]
- ³¹ City of Cape Town (2019), 'Rail enforcement unit on the right track'. City of Cape Town, 9 January. Available at:
<http://www.capetown.gov.za/Media-and-news/Rail%20Enforcement%20Unit%20on%20the%20right%20track> [Accessed: 21 January 2019]
- ³² Isaacs, L. & Smith (2018), G-L, 'Metrorail resumes limited service on CT Central Line after 6-week suspension', EWN website, 21 February. Available at: <http://ewn.co.za/2018/02/21/metrorail-resumes-limited-service-on-ct-central-line-after-6-week-suspension>. [Accessed: 21 January 2019]
- ³³ City of Cape Town (2019), 'Rail enforcement unit on the right track'. City of Cape Town, 9 January. Available at:
<http://www.capetown.gov.za/Media-and-news/Rail%20Enforcement%20Unit%20on%20the%20right%20track> [Accessed: 21 January 2019]
- ³⁴ City of Cape Town (2017), 'Cape Town's transport picture 2016', TDA website. Available at:
https://www.tda.gov.za/docs/categories/1759/6978_Transport_Picture_2017_05122017.pdf. [Accessed 21 January 2019].
- ³⁵ City of Cape Town (2015), 'Capetonians' future mobility relies on integration of MyCiti service, trains, GABS and minibus-taxis', TDA website, 19 October. Available at: <https://www.tda.gov.za/en/news-and-events/press-releases/articles/capetonians-future-mobility-relies-on-integration-of-myciti-service-trains-gabs-and-minibus-taxis/article-copy/> [Accessed: 21 January 2019]
- ³⁶ Taylor, A. (2019), 'Climate information for building climate resilient cities in South Africa', A report prepared under the partnership between African Centre for Cities and National Treasury's City Support Programme.
- ³⁷ Cooney, C. (2012), 'Downscaling climate models: Sharpening the focus on high level changes', *Environmental Health Perspect*, 1 January. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3261962/> [Accessed: 2 March 2019].
- ³⁸ The Nature Conservancy (2018), 'The Greater Cape Town Water Fund: Assessing the Return on Investment for Ecological Infrastructure Restoration', November. Available at:
https://www.nature.org/content/dam/tnc/nature/en/documents/GCTWF-Business-Case_2018-11-14_Web.pdf [Accessed: 2 March 2019].
- ³⁹ Ibid
- ⁴⁰ City of Cape Town (2014), 'Integrated Coastal Management Policy of City of Cape Town', Available at:
http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/CCT_Integrated_Coastal_Management_Policy_2014-09.pdf. [Accessed: 3 March 2019].
- ⁴¹ Ibid
- ⁴² StatsSA (2018), 'Quarterly Labour Force Survey – Quarter 4: 2018', Statistics South Africa, 31 July. Available at:
<http://www.statssa.gov.za/publications/P0211/P02114thQuarter2018.pdf> [Accessed: 28 February 2019]
- ⁴³ Ibid
- ⁴⁴ Economist (2016), 'The dollar's strength is a problem for the world', *Economist*, 3 December. Available at:
<https://www.economist.com/finance-and-economics/2016/12/03/the-dollars-strength-is-a-problem-for-the-world>. [Accessed: 28 January 2019].
- ⁴⁵ Zumbun, J. (2018), 'IMF lowers global growth forecasts for 2018 and 2019', *The Wall Street Journal*, 8 October. Available at: <https://www.wsj.com/articles/imf-lowers-global-growth-forecasts-for-2018-and-2019-1539048878> . [Accessed: 29 January 2019].
- ⁴⁶ BizNews (2018), 'The trade war: what it means for emerging markets'. *BizNews*, 6 December. Available at:
<https://www.biznews.com/sponsored/2018/12/06/china-trade-war-emerging-market>. [Accessed: 29 January 2019].
- ⁴⁷ Ibid
- ⁴⁸ Sustainable Livelihood Consultants (2015), 'City of Cape Town informal economy development study and output review'.
- ⁴⁹ SALGA (2012), 'Making the informal economy visible'.
- ⁵⁰ Damania, R, et al (2017). 'Unchartered waters: The new economy of water scarcity and variability', World Bank, Washington DC. Available at: <https://openknowledge.worldbank.org/handle/10986/28096>. [Accessed: 3 March 2019]
- ⁵¹ Naidoo, R. (2019), 'Capacity building programme for employment promotion – To be report: Digital skills for the future', A report commissioned for the Western Cape digital skills shared agenda for action.
- ⁵² WEF (2018), 'Readiness for the future of production report 2018', WEF, Available at:
http://www3.weforum.org/docs/FOP_Readiness_Report_2018.pdf. [Accessed: 10 March 2019]
- ⁵³ Unconventional Economist (2017), 'The biggest risk from technological change is inequality', *Macrobusiness*. Available at: <https://www.macrobusiness.com.au/2017/01/biggest-risk-technological-change-inequality/>. [Accessed: 10 March 2018]
- ⁵⁴ Craffert, L. & Visser, K. (eds) (2018), 'Western Cape Digital Skills Shared Agenda for Action'.

- ⁵⁵ Sicetsha, A. (2018), 'The winning city: Cape Town voted as Africa's technology capital', *The South African*, 1 August. Available at: <https://www.thesouthafrican.com/cape-town-voted-tech-capital/>. [Accessed: 10 March 2019].
- ⁵⁶ Craffert, L. & Visser, K. (eds) (2018), 'Western Cape Digital Skills Shared Agenda for Action'.
- ⁵⁷ Smith, C. (2018), 'Drought impact already reflects in hotel bookings – survey', *Fin24*, 25 March. Available at: <https://www.fin24.com/Economy/drought-impact-already-reflects-in-cape-town-hotel-bookings-survey-20180322>. [Accessed 6 March 2019]
- ⁵⁸ Reuters (2018), 'Cape Town faces severe economic troubles over drought – Moody's', *EWN*, 12 March. Available at: <https://ewn.co.za/2018/03/12/cape-town-faces-severe-economic-troubles-over-drought-moody-s> [Accessed: 6 March 2019]
- ⁵⁹ Winde, A. (2018), 'Western Cape shows positive business confidence sentiment', Statement by the WC Minister of Economic Opportunities, 14 March. Available at: <https://www.westerncape.gov.za/news/western-cape-shows-positive-business-confidence-sentiment>. [Accessed: 6 March 2019].
- ⁶⁰ City of Cape Town (2015), 'Municipal Disaster Risk Management Plan', City of Cape Town. Available at: [http://resource.capetown.gov.za/documentcentre/Documents/City%20strategies,%20plans%20and%20frameworks/Municipal%20Disaster%20Risk%20Management%20\(DRM\)%20Plan.pdf](http://resource.capetown.gov.za/documentcentre/Documents/City%20strategies,%20plans%20and%20frameworks/Municipal%20Disaster%20Risk%20Management%20(DRM)%20Plan.pdf). [Accessed: 12 March 2019].
- ⁶¹ WEF (2018), 'Global Risks Report 2018: 13th edition', World Economic Forum. Available at: http://www3.weforum.org/docs/WEF_GRR18_Report.pdf. [Accessed: 4 March 2019]
- ⁶² Wikipedia (2018), '2018 Atlanta cyberattack', Wikipedia. Available at: https://en.wikipedia.org/wiki/2018_Atlanta_cyberattac. [Accessed: 4 March 2019]
- ⁶³ Regan, H & Westcott, B. (2018). 'Australia suffers through searing temperatures as heatwave reach its peak', *CNN*, 18 January. Available at: <https://edition.cnn.com/2019/01/18/australia/australia-heat-wave-peak-intl/index.html>. [Accessed: 5 March 2019].
- ⁶⁴ Engelbrecht, F. & Malherbe, J. (2019), 'Projects of future climate change over the southwestern Cape', a presentation as part of the project update on the Hazard, Vulnerability and Risk Assessment Study for Cape Town, 18 January 2019.
- ⁶⁵ IOL reporter (2018). 'South Africans losing R2.2bn a year to cyber attacks', *IOL*, 21 June. Available at: <https://www.iol.co.za/capeargus/news/south-africans-losing-r22-billion-a-year-to-cyber-attacks-15601682> [Accessed 5 March 2019].
- ⁶⁶ *Fin24* reporter (2016), De Lille: Let Cape Town buy Eskom's unwanted IPP energy', *Fin24*, 26 July. Available at: <https://www.fin24.com/Economy/de-lille-let-cape-town-buy-eskoms-unwanted-ipp-energy-20160726> [Accessed: 7 March 2019].
- ⁶⁷ Yelland, C. (2017), 'Cape Town takes government to court in bid to buy electricity from IPPs', *Fin24*, 7 August. Available at: <https://www.fin24.com/Economy/Eskom/cape-town-takes-govt-to-court-in-bid-to-buy-electricity-from-ipp-s-20170807>. [Accessed 7 March 2019].
- ⁶⁸ Reynolds, G. (2017). 'Hurricane Harvey revealed the awesome power of real America' *USA Today*, 5 September, Available at: <https://www.usatoday.com/story/opinion/2017/09/05/hurricane-harvey-houston-flood-demonstrates-power-ordinary-americans-glenn-harlan-reynolds-column/631375001/>. [Accessed: 6 March 2019].
- ⁶⁹ Singh, A. (2009) Speech at the International Conference on Gender and Disaster Risk Reduction. April 20-22, 2009. Beijing, China.
- ⁷⁰ Aguilar, L. (2009), 'How natural disasters affect women', *IUCN*, 17 June. Available at: <https://www.iucn.org/content/how-natural-disasters-affect-women>. [Accessed: 6 March 2019].
- ⁷¹ Sterrett, C. (2016), 'Enhancing resilience through Gender Equality', *Care*. Available at: https://www.care.org.au/wp-content/uploads/2016/06/REPORT_Gender_Equality_Enhancing_Resilience.pdf [Accessed: 7 March 2019]
- ⁷² Jack, K, Visser, m, Robertson, E & Berger K. (2019), 'Day Zero – understanding responses to the water crisis', a report published by J-Pal and UCT.
- ⁷³ IFRC (2007), 'Addressing discrimination in disasters', *IFRC*, Available at: <http://www.ifrc.org/en/news-and-media/opinions-and-positions/opinion-pieces/2007/addressing-discrimination-in-disasters/>. [Accessed: 7 March 2019].
- ⁷⁴ Jack, K, Visser, m, Robertson, E & Berger K. (2019), 'Day Zero – understanding responses to the water crisis', a report published by J-Pal and UCT.
- ⁷⁵ GreenCape (2018), 'Guidelines for small scale embedded generation in Western Cape municipalities', *GreenCape*, Available at: <https://www.greencape.co.za/content/small-scale-embedded-generation-sseg-resource-pack/>. [Accessed: 10 March 2019].
- ⁷⁶ US Department of Energy (2019), 'Property Assessed Clean Energy Programs', Department of Energy. Available at: <https://www.energy.gov/eere/slsc/property-assessed-clean-energy-programs>. [Accessed 10 March 2019].
- ⁷⁷ Ralph, O. (2018), 'Catastrophe bond losses force investors to reassess risk', *FT*, 29 November. Available at: <https://www.ft.com/content/9dc2441c-f23a-11e8-9623-d7f9881e729f>. [Accessed: 9 March 2019].
- ⁷⁸ Republic of South Africa (2005), 'Intergovernmental Framework Act (No. 13 of 2005)', *Government Gazette* (Vol 482, 15 August 2005).
- ⁷⁹ Holling, C.S. (1978). 'Adaptive Environmental Assessment and Management'. Wiley, London. Reprinted by Blackburn Press in 2005
- ⁸⁰ Wikipedia (2019), 'Data science', Wikipedia. Available at: https://en.wikipedia.org/wiki/Data_science. [Accessed: 10 March 2019].
- ⁸¹ UNStats (2018). *SDG Indicators: Metadata Repository*. Available at: <https://unstats.un.org/sdgs/metadata/> (Accessed 11 January 2019)