Food for the Future:
Planning for Urban Agriculture In Cape Town's City Bowl

Nicola Nan Rabkin

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Abstract

The field of urban planning engages with many aspects of human life, but urban food systems, especially food production, have somehow slipped the agenda. Food insecurity and food-related challenges have for a long time been viewed as rural issues related to environmental factors affecting food production. Now that, in 2013, more than half the world's human population lives in cities, food insecurity has become an urban issue just as much, if not more, than that of rural areas. At the same time industrial and conventional agricultural methods fail to satisfy global human hunger and contribute to large-scale ecological destruction and a variety of human health problems. In many cities around the world, local governments and planning departments, and the planning profession more broadly, have begun to think more deeply about urban food systems: can food systems be more just, more equal, more accessible, healthier and ecologically sustainable.

The literature on urban agriculture generally follows two themes: one being urban agriculture as a livelihood and food security strategy for the poor and the other being as socio-ecological strategy to build community through enlivened, green public spaces. Global ecological and economic crises are slowly bringing these themes closer towards one another. Cape Town, in policy and practice, generally remains within the theme of urban agriculture as a food security strategy for the poor. This is a narrow and limited conception of urban agriculture that creates spatial and behavioral barriers to food production in the city. A case study of Cape Town's City Bowl presents an opportunity to engage planners, and ordinary citizens, with food and food systems through urban agricultural strategies. This study examines the constraining factors of urban food production and the potential that this unique urban centre holds for building a healthier food system for all inhabitants. These opportunities are, in this thesis, transformed into proposals for interventions, primarily involving local government and planning.

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Acronyms

AAPS	Association of African Planning Schools
AoA	Agreement on Agriculture
APA	American Planning Association
CARA	Conservation of Agricultural Resources Act
CBD	Central Business District
CCID	Cape Town Central Improvement District
CMA	Cape Town Metropolitan Area
CoCT	City of Cape Town
CPUT	Cape Peninsula University of Technology
CT	Cape Town
CTFPC	Cape Town Food Policy Council
CTP	Cape Town Partnership
CTSDF	Cape Town Spatial Development Framework
CTZS	Cape Town Zoning Scheme
DEA	Department of Environmental Affairs
DSDP	District Spatial Development Plan
EIM	Environmental Impact Management
EMF	Environmental Management Framework
FAO	Food and Agricultural Organization of the United Nations
FIFA	Federation of International Football Association
FPC	Food Policy Council
GIS	Geographic Information System
IDP	Integrated Development Plan
LFB	London Food Board
MAYCO	Mayoral Committee
MOSS	Metropolitan Open Space System
MSA	Municipal Systems Act
n.d	No Date
NGO	Non-Governmental Organisation
NPC	National Planning Commission
NPO	Non-Profit Organisation
OFPC	Oakland Food Policy Council
OZCF	Oranjezicht City Farm

PHA	Philippi Horticultural Area
SDF	Spatial Development Framework
SEED	School Environment Education and Development Programme
SMAAB	Secretaria Municipal Adjunta de Abastecimento (Secretariat of Food Policy and Supply)
TAU	Transvaal Agriculture Union
UCT	University of Cape Town
UN	United Nations
UNEP	United Nations Environment Programme
UN-Habitat	United Nations Human Settlements
USA	United States of America
UK	United Kingdom
VOC	Vereenigde Oost-Indische Compagnie (Dutch East India Company)
WCED	World Commission on Environment and Development
WC	Western Cape
WPI	Worcestor Polytechnic Institute
WTO	World Trade Organization

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Introduction

1.1 Background

As a teenager, I asked my mother about growing up in the 1960s and 70s. I was fascinated by that period of human history and asked her if she and those around her were aware of the changes that were taking place in global society (civil rights, technological advance and women's liberation); did they know they were on the brink of a new world?

I was enthralled by this nascent awareness of self in a changing world but I have since become conscious of my own generation and the world that my and future generations will inherit. Much of what we, as humans, have for centuries taken for granted will no longer be the foundation upon which we will build our society. Such basics as weather and seasons, fresh water, clean air and healthy soils have been altered beyond return. I feel a part of a great movement into a new era for humanity, one that will come about through an awakened consciousness and heightened conscience for all living and non-living beings on this Earth and a connection to our earthly purpose in the Universe. The extension of civil and women's rights once seemed to me to be the greatest human achievement but since I have been exposed to the possibility of extending rights to Nature I understand that we are in for a paradigm shift on a scale beyond that of any in recorded history.

Food has always been a central theme in my life. When I was a child my parents worked as chefs and restaurateurs; my grandmother would cook us our weekly Shabbos meal; every night our family eats together at the table; and Sunday lunches bring friends from near and far. I have grown up with the understanding that food is quality; food is fresh from the market; food is health and happiness and food is a nature-given cycle but this is not a common understanding. Food represents a nexus of a wide variety of relationships, connecting family, culture and nature. It brings together the processes of water, soil, energy and waste, which manifest through human bodies. People need food and so food production follows people, from the village to the city to the vast mono-cultured fields of today's industrial agricultural system. The 'food regime' that dominates in the current neo-liberal era, is a product of capitalist corporatism that turns nature into resources and food into commodities (McMichael, 2009 and Holt Gimenez and Shattuck, 2011). Industrial agriculture is the single most environmentally destructive human activity (Foley, 2011). In addition to destroying habitats and biodiversity according to Roux (2012), food and agricultural systems

contribute up to 35 per cent of greenhouse gas emissions, globally. These emissions are released in the production and transportation processes almost equally and do not include food waste emissions, which is a large, yet not as easily quantifiable, contributor.

Dreams of modernity and progress have manifested into the cities of today, but are also in part responsible for the environmental degradation that human practices and socio-economic systems have inflicted on the Earth, and ultimately each other. By allowing the division of urban and rural, the city has become primarily the site for human consumption, rather than the full cycle that includes production and waste. Industrial agriculture feeds the cities of today. The city is our habitat, the natural expression of our human dreams and desires, our ability and our purpose (Register, 2006). The city is now home to more than half the world's human population, but is also a habitat that we share with many other beings. We have shaped the city around us to fit our wants and needs and yet it is a natural entity, just like us, an eco-system just like any other. And like an eco-system we must adapt and evolve to external forces; our purpose is changing.

There are so many varying crises in the world today that are only expected to increase as resources deplete and human populations continue to grow. It is difficult to know how or where to begin to face such challenges that it is often easier to become disheartened and apathetic, especially as a young person. My choice to study City and Regional Planning was a sudden one. For most of my life I had the assumption that humans are inherently bad for nature and had planned to live my life far from urbanity, which to me seemed like the epitome of the human destruction of Earth's systems. This perspective changed almost overnight for me in the final term of my undergraduate degree. While researching for an Environmental and Geographical Science assignment on the social construction of wilderness and nature, I realized that humankind could have a dynamic,

Figure 1.1: Planting at the Oranjezicht City Farm

productive and creative relationship that positively benefits the natural environment. Perhaps by fate, that same week our class was visited by a member of the UCT Planning Department and I began to see a future in connecting the built and natural environments. The past two years have taught me the importance of reconnecting humans to nature, a relationship that has been mostly forgotten and forgone in the quest for human progress and development. I now see my role as a planner as a facilitator for rebuilding of the relationship between humans, human habitat as the city and the natural systems on which our mutual survival depends.

When I discovered and began working on the Oranjezicht City Farm (OZCF) project in the centre of Cape Town I found a simple and meaningful way to engage with some of the greatest challenges facing humankind. Growing food in the city is a means to overcome the binaries that have for so long separated the city from the country and in the same way; humans from nature. Engaging with food production has opened my eyes to the interconnectedness of the soil beneath my feet, the water that can so easily be taken for granted, the city air, insects, birds and other creatures, and the countless interactions between all living and non-living beings that allow us to live as we do. The 'environment' is not something distant and outside of ourselves, where the assumption of responsibility can be externalized, but so intrinsically connects the individual to the whole that responsibility, respect and love is internalized.

This has formed much of the inspiration behind this thesis project. I see the potential of urban food production not only as providing food sources within the city, but also as a powerful tool for rebuilding our connection to nature, on a city, community and individual level and providing a means to engage with the politics of food.

1.2 Problem Statement

The current global food system is responsible for vast amounts of land degradation, habitat and biodiversity loss and carbon emissions, thus contributing to climate change in several different ways (Roux, 2012; Foley, 2011 and Horrigan et al, 2002). At the same time, human health as a result of lifestyle choices and food consumption is in decline and food insecurity remains one of the most prominent issues of the time (FAO, 2012). This is reflected in the paradox that for every one person that dies of hunger-related disease, two people die of obesity or over-weight related diseases, which are all forms of malnutrition (Buchner et al, 2012). This is just one of many contradictions that Buchner et al (2012) discover when analyzing the global food system. It thus becomes clear that the food system needs to be explored in more detail and alternatives developed.

Throughout human history urban food production has been an important activity to supplement household dietary needs and income, especially during times of national crisis and food shortage. There is a growing understanding and agreement that the current global food system is insecure and unsustainable (Buchner at al, 2012; Roux, 2012; Foley, 2011; Horrigan et al, 2002). Internationally there is a movement towards an alternative food system and urban food production is an important part of this movement (Horrigan et al, 2002). The global acknowledgment of the need to respond to environmental degradation and climate change has reinvigorated the planning profession through concepts such as those of sustainability (Berke, 2002). Accordingly, I believe that urban planners

have an important role to play in supporting and moving towards alternative food systems. Food has been missing from the urban planning agenda for most of the profession's history but this is changing around the world (Morgan, 2013). Cape Town must follow suit in order to become a sustainable, resilient and healthy city.

1.3 Aim of this Project

"It will take courage, intellectual honesty, passion and soul too"

In the above quote, Cullinan (2002) refers to the massive paradigm shift that must take, and is currently taking place, to a future that is not dependent on fossil fuels, the destruction of natural systems and the exploitation of natural "resources", a future that can be beneficial to all members of the Earth Community. I strive for these qualities in this thesis. The aim of this project is to understand how urban agriculture could contribute to this paradigm shift and to more resilient urban environments.

The world is changing at a rapid pace. In the next century we should expect to see huge changes in the natural environment upon whose relative stability we have depended for centuries. The world is changing and yet the purpose of the city has not yet changed. The city remains primarily the site of the economy, of civilization and of development and continues to perpetuate the binary between city and country, humans and nature that physically and spiritually degrade the natural environment, and in turn negatively affect the health and well-being of humans.

In this project I wish to explore how urban agriculture can be used as a strategy to bridge these binaries. Through building awareness of the origin of our food we can perhaps become more conscious of the interconnectedness of all of our co-evolvers with whom we share our planet. The issue of food and the unsustainability of industrial food production is becoming more and more prominent, as I will explore in the literature review in Chapter 2. Urban agriculture in literature and practice is gaining traction around the world as a relatively simple, hands-on means to engage with a variety of social-ecological challenges- health issues, malnutrition in various forms, poverty, reclaiming land and asserting democracy and reliance on a socially and environmentally unjust and unethical food system.

Food production has traditionally been viewed as a rural activity outside the realm of urban planners and built environment professionals, despite an ongoing history of urban food production. In this project I aim to show that planners have an important role to play in understanding food systems generally and urban food systems specifically, in addition to facilitating urban agricultural practices that contribute to an alternative food system, which in turn contributes to a new development paradigm. The discipline of planning provides an opportunity for the better merging of social, ecological and scientific knowledge with intuition and on-the-ground experience. Planners have the tools to deal with long term temporal scales that will effect and be affected by future environmental changes, as well as the ability to link different spatial scales and understand the linkages between the local, the national and the global systems, in order to respond to the crises that define our time.

The overall aim of this project is to bring to the fore the role of planners in engaging actively with urban food systems and asserting urban food production as a socio-ecological strategy for sustainable urban development. The challenge of food is a broad one, such that a variety of actors and institutions should be involved in the processes of food. This project therefore aims to expand the circle of those involved in the issue of food. This project will contribute to the growing literature on urban agriculture and an alternative food movement, in a city that represents many of the themes that are present in the relevant literature. The interventions provided here aim to promote urban food production as a cultural, political and ecological strategy for the City of Cape Town.

1.4 Research Questions

The overarching question that I aim to answer through this research project is that of the role of urban planners in urban food production and how urban planners can better relate to and promote the process of food production in Cape Town generally and in the City Bowl specifically.

Further Questions:

What role do planners currently play in the Cape Town Food system?

What mechanisms are currently in place to support urban food production in Cape Town, and what are the barriers?

What spatial tools can be better used to promote and facilitate urban food production?

Which international urban agricultural case studies can be used to inform food planning in the central Cape Town context?

Broadly, I would like to explore the manner in which urban food production contributes to a paradigm and mindset shift towards urban development based on the laws of nature, rather than the principles of economics.

1.5 Spatial Focus

I have chosen to focus on the Cape Town Metropolitan Area (CMA) for my case study research. For a more focused study I have chosen to study the central city or City Bowl, as it is known.

Cape Town is a city that still suffers from a legacy of spatial apartheid based on race. The city remains divided by both race and income and has spatial inequalities that manifest in various outcomes. One of these outcomes is that of the consumption of resources such as food, energy and water, with vast disparities between the rich and the poor. This has an impact on the urban metabolism of the city as a whole, with some suburbs consuming more than their ‘share’ of resources. What is notable for the purposes of this thesis is that of the consequences of the food system and the impact of high consumption levels on urban metabolism and food security.

Figure 1.2: Satellite image of the Cape Town City Bowl with Oranjezicht City Farm (ozcf.co.za)

When researching urban agriculture, two distinct themes arise. This first is that of food security and food production as a livelihood strategy for the poor. The case material for this theme comes primarily from Africa and Asia as well as from poor urban areas in the USA. The other theme relates to environmental and social issues, exploring the ways in which urban food production can positively affect the environment while strengthening human community. This is a theme that is prominent in the UK, Europe and the USA. This shows that there are two rather different food movements occurring internationally that correlate with the spatial and social divides present in Cape Town. For example the OZCF in the wealthy and established suburb of Oranjezicht in Cape Town's city centre has a different motive to that of Abalimi Bezekhaya that operates on the Cape Flats in low-income settlements. Battersby and Marshak (2013) argue that to achieve food security across the board in Cape Town is to align the social and economic potential of food production in policy and practice.

On the Cape Flats, in very low-income areas, food insecurity is *visible* as it is strongly related to poverty. However, high-income areas may also suffer from a different kind of food insecurity. One that is *invisible* because food production is spatially so far removed from consumption. Food production that occurs far from consumers is unaccountable and therefore often reliant on unsustainable methods and undemocratic practices.

For the purposes of my research I focus on Cape Town's city centre, or City Bowl. This "bowl" is created by the famous Table Mountain to the south, Devil's Peak to the southeast, Lion's Head and

Signal Hill to the west and northwest and Table Bay to the North. This area contains the central business district (CBD) and surrounding suburbs. Within this area the Oranjezicht City Farm is already established and aims to act as a pilot project and inspiration for similar urban agricultural projects in the City Bowl and beyond.

1.6 Method

The purpose of this section is to outline the research process: how I established my research questions and how I aim to answer them.

The literature research and review provides the theoretical base for this project. The literature and theory that has been most pertinent to this thesis is that which bridges that divide between food and planning. This is supplemented by literature on the concepts pertaining to sustainable urban development and sustainability generally, as well as more general literature on urban agriculture. Combined with this is a study of cases from around the world where urban food planning and production has played an important role in a number of ways, from building community and providing sustainable livelihoods to reducing ecological impact. The academic context for this proposal lies in these studies that reflect an alternative food production model.

I will be using the case study method to study central Cape Town (the City Bowl) and the role that urban agriculture and food production currently and could potentially play in this setting. The case study method is especially useful in acquiring in-depth information within a specific geographical location. This specific location can be useful in gaining a deeper understanding of how universal and global forces manifest locally. The researcher, myself, benefits from being situated within the specific location, allowing for a more authentic and nuanced understanding of the value and power systems at play. According to Yin (1998) case study research does not necessitate a specific kind of evidence or data (for example, qualitative or quantitative) and information can come from a variety of sources. This is useful for my research, as I cannot use primary research and quantitative data collection because of time constraints. Therefore, I use secondary data, historical sources, my own observations as well as those by other individuals in the field to explain how the food system of Cape Town generally, and the City Bowl specifically, operate. In order to discover the contextual nuances of this subject, I interviewed individuals that are in involved, in a variety of ways, in the process of facilitating urban agriculture in the City. While, not providing the base for this project, these interviews provide an opportunity to get clarification on particular subjects and allow for review of my literature research and intended interventions.

The case study method is highly contextual and the depth with which a certain context can be researched and analyzed is essential in gaining insight into a highly complex issue, such as this topic, which incorporates a variety of ecological, political, social and economic factors. Yin (1998) asserts the three kinds of case research: exploratory, explanatory and descriptive. Case research is best at providing explanation on how systems, such as that of the food system of central Cape Town, operate. My own research is a combination of exploratory and explanatory as I wish to answer ‘what’ and ‘how’ questions such as what is currently being done; what structures and policies are already in place; what barriers are preventing change; how these can be overcome

and how change can take place.

Case study research is also important in the context of the Global South as the majority of information comes from the very different context of the North. The complexities of urban processes found in the South have developed differently to those of the North and it is important to build southern precedent. Further, case research can challenge and confront preconceptions and may reveal nuanced information regarding developmental trends (AAPS, 2011). The food movement trends in the North and South have, up until this point, generally followed two distinctly different themes. Recently, due to the global economic crisis and impending ecological crises, these trends have been moving closer towards one another. Case research from Cape Town, situated within the Global South but with many of the attributes associated with a developed city, could add valuable insight into the manifestation of global trends in a unique urban environment.

The challenge for case researchers and analyzers is not to draw grand theoretical conclusions from a single case. Case study is useful in understanding a single "unit" (individual, community, location) but it does not necessarily lend itself to the formulation of generalization and universal theory (AAPS, 2011). The case method is better suited to disprove a general theory (which often neglects the importance of context) than to create new theory. This case study of central Cape Town provides insight into the specifics of the area that are necessary for bringing about change in the policy and spatial environments relating to food. The purpose of this case research is not to create or disprove general theory, but to explore the manifestations of global trends and movement in Cape Town and how these do, and should, play out in the City Bowl area.

The literature review, interviews, conversations and case study analysis are the foundation for the policy and spatial interventions that are proposed in Chapter 4.

1.7 Ethical Position

Planning is inherently a value-based exercise as its interventions rest largely upon the ethics of the planner/s. It is essential for the normative position of the planner to be explicit in order to understand the purpose of the intervention and the overarching purpose towards which the intervention aims to lead.

This thesis rests on my understanding that there is no separation between humans and nature. Humans are as much a part of nature as other earthly beings and all are dependent on each other. The interventions I propose in this project are based upon this understanding and I would like to show these strategies as a means to building a healthy and harmonious relationship between the city and nature. This is a binary that has been created through the assumption that humans are separate and generally dominant over nature; and the city is representative of this relationship. Since the Industrial Revolution the development of the city has placed increasing demands on natural systems and they have been degraded to a point that our interconnected relationship is becoming more and more obvious as the negative effects on the environment increasingly negatively affect human lives.

When I was in my third year of studying Environmental and Geographical Science I was struck by a notion presented by my professor: that it is impossible for humans to even begin to fathom a geological timeframe. This struck me again when I recounted this notion to a close friend while sitting on the top of a mountain in Nyanga, Zimbabwe where for as far as the eye could see there was nothing but mountains and forest and sky. Our human timeframe is so minuscule compared to that of the mountains that surround us, even the youngest of them, that it is an enormous challenge to consider all that a mountain has experienced, seen and lived through. A great challenge, but one that would be enormously beneficial for our and millions of other species, would be to "think like a mountain" (Leopold, 1949). If this cannot be done, how can a mountain or a rock or even a tree be seen as a being with a consciousness that may be more meaningful than that of a human person?

The rise of the city has allowed urban dwellers to live their lives somewhat separated from nature but if humankind aims to build a harmonious relationship with nature and a future free from the negative effects of environmental degradation, this will have to change. In order to do this, it must be accepted that humankind is but one member species among millions of other "co-evolvers" that share in our Earth Community (Cullinan, 2002). In order to do this, the privilege of rights needs to be extended to all members of the Earth Community, not even just living creatures but to the systems upon which we depend, what Leopold (1949:239) refers to as the Land Ethic, which "simply enlarges the boundaries of the community to include soils, water plants and animals, or collectively: the land." Only then will these beings be released from the bonds of property law that have oppressed them for so long. Only then will we, all members of the Earth Community, be able to adapt and evolve together into an uncertain and changing future.

My own ethical position stems from my deep love of nature, my awe in the power of land and water and atmospheric systems. My studies of natural and geographical sciences have, in their own small way, helped me to "think like a mountain". To have just the smallest knowledge and

Figure 1.3: Photograph of the Nyanga Mountains, Zimbabwe that inspired me to "think like a mountain"

understanding of natural and geological history has formed my perspective of seeing humanity as only one member of the larger Earth Community. My ethical perspective that informs this project is therefore one that positions humanity as an element of nature, of the singular Earth Eco-System. In summation, “a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise” (Leopold, 1949:262). Human food systems, one of humankind’s most basic activities, must be in line with this ethic.

Michael Pollen, renowned food author, claims that for decades we have literally been consuming oil (Edible City: Grow the Revolution, 2013). The current global food system is the most ecologically destructive human activity (Foley, 2011). Since the end of World War Two, oil has been used in every aspect of food production and consumption. Changing the way we eat and interact with food towards being more ecologically sensitive will have positive benefits on a huge variety of natural systems ranging from reduction of carbon emissions to improved water and soil quality, to habitat, human and ecological health. Furthermore, a physical interaction with food production allows us to connect with the energies and life forces of the Earth and to understand and respect the interdependencies of all living and non-living beings in our Earth Eco-System.

1.8 Limitations

This project is limited by the amount of time assigned to its undertaking. For this reason, extensive primary research is not possible and therefore real impacts that urban food production have had or could potentially have are indefinable and I am restricted to the use of secondary data. Primary research therefore is limited to gaining perspectives from various individuals that are involved in a variety of ways in the urban agricultural field in Cape Town.

Ideally, it would be beneficial to include a public participation process in the planning interventions. The involvement of residents and other stakeholders legitimizes the planning process, especially when considering a change in ethics regarding land and land ownership.

I have also been limited by the availability of information, which is linked to the time constraint, for example a vacant land study was done for the City of Cape Town and I thought that this would be an essential resource for this project. However, I have been unable to access this land audit and have therefore had to use other available data such as that from Google Maps, the City Map Viewer and the Cape Town Property Valuations Roll. Another example of inaccessible material is that of a beekeeping bylaw for the City of Cape Town. There is no bylaw available on the City website. A beekeeping bylaw from the previous Southern Peninsula Municipality was found through other means.

1.9 Structure of Document

Chapter 2, following, contains a review of the relevant literature pertaining to the processes and systems of food. This chapter begins with a review of the concept of sustainable development, as I position food and the challenges thereof both within the context of the global ecological crisis and as a socio-economic activity. Furthermore, the concept of sustainable development has

reinvigorated the planning profession to engage with the complex interactions between ecology, society and economics. This chapter then explores the rise of food planning as a sub-discipline, using cases from around the world. Urban agriculture and food production is then discussed in more detail regarding the benefits and limitations thereof.

Chapter 3 contains an analysis of the policy and spatial environments of the City of Cape Town, generally, and the City Bowl more specifically, with regards to the current food system. This chapter concludes with the opportunities and constraints for planners to engage with the urban food system, and urban food production specifically.

Chapter 4 contains proposals for the policy and spatial interventions for the reform of the Cape Town food system and promotion of urban food production in the City Bowl.

Chapter 5 outlines the implementation process for these interventions. This chapter will therefore include the actors and institutions, as well as the timeframes, necessary to implement the proposed interventions.

I conclude in Chapter 6 with a summary of this thesis, some recommendations for further study and final thoughts.

2

Literature Review

The purpose of this literature review is to ground the topic of this thesis within the academic debates and discourse concerning the topic of urban food production and how those in the field of urban planning engage with this practice. Before I embark on the journey through literature, it is important to define the term "urban agriculture" (UA) and explain my use, or non-use, of the term. One of the most commonly cited definitions of urban agriculture is that by Mougeot (2005:10):

> *"UA is an industry located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area".*

This is the understanding of urban agriculture that I relate to and use for the purposes of this thesis. I also use the term "local" or "urban food production" in much the same way. However, I use urban agriculture primarily regarding the conception of such an activity and the movement and literature surrounding it. When speaking of food production (whether local or urban) I speak of the process of growing, raising or cultivating food within a specific locality.

With this in mind, this chapter aims to position the role of urban agriculture, and urban food production, as a method for improving the sustainable and resilience potential of cities in facing an uncertain future. Within the field and understanding of sustainability and sustainable urban development, resilience refers to the ability of an urban environment, viewed as an eco-system or complex organism, to bounce back from or absorb external shocks. Embedded within this chapter are the role-players associated with such a process, and the contribution that urban planners can make to building a sustainable city generally, and to urban agricultural practice specifically.

I begin this chapter with a discussion of the broader context of sustainable development and the debates surrounding this concept. This is useful in setting the scene, as my intention is to position urban agriculture within the context of sustainability, rather than, for example, as a method for securing food security alone. Despite criticism of this concept, it has provided for a renewed interest in the field of planning, as it inevitably requires development strategies that have the ability

to weigh up short-term needs and desires with those of the long-term. The following section looks specifically at the relationship between cities and food, and the relative absence of food from the urban planning agenda until recently. This section aims to explain the importance and necessity of planners engaging with urban food systems. The final section looks specifically at UA and the benefits and limitations thereof.

2.1 Sustainable Development: A New Paradigm or Business as Usual?

The concept of sustainable development emerged in the 1970s (Kates et al, 2005) with the realization that economic growth and development was at the expense of the natural environment, and that these " natural resources" were finite (Daly, 1973). This understanding took hold in the late 1980s and 1990s and was first defined by the Brundtland Commission in 1987 as 'development that meets the needs of the present, without compromising the ability of future generations to do the same' (WCED, 1987). At this time, the realization took hold that economic growth alone could not fulfill its promises of poverty reduction and environmental degradation was occurring more rapidly than ever.

This approach to development therefore advocates the 'triple bottom line' of economic growth, environmental protection and social equity (both intra and intergenerational). The fourth aspect of this is that of governance, for the balancing of these desired goals requires a certain level of state intervention and institution building (Tonts and Haslam-McKenzie, 2005). However, since its inception, the concept has undergone various transformations notably that of environmental or ecological sustainability, which places economic and social as human activities that occur within the constraints of the natural environment (Goodland and Daly, 1996)

The concept of sustainable development has been criticized for a number of reasons, which are not within the scope of this chapter but most significantly for its inability to change the status quo and is therefore a 'business as usual' model of development (Liepitz, 2011). Matthews (2004), a post-developmental theorist, argues that "development" in its most basic meaning (devoid of the twentieth century connotations of economic growth) has not occurred. Thus what is generally understood in development discourse is actually westernization and cultural homogenization at the expense of irreversible environmental destruction, according to Nederveen Pieterse (1998). While some argue that sustainable development has offered a new development paradigm (Conroy and Berke, 2004), it remains based on the same core principles as mainstream, twentieth century development that is people-centred and focused on resource-requiring economic growth.

Development from this perspective relies on inputs of what have been deemed natural 'resources'. This conception of nature greatly reduces the essentiality of the human-nature relationship to one that is not mutually beneficial and where nature becomes the primary factor of production, an object of capital, in the name of human progress (Acosta, 2010 and Pieterse, 2011). This understanding of human progress is the basis for much of the global economic and legal system, demonstrated most clearly by the theory of Comparative Advantage (and is common for all mainstream economic

theory and practice) in which all 'resources' are seen as Earth's bounty belonging to the state and should be bought and sold to further human progress and development (Acosta, 2010 and Cullinan, 2009). In the words of Herman Daly (1973:11):

> *"The growth paradigm has outlived its usefulness. It is a senile ideology that should be unceremoniously retired into the history of economic doctrines… Political economy must enter a period of revolutionary science to establish a new paradigm to guide a new period of normal science."*

Although this idea began to take hold as early as the 1970s, nearly 50 years later the growth paradigm remains central to the common understanding of development. Development in its current form perpetuates the problematic assumption that humans are separate from, and generally of greater importance than, nature. While sustainability discourse has brought to the fore the relationships between the natural environment, society and economics, it has not fully portrayed the complexity of the interconnected relationship between humans and nature, that in fact there is no divide and that humans are nature. Sheehan (2013) argues that by simply putting adjectives in front of nouns such as "sustainable" development and "green" economy does nothing to alter the current goals of humanity. She asserts that the human position on Earth must be reconsidered. The arrogance of humanity in assuming its dominant position has got us into this mess and it will not get us out (Havel, 1992). The economy is merely one among many human activities, and is therefore significantly of a lower order than the Earth or humans themselves therefore "we must recognise the economy's place as servant to humans and the Earth, not master of both" (Sheehan, 2013:2).

2.1.1 Sustainable Cities

More than half the world's human population now lives in cities (FAO, 2012). Cities have played an enormous role in separating humans from their natural connections and have had massive impacts on natural systems, both locally and globally. In order to construct or expand a city plants and habitats must be flattened, animals killed or chased away and hydrological systems consumed, altered and polluted (Campbell, 1996). However, if we, as planners and other built environment professionals, can account for nature as part of and intertwined with the built environment nature will be a presence that is neither benign nor hostile, it just is (Whiston-Spirn, 2001). This stems from the understanding that nature is not something to be found outside the city; nature is inside the city; nature is the city and the city is nature. While values of integrating city and nature are among the founding principles of the field of planning, they have, in the post World War 2 Era, largely been foregone for purposes of economic growth and development. Ignoring the value of natural landscapes and systems in urban development will eventually have negative consequences on the city and its citizens (Alberti, 2007). According to Morgan and Sannino (2010), the city has a new role to play, not only as the site for economic growth and development but as a driver of the "ecological survival" of humankind. This means the city must curb its habits to be more in synchrony with the natural systems it depends upon.

In order for a city to maintain a harmonious relationship with nature it is essential that it be understood as a natural entity itself, as an eco-system and extended organism. This defies the assumption

that there is division between humans and nature and alters the human perspective to one that is interconnected with nature, demonstrated by the words of Ian McHarg: “In the quest for survival, success and fulfilment, the ecological view offers invaluable insight. It shows the way for the man who would be the enzyme of the biosphere- its steward, enhancing the creative fit of man-environment, realising man’s design with nature” (McHarg, 1969 in Wheeler and Beatley, 2004: 37). The city is a natural formation but also an expression of human consciousness and evolution (Register, 2006). According to Gasson (2007) in order for an urban environment to become aligned with natural systems and thus be ecologically sustainable, it must mimic the natural environment as far as possible, conceptualised as ‘biomimicry’. The field of biomimicry engages with the key question of whether human processes and systems can be designed and adapted to live in synchrony with the Earth, essentially to imitate other forms of life, natural systems, rather than those often conceived as human and therefore not natural. It is the practice of learning from and emulating life’s genius to solve human problems and create more sustainable designs. Biomimicry is at the same time a branch of science, a problem solving method, an ethos of sustainability, a movement and a new way of valuing and viewing nature and biodiversity. Natural systems are sustainable because of endless solar energy and negative feedback loops. Urban systems, on the other hand, are subject to runaway growth of which the consequences are too far (temporally or spatially) to force an immediate reaction and thus a situation has been created where local actions cumulatively affect global systems, which in turn again have local implications (Gasson, 2007).

Sustainable development and ecologically conscious development are inherently urban challenges, as humankind has become an urban species. Deelstra and Girardet (1999) assert how the city of the present and the future is significantly different from that of the past, thanks to the availability of cheap fossil fuels and resultant low transport costs. This means that the actual site of the city alone does not define its extent (Deelstra and Girardet, 1999). Using the concepts of an ecological urban footprint and urban metabolism help to explain how a city influences and affects the landscapes and systems upon which it relies, and vice versa as naturally the city is affected and influenced by its surroundings in turn. These concepts both examine the consumptive habits of the city, the footprint focusing more on the space and extent from which resources are drawn and the metabolism on the manner in which these resources move through the urban system.

The ecological footprint perspective allows the competition for natural resources, or natural capital, to become clear on both an intra- and intergenerational level (Deelstra and Girardet, 1999). For example, the Cape Town Metropolitan Area (CMA) has an estimated ecological footprint of 128 300km^2 which is almost equal to that of the spatial footprint of the Western Cape Province. This number is 52 times larger than that of the municipal area (CoCT, 2007a). The per capita ecological footprint for Cape Town is approximately 4.28 hectares (Gasson, 2002), which is unjust when compared with the planet’s “fair share” which is approximately 1.9 hectares per capita (CoCT, 2007a). To put this into perspective, if everyone in the world had the same average as Cape Town, we would need 2.3 times the Earth’s natural capacity.

If urban environments are considered as natural entities, the constructed eco-system of our natural human species, it is essential that the metabolism of it be understood in the same way as any other

eco-system. The Earth is a singular, finite metabolic system and so for global system patterns to continue relatively undisrupted, all sub-systems should act in a similar manner. Like any metabolic system, cities have inputs (for example, energy) and outputs (waste) (Gasson, 2007). Natural eco-systems have a cyclical metabolic loop, meaning that they are materially closed and there is no import, loss or export of matter (energy is received externally) unlike urban eco-systems that are generally linear (resources flow in and by-products flow out in one direction). The city is the site of consumption, while production and waste happen outside of the city, creating a "through-put" which is unsustainable within the closed, finite system of the Earth (Barles, 2010).

Register (2006) argues that the conception of sustainability with regards to the city is not sufficient an explanation for the desirable outcome. He asserts the "eco-city" as a fully functioning natural eco-system that is home to many species besides humans. This eco-city not only sustains levels economic growth, social justice and ecological neutrality but also contributes to the Earth eco-system in a plethora of positive means and provides humankind with a connection to nature and to the universe through meaningful positive relationships.

2.1.2 Planning for Sustainable Cities

The originators of the planning field, such as Lewis Mumford, Ebenezer Howard, Patrick Geddes and Brenton MacKaye, found the natural environment to be an integral element in planning and the root of regional cultural identity (Todes, 2005). Thus, bridging the natural and social junctures between the city and nature and/or country has been one of the principle ideas of planning. In the period between the post World War 2 Era and the mainstreaming of the concept of sustainable development, however, the pursuit of human progress through economic growth became the primary focus of planners. Sustainability has provided a common, uniting and normative cause for planners, which they have not had in decades, if ever (Berke, 2002 and Todes, 2005) and planning for sustainable cities is a growing field of literature and practice.

But is this enough? Yes, the conception of sustainable development was the beginning of an academic debate that continues to grow and evolve, and has provided a common cause for planners and government officials alike but is *this* enough? It is clear that despite the goals of sustainable development coming to the fore nearly 30 years ago, the natural environment is in a worse state than ever and poverty, inequality and hunger are still the major issues facing human society (UN, 2013). What is needed is an entirely new conception of development, not simply a rearrangement of the same principles under different guises (Matthews, 2004). What is needed is a paradigm shift, one that does not see humans as separate from nature, but as integral to the functioning of the Earth eco-system (Cullinan, 2002). Katzschner (2010) asserts that built environment professionals are entering a most important and interesting stage and are thus central to re-building the relationship between city and nature to one of freedom and harmony. The following section looks specifically at how planners have begun engage with the topic of food and food systems. It is increasingly evident that the current food regime is unsustainable and is a product of an outdated development paradigm. Planning is thus beginning to tackle food not only from a health, nutrition and food security perspective but also as an important aspect of planning for sustainable cities, connecting to the normative dimension of city-making that ultimately aims to make cities better places for

society and promoting societal relations that in turn promote the well-being of *all* inhabitants.

2.2 Planning and Food Systems: Making an Acquaintance

As discerned above, the field of planning has benefitted from a resurgence in popularity since the mainstreaming of the concept of sustainable development. At the same time, the concepts of and surrounding sustainability have broadened the planning field to include values largely ignored in the post World War 2 Era, such as that of the natural environment. Industrial agriculture is considered by many to be the most ecologically destructive human activity at present (Foley, 2011). This statement brings to light the important link between food production (and other associated activities such as consumption and waste) and the fate of the natural environment, which determines the fate of the human race.

The purpose of this thesis is to understand better the role of planners in facilitating urban food production and I therefore use this section to explain how planners have begun to engage with the subject of food. Before continuing with this section I find it necessary to define the term 'food system' as this is central to this section particularly and thesis in general. Pothukuchi and Kaufman (1999) have defined a food system as the network of actors, activities and processes relating to the production, distribution, consumption and disposal of food and food-related products.

The subject of food has traditionally been omitted from the urban agenda and the planning field, despite its obvious connection to many urban activities (for example the local economy, public health and the natural environment) and assumed to be under the auspices of rural governance (Pothukuchi and Kaufman, 1999). According to Morgan and Sannino (2010), this is largely due to the fact that in the urban environment in the twentieth century, food became virtually invisible in that it was, in some form, easily available and accessible. Food challenges in developed countries were met through industrialized agriculture. This trend is largely imitated in developing countries that strictly enforce the urban-rural divide and maintain food as a rural imperative (Pothukuchi and Kaufman, 1999). However, in the 'urban era' (UN-Habitat, 1996) where more than half the world's human population lives in cities, this divide between urban and rural is becoming increasingly illogical and these delineations mean less and less, as the geographies of urbanization, which have long been understood with reference to the densely concentrated populations and built environments of cities, are assuming new and increasingly large-scale morphologies that cross-cut and ultimately degrade the urban-rural divide (Brenner, 2013). The city is the place for political and social action as the socio-environmental impacts of the current form of urbanization are realized.

But food is more and more becoming a central focus of planners and is more prevalent on the urban agenda (Morgan, 2013). Morgan (2009) claims that this is due to the "new food equation" that has changed the way planning professionals and city officials look at the urban food system. This equation, which has sparked a global food movement, includes various factors such as the 2007-08 food price surge, rapid urbanization and the effects of climate change on production, among others. Aligning food planning with other goals relating to sustainability has been a successful tactic employed by urban planners in cities such as London, UK and Waterloo, Ontario (Morgan,

2009). This is an important method that highlights the interconnected nature of the food system and its impacts on so many aspects of the urban environment. According to Morgan (2009) this technique also engages actors from a variety of fields, and from all sectors of society, which further shows how food is a uniting factor that has potential as a multidisciplinary field in its own right.

Do these food movements and the shift to incorporate food into urban planning mean that there is preparation for a new food regime? McMichael (2009) defines a food regime as an historical concept that distinguishes different periods of production and distribution of food under various hegemonic devices of the global economy. The three major regimes are: that of the European colonizers using cheap food and material imports from their colonies; the 'Green Revolution', which saw the onset of industrial agriculture and surplus grains being exported to the newly liberated colonies; the third and current regime is the corporate (or neoliberal) regime which, through the World Trade Organization (WTO) and its Agreement on Agriculture (AoA), has put the agri-food industry firmly in the hands of private corporations (Holt Gimenez and Shattuck, 2011). McMichael (2009) argues that the history of food regimes is not restricted to the understanding of food as a commodity but to understanding capitalism, and how this paradigm is produced and reproduced over time. Therefore, the reforms that are being made to global food policy are weak and do not represent a move away from the neoliberalism of the global food system (Holt Gimenez and Shattuck, 2011). According to Holt Gimenez and Shattuck, such reform will only deepen the food crisis. But as food movements continue to grow and influence local policy there is potential to reclaim the food system if the diverse parties that are affected by the current global food system in various different ways, come together to put intense pressure on the current system. Holt Gimenez and Shattuck (2011) close their argument with the statement that a transformation of the current food regime would require a societal shift, one that embeds the market economy within society, rather than the other way around. This must surely be part of the process of embedding human society within the natural environment, as proposed by ecological sustainability. And while the food movement can play a role in changing the food regime, it may also have the potential to contribute to much broader systemic changes.

Thus far it has been shown that planners have begun to engage with food systems internationally, and it has been argued that this is an important relationship that has the potential to contribute to reform, or transform, the global food regime that dominates local food systems. Food planning is developing into a sub-discipline, especially in the USA where the American Planning Association (APA) has produced a Guide to Community and Regional Food Planning (2008). This has been asserted as an attempt to move from "conventional" to "community" food systems. Conventional is understood to be the largely displaced, industrial agri-food system, compared to that of the community, which emphasizes the strengthening of visible relationships between the various actors (Raja et al, 2008).

As will be explained in more detail in the next section, the APA and the food planning initiatives in the USA and the UK are representative of a food movement based on the socio-ecological benefits of urban food production. For the most part in Africa and the rest of the developing world, urban food production is lauded as a food security strategy related to livelihood diversification

and poverty alleviation. The rest of this section looks at examples from both perspectives of how planning is engaging with the topic of food.

2.2.1 Food Planning in North America

There are several instances in the North America where planning is taking an active role in the food systems of urban environments. There have been various different approaches to this including creating a food system plan, including a food system component in comprehensive plans and altering zoning schemes to include aspects of the food system (Raja et al, 2008).

Waterloo, Ontario and Oakland, California have formulated stand-alone food system plans. In the case of Waterloo the plan was created by the Department of Public Health, acknowledging the historical link between the fields of public health and planning (Maan Miedema and Pigott, 2007). In Oakland, a Food Policy Council (FPC) was created in 2005 after the Mayor's Office of Sustainability commissioned an assessment report of the Oakland food system and a recommendation was made to create such a council (oaklandfood.org). This FPC, with a start up fund of $50 000 from the city government, has since produced a food plan called Transforming the Oakland Food System: A Plan for Action (Raja et al, 2008). In terms of spatial planning, both plans recommend using land-use zoning as a tool for limiting availability of unhealthy food in certain neighbourhoods (for example in the vicinity of schools), increasing accessibility and availability of healthy, local foods and for increasing urban agricultural practice (Maan Miedema and Pigott, 2007 and OFPC, 2005)

Benicia and Marin County, California, Madison, Wisconsin and Seattle, Washington have included a substantial segment on the topic of food within their comprehensive urban (or rural in the case

Case Study 2.1: Beacon Food Forest, Seattle. (beaconfoodforest.org)

A food forest is a gardening or landscaping technique based on permacultural principles, aimed at creating a woodland or forest self-sustaining eco-system. Tall fruit and nut trees form the canopy, with berry shrubs and edible plants beneath. Companion plants are used for pest management and soil fixers. Since 2010, the City of Seattle Department of Neighbourhoods has given $120 000 to begin a food forest in Jefferson Park, 2.5 miles from downtown Seattle. Jefferson Park already offers a variety of recreational facilities and a south-facing sloped area of the park is ideal for a food forest. The aim is to improve public health, reduce climate impact and improve food security through free public access to and availability of fresh fruits, vegetables and nuts.

of Marin County) plans (Raja et al, 2008). A common feature among these plans is that food is considered an issue of sustainability and asserts community food gardens, in various forms, as an important feature of urban planning (Raja et al, 2008). For example, the 2005 updated Seattle Plan calls for a dedicated community garden for every 2500 households in an urban "Village". This is an important aspect of the open spaces network and food gardening is strongly encouraged and supported in these spaces (City of Seattle, 2005). An example of municipal support for community food gardens in Seattle is that of the Beacon Food Forest (see case study 2.1).

Historically, zoning schemes have been used to separate and isolate food sources from residents and consumers. However, with increasing links being drawn between food, public health and planning, land use zoning in some cities has been used to limit fast food restaurants (Los Angeles, California), promote urban agriculture practice (Milwaukee, Wisconsin) and support neighbourhood and farmer's markets (Kitchener, Ontario) (Raja et al, 2008).

2.2.2 Food Planning in the UK

An FPC has also been created in Bristol, UK. The purpose of this FPC is to help bring about a change in the local food system to one that is resilient and sustainable. The focus is on supporting a local food system, as the understanding is that dependence on 'cheap' super market foods is unsustainable and insecure (Carey, 2013). The Food Plan for Bristol proposes several strategies including safeguarding fertile agricultural land for food production, supporting community food enterprises, increasing urban food production and distribution, redistribution and recycling of food waste in order to create a 'closed-loop' food system for the city (Carey, 2011). This aspect of local food production links with the concept of urban metabolism in achieving a sustainable city through a circular, rather than linear metabolism.

The London Food Board (LFB) launched the London Food Strategy in 2006, under then Mayor Ken Livingstone (LDA, 2006). This is a holistic strategy that places local government, across a variety of departments, as the major driver of urban food security and sustainability, with some issues identified as being under national government jurisdiction (Mansfield and Mendes, 2013). The Food Strategy incorporates a range of food issues, drawing on different stakeholders, actors and sectors (LDA, 2006). According to Mansfield and Mendes (2013) this holistic approach is part of the reason why it has been successful, especially in maintaining momentum and relevance. However, the London Food Strategy is largely aspirational and has little to no legal standing to implement its strategies. Nevertheless, aspects of the Strategy have been incorporated into the Comprehensive Plan for London (2011) and there are various partnerships underway in order to increase implementation potential (Mansfield and Mendes, 2013). The explicit nature in which urban agriculture is discussed in the Food Strategy is that it is not a food strategy in isolation, but as a means to connect various aspects of a food system (LDA, 2006). Thus, urban agriculture has been incorporated into the London Plan in Policy 7.22, through the identification and protection of land for food (current allotments and potential agricultural land for gardens and orchards) by the different Boroughs (Greater London Authority, 2011).This is an important perspective for the purposes of this thesis.

2.2.3 Food Planning in the South

Rocha and Lessa (2010) claim that cities of the North, such as London, have generally created food policies in response to pressure from civil society and followed the lead of civic organisations. On the other hand, in Belo Horizonte, Brazil it was local government that initiated the alternative food system in the city. For 20 years, the Secretariat of Food Policy and Supply (Secretaria Municipal Adjunta de Abastecimento—SMAAB) has been working on policies and programmes to promote a sustainable, resilient and accessible food system for all citizens and, most importantly, they have largely been successful in improving access to healthy food and reducing levels of hunger and malnutrition (Rocha and Lessa, 2010). Among various programmes, such as education on food and health and supply and regulation of food markets, SMAAB supports urban food production in four different projects: Community Gardens, School Gardens, Pro-Orchard Project and Workshops for Planting in Alternative Spaces. In 2008, SMAAB had offered 62 workshops to approximately 1300 people and distributed 1600 seedling to its various projects (Rocha and Lessa, 2010). All municipal programmes are within the context of a national food strategy: Fome Zero (Zero Hunger), which prioritizes access to healthy foods and family agriculture, among other food and poverty-related strategies (Rocha and Less, 2010).

Food planning and planning for urban agriculture in Africa is virtually non-existent, to the point where it is illegal in some African cities (Asomani-Boateng, 2007). For example, in Harare, Zimbabwe, agriculture is not acknowledged as an urban activity, mimicking the historical binary between city and country. Thus the city planning system largely ignores it (Mbiba, 1994). However, the extensive economic and associated hunger crises have forced marginal support for urban food production through the Nyanga Declaration on Urban Agriculture in Zimbabwe and the Harare Declaration (Kutiwa et al, 2010). This has led to the National Environment Draft Policy providing frameworks and guidelines for the creation of local urban agricultural policies. Local municipalities thus have the power to provide permits for 'suitable' food production but on the whole legislation and policy for enhancing and improving urban agricultural practice does not exist (Kutiwa et al, 2010).

Dar es Salaam, Tanzania has had a long history of anti-urban agricultural policies and yet 100 000 tonnes of crops, 95 000 litres of milk, 6000 trays of eggs and 11 000 kilograms of poultry are produced within the city each year (Conway, 2006). The British colonial rulers banned farming within in city limits, in order to maintain "health and cleanliness". After independence, the government was so focused on rural growth and development that urban farming and urban development in general was largely ignored (Conway, 2006). The 1970s saw a series of droughts that necessitated the formulation of an Agriculture for Life and Death Policy, which actively encouraged urban food production through a number of demonstration gardens as pilot projects and to provides seeds, tools and other resources to citizens. These gardens were neglected for 20 years, until, in the late 1990s, they were revived once more (Conway, 2006). Urban agriculture was included in the Dar es Salaam Master Plan (1978) as a protective land-use zone and has been since then; however, developers often pay little attention to zoning, especially due to customary laws of buying and selling land (Conway, 2006).

As can be seen from the different examples set out in this sub-section, there is a different interpretation of the purposes of urban food planning and production between the Global North and South, especially in Africa. Urban food production in Africa, is generally seen in isolation, as a reactive strategy to reduce hunger, rather than as part of an holistic approach to overall well-being. This is discussed in more detail in the following section, which explores urban agriculture and food production in concept and practice, focusing on the potential benefits that could contribute to cities that are more aligned with the purposes of nature, positively benefitting occupants, of all species, of the city.

2.3 Urban Agriculture: the Politics of Food

Urban food production is a practice as ancient as cities themselves (Mougeot, 2005). Boukharaeva and Marloie (n.d), drawing on historical, political and philosophical sources, claim that farmers made up a large percentage of the ancient urban populations in Africa, Asia and Europe, and there is some minor evidence to suggest that agriculture could even have been the central urban function, before being moved to the peripheries. Even into the twentieth century, urban food production remained an important activity, despite the relative ignorance of it by urban planners and other officials (Boukharaeva and Marloie (n.d). Urban agriculture (UA) as a theoretical concept emerged in the 1970s and 1980s with the purpose of reducing food insecurity and poverty in Africa. According to Olivier (2012), this came as a result of rapid urbanization coupled with decreasing levels of nutrition and rising poverty. In Africa, then and now, the promotion of UA and urban food production remains stuck within the food security and poverty reduction mindset (Battersby and Marshak (2013).

According to Olivier (2012), since the 1980s UA has gone through several phases of varying popularity. He argues that since 2005, UA has undergone a 'renaissance' and is once again a popular strategy for building food security in Africa and the rest of developing world. UA is also promoted as a strategy for waste management in Africa (Mougeot, 2006). At the same time, UA has found a place in urban centres of the developed world where, however, urban food production has, until recently, been lauded primarily as a social strategy, one that builds community while performing a greening function and tackling food security on a minor level (Battersby and Marshak, 2013). McClintok (2010) and Battersby and Marshak (2013) claim that urban food production in the North is in fact beginning to align itself with that of the South. What has been "community gardening" as a recreational and social process is becoming one of "urban sustainability and economic resilience" due to the economic collapse in 2008 and the ever widening acknowledgement of the need to promote urban sustainability and forge new paths in the face of environmental crises (McClintok, 2010:191). It is this alignment, between the varying food movements across the world with all the various motivations behind it, which has the potential to bring radical reform or transformation to the global agri-food regime (Holt Gimenez and Shattuck, 2011 and McClintok, 2010).

Horrigan et al (2002) explore the negative environmental and health impacts of the industrial agricultural system that dominates the current food regime. According to Foley (2011), agriculture has become the greatest threat to the natural environment and thus to humankind itself. Horrigan

et al (2002) argue for a move to sustainable agriculture, as the current model erodes and degrades natural systems faster than they can be regenerated. While urban food production alone will not bring about this shift, it is an important political and social component that has the potential to expose millions of urban citizens to the unsustainable nature of the current global food system. Improving food systems is not just about solving a singular problem, but addressing systemic issues to produce a better society. Food systems and food choices influence social, political, economic and ecological relations. While food systems may appear apolitical and their normative underpinnings hidden, they express fundamental ideas about what kind of society and settlements that we, as eaters and citizens of planet Earth, want to create.

2.3.1 Benefits and Limitations of Urban Food Production

The benefits of urban food production are wide and varied and the movements in the North and South draw on these in different ways. This next sub-section looks more carefully at these benefits but there is a caveat here. UA literature is often criticized for generalizing the benefits of urban food production and it is not my intention to underestimate this criticized but rather to explore the potential benefits and follow these with the limitations that accompany it.

McClintok (2010) uses the lens of the "metabolic rift" to explain the essentiality of urban food production. The theory of metabolic rift is an extension of the Marxist argument of social alienation through capitalism. Social environmentalists and human geographers have extended this to include the metabolic rift between humans and nature, based on the understanding that humans are nature and all social interaction interfaces with the natural environment (Sorlin, 2012). Dichotomies between humans and nature, urban and rural, create a "geographical displacement" of the ecological crisis and thus do not hold individuals accountable for their role in unsustainable consumptive habits (McClintok, 2010).

The metabolic rift concept relates to that of urban metabolism discussed earlier in the chapter and thus to food production in the city and the potential thereof to close the metabolic loop through local food production and organic waste management. The term 'food miles' is often used to describe the extensive transportation system used to move food from places of production to those of consumption, contributing to climate change through excessive carbon emissions. By reducing food miles, it is assumed that local food production is more ecologically sustainable through the minimizing the urban footprint. However, as Born and Purcell (2006) argue, this is potentially a dangerous assumption, what they term the "local trap", as this is not the only factor of sustainability. For example, local production may require large amounts of water that threatens local water supply. This brings attention to the fact that UA should not be generalized, as it often is through case study research (Olivier, 2012). Each urban food production project is unique and has a different set of environmental factors that must be taken into account when defining its particular purpose.

Other potential ecological benefits of urban food gardens include those of open green spaces: providing permeable surfaces for stormwater and replenishing groundwater, promoting biodiversity and improved soil quality (especially when using organic, permaculture or other alternative farming methods), acting as a carbon sink and re-use of waste water and organic waste (De Zeeuw et al,

2011). De Zeeuw et al argue that this is important for adapting and building urban resilience to climate change (2011).

Food security, nutrition and health are amongst the most commonly cited benefits of urban food production. While health has often been argued as the reason behind restricting urban agriculture, it is becoming increasingly clear that the potential benefits outweigh the risks, which can be identified and reduced through proper management (De Zeeuw et al, 2011). Born and Purcell (2006) also warn against attributing too many health benefits to local food production alone. However, there is no arguing the potential of growing food oneself, or in a communal garden, to increase access to fresh fruit and vegetables primarily, which in turn has positive diet-related health benefits (Bellows et al, n.d). Bellows et al also claim that food gardening is beneficial to individual and community health through exercise, reducing vulnerability by building social capital and improving mental health and wellness through outdoor activity and engagement with plants and soils.

Lastly, urban food production is often assumed to help build local economies and improve social relations. But again Born and Purcell (2006) warn against this assumption as it can reinforce socio-economic inequalities already present in a particular urban community. Therefore, they argue that the purpose of a project must be explicitly worked towards, rather than assume that it will come about simply because of its scalar characteristic.

2.4 Conclusion

The purpose of this literature review is to explore how urban agriculture as a practice and concept relates to sustainability and response to environmental crises. While there is extensive criticism of the concept of sustainable development and sustainability, it has mainstreamed ideas of environment and reinvigorated the planning profession. Furthermore, in the absence of a better vocabulary, these terms provide a linguistic tool to engage with the challenges of nature, society and economy. It is for this reason, despite the weakness of the concepts of sustainability, that I use these terms in the following chapters.

The current food regime is based on industrial agricultural methods that are unsustainable and there are food movements across the world responding to the impending food crisis. This is reflected in academic literature and is finally becoming an issue that urban planners engage with. Urban food production alone will not bring about an alternative food system but has the potential to contribute significantly to a more holistic understanding and practice of both the food system and the urban eco-system. This is the idea that carries through into the following chapters. The next chapter is an analysis of the study area chosen for this project that aims to discover opportunities for change in the Cape Town food system through the promotion of urban agriculture.

3

Contextual Analysis

This analysis chapter forms the base upon which the interventions in the next chapters are set. This chapter explores the context of Cape Town in general and the City Bowl, specifically, and the components thereof that relate to the city food system. Section 3.1 begins with a brief history of the Cape and how agriculture has continuously played an important role in the lives of Capetonians, giving potential to an improved relationship between the city and food. Section 3.2 determines and motivates the spatial extent of the study that, for the purposes of this chapter, includes the whole city but focuses on what is known as the City Bowl, nestled between Table Mountain and the Atlantic Ocean at Table Bay. Section 3.3 is an analysis of current legislation, plans, policy and institutional environment that promote, or have the potential to promote a relationship between food, food production and planning. Section 3.4 looks specifically at the geo-spatial attributes of Cape Town and, where specific data is available, at the City Bowl in relation to food production, consumption and waste. Section 3.5 is an assessment of some elements of the Cape Town food system as far as is possible with the secondary data that is available. The conclusion (section 3.6) of this chapter presents the opportunities and constraints that will be carried through into the following interventions chapter.

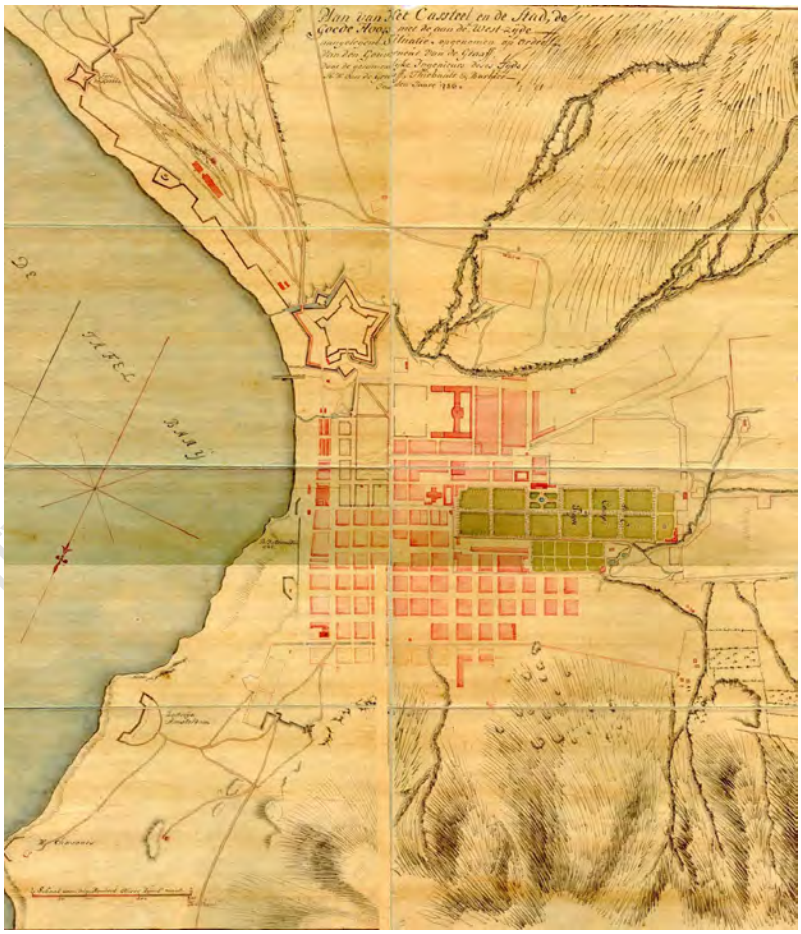


Figure 3.1: Plan for the Cape of Good Hope (1786) showing the Castle, Town and Company Gardens. Table Bay, to the north, is on the left-hand side (tanap.net)

3.1 Agricultural Origins of the Cape

Cape Town has, what Jane Battersby calls, “urban agri-cultures” as there are a variety of food production activities that take place within the Metropolitan Area and these are distinctly related to the variety of cultures found here (Battersby, 2013). From luxury wine estates to home food gardens, agriculture in Cape Town has grown and been transformed since its beginnings as a refreshment station for the Dutch East India Company (VOC).

There is so much history of the Cape that remains occluded before the arrival of the Jan Van Riebeeck and the VOC in the Cape in 1652, as there is no written documentation. One thing that is known is that the original Khoi people inhabited the area known as “Camissa”- the place of

Figure 3.2: Map of Cape Town City Bowl (1760) showing the farms in Table Bay (tanap.net)

sweet waters. It was called this because of the multiple freshwater springs that flowed down from Table Mountain and into Table Bay. According to Reclaim Camissa, a civic organization aimed at reclaiming the natural infrastructure of the City Bowl for the public good, these "sweet waters" are the reason behind the Dutch Settlement at the Cape (Turton, 2013) and provided the opportunity for Van Riebeeck to fulfill one of his two main objectives: to establish food gardens for ship refreshment (Worden et al, 1998). These began at the Company Gardens that remain to this day in the centre of Cape Town, although not as food gardens (Karstens, 1950). The supply of vegetables to the passing ships was supplemented by the farms of the 'free burghers' on the slopes of Devil's Peak, Table Mountain, Lion's Head and the Liesbeeck Valley.

In the late 1800s, German settlers moved into the Cape Town Lowlands, the low-lying area, known as the Cape Flats, between the Table Mountain range and the Hottentots Holland Mountains east of Cape Town and farms were established in Philippi after the government decided the Cape Flats should be used for agricultural production (Edwards, 1984). Under the Apartheid government, the Cape Flats were used as a dumping ground for black immigrants and those affected by forced removal. This area and its residents, although equal before the law, continue to suffer from the legacy of Apartheid and experience poverty, food insecurity, over-population, sprawl and a lack of housing and service provision. Nevertheless, due to its agricultural, heritage and biodiversity value, the Philippi Horticultural Area (PHA), which can be seen in figure 3.9, remains an important node of vegetable production for the city, but is constantly under threat from urban creep and the need for housing.

Since its origins and throughout Cape Town's history, agriculture has played an important role in the economy of the city and in the livelihoods of its citizens. The Constantia Wine Route in the Southern Suburbs, home to the historic first wine industry in the southern hemisphere, attracts tourists from all over the world; over 3000 (mostly female) micro farmers support their livelihoods from home and community food gardens on the Cape Flats (abalimi.org); the PHA provides up to 50 percent of Cape Town's fresh vegetables (Battersby and Haysom, 2012); and there is growing interest in the value of urban food production as socio-ecological resilience strategy within the city centre.

3.2 Spatial Extent of Study

This project is focused around the Cape Town CBD, the area known informally as the 'City Bowl'. The spatial informants for this designation include those of the Cape Town Partnership area (figure 3.3) the Table Bay planning district (figure 3.4 and the Cape Town Centre Improvement District (CCID) (figure 3.5). Overall, the catchment area of the Table Bay, asserted by the Reclaim Camissa organization (figure 3.6), forms the basis of the spatial study area shown in the base map, figure 3.7 in the pull-out map at the end of this section.

Using a watershed or river basin as a planning, administration or management unit is not a new concept and has been demonstrative of human-nature relationships in a variety of forms for centuries (as early as the third century BC in China), including the human power over nature of high modernism between the 1920s and 1970s (Molle, 2009). Molle (2009) claims that the concept of river basin management in fact lost its appeal in the early decades of environmentalism (1970s onwards),

FIGURE 3.3: THE JURISDICTION OF THE CAPE TOWN PARTNERSHIP: AN INFORMANT FOR THIS STUDY (CAPETOWNPARTNERSHIP.CO.ZA)

as it was largely responsible for the environmental and social degradation associated with dams and hydraulic power. However, it has once again gained momentum primarily for Integrated Water Resources Management, which acknowledges far more complex socio-ecological interactions than any previous (western) conceptions (Molle, 2009 and O'Neill Karen, 2005). While this project's key focus is not on integrated water or catchment management, the relationship between food and water systems, as well as all other natural systems is an important one that I wish to highlight in this project.

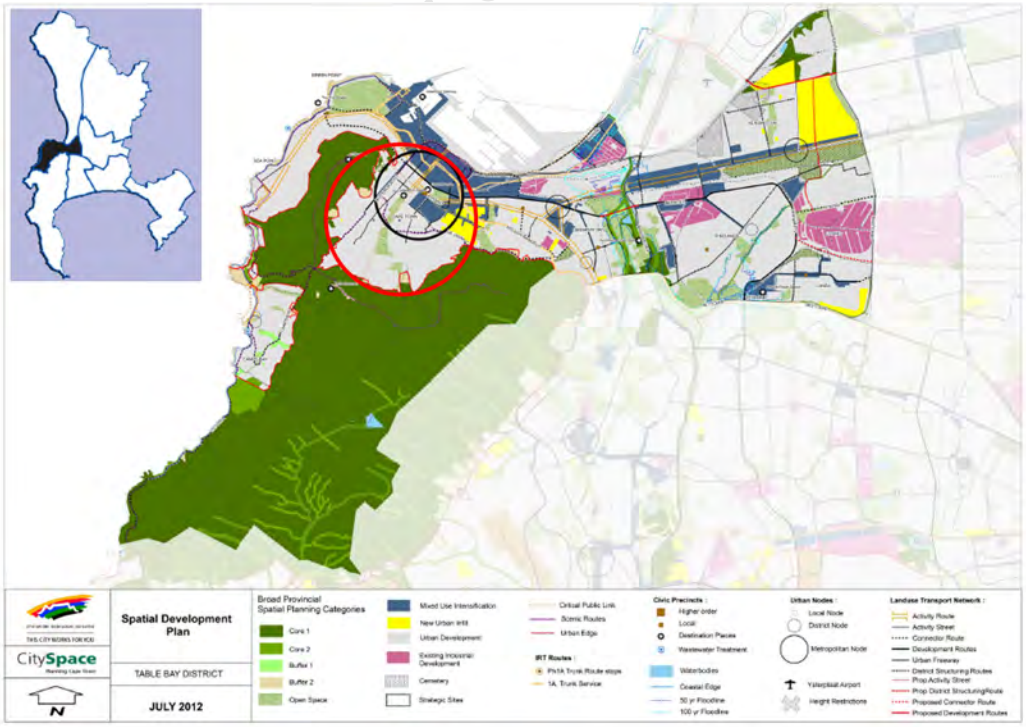


FIGURE 3.4: SPATIAL EXTENT OF THE TABLE BAY PLANNING DISTRICT: AN INFORMANT FOR THIS STUDY. STUDY AREA IS CIRCLED IN RED (COCT, 2012A)

Further, the Table Bay catchment area encompasses a range of socio-economic areas including the CBD, the relatively wealthy suburbs of Oranjezicht, Vredehoek and Tamboerskloof and middle-

Figure 3.5: The jurisdiction of the Cape Town Central Improvement District: an informant for this study (capetownpartnership.co.za/ccid)

income areas of Zonnebloem and the Bo-Kaap in the suburb of Schotshekloof. There is also an informal settlement in Schotshekloof. These suburbs are shown on the base map in figure 3.7. The upper reaches of the catchment are found on Table Mountain to the south, Lion's Head and Signal Hill to the west, Devil's Peak to the southeast with Table Bay to the northeast.

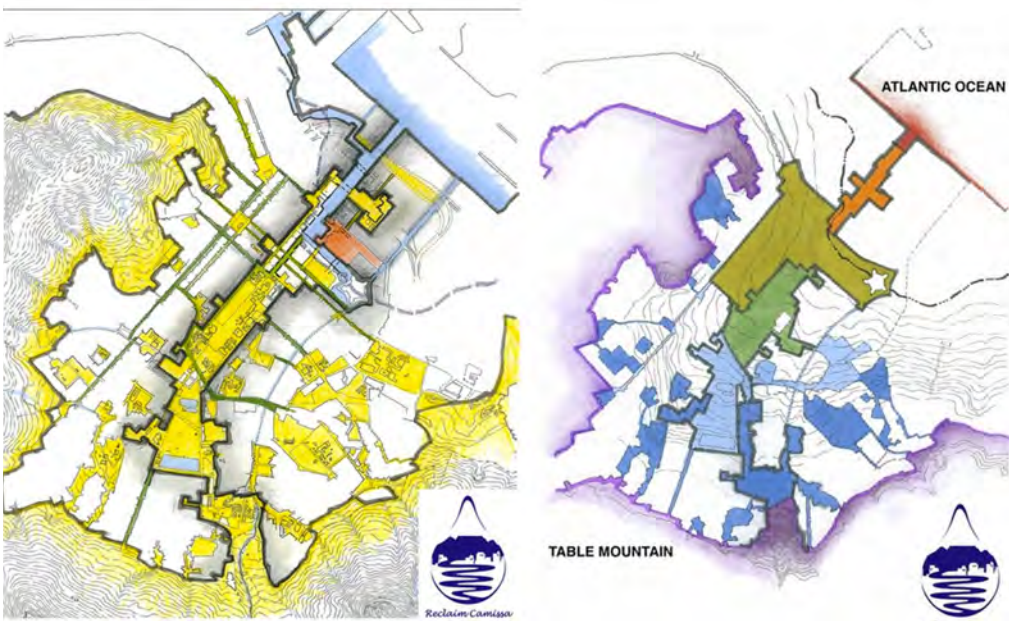


Figure 3.6: The Table Bay Catchment Area: an informant for this study (reclaimcamissa.org, 2013)

The CBD and City Bowl, due to large numbers of people passing through it daily, has the potential to showcase a new way of living; one that integrates nature and food production with the built environment and every day living. This area has the potential to inspire interest and fascination through the interface of nature, and food production, and the built environment.

Figure 3.7: Base map showing the spatial extent of the study with suburbs (Data Source: CoCT, 2013)

3.3 Current Legislative and Institutional Environment

The National Development Plan and the National Strategy for Sustainable Development provide some of the overarching frameworks for planning in South Africa. The primary planning guide for the City of Cape Town is the Integrated Development Plan, 2012 (IDP). The IDP is mandated by the Municipal Systems Act of 2000 (MSA) and is responsible for planning and budgeting for the municipality for the political term of five years. The IDP, in terms of the MSA, must contain a spatial element in the form of a Spatial Development Framework (SDF) that is a ±20 year plan for the municipality. The purpose of the Cape Town SDF (CTSDF) is to provide a long-term vision for the city and guide spatial development towards a desirable urban structure and form. The CTSDF also guides the finer scale plans known as District Spatial Development Plans (DSDP), which run on a shorter time frame (±10 years) and apply to the eight planning districts of the Cape Town Metropolitan Area (CMA), shown in figure 3.8 (CoCT, 2012a). These also contain an Environmental Management Framework (EMF) for the area. The relevant DSDP for this project is the Table Bay District Plan.

The City of Cape Town devised an Urban Agriculture Policy in 2007, the first city in the country to do so. This policy has been in the process of being revised since July 2012 and is due to be promulgated in 2014.

3.3.1 National Plans and Perspectives

The National Development Plan (NPC, 2011) for South Africa provides a vision for the country, a plan to, by 2030, reduce poverty and inequality, improve levels of health and education and have all South Africans as happy, healthy participants of a well-functioning society. This plan, while in some ways perpetuating the bias of sustainable development towards economic growth and development combined with infrastructural provision as the base for poverty reduction, does provide several spaces into which a reform of the country's food system may fit. Some examples include: Chapter 3: Economy and Employment, where the link is made between agriculture and employment and some notice is given to supporting small-scale farmers. Chapters 4: Economic Infrastructure and 5: Transitioning to a Low-Carbon Economy, speak to the need to reduce industrial energy inputs and carbon outputs. Chapter 10: Promoting Health, seeks to promote improved nutrition and increased physical education, especially in schools.

The National Strategy for Sustainable Development makes several references to food and provides several hooks for reform to the national food system. Most reference is given to food security and supporting food production measures that will increase food security for the poor as an indicator of overall sustainability. The link between climate change and food is made (DEA, 2011:31), from an adaptation and resilience perspective. The mitigation aspect of reducing the environmental impact of current agricultural practice does not feature in detail. Interventions in the agriculture sector are proposed with reference to water management and protecting aquatic eco-systems (DEA, 2011:34).

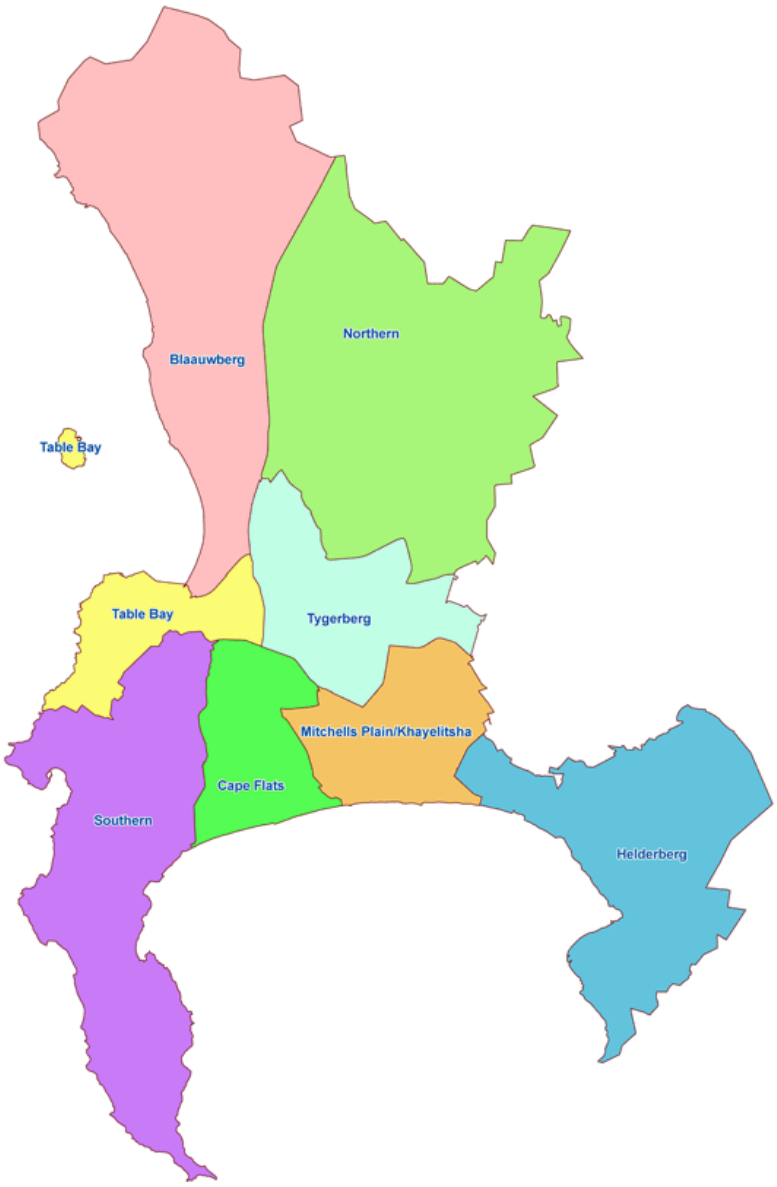


FIGURE 3.8: THE EIGHT PLANNING DISTRICTS OF THE CITY OF CAPE TOWN (CAPETOWN.GOV.ZA)

3.3.2 Cape Town's Spatial Development Framework

The starting point of the CTSDF (2012) is the long-term vision statement, which is drafted as follows:

"To, by 2040, turn Cape Town into one of the world's greatest cities in which to live and learn, work, invest and discover- a place of possibility and innovation, with a diverse urban community and all the opportunities and amenities of city life, within a natural environment that supports economic vibrancy and inspires a sense of belonging in all"

This vision, and the SDF in general, are based on the principles (by its own definition) of sustainable development, implying intra and intergenerational equality, sustained economic growth and environmental preservation. Part of this consideration is the "source of inputs and destination of outputs including goods, ecological services, products and waste" for environmental sustainability (CoCT, 2012b:9). This gives reference to the concepts of urban metabolism and ecological footprint and positions the municipality as a driver in reducing the ecological impacts of urban growth.

The first mention of food within this document is in section 3.1.2, under Natural and Cultural Environment and Resource Capacity as a Driver of Urban Growth. This reference mentions the challenge of preserving productive agricultural land for food production, as shown in figure 3.9, near the city and, together with the risks associated with decreased availability of oil, threaten the food security of the city (CoCT, 2012b:23).

Policy 28 of the CTSDF (part of Managing Urban Development Impacts on Natural Resources and Critical Biodiversity) is set out in order to protect valuable agricultural areas, existing farmed areas and horticultural areas from urban encroachment, and support urban agriculture. This means that current and potential agricultural land should be protected from development and opportunities for expanded urban agriculture programs should be investigated, in order to maintain or increase food security as well as mitigate effects of food price increases. Despite these measures to protect farmland within the city, the Philippi Horticultural Area (from where approximately 50% of Cape Town's fresh produce items come from) is currently and continuously under threat from urban expansion and development (case study 3.1), undermining the policies of the CTSDF and the desire to create an ecologically sustainable and food secure city. A proposal to move the urban edge around the PHA is being considered prior to the start of a Food System's and Security Study for Cape Town, which has been initiated in part by the planning department (Hennessy, 2013).

Agriculture features within the spatial planning categories. High Potential Agricultural Land is given long-term protection status due to unique production, cultural and heritage attributes. Agricultural areas of significant value are given to existing use, potential and emerging agricultural use and food security (CoCT, 2012b). This land for food security is not well defined and the implementation thereof could benefit from comprehensive definition.

Urban agriculture in this document is viewed primarily as a food security strategy, which is problematic as discerned in the previous chapter. However, this is a view that is reflected in the

Case Study 3.1: The Philippi Horticultural Area
(futurecapetown.com and farmandgarden.co.za/pha)

The PHA has significant historical, cultural, ecological, social and economic value as it currently stands. Besides the contribution it makes to the Cape Town food system it is an ecological sink for water and atmospheric emissions, is part of the Metropolitan Open Space System and hosts endangered fynbos species. Recently the PHA has received significant media attention due to the decision by the Mayoral Committee to rezone a portion of the PHA. The reasoning behind this is that there are security issues, illegal dumping, inevitable urban creep and that there are farmers who wish to sell their land. Further, it has been stated by MAYCO that the PHA does not benefit the poor and the need for low-cost housing. Several parties have refuted these issues and argue that the value of the PHA extends far into the future, when food and water security become even bigger issues. The decision now rests with the provincial Department of Environmental Affairs and Development Planning.

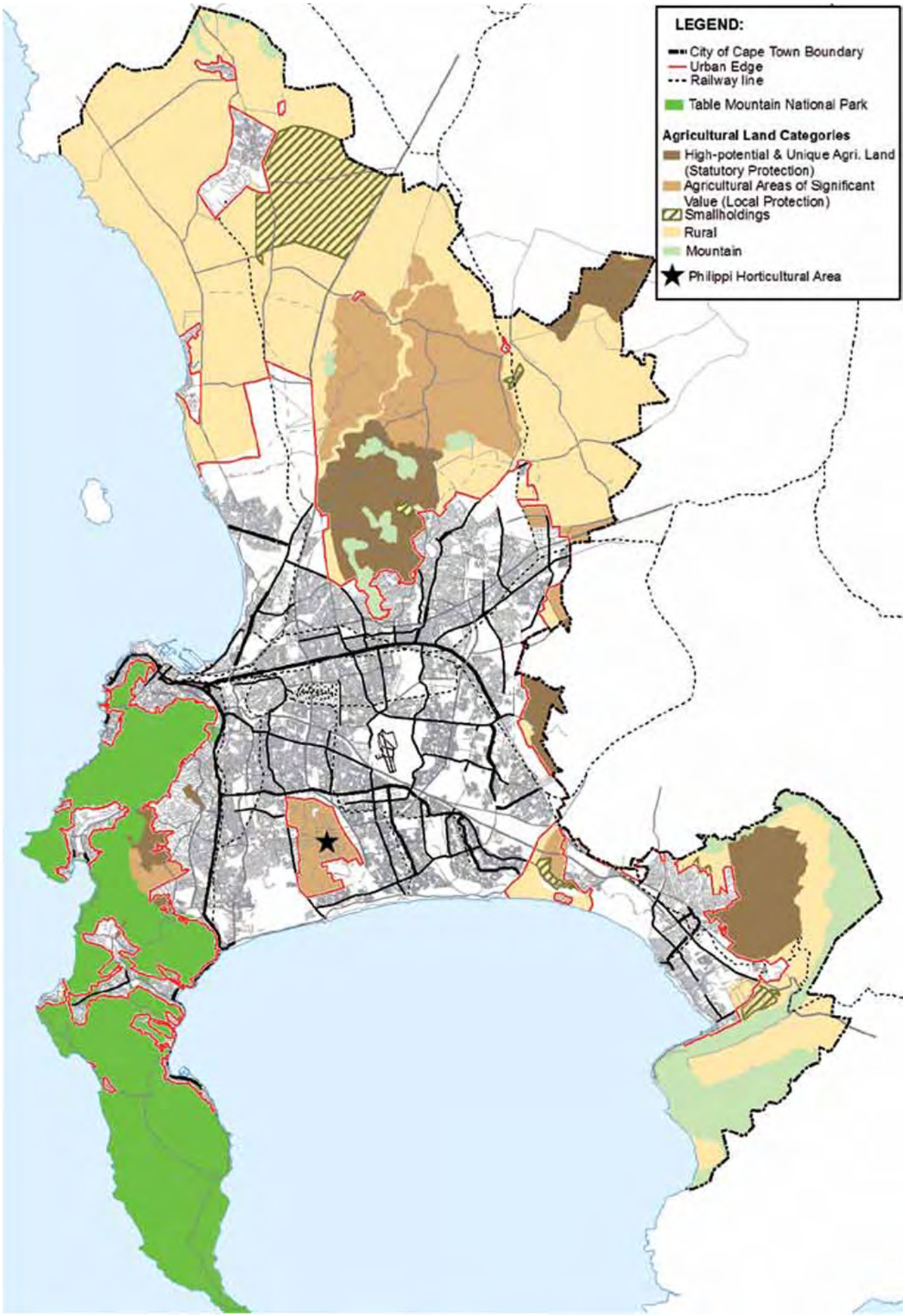


FIGURE 3.9: AGRICULTURAL AREAS TO BE PROTECTED IN THE CAPE TOWN MUNICIPALITY, ACCORDING TO THE SDF. THE PHILIPPI HORTICULTURAL AREA IS INDICATED WITH A STAR (COCT, 2012B)

urban agricultural policy for Cape Town as well. An exploration of the Cape Town food system is not included in the CTSDF and the only relationship between sustainability and food is that of food security, as opposed to a relationship regarding urban metabolism, ecological footprint and environmental sustainability combined with a health, well-being and social/community building perspective. Nevertheless, the SDF provides a "hook" for the topic of food and can be extrapolated in the future to create greater potential for urban food production in Cape Town (Kruger-Fountain, 2013).

3.3.3 Table Bay District Plan and Environmental Management Framework

The district plan is a medium term (±10 years) plan that aims to guide spatial development in line with plans at other levels (national, provincial and city) and informs more detailed local plans. The primary function of this plan is to give direction to the desired structure and form of the built environment in order to promote to economic growth and social upliftment and equity without compromising the natural environment (CoCT, 2012a).

Figure 3.10: Civic precincts, destination places and green web in the District Plan. Study area shown in the circle(CoCT, 2012a)

The protection and integration of the natural environment into the city are posited as important actions in order to achieve a balance between urban development and nature (CoCT, 2012a: 32). These actions include the consolidation and rationalization of open space and vacant land within the district, which have the potential to support biodiversity and, although not stated, urban food production. The spatial strategies relating to open space and promoting the local natural assets include the provision of and access to multi-functional open spaces, which in turn relate to the ecological and open space corridors associated with biodiversity and storm water management (CoCT, 2012a:34). The spatial elements of these actions mirror the spatial planning categories of the SDF. Figures 3.10 and 3.11 show destination places, core conservation areas, green webs and linkages that have the potential to link to urban food production as an ecological, heritage and tourism strategy.

FIGURE 3.11: CONSERVATION AREAS, GREEN WEB AND GREEN LINKAGES IN THE DISTRICT PLAN. STUDY AREA SHOWN IN THE CIRCLE(COCT, 2012A)

The Environmental Management Framework aspect of the District Plan uses zoning as the primary tool for environmental management and protection and is thus negligent in providing for proactive environmental planning. Zoning is a restrictive tool that does not promote long-term positive planning. Positive planning suggests a response to traditional planning techniques that effectively prevent certain actions from taking place. Instead, positive planning inspires non-prescriptive future action. The Environmental Impact Management (EIM) zones restrict certain developments, land-uses and activities that may or may not have an undesirable or significant impact on the desired state of the natural environment in that area (CoCT, 2012a). Nevertheless, the sections on hydrology, biodiversity, culture and recreation and natural economic resources do provide a potential to link with potential urban food production sites as a means to positively plan for enhancing the natural environment.

3.3.4 The Cape Town Urban Agricultural Policy

The City of Cape Town first produced an Urban Agricultural Policy in 2007. The City's perspective on urban agriculture, reflected in this policy, is focused on two related aspects: household food security and economic opportunity (CoCT, 2007b). This places urban agriculture firmly within the theme of UA as a strategy for poverty reduction, despite advocating UA as a holistic development approach. The Urban Agricultural Unit for the City of Cape Town is part of the Economic Development Department, reinforcing this theme. The purpose of the 2007 Policy was to give urban agriculture formal status, and since the promulgation of this policy this status has been growing, to be included in the CTSDF and as a land use zone in Cape Town Zoning Scheme (CTZS) (Visser, 2013). While there is no zone exclusively for urban agriculture, it is included as a primary use in single residential (SR2): incremental housing and as a consent use in the following zones: single residential (SR1): conventional housing, community zone (CO1): local, community zone (CO2): regional, utility zone (UT), Public Open Space (OS2) and Special Open Space (OS3) (CoCT, 2012c).

In the revised UA Policy, which is currently in draft form, the ecological and social benefits are explored in a bit more detail than in the previous version as Visser (2013) claims "agriculture is more than just an economic activity". However, this is a minor consideration and does not fully account for urban food production as a strategy to build resilience against environmental shocks, reduce ecological impact and build awareness around food and food systems. Overall, the UA policy aims to provide an "enabling environment wherein public, private and civil society agents can collaborate to increase the scope and scale of urban agriculture in the city" (CoCT, 2012d:1).

3.3.5 Current Institutions

At present, NGOs and NPOs are the leaders in promoting and supporting urban food production. Abalimi Bezekhaya is the oldest urban agriculture project in Cape Town that supports, funds and trains urban agriculturalists, micro and community farmers, on the Cape Flats (abalimi.org.za). In attempting to build relationships between wealthy and low-income areas, Abalimi began the Harvest of Hope project that sells excess vegetables through a box system to consumers in wealthier areas (Battersby, 2013). SEED (School Environment Education and Development Programme) has worked for the past 12 years to improve and facilitate outdoor learning through schools and other educational facilities (seed.org.za). Soil for Life teaches people how to grow food and build the necessary healthy soils in order to feed families (soilforlife.co.za). Seed and Soil for Life are also based in the Cape Flats. GreenPop is a "social business" that aims to popularize sustainable living primarily through tree-planting projects but also through education, green events, social media and "voluntourism". In the two and a half years since its inception, GreenPop has planted 23 012 trees in South Africa and Zambia. The two tree-planting projects are: the planting of fruit and indigenous trees at schools, crèches and community centres and the reforestation project, which replaces original trees in deforested areas (greenpop.org). The Oranjezicht City Farm, started in 2012, aims to build community through growing food and reintroduces Cape Town's and, more specifically,

Case Study 3.2:The Oranjezicht City Farm (ozcf.co.za)

The Oranjezicht City Farm is non-profit organization that aims to "celebrate local food, culture and community through urban farming in Cape Town". The site was originally, as far as recorded history tells, part of the Oranje Zigt farm, established in 1709 by the van Breda family. The farm here was made possible by the springs flowing off Table Mountain and into Table Bay. In 1901 the farm was broken up into the residential suburb of Oranjezicht and the springs were covered up. The original homestead remained until 1957 when it was demolished to create a bowling green. The bowling green fell into neglect after several decades until 2012 when permission was gained from the City and Heritage Western Cape to transform the site into a community farm.

Oranjezicht's heritage as a food-producing region (see case study 3.2). The OZCF is currently the only established urban agricultural organization within the specific study area, although there are a few other small projects. These organizations represent the bottom-up nature of urban agriculture and the relative lack of a supportive legislative environment for urban agriculture.

Since the release of the Urban Agriculture Policy in 2007, the City of Cape Town has become an actor in the process of urban food production, making provisions for the release of land, supply of equipment, infrastructure, production inputs as well as skills development and training (CoCT, 2007b). This policy instituted the Urban Agriculture Unit within the Development Facilitation Branch Directorate: Economic and Human Development. This unit has a staff of three people and they aim to facilitate relationships with the provincial Department of Agriculture, in order to link small-scale with commercial farmers, City Parks and the municipal Department of Environmental Resources Management, so as to better manage waste disposal (Visser, 2013 and Hewett, 2013). City Parks, a municipal department, manages and maintains over 5000 hectares of open space within the metropolitan. This includes district and community parks, biodiversity areas, cemeteries, greenbelts and road verges (capetown.gov.za/en/parks). The spaces that are managed here provide opportunity for the integration of food production.

The City of Cape Town, the South African Property Owner's Association and the Cape Town Regional Chamber of Commerce and Industry, amongst others, initiated the Cape Town Partnership in 1999 as a non-profit organization aimed at mobilizing and aligning public, private and civic resources in order to regenerate the Central City (capetownpartnership.co.za). In so doing, they foster collaboration, provide a platform for research and knowledge sharing and start important conversations (Nteta, 2013a). Despite some criticism of the organization as a neo-liberal agent driving exclusionary economic growth in the (Lemanski, 2007), one important conversation they have just started is that regarding urban agriculture in Cape Town. The "Green Clusters" talk, held on the 30th of August 2013 asked the question "how can we move from a projects-based practice to a system?" and brought together a collective of farmers and City of Cape Town representatives (Nteta, 2013b). From this meeting, the need emerged to form a forum "to bring urban agriculture to its conceptual maturity and to the forefront of local government's mandate" (Nteta, 2013b:1). Green Clusters was the first meeting as part of a quarterly series, which eventually aims to become independent of the Partnership (Nteta, 2013a). The next meeting will be held in early 2014.

The institutional and legislative environment for urban agriculture, and for a sustainable food system in general, holds much potential despite a limited and not well-integrated perspective of the topic in the policy and planning environment. The following chapter looks more specifically at the physical and spatial aspects that relate to the food system in the City Bowl.

3.4 Physical and Spatial Analysis

The purpose of this section is to discover the opportunities and constraints presented by the physical environment of the City Bowl, as well as some of the production, consumption and waste habits of the residents of the area.

3.4.1 Geology

The underlying geology of a region forms the base of the physical environment, determining the topography, hydrology, biodiversity and human activity of the area (CoCT, 2011). The three main rock types of Cape Town are the Malmesbury Group, Cape Granite and Table Mountain Group (sanparks.org). The Malmesbury Group, which is the oldest rock formation, is found largely beneath the other formations and is therefore not often exposed, except at Signal Hill and along the lower slopes of Devil's Peak. This is a shale rock type consisting of sand and mudstones. Many of Cape Town's tall buildings have their foundations in this rock type (CoCT, 2011). Some of the Cape Granite intrusions have been exposed through weathering and erosion, for example Lion's Head (Compton, 2004). The Table Mountain Group sandstones make up the youngest rock formation and lie above the Malmesbury and Granite Groups, forming the famous Table Mountain as well as many other Western Cape Mountains (CoCT, 2011).

In the City Bowl, the dominating surface rock type is scree, shown in figure 3.12, which consists of fallen rock fragments accumulated from years of rock falls from Table Mountain and Devil's Peak (CoCT, 2011). The Foreshore, the northernmost part of city closest to the harbor, is reclaimed land and the fill was formed from the material dredged in the reclamation process (CoCT, 2011).The area is dominated by the slopes that form the "bowl" of the city, with flats beneath the CBD and foreshore. The slopes of Table Mountain and Devil's Peak face northwards, predominantly, and those of Lion's Head and Signal Hill face eastwards, both receiving plenty of sunlight.

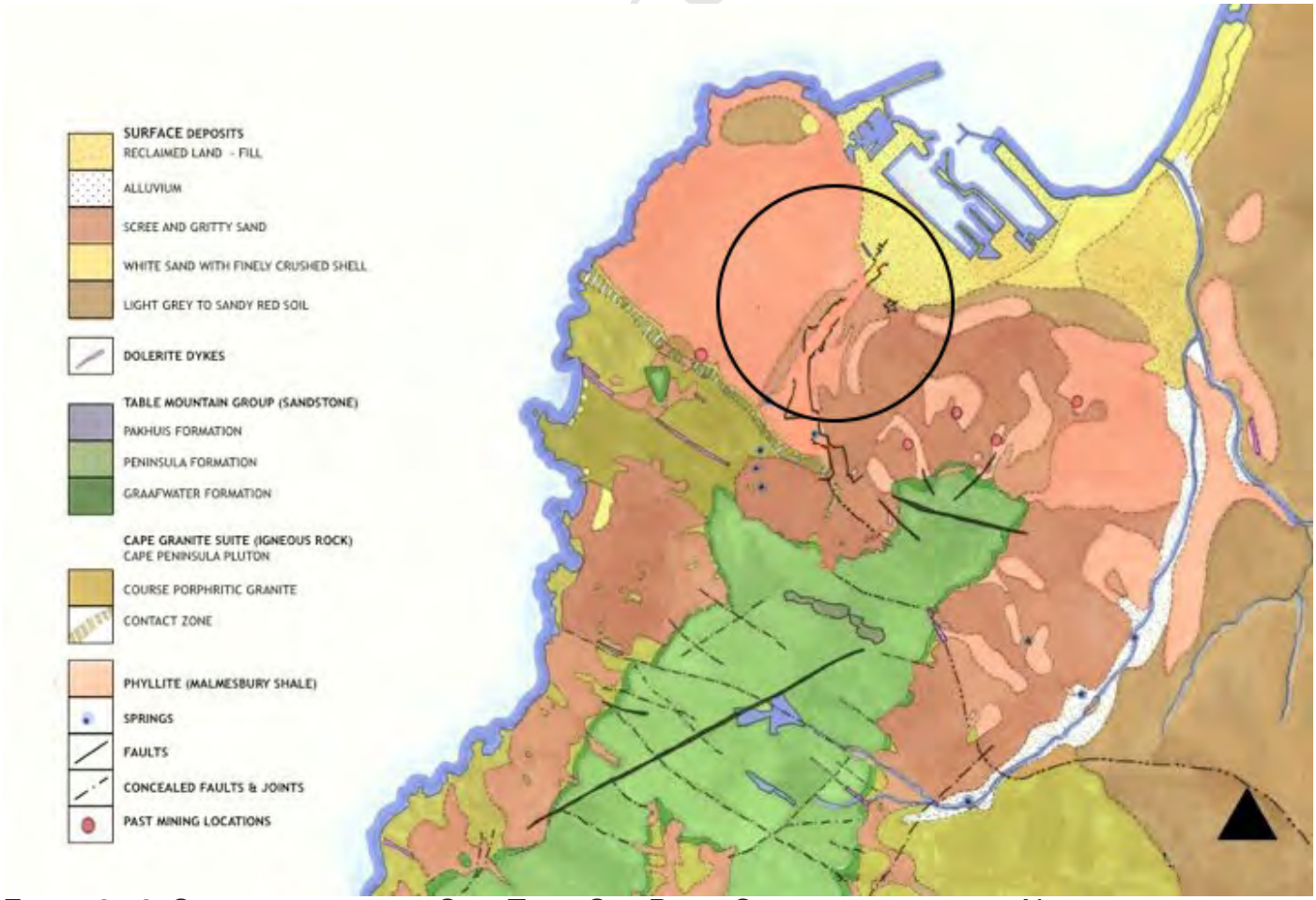


Figure 3.12: Surface geology of Cape Town City Bowl. Study area is circled. Not to scale. (reclaimcamissa.org)

3.4.2 Pedology and Agricultural Potential

Two soil types dominate the City Bowl and these can be seen in figure 3.13. The northern edge consists of deep, leached, sandy soils with subsurface accumulation of organic matter, known as podzolic soils (CoCT, 2011). From a traditional perspective, these podzolic soils do not have high agricultural potential due to their sandy nature. However, this conception can be challenged as extensive composting can increase soil fertility. This area, the foreshore, contains fill material. The slopes of the City Bowl have shallower soils with intermittent diverse soils (CoCT, 2011). These soils have limited pedological development (rocky soils) as they are on a slope and are dominated by scree.

The City's Agricultural Land Review did not identify any areas of high agricultural potential or uniqueness within the Table Bay District, which includes the City Bowl (CoCT, 2008a). The indicators for these areas can be found in table 3.1. While the City Bowl area does not fit with several of these factors, namely high agricultural potential of soil, there are many that could positively contribute to the agricultural potential of this part of the city. These include the terroir, irrigation water (specifically in conjunction with the revitalization of the underground springs that currently run beneath the city), agri-tourism (specifically relating to the historic origins of Cape Town), market proximity, cultural/ heritage landscape, biodiversity interface (between the Table Mountain National Park and the Atlantic Ocean) and open space and recreation (CoCT, 2008a).

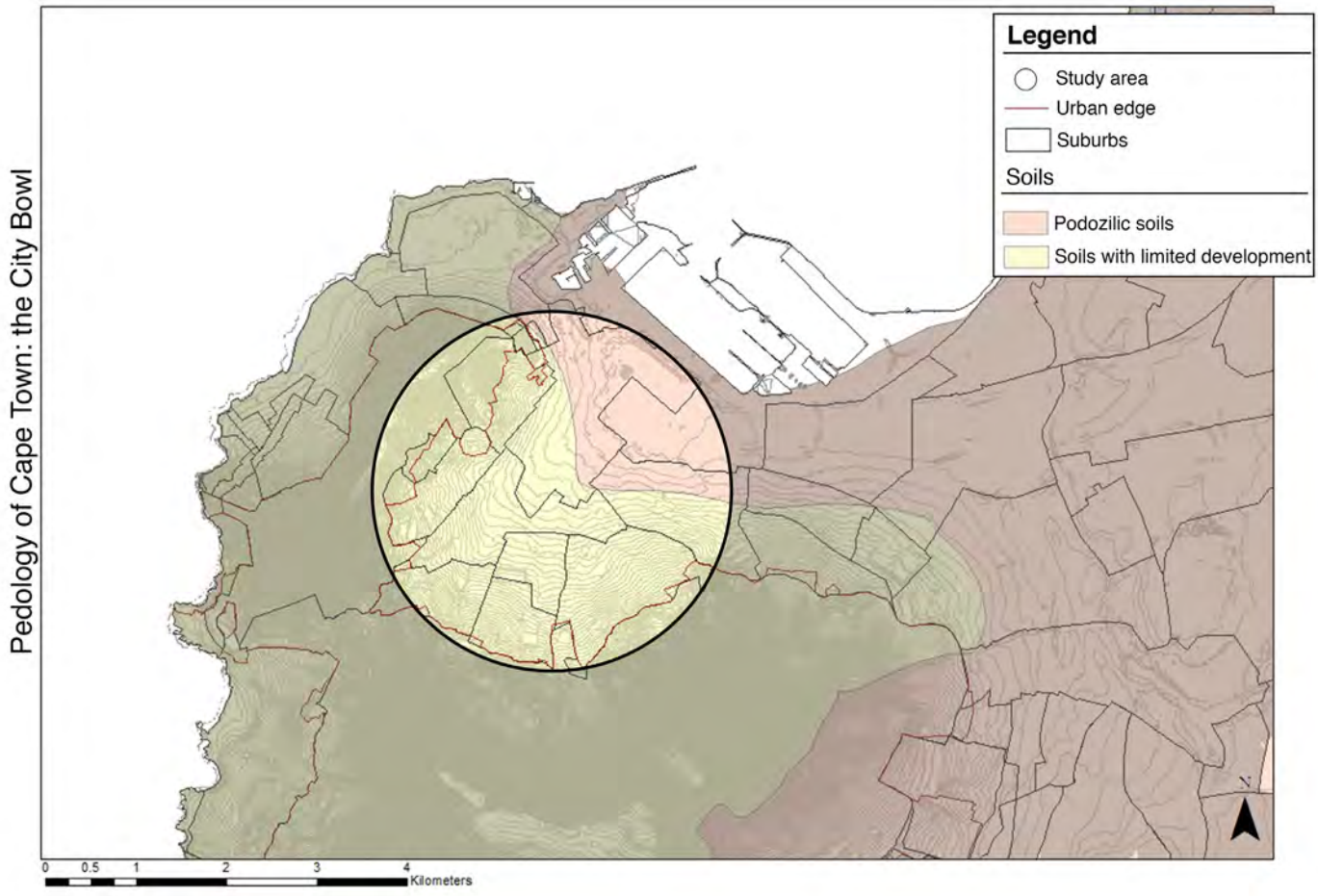


Figure 3.13: Pedology of Cape Town. The City Bowl study area is circled (Data Source: CoCT, 2013)

Soil potential	Informed by slope, soil depth, drainage and soil texture
Terroir	Localized production factors such as aspect, soil and micro-climate
Irrigation water	Groundwater, irrigation scheme water or recycled water
Primary or secondary production	With secondary production denoting increased non-agricultural or agri-processing activities
Critical mass	Indication the extent of activity required for operational feasibility
Agri-tourism	Agri-related tourist attractions
Food security	Referring specifically to vegetable production
Market proximity and crop perishability	Indicating the need for market proximity given crop perishability and transport cost
Existing agriculture	Denoting current agricultural activities/use
Homogenous farming area	Identifying composite areas of similar agricultural crop types and practices
Rural Living	Referring to smallholding areas
Land use buffer/interface	Identifying composite areas which serve as a buffer/interface between conflicting uses
Agricultural working landscape	Referring to production areas which collectively comprise a landscape
Cultural/heritage landscape	Referring to landscapes reflecting either their cultural or heritage aspects
Natural landscape	Denoting extensive unspoilt/undeveloped natural areas
Biodiversity interface	Denoting agricultural areas serving as interface/buffer between developed areas and areas of biodiversity
Open space	Referring to agricultural areas which also serve an open space function
Recreation	Referring to agricultural areas used for active and passive recreation

Table 3.1: Indicators for Agricultural Potential according the Agricultural Land Review for the City of Cape Town (CoCT, 2008a)

3.4.3 Hydrology

Cape Town has a Mediterranean climate and thus has a winter rainfall pattern with approximately 760mm of precipitation per annum, usually higher in mountainous areas (CoCT, 2011). Table Mountain is the source for most of the smaller rivers and streams in the area. These streams have been converted and integrated in the stormwater drainage system for the city (figure 3.14). The Reclaim Camissa Project has identified 25 underground springs in the City Bowl; archival records show that there were 36 originally, that gave the area its Khoisan name “Camissa”- the Place of

Sweet Waters. This project aims at reclaiming the natural springs and streams and integrating them into civic infrastructure. To date, the Green Point Park at the Stadium, built for the 2010 FIFA World Cup just outside the study area, makes use of the water from the Stadsfontein spring- the largest of the springs and probably the reason that the city of Cape Town exists today (reclaimcamissa.org). The presence of 'soft spaces' within a city, improves drainage especially during flash floods, reducing the run-off into stormwater drains.

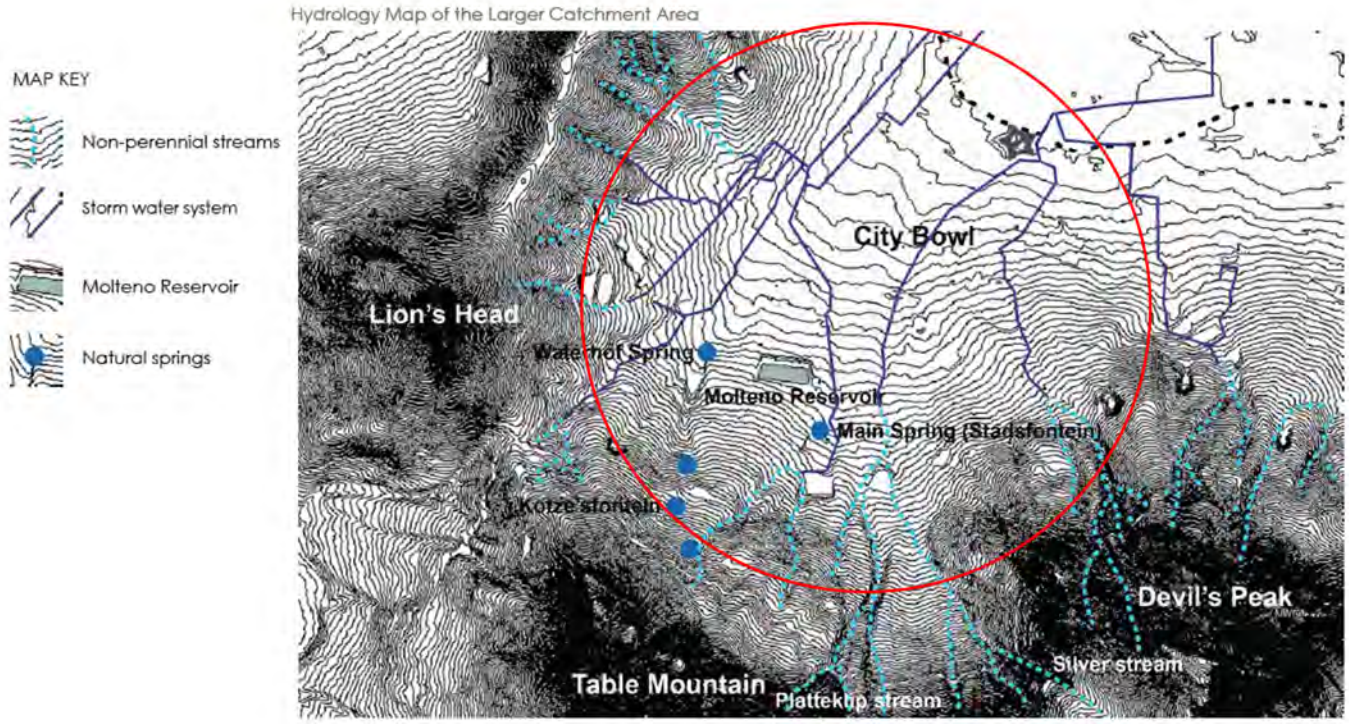
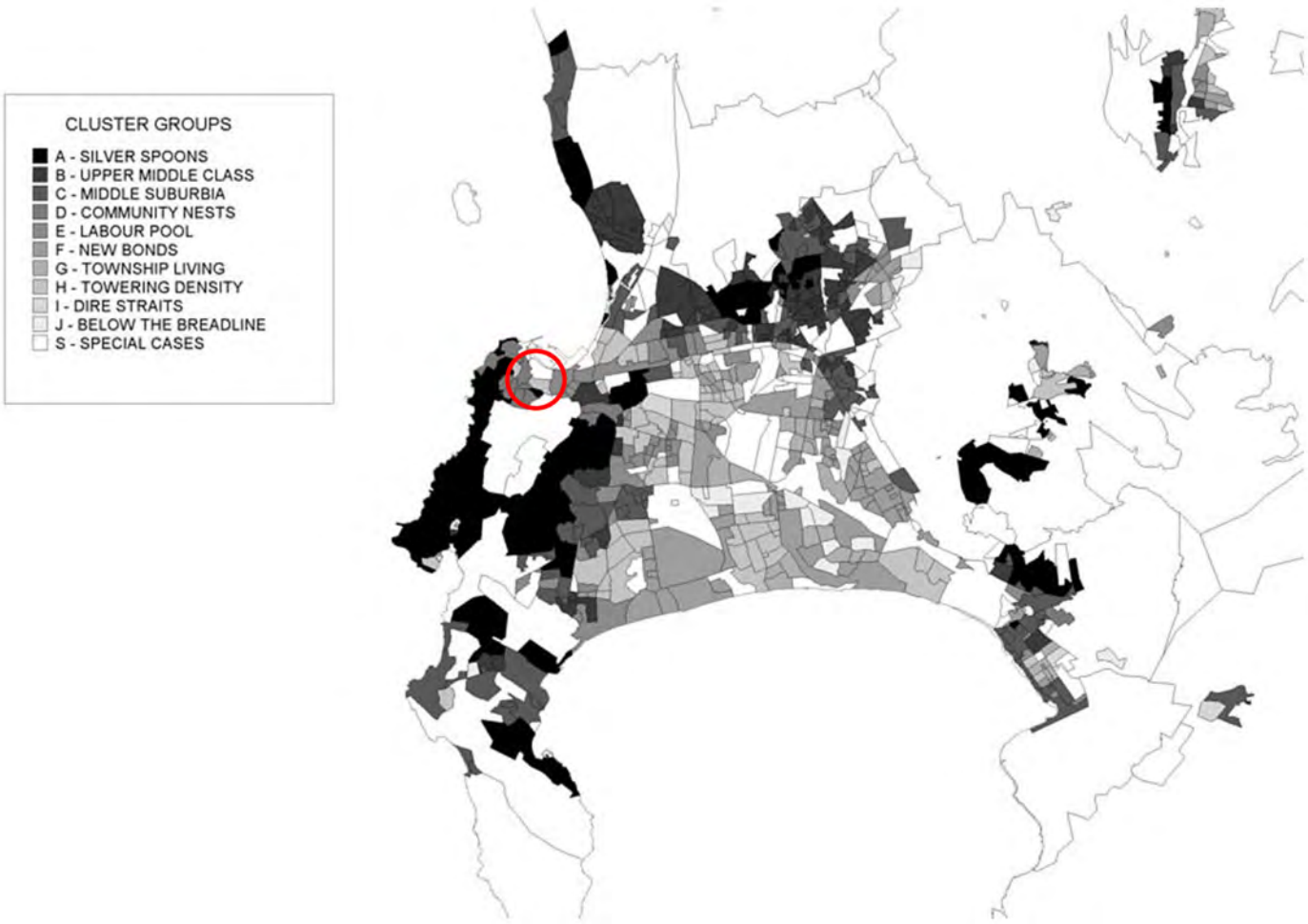


FIGURE 3.14: HYDROLOGY OF THE CAPE TOWN CITY BOWL, SHOWING THE NATURAL SPRINGS, STREAMS AND THE STORMWATER DRAINAGE SYSTEM. NOT TO SCALE (CAPE TOWN PARTNERSHIP, 2011)

Water consumption in Cape Town is inefficient and inequitable (Swilling, 2006). Cape Town is expected to run out of water, through its current supply lines, in 2025 (Swilling, 2006). In 1998, residential water consumption accounted for 37% of the total, with 60% of this being consumed by high-income areas (Swilling, 2006). Gasson (2002) predicts that in 2020, high-income areas will still be consuming the largest percentage of water, despite a reduction to 42%. Swilling (2006) organizes the CMA into suburbs according to their consumption levels (figure 3.15 and 3.16), of which water consumption is one factor. The City Bowl is dominated by suburbs classified as "community nests" and with two "towering density" suburbs representing middle to high-income areas that dominate the City Bowl area (Swilling, 2006).

3.4.4 Available Land

Available land in the City Bowl is at a premium for developers. In the current economic context, it is difficult to justify urban food production against development desires (Kruger-Fountain, 2013). There are some areas on the ground that are available for agriculture, for example under-utilized recreational spaces (such as the OZCF) and reinvigorating the productive value of the Company Gardens. Also note the Tamboerskloof Erf 81 Military Farm, a piece of land owned by national government. This piece of land was recently under scrutiny for the development of a luxury guesthouse (iolproperty.co.za). In response, a group of local residents joined forces with caretaker



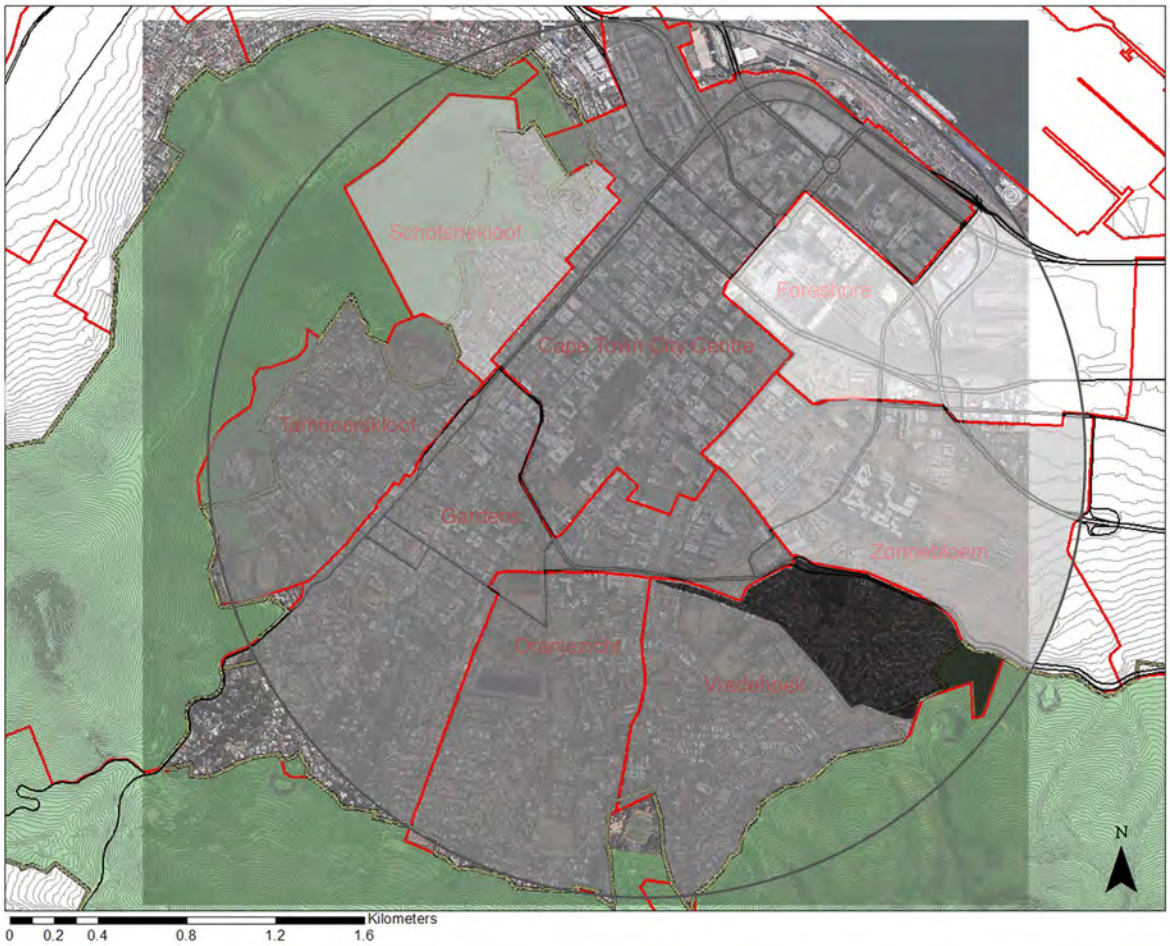


FIGURE 3.15 & 3.16: CAPE TOWN SUBURBS BY CONSUMPTION (SWILLING, 2006 AND DATA SOURCE: COCT, 2013)

Andre Laubscher, for a model community farm complying with sustainable farming methods and design (facebook.com/erf81). There is also potential for using under-utilized space at public buildings, such as schools, libraries, places of worship, sports facilities and government buildings. Erf 81, OZCF and public facilities are shown on figure 3.17 on the following page. A vacant land audit for Cape Town with a broad focus on the potential uses for such land, beyond that of social housing, would be beneficial for the purposes of urban agriculture. Figure 3.17 also depicts the Metropolitan Open Space System (MOSS).

Beyond this, it is necessary to look at creative, unconventional opportunities such as vertical, small-space and rooftop gardening. In 2012, a group of students from the Worcester Polytechnic Institute undertook a study for the potential of rooftop gardening in the Cape Town CBD as an employment strategy. A GIS analysis revealed that in the CBD alone there is 162 000sqm of flat rooftop space (WPI, 2012). A showcase rooftop garden has been created at 44 Wale St (shown on figure 3.16), where the offices of the City of Cape Town's Environmental Resource Management Department, including the Environmental Capacity Building, Sustainable Livelihoods and Communication Branch are found (Du Toit, 2013). The Prestwich Memorial Building (also shown on figure 3.17), where the remains of over 2,500 bodies of slaves, servants and other under-privileged citizens from the 17th and 18th century are memorialized, has been selected as the pilot project for a micro-green or mushroom farming unit, employing several previously unemployed laborers from the surrounding low-income areas (Du Toit, 2013). The Prestwich Memorial centre is designed as a multi-purpose public amenity that continues to tell the story of Cape Town (archivalplatform.org). Rooftops can also be used for supplementary agricultural purposes, such as worm-farming, composting and beekeeping (see case study 3.3 for beekeeping in the Fringe). Uncovering 'lost' or 'inbetween' spaces also provides opportunities for food production, such as that demonstrated, in case study 3.4, by the Methodist Church in Greenmarket Square.

I have conducted a preliminary vacant land study in order to discern potential pieces of public land for urban agricultural project interventions. This is shown in figure 3.18, with a corresponding table (3.2) that gives details on the current uses, land-use zones, property ownership and market value. Four sites have been chosen out of these and the related interventions will be explored in the next chapter, these are highlighted in table 3.4. Due to their proximity, sites 8,9 and 10 are to be merged into one, multi-functional site.

Case Study 3.3 Rooftop Beekeeping in the Fringe (fringe.org.za)

The LibraVision Building in the east city district, recently known as the Fringe in terms of the Cape Town World Design Capital 2014, is now home to the City Bowl's first rooftop bees. Following the precedent of cities like London, Paris and New York, Marine and Derek Williams installed the hives with the support of the LibraVision Film Company and local businesses. The local Cape Honey Bee is able to forage for nectar within a radius of 3 to 5km, which in this case includes Table Mountain and all its fynbos, as well public parks such as the Company Gardens. The global decline in bee populations threatens food security on a massive scale, as bees are an essential part of the agricultural process. Urban beekeeping has the potential to restore bee populations while bringing their plight to the forefront of citizen's minds.

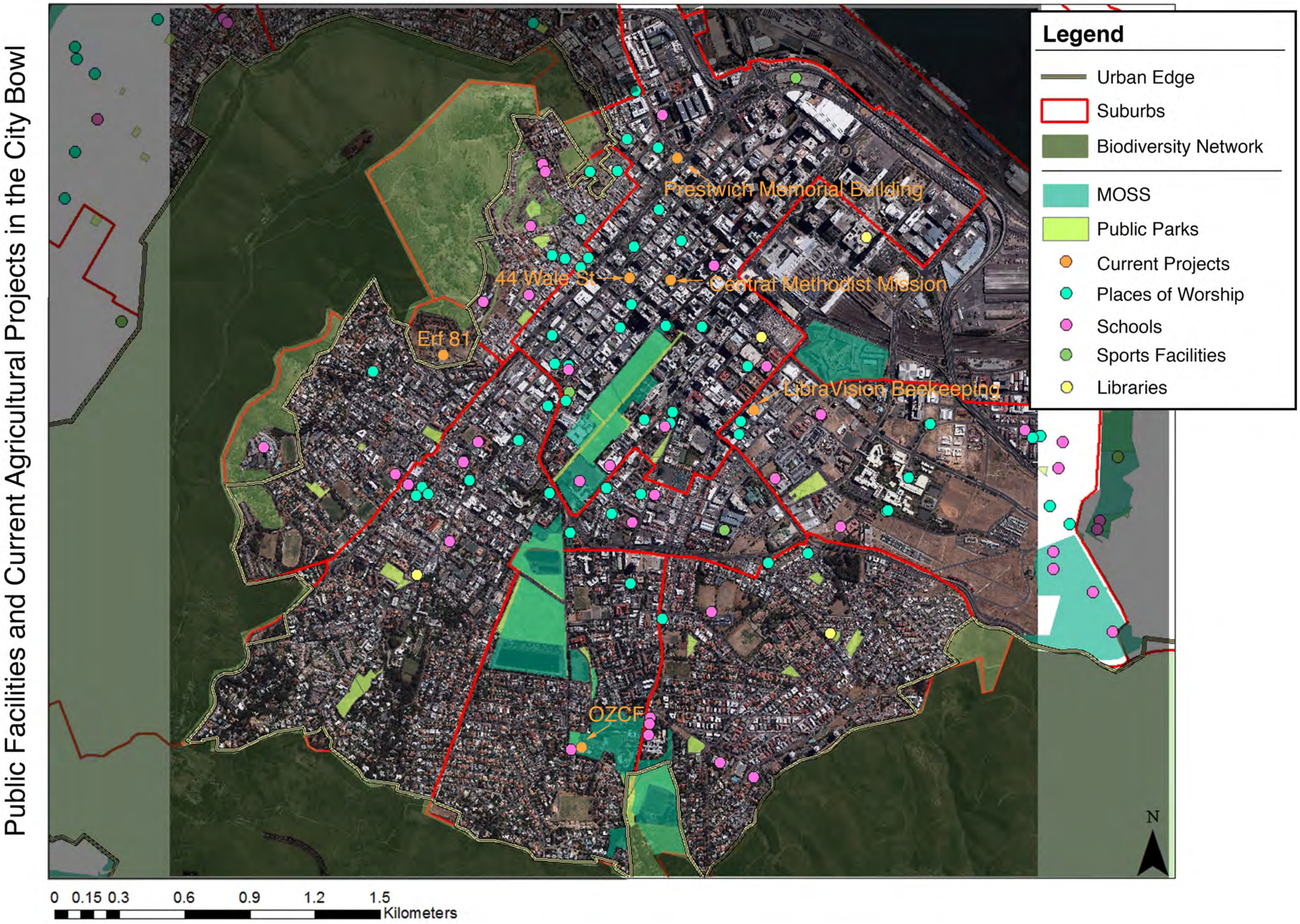
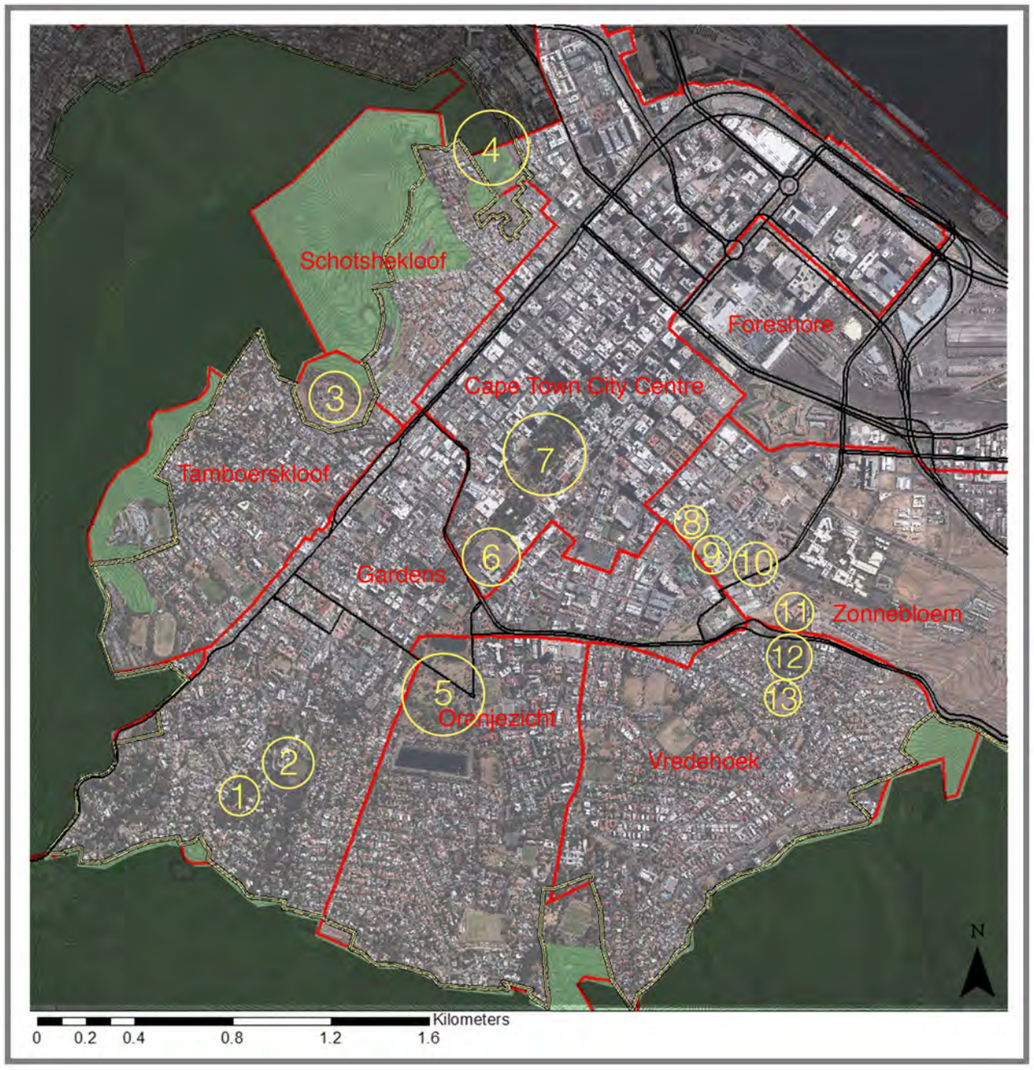


Figure 3.17: Spatial analysis of public facilities, MOSS and current urban agricultural projects (Data Source: CoCT, 2013)



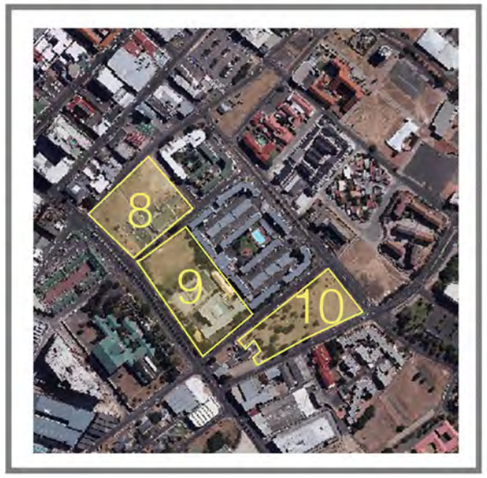


FIGURE 3.18: PRELIMINARY VACANT LAND STUDY FOR THE CITY BOWL. (DATA SOURCE: COCT, 2013)

	Address	Erf	Current Use	Zone	Size (sqm)	Market Value (R)	Propert Owener
1	39 Leeuwenhof Rd, Gardens	2345	Open space, alien trees	Single Res 1: Conventional	5678	13 674 901	City of Cape Town
	41 Leeuwenhof Rd, Gardens	2307	Open space, alien trees	Single Res 1: Conventional	10 418	15 000 000	City of Cape Town
2	61 Hof St, Gardens	3154	Residence of the Premier	None	57 533	100 000 000	Western Cape Province
3	Military Rd, Schotshekloof	81	Vacant, various activities	Utility	102 873	8 800 000	Republic of SA
4	39 Strand St, Cape Town Centre	367	Vacant	None	114 405	289 022 500	City of Cape Town
5	Camp St, Gardens	1227	De Waal Park	Open Space 2: POS	85315	7 500 000	City of Cape Town
6	96 Hatfield St, Cape Town Centre	96115	Cape Town High School	None	32 601	39 893 559	Western Cape Province
7	Government Ave, Cape Town Centre	95164	Company Gardens	Open Space 2: POS	59 691	382 500 000	Adminstrator of the Cape of Good Hope
	19 Victoria St, Cape Town Centre	95135	Company Gardens	Open Space 2: POS	54 456	73 500 000	City of Cape Town
8	4 Bloemhof St, Zonnebloem	5650	Vacant, parking	Mixed Use 2	717	1 817 500	Republic of SA
	6 Bloemhof St, Zonnebloem	5667	Fruit and Veg City	Mixed Use 2	2730	8 908 029	City of Cape Town
	Kent St, Zonnebloem	5626	Fruit and Veg City	Mixed Use 2	122	1000	City of Cape Town
	1 Kent St, Zonnebloem	5641	Vacant, public parking	Transport 2: public road and parking	105	157 500	Republic of SA
	2 Kent St, Zonnebloem	5623	Vacant, public parking	Transport 2: public road and parking	283	1000	City of Cape Town
	3 Kent St, Zonnebloem	5642	Vacant, parking	None	185	647 500	Republic of SA
	5 Kent St, Zonnebloem	5661	Vacant, parking	None	468	1 170 000	City of Cape Town
	8 Kent St, Zonnebloem	5627	Fruit and Veg City	Mixed Use 2	758	1000	City of Cape Town
	12 Kent St, Zonnebloem	5628	Fruit and Veg City	Mixed Use 2	767	1000	City of Cape Town
	Canterbury St, Zonnebloem	5645	Vacant, parking	None	230	805 000	Republic of SA
	109 Canterbury St, Zonnebloem	5644	Vacant, public parking	Transport 2: public road and parking	255	892 500 00	Republic of SA
9	Drury Ln, Zonnebloem	5854	Harold Cressy High School	Community 1: Local	13 943	16 335 536	Western Cape Province
10	42 Constitution St, Zonnebloem	116982	Vacant	Open Space 2: POS	10 846	1000	City of Cape Town
	42 Constitution St, Zonnebloem	116976	Vacant	None	2927	1000	Republic of SA
11	70 Constitution St, Zonnebloem	116979	Trafalgar High School	Community 1: Local	28 779	23 473 207	Dept of Public Works and Transport
12	De Waal Dr, Vredehoek	318	Open space, alien trees	Open Space 2: POS	18 440	1000	City of Cape Town
13	5 Anemone Ave, Vredehoek	479	Open space, alien trees	Open Space 2: POS	7198	1000	City of Cape Town

TABLE 3.2: PRELIMINARY VACANT LAND STUDY FOR THE CITY BOWL. (CAPETOWN.GOV.ZA/EN/PROPERTYVALUATIONS)

Case Study 3.4 Central Methodist Church and Touching the Earth Lightly (ttel.co.za)

A collaboration between the Methodist Church on Greenmarket Square in the CBD and Touching the Earth Lightly, a “call to action” organization, aims to confront common perceptions about space and food. In between the church and the fence, soil-filled and vegetable-growing milk crates can be found. This project challenges all surrounding buildings in the CBD to follow their example and use innovative methods for growing food and greening the city, promoting the invigoration of ‘in-between’ spaces.

3.4.5 Waste Production

Cape Town produces two million tonnes of waste per year (Swilling, 2006). In 1998, approximately half of this was residential. Only 6.5% of residential and commercial waste is recycled, compared to 60% of industrial waste (Swilling, 2006). The remainder goes to landfills on the Cape Flats, which are filling up rapidly and polluting the groundwater. In 1998, high-income areas contributed more than 50% of the waste going to landfills (Swilling). This translates to 1.3kg of waste per person per day in high-income bracket, 0.7 for middle-income bracket and 0.35 for low-income bracket. This inequality and over-production waste is possible only at the expense of the natural environment and the poor (Swilling, 2006). Waste figures for the City Bowl area are not available, but from the consumption maps (figure 3.15 and 3.16) the assumption can be made that the area produces a significant amount of waste, as this is one of the indicators Swilling uses for his analysis. Between 40-60% of residential waste is organic matter- from kitchens and gardens.

3.4.6 Summary

In summation, the City Bowl does have constraints in terms of food production, especially from a traditional perspective on agriculture where fertile soil, land, geology, slope and water availability are the primary indicators for agricultural potential. However, this projects aims to challenge conventional thought. For the purposes of this project urban food production is not simply about producing food, especially in the City Bowl area, and a different perspective presents a new set of indicators and opportunities.

3.5 Food Systems Analysis

A food system has previously been defined as the network of actors, activities and processes relating to the production, distribution, consumption and disposal of food and food-related products (Pothukuchi and Kaufman, 1999). A food system analysis or assessment has often been the first step in planning for a sustainable and secure urban food system, for example in London, UK and Waterloo, Ontario (as discussed in the previous chapter). At present, a comprehensive food system

analysis has not been undertaken for Cape Town, or more specifically for the City Bowl. Thus this section draws on various sources that have explored different aspects of the Cape Town food system. Assumptions are made as to the consumption of the City Bowl, as well as estimations for the City as a whole.

The Cape Town food system is a complex network that effects and is affected by a wide variety of other systems, including both the formal and informal economic sectors. Battersby and Haysom (2012) claim that the complexity of the Cape Town food system is such that the intricacies thereof may not be fully understood until it is too late, thus the need for a comprehensive food system assessment. Such an assessment, 'Food Systems and Food Security', has been commissioned by the Mayor's Office, with input from the planning department (Hennessy, 2013), but as yet it remains pending (futurecapetown.com).

3.5.1 The PHA and Cape Town's Food System

Cape Town consumes 305 494 tonnes of fresh produce annually (Roux, 2012). The top 29 food items consumed in Cape Town make up 96.3% of the total fresh produce input for the city (Roux, 2012). The top three fruits and vegetables (potatoes, onions and tomatoes) account for 53% of the annual total (Roux, 2012). Other high consumption vegetables include cabbage, spinach, potatoes, carrots, onions, butternut, peppers and cauliflower.

The PHA is integral to the Cape Town food system and produces up to 50% of some of the vegetables consumed within the city (Roux, 2012 and Battersby and Haysom, 2012). The four major retailers and fresh food market account for 90% of the fresh food sales in the city, and the PHA is the source for much of these vegetables (Roux, 2012). Table 3.3 shows the vegetables produced in the PHA. The PHA also provides for the informal food system, supplying local spaza shops, informal markets and street vendors, as well as providing vegetables that are distributed free of charge into the communities of farm laborers (Battersby and Haysom, 2012). If the food production capacity of the PHA was reduced or lost completely, the food sources from outside of the city will continue to satisfy the consumption levels of many Capetonians. However, this will add to the cost of food (due to transportation costs especially with expected increases in the price of oil) and isolate those not connected to the formal food system thus increasing food insecurity among the poor most acutely (Battersby and Haysom, 2012), but also among all citizens (Swilling, 2006).

3.5.2 Food and Cape Town's Urban Metabolism and Ecological Footprint

The most recent data available on the metabolic inputs for Cape Town come from 1998 (Gasson, 2007), and while this may be out of date an assumption can be made that this information remains relevant to date due to a largely unchanged Cape Town food system. According to Gasson (2002 and 2007) food makes up 0.4% (approximately 1.3 million tonnes per annum) of the city's metabolic inputs. This percentage translates into an ecological footprint of 112 349 km^2 for food production, transportation and consumption, out of a total ecological footprint for Cape Town at 128 264km^2. The reason behind this large food footprint is the reliance on long-distance supply chains (Swilling, 2006) with the average distance a food item travels before being consumed in Cape Town at

Cabbage	Celery	Fennel	Maize	Broccoli leaves	Artichokes
Potatoes	Swiss Chard	Beans	Peas	Kohlrabi	Pac Choi
Carrots	Beetroot	Parsley	Beans	Cucumber	Covo
Lettuce (variety)	Leeks	Squashes (variety)	Rape	Watermelon	
Broccoli	Spring Onions	Celery	Kale	Tat Soi	
Cauliflower	Radishes	Eggplants	Peppers	Tomatoes	
Onions	Coriander	Rocket	Patty Pans	Rhubarb	
Spinach	Basil	Covo	Turnip	Strawberries	

TABLE 3.3: VEGETABLES PRODUCED IN THE PHA. THOSE HIGHLIGHTED ARE PRODUCED IN LARGE QUANTITIES (BATTERSBY AND HAYSOM, 2012)

715km (Roux, 2012). The fact that four main retailers and one fresh food market dominate the Cape Town food market helps to determine the sources of food, the distance it travels and the transport and distribution system. Of the top 29 vegetables consumed in Cape Town many are produced within the Western Cape, but significant amounts are sourced from other South African provinces, as well as the neighboring countries of Namibia and Mozambique (Roux, 2012). Furthermore, a large amount of food products are imported from all around the world, although these numbers have never been quantified for Cape Town (Roux, 2012). South Africa remains a net exporter of food products and demand for South African produce is growing (SAInfo, 2012), however, cheap imports, such as poultry from the European Union and Brazil, threaten the livelihoods of South African farmers, national food security and the sustainability of the agricultural industry (TAU, 2013).

This dependence on long supply chains from unsustainable, non-organic agricultural sources deems "all Cape Town households extremely vulnerable from a food security perspective in the medium to long term" (Swilling, 2006:48). Swilling further claims that up to 80% of the cost of food items is related to the transportation, packaging, refrigeration and chemical treatment of food items, which, at present, is affordable for middle and high income households but not for the poor. However, the continued reliance of these food-related processes on oil imports are unsustainable and will likely cause city-wide food insecurity into the long term.

3.5.4 City Bowl Consumption

The suburb consumption levels in CBD are generally high, shown in medium to dark grey (figures 3.15 and 3.16). From Swilling's (2006) calculations, these suburbs have an ecological footprint that amounts to the requirement of approximately 2.5 planet Earths, if everyone lived as these residents did. This is in comparison to the wealthiest suburbs of Cape Town that would require up to 14.8 planets but the average for Cape Town is 2.3 planets. Cape Town has a per capita ecological footprint of 4.28 hectares, compared to the United States' 5.1, India's 0.4 and a world average of 1.8. While these consumption patterns have been calculated to include many materials other than food, the food (and food-related) input and food-related waste output are comparatively high. This serves to indicate the unequal consumptive patterns in Cape Town as a whole, and show that the City Bowl area has the potential to reduce its ecological footprint through local food production and

a cyclical perspective on waste.

3.5.5 Food, Waste, Energy and Emissions

The average distance a food item travels before being consumed in Cape Town is 715km (Roux, 2012). The primary transportation for food produced in South Africa and neighboring countries is on flat-bed or refrigeration trucks, covering a total distance of 11,000,944km per year (for the top 29 fresh food products, 96.3% of the total) resulting in 10 663 tonnes of carbon dioxide annually (Roux, 2012). If 10% more food were produced locally, Cape Town's 20 million tonnes of carbon dioxide would be reduced by 0.05% (Roux, 2012). Further, carbon dioxide is emitted in the food production process. 564 966 tonnes of carbon dioxide are emitted to produce the 305 494 tonnes of fresh produce consumed in the city. According to Roux (2012), if 10% of Cape Town's food were produced locally, with organic or similar agricultural methods that use little or no pesticides and fertilizer, Cape Town's carbon emissions would be reduced by 0.28%, which, despite first glance, is not a trivial reduction when viewed in terms of the whole and sector contributions.

Methane released during the decomposition of organic waste in landfills accounts for 3% of Cape Town's annual emissions (CoCT, 2008b). Of the 2.1 million tonnes of solid waste produced by Cape Town, 30% of this is food-related organic waste (Roux, 2012). Roux (2012) claims that if 10% of food-related organic waste were diverted into a composting network for urban food production, Cape Town would reduce its carbon emissions by a further 0.3%. Minimizing waste going to landfills is a priority for the City of Cape Town, as the current landfill sites are rapidly filling up (capetown.gov.za/en/solidwaste2). The transportation of waste to landfills also contributes to the carbon footprint of the city, but the statistics of this is not available at present. Diverting waste from landfills, especially organic waste, will have positive environmental benefits in reducing the ecological footprint and moving towards a cyclical urban metabolism

3.6 Conclusion: Opportunities and Constraints

The first constraining feature of urban food production in Cape Town, generally, is that of the policy environment and the missing link between planning, the natural environment and food. This is representative of a mindset constraint that positions food production and agriculture as primarily on the rural agenda and not as the purpose of the city. The commitment to ecologically sustainable development in national, municipal and district planning, however, does provide an 'in' into which food planning and production could potentially fit. The opportunity is there to create national, provincial and/or municipal plans, programmes or departments with an explicit focus on food, food systems and planning. A comprehensive food system assessment would be beneficial to all those working within the expansive realm of food. The presence of civil society and non-profit organizations already in place show that there is a social movement towards urban food production as both a food security and ecological strategy, offering opportunities of volunteerism, training, upskilling and education. These organizations would benefit from a friendlier legislative environment and, in turn, legislation and state institutions would benefit from collaboration with these organizations.

Space and available land, and the bureaucracy and funding involved in access to such land, in a city

is undoubtedly a major constraint when considering urban food production. However, this provides an opportunity to rethink the way in which agriculture is perceived. The rooftop study for the CBD proves that there is opportunity for innovative food production methods in the City Bowl, and further research into vertical spaces, pavements and verges could support this assumption. Schools, parks, libraries and other public or semi-public places provide an opportunity for integrating food production into multi-functional spaces. While the soil potential for agriculture is not particularly high, soil quality can be improved through composting and recycling of organic waste material, and in turn, appropriate agricultural methods could improve the overall soil quality. The indicators that are conventionally used to determine agricultural potential need to be challenged, as they are a manifestation of the conventional perspective on agriculture: indicators such as slope and availability of large tracts of land represent the needs of modern agriculture, not of the future of food production. Nevertheless, there are vacant pieces of land within the City Bowl, discovered in a preliminary vacant land audit, that present opportunities for public urban agricultural projects. These will be explored in more detail in the next chapter as they are used as sites for spatial interventions, with support from the MOSS.

There is opportunity to connect with water management, especially storm water management with regards to soft spaces and reducing run-off during flash floods, as well as integrating with the restoration of the underground springs beneath the CBD. The historical aspect of agriculture in the Cape provides an opportunity to 'tell the story' of the city and engage with tourism, while linking with the public open spaces and green web of the city. These spaces provide opportunity for the gathering of people, to engage with each other and acquire health, well-being and community benefits. Cape Town is privileged to already have the PHA producing a large percentage of its food. Bringing urban food production to the forefront of people's minds within the urban space of the CBD and City Bowl has the potential to improve the production value of areas such as the PHA and other agricultural sites in and around the city. The City Bowl is the centre of Cape Town, where the majority of citizens pass through on a regular basis. The potential of this area to bring about change in perception and mindset is enormous. Bringing aspects of nature and food production into the City Bowl has the potential to bring about a new kind of normal.

4

Interventions

An important aspect of planning is the ability to envision a future, an ideal that can be worked towards through both legislative and on the ground interventions. Impending climate change and environmental crises present an opportunity- a time to rethink the societal relations with nature, engage with what has resulted in and from these changes and how the dualistic assumption of the city as human territory, with nature as an outside concept, can be challenged. The divide between humans and nature is imaginary. Humans are natural; nature is inside the human being.

'Nature' is already such a huge part of Cape Town's identity: the mountains, Table Mountain's 'table cloth', the coastlines and biodiversity contribute to the sense-of-place. From the earliest times, people living in the Cape Town area have used the natural vegetation for food, medicine and shelter amongst many other purposes. The impending changes must strengthen this relationship until Capetonians understand that nature is as much a part of their individual being as their communal being. In 50 years time, when climate change has rendered the world anew, the human built environment of Cape Town could be an example to other cities of how to live in synchrony with natural systems. To get to this point, elements of nature must be brought into the human environment, even more so than they already are. Drawing on the natural and cultural heritage, the fabric of the city has become softer, breaking up the hard surfaces with corridors lined with fruit trees and indigenous plants. These corridors provide food, access, shelter and shade for all inhabitants- birds, bees, butterflies and people. These corridors connect schools, businesses and homes to parks and gardens where fruit trees, shrubs and vegetables grow, fed by the mountain springs. Children grow up with a connection to all elements of nature, understanding the intricate cyclical relationship between humans and their environment represented through the growing of food.

The intention of this project generally and this chapter specifically is to think of the process of producing food as not only about quantities and commodities but as a natural process that ultimately shapes how individuals think about nature and community. The interventions in this chapter are not exhaustive and rather represent the first steps that can be taken to begin to change the physical and imagined landscape of the City Bowl and Cape Town in general.

It is clear from the previous chapter that the City of Cape Town needs to reform its food system. The

current food system is unequal, unhealthy, wasteful, inefficient and potentially insufficient. It is further entangled with a variety of other unsustainable human activities, such as those regarding energy, water and waste, rendering the food system in polar opposition to the sustainability trajectory. Urban agriculture should be seen not simply as a food strategy but as a means to bring together and to the fore, a variety of complex behavioral issues in an effort to promote a more ecologically sustainable city and bridge the divide between humans and nature. The literature review provided insight into the important role that planning can, is and should be making in bringing about change in food systems, from the community to the global scale and the potential impacts such a change would have on other human and natural systems.

The purpose of this interventions chapter is to show the potential contribution that urban planning can make to local food production and urban agriculture in the CMA generally, and to the City Bowl specifically. Cape Town needs to have a more holistic perspective on food and food systems that does not focus on the different aspects thereof in isolation. The general policy and legislative interventions pertain to Cape Town as a whole inasmuch as they are municipal policies, regulations and bylaws, while the spatial interventions use the City Bowl to demonstrate the possibilities for food production in the central city.

The following interventions aim to :

Bring healthy food systems consideration into the planning agenda

Challenge the narrow conceptions of food production found in South African and Capetonian policy, including how food production contributes to better understanding of how natural life supports city life

Plan for a healthier (for people and the planet) food system for Cape Town, ultimately playing a role in reshaping the global agri-food regime

Encourage community, private and public to grow more food and source food from sustainable and/or local sources that support and pay attention to care, nurture and overall well-being

Promote the agricultural and ecological heritage of the City Bowl for public awareness, educational, health and well-being and tourism purposes in order to facilitate enjoyment that comes with a sense of responsibility to all citizens to recognize, honor, and respect natural and food systems

4.1 Policy Interventions

A supportive legislative and policy environment forms the basis of transforming a food system and the related food culture. Currently in Cape Town the policies and local and provincial government departments that relate to food, agriculture, health, environmental resources and planning work separately on different mandates. The subject of food, with the multitude of linkages it presents, is such that transforming the local food system to one that is more sustainable into the long term will require a trans-disciplinary approach, with planning as a key participant. According to van Breda

(2012) a trans-disciplinary approach is one that transcends traditional disciplinary segregation, creating a new mode of knowledge creation and sharing through mutual learning and collaboration in order to meet complex societal challenges.

The United Nations Environment Programme (UNEP) in a discussion paper on achieving sustainable food systems recommends that governments use a "sustainable diets" lens for policy-making regarding food systems (UNEP, 2013). This would entail challenging the norm where agriculture and food-related policy remains the mandate for departments of agriculture alone and move away from the 'silos' in which government departments tend to act. This UNEP document provides a concise summary of the actions that governments (as well as the private sector) can take to move towards a sustainable food system. While urban food production does not feature here specifically, it can be used a strategy to fulfill some of these targets especially through creating awareness and "using public procurement as a catalyst for change" (UNEP, 2013: 30). Thus, the policy interventions presented in this section aim to work towards these actions and aims, especially that of state action as a catalyst for change, inspiring the public to follow suit with cascading effects. The first sub-section below looks more generally at food and food-related policy and planning, the second more specifically at urban agriculture.

4.1.1 Food Perspectives, Assessments, Policies and Plans

These policy interventions have a broader focus on Cape Town's food and food systems. They pertain not only to the City Bowl but for the CMA generally, although the City Bowl can act as a catalyst for the rest of the city.

FOOD SYSTEMS PERSPECTIVE:

In order to manage the conceptions of the Cape Town food system and the relationships that the food system has with other sectors and systems, the City of Cape Town should produce a Cape Town Food System Perspective. This is an overarching document outlining the linkages between all municipal departments and food, and how these should be managed. This perspective document also challenges the private and civil sectors to rethink their relationship to the natural environment, to consumption of food and water and production of waste.

FOOD POLICY COUNCIL:

In many cases, such as Oakland, a food system assessment has resulted in the creation of a food policy council (FPC) with the aim of fostering collaboration, gathering research and advising on food-related policy (Maan Miedema and Pigott, 2007). This does not necessarily come after the assessment as such a council could undertake such an assessment as their first mandate, such as in the case of Bristol (Carey, 2013). The Cape Town Partnership has begun the process of creating an urban agriculture forum for the city. While this is important, this should be subsidiary council to the Cape Town Food Policy Council (CTFPC) which conducts regular food system assessments, drives the formulation of food system plans, advises on all food system related policy and acts as a resource centre for municipal department, private businesses and the public. In the case of Cape Town, it is necessary to first set up an FPC, as the topic of food and food systems falls through the cracks of other municipal departments. The first task of the CTFPC would be to conduct a food systems assessment, in partnership with the City of Cape Town, Mayor's Office, academics, civil

society and organizations and the private and retail sectors. The primary purposes of the CTFPC is to advise on food policies for the city, conduct research, share knowledge and create food plans.

FOOD SYSTEMS ASSESSMENT:

As has been demonstrated by several cases, such as Bristol and Oakland, a comprehensive local food system assessment is essential to ascertain the status quo of the local food system. Pothukuchi (2004) claims that planners have a very important role to play in undertaking a food systems assessment. The planning tools and skills that add to the assessment process include the ability to map and spatialize the multiple scales and linkages that are inherent to a food system, bringing local government into the process with the potential to provide solutions and, most importantly for the purposes of this project, bringing planners into the realm of food issues in a leadership capacity (Pothukuchi, 2004).

A food systems assessment must include a comprehensive analysis of food types, food culture, food sources, inputs and retail points, food and kitchen waste production and end-points and food-related water and energy use. These aspects should be spatialized as far as possible in order to contribute to a spatial food plan.

FOOD SYSTEMS PLAN:

A food systems assessment provides the basis for a food plan. The Cape Town Spatial Development Framework (2012) does not include a food plan for the city but does provide the space for a supplementary food plan. The CTFPC will have the directive to compile a food plan every five years in accordance with the timeframe of the SDF, beginning with a strategic vision and incorporating strategies such as safeguarding land for food production, infrastructure for access to healthy and sustainable food sources for all, redistribution and composting and transforming food culture.

FOOD PLANNING AND EDUCATION:

Another important aspect of bringing food into the planning agenda is that of education. The current Masters in City and Regional Planning (MCRP) degree offered at the University of Cape Town (UCT) and the BTech in Town and Regional Planning degree at Cape Peninsula University of Technology (CPUT) for example, pay attention to a variety of human needs and activities including the economy, infrastructure, transport, the natural environment and service delivery but give very little input on food systems and the relationship between food systems and planning. A course, or section, in food planning would promote this important relationship and provide for a future of food planning in the public and private sectors. Food and outdoor-based experiential education should be included in school syllabuses from the nursery school to high school level. This can be linked with various urban agricultural projects around the city.

4.1.2 Supporting Urban Agriculture

Urban food production alone will not bring about the radical changes that are necessary to transform unsustainable food systems. However, it has the potential to enliven urban spaces, build community and above all, raise awareness and promote education around food and food systems. Nevertheless, in Cape Town as a whole, there is opportunity to improve levels of food security through urban agriculture, as there are tracts of land, such as the PHA, that currently produce large amounts of food (the PHA produces approximately 50% of Cape Town's fresh produce), with the

potential to increase. Greater awareness of food systems and food security within the City Bowl has the potential to positively affect public interest and private investment into food production elsewhere in the city. Some of these interventions pertain to the CMA as a whole and some use the City Bowl as a catalyst space.

IDENTIFYING AND PROTECTING LAND AND OTHER SPACES FOR URBAN AGRICULTURE:

A vacant land study for Cape Town primarily focuses on land for social housing (Ramdewor, 2009). The needs of housing and food are often perceived as mutually exclusive but this is an unhelpful binary that posits these needs as opposites rather than cooperative. The provision of housing is high on the political agenda in Cape Town and in South Africa generally, but in order to bring the challenge of food and food production higher up the agenda a land audit for urban agriculture should be undertaken. A vacant land study focusing on agricultural opportunities is different to that for housing as there are different requirements and a different approach is necessary. An innovative perspective is required in order to include spaces that would traditionally be excluded. This includes looking at potential rooftops and in-between spaces otherwise overlooked because of their size and supposed incompatibility with agriculture. Further, soil potential, access to water and security have traditionally been viewed as the primary factors in identifying land for food production, and while these remain critical factors, this undermines the understanding that soil can be made and its fertility increased through composting. Soil and water quality and access are not static factors and can be improved through human intervention.

This land audit should be within a food systems assessment and the patchwork nature of small and isolated pieces of land linked to one another through a central 'food hub', further linking food producing land and growers with buyers, markets (formal and informal), community kitchens and schools. This will be discussed in more detail in the following section on spatial interventions and depicted in figure 4.5. The protection of potential agricultural land can be done through zoning, described in more detail later.

AMENDMENTS TO THE UA POLICY:

Access to public land and water for food production must be made available to all citizens. The current UA Policy for Cape Town allows for the disposal of public land, the lease of public land, which includes land that cannot be sold such as those around public facilities and road verges, and the acquisition of commonage land for urban agriculture (CoCT, 2007b). Water is subsidized for vulnerable groups involved in urban agriculture. Permits are required for the lease of land for food production (CoCT, 2007b).

Actions must be put in place to encourage the public to make use of these provisions. First, an awareness campaign is necessary to ensure the public is conscious of the UA Policy and the land and water provisions are available to those interested. Second, in order to encourage management of and food production on public land (such as pavements, verges and that around public buildings) by residents, the lease of such land should hold benefits such as tax incentives and free or subsidized water access and other municipal services (discussed in more detail under the new and amended bylaws intervention). Third, the disposal of public land for the purposes urban

agriculture must be incentivized through property tax credits and free or subsidized municipal services. Fourth, water for all urban agricultural projects with public benefits should be subsidized with regulations attached.

Regulations must be put in place to ensure that food production is more compatible with ecological requirements. This includes the method of growing, the use of water and the integration of indigenous vegetation. Growing practices should not include the use of oil-based pesticides and fertilizers and include the use of organic composting derived from organic waste. Water use should be minimal through the use of efficient watering (such as drip irrigation) and the promotion of rainwater collection. The integration of indigenous vegetation promotes plant and animal biodiversity, plant and eco-system resilience and pollination by birds and bees.

AMENDMENTS TO THE ZONING SCHEME:

The CTZS is to be amended to include a zone exclusively for urban agriculture. Open space zones 2 and 3 already have urban agriculture as a consent use. Mixed Use (MU) Zones must be amended to include urban agriculture as a consent use. An additional open space zone (OS4): food production, with urban agriculture as its primary use should be included in the CTZS. Local and Regional Community Zones (CO1 and CO2) are to have urban agriculture as a primary use. OS4 zones and Agricultural (AG) zones are to have the same status as conservation areas in terms of being untouchable for development. These zones should also hold specifications that these pieces of land may not lie fallow for more than one year to ensure continued practice and fertility of soil.

In addition, to encourage a local food economy, consent uses for daily, weekly or monthly farmers markets should be included in zone OS4, known as informal trading. Zones OS2 and OS3 have consent uses for informal trading at present.

NEW AND AMENDED BYLAWS:

The City of Cape Town Public Parks By-law (CoCT, 2010) prevents the planting, picking or pulling out of any plant in a public park. Public parks should, in the future, be spaces for the public to utilize for food production and consumption. The planting of fruit-bearing trees and hedges should be promoted in parks, facilitated first by the City and then by the public, so that fruit-picking and access to food products become an encouraged practice for park visitors, especially children. While it is not desirable to have these amenities abused by the public, they should not be exclusive and must be available to all citizens. In parks with food-producing plants, signs should be posted with information regarding the safety of gathering food, the appropriate handling of food-producing plants and the responsibility not to over-harvest. Furthermore, there is a job creating opportunity and local neighborhood visitor management structures can be put in place to ensure security.

There is currently no specific beekeeping bylaw for the City Bowl. An available bylaw regarding beekeeping remains that pertains to the previous Southern Peninsula Municipality (South Peninsula Municipality, 2000). New beekeeping bylaws for the districts of Cape Town need to be formulated. Restriction to beekeeping must not be part of the new bylaw, as in the Ontario Bee Act (see case study 4.1). In order to raise awareness and educate the public about the safety and importance of

urban beekeeping, an awareness campaign is to be launched and demonstration hives installed at public buildings.

A new bylaw for the City of Cape Town is to be formulated to allow for the 'adoption' of pavements, road verges and islands. This will allow individuals, households or neighbors to apply for a permit to manage a publicly owned (City Parks) piece of land. Regulations regarding the type of plants grown, the gardening techniques used and water use are enforced through permit application. Permits must be renewed every two years.

Case Study 4.1 The Ontario Bee Act (justfood.ca)

In 2009, the Ontario Bee Act was amended to remove all restricting factors of urban bee keeping. Previously, the Act enforced that hives were kept 30m from property lines. The Act no longer regulates the distance that hives are kept from property boundaries, as beekeeping is now seen, through good management practice, as a safe and suitable activity for urban areas. Beekeepers and hives must all be registered with the Provincial Apiarist to ensure the health and safety of the bees.

FOOD PRODUCING STATE BUILDINGS:

Similar to the public undertakings in terms of energy, the City must make provisions for food production in, on and around public and municipal buildings. The City of Cape Town has made provisions to reduce its municipal electricity, petrol and diesel usage through switching to energy efficient lighting and vehicle fleets and solar water heating (CoCT, 2006). Municipal food production is a job creation strategy as well as an ecological and food producing strategy. In the City Bowl, 44 Wale St is an example of a pilot project undertaken by the City to promote the use of rooftop spaces. While these rooftop spaces are not open to the public, they have an important role to play in providing jobs, acting as training centres and exposing office workers to relaxed environments. All municipal buildings, not only those home to departments relating to food and environment, must facilitate food growing. This includes the Houses of Parliament, which back onto the Company Gardens. The Company Gardens is also home to two national museums. Other public buildings that should engage with food production and/or greening include schools, hospitals (see case study 4.2) and libraries. Some opportunities for these will be shown in the following section.

Case Study 4.2 The Henry Ford West Bloomfield Hospital Greenhouse (henryfordwestbloomfield.com/greenhouse)

This hospital in Detroit, Michigan is the first in the state to take proactive steps to re-imagining healing and wellness. A 1500 ft^2 greenhouse provides organic fruits and vegetables to the hospital cafes and patient meals, as well as a space for tours, educational programmes, gardening and cooking classes and patient therapy. This initiative is dedicated to disease prevention, citizen wellness and preventing childhood obesity.

It is essential that all citizens feel a desire and commitment to protect and enhance the land and ecological community that support urbanity. Thus far, the interventions proposed have been focused on actions that the state can take to promote a healthier food system and facilitate food production. However, It is not only the responsibility of the state, but of each individual, community, company and organization to integrate nature into the city and take ecological responsibility for its actions. This is the only way for an extension of the land ethic to take hold and large-scale behavioral change to take place. The following interventions are focused on the private and civil sectors but also require input from the state in terms of regulations, partnerships and awareness campaigns.

PROPERTY TAX CREDITS AND OTHER INCENTIVES:

Properties and buildings supporting food production, especially that which is advantageous to the local community through food provision or green jobs, should benefit from property tax credits and/or subsidized municipal services. This includes rooftop, vertical and small-space gardening, specialized food production such as mushroom and micro-green container farming and hydro or aquaponics (both of which are methods for food production without soil). Private buildings undertaking retrofitting construction to include food production, greening and providing jobs in this sector should be subsidized by the City and through public-private partnerships.

New buildings, of over five floors, must make provisions for food production and greening. This includes rooftop and small-spaces with sufficient flat space, drainage and sunlight or through hydro or aquaponic systems that do not require soil and can operate vertically.

Opportunities must also be provided for the letting and sub-letting of rooftops and small-spaces to individuals and organizations with the express purpose of food production.

Again, regulations should be put in place to promote ecological sustainability and resilience of food production: growing practice, water efficiency and integration of indigenous vegetation.

EFFECTING BEHAVIORAL CHANGE:

As previously stated, every individual has an ecological responsibility and the capacity to promote behavioral change. While it is difficult to control what people do in their private spaces, awareness campaigns can play an important role. An awareness campaign regarding the production of food, targeting private homeowners must be launched. The AlienBusters campaign (see case study 4.3) targeted South African property owners and challenged them to engage with their responsibility

Case Study 4.3 National Campaign against Alien Vegetation: AlienBusters (Murray, 2005)

Working for Water, an intergovernmental public works programme in South Africa aimed at controlling alien vegetation, launched an “AlienBusters” campaign in 2000 with the purpose of publicizing the 2001 amendments to the Conservation of Agricultural Resources Act of 1983 (CARA) regarding landowners’ responsibility to control alien vegetation on their property. While Murray (2005) argues that there are conceptual, visual and semantic problems associated with this campaign, it highlights the importance of individual responsibility to the natural environment and the importance of behavioral change.

to remove alien vegetation on their property and replace it with indigenous species. The Dig for Victory campaign, (see case study 4.4) in the UK during World War Two, was successful in ensuring individuals and families felt they had a national responsibility to plant food gardens on or near their homes. These two examples provide a precedent for a similar campaign for Cape Town regarding urban food production and the importance and responsibility that individuals, households and communities have to the their own land and to providing their own food. Part of an awareness campaign is to have a day dedicated to farming and gardening, in which demonstration gardens are opened, competitions held and resources shared. Further incentives can be offered, on condition of good practice, through property tax credit and subsidized water provision.

Case Study 4.4 Dig for Victory Campaign during WW2, UK (Ginn, 2012)

During WW2 food imports into the UK were practically non-existent and the government imposed food rationing. Drawing on national identity and patriotism, the "Dig for Victory" campaign was launched in 1939 at the outbreak of the war in order to ensure food security for the nation. Posters and leaflets were distributed, as well as planting guides to ensure a steady supply of vegetables throughout the year. Today the Dig for Victory campaign is once again receiving attention as the nation prepares for climate change and ecological uncertainties.

Ginn (2012) critically dissects the campaign and claims that it was not as 'rose-tinted' as it appears. Nevertheless, despite contested figures on acreage and tonnes of food produced, there is no doubt that the campaign was effective in encouraging the domestic sphere to plant vegetables in their homes and on public land.

Figure 4.1:Poster from the Dig for Victory Campaign (sacgardens.org)

4.2 Spatial Interventions

In Belo Horizonte, Brazil, SMAAB (the Secretariat of Food Supply and Policy) facilitates four different kinds of projects: Community Gardens, School Gardens, Pro-Orchard Projects and Workshops (Rocha and Lessa, 2009). Drawing inspiration from this precedent, the CTFPC and City of Cape Town should institute these kinds of projects. While the policy interventions do include spatial elements, this section aims to provide specific potential sites where pilot projects, similar to those in Belo Horizonte, could take place. Before moving into these, however, I present a conceptual design for the City Bowl, where the physical linkages are shown between the different projects and a 'new kind of normal' is shown through the presence of food and indigenous gardens and fruit and indigenous trees throughout the City Bowl.

4.2.1 Conceptual Design

The basic concept behind the spatial interventions is that of connectivity on multiple levels, spatially linking the various projects, gardens, parks and farms in such a way that access is easily achieved between them for people, for water, vegetation and fauna. The concepts of ecological corridors and open space systems form part of the basis for access pathways. The access route around the city should be lined with sign-posted fruit, nut, heritage and indigenous trees and shrubs that highlight their significance to the city. This route also acts as an ecological corridor for birds, bees and other insects Along the route are various projects, ranging from schools and other public facilities to community gardens and orchards. An original design for such a concept is shown below in figure 4.2.

FIGURE 4.2: ORIGINAL CONCEPTUAL DRAWING FOR CONNECTING CITIZENS, ANIMALS AND INSECTS TO THE NATURAL HERITAGE AND URBAN AGRICULTURAL PROJECTS OF THE CITY BOWL

Concept Map: Linkages between Exising, Proposed and Potential Projects

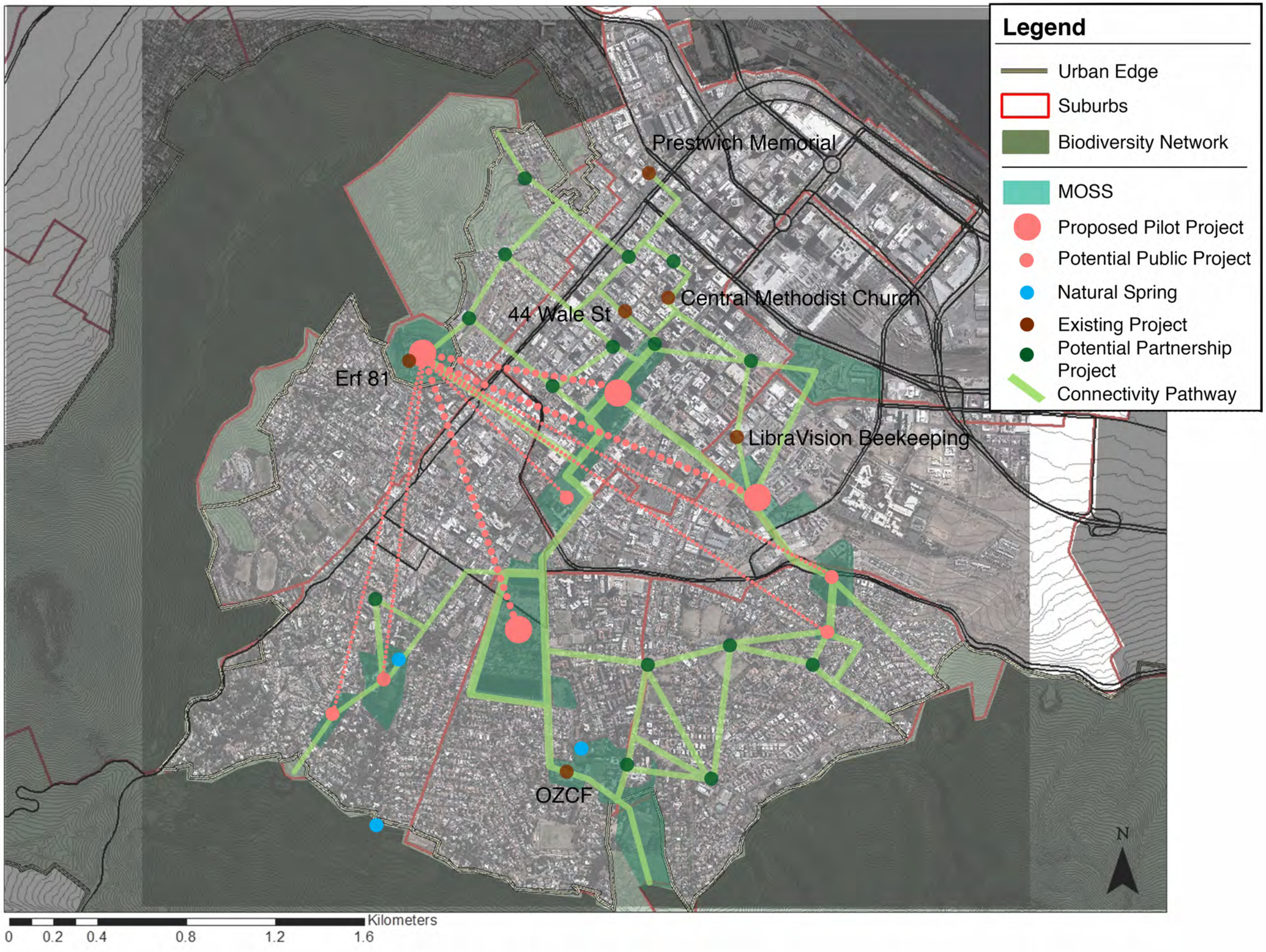


Figure 4.3:Conceptual Design for the City Bowl: Connecting Existing, Proposed and Potential Projects (Data Source: CoCT, 2013)

A central 'food hub' is an important site where resources can be shared amongst farmers, gardeners, learners and public officials. The links between this hub and the other proposed project sites are shown with a dotted line in figure 4.3. The large pink dots indicate the projects proposed in the following sub-section. The small pink dots are those sites that were analyzed in the previous chapter in the preliminary vacant land study, these sites should also be added to the MOSS. The green dots indicate sites of state buildings, schools, libraries, places of worship and public parks that could potentially hold some form of urban food production.

4.2.2 Spatial Design and Interventions

These interventions are based on my own preliminary vacant land study analyzed in the previous chapter. From all the sites examined, four have been chosen for urban agricultural pilot projects. These sites were numbered 3, 5, 7, 8, 9 and 10 (table 3.4 in the previous chapter). These are represented on the map (figure 4.5) on the following page as 1 (3), 2 (5), 3 (8,9,10) and 4 (7). Site 1 is at the Erf 81 Military Farm. Site 2 is at the Company Gardens in the area known as the Paddocks on the northern boundary with Cape Town High School. Site 3 is a conglomeration of three sites on or near to Roeland Street. This includes the vacant land surrounding Fruit and Veg City, the Harold Cressy High School and the vacant park on Constitution Street. This area will constitute a retail and school food precinct. Site 4 includes the southern area of the De Waal Park and crosses over Camp Street. The other sites identified in the vacant land study are state-owned and are to be included in the MOSS with the potential to develop into food production sites. Connecting the MOSS and the various proposed projects, a 'green route' is to be instituted so citizens and tourists can walk, or cycle, safely through an informative city walk. All these interventions are described in detail below.

1. FOOD HUB AT ERF 81:

This is a large (102 000m^2) site that could accommodate a central food hub: demonstration gardens, organic waste collection and composting and a resource, training and workshop centre. This site could also be home to the CTFPC and therefore offers office and meeting space.

Figure 4.4: Photograph from the Erf 81 farm (Duncan, 2012)

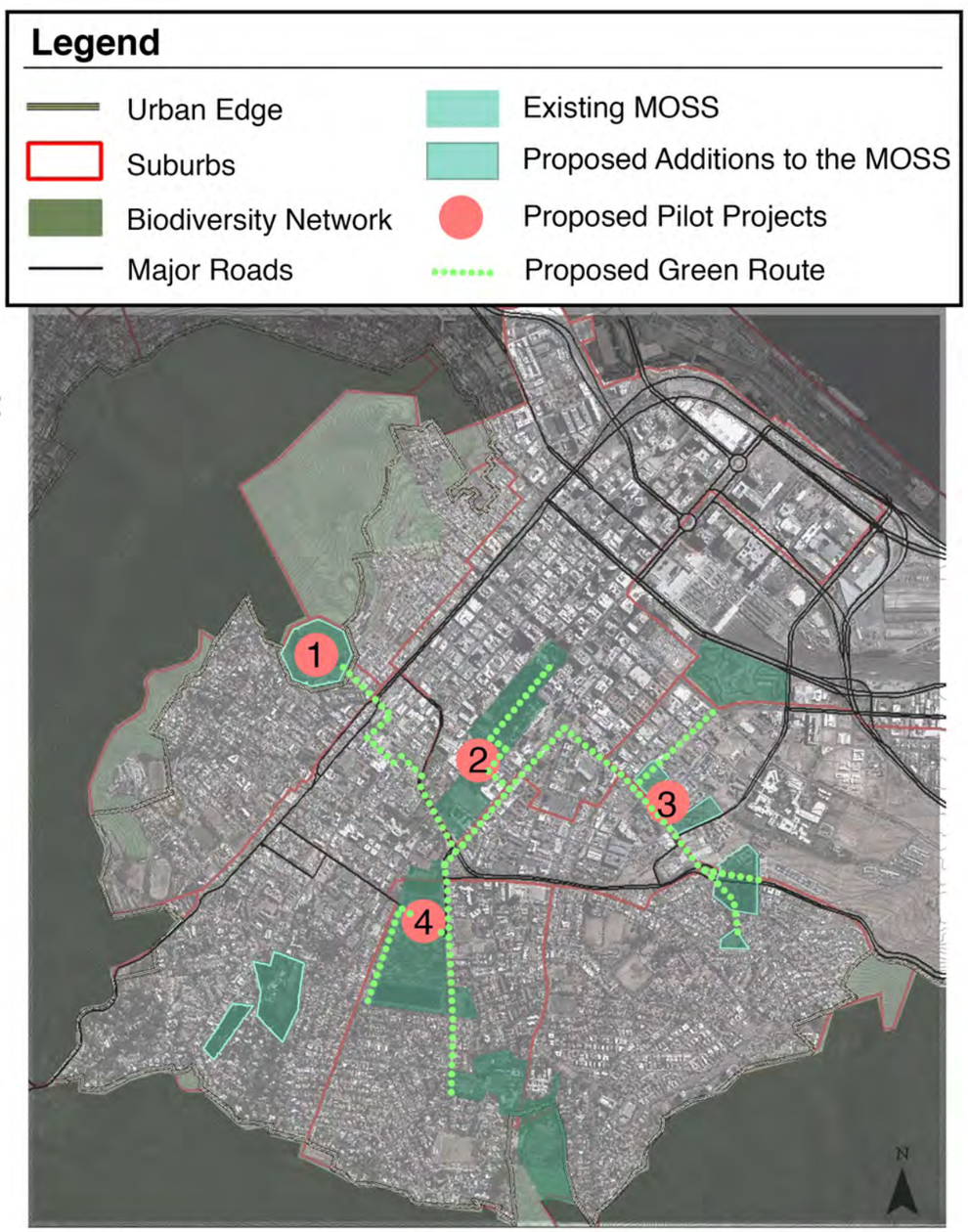
Purpose:

- Home to the CTFPC
- Education, workshop, training and resource centre
- Demonstration gardens open to the public

2. Company Gardens (Paddocks):
Agricultural Heritage

3. Roeland St:
School and Business Precinct

1. Erf 81: 'Food Hub'
and Resource Centre



4. De Waal Park:
Orchard Project

FIGURE 4.5:SPATIAL INTERVENTIONS MAP. SHOWING THE PROPOSED PILOT PROJECT SITES, ADDITIONS TO MOSS AND GREEN ROUTE (DATA SOURCE: COCT, 2013)

- Demonstrate a positive link between food production and indigenous vegetation on Signal Hill
- Organic waste depot and composting site
- Food distribution to those in need

Required Action:

- Permission from National Government (landowner) to use the land
- Land rezoned from Utility to OS4: Urban Agriculture
- Work in partnership with current occupants and Erf 81 Project to design and grow a demonstration garden
- Renovate and construct resource and workshop centre
- Construct office and meeting space
- Demonstration composting facility
- Addition to the MOSS

2. AGRICULTURAL HERITAGE PROJECT AT THE COMPANY GARDENS:

The Company Gardens was the first food production site in South Africa (Worden et al, 1998). In the centuries between then and now it has been converted into a pleasure garden in the Victorian style. A return to the original function of the garden presents an opportunity to tell the story of the historical, and ecological, heritage of Cape Town through food production. The "Paddocks" area of the company gardens (the smaller, southernmost section on the boundary of the Cape Town High School) is currently covered in lawns and is a potential space for agriculture (figure 4.6 shows the four lawns separated by a pathway). The site will need to be secure in order to prevent abuse.

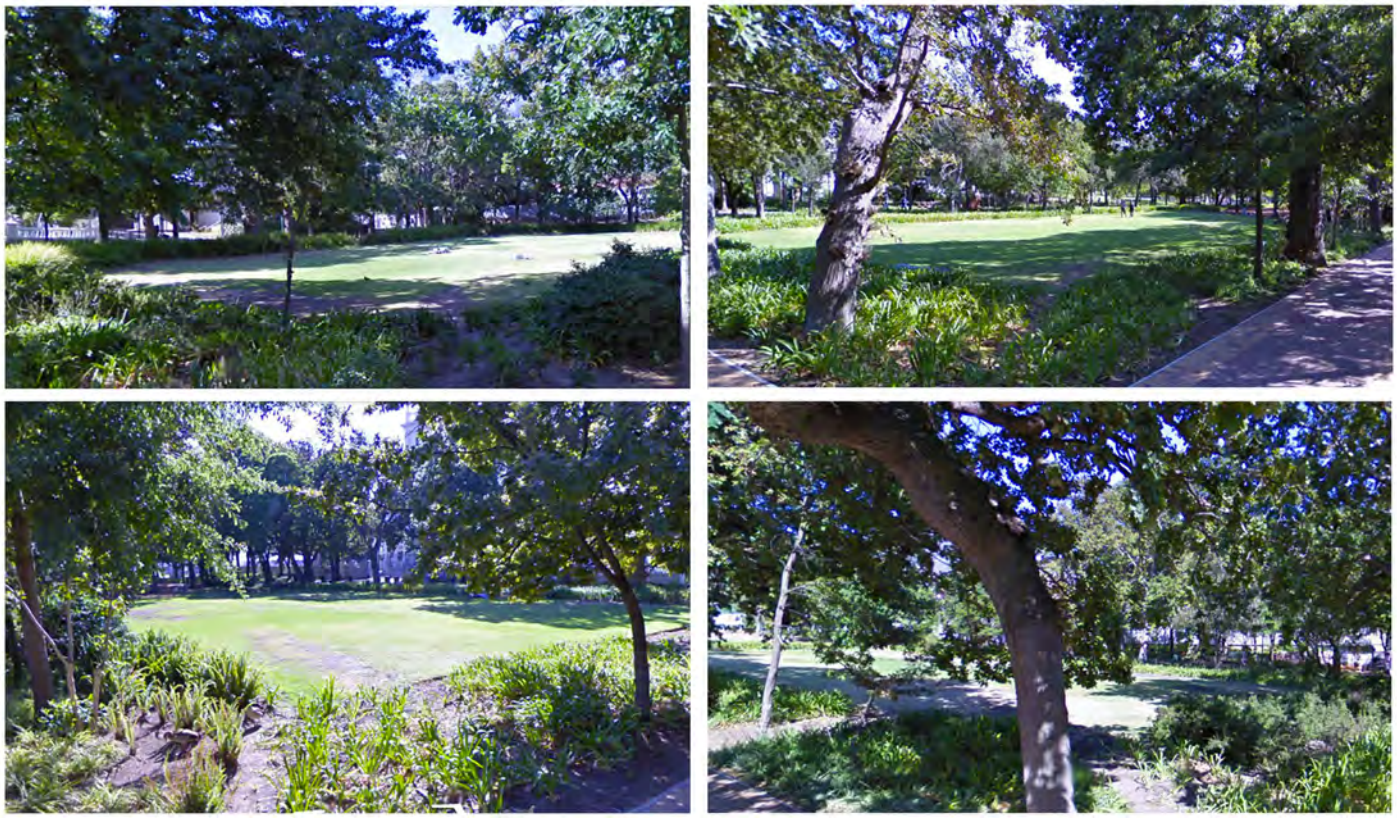


Figure 4.6:The four lawns in the Paddocks area of the Company Gardens (Google Maps, 2013)

Purpose:

- Educational, awareness and tourism facility, connecting the historical, cultural and natural heritage of Cape Town and the City Bowl
- Connect with the Cape Town High School, other schools and the public
- Provide green jobs

Required Action:

- Permission required from Heritage Western Cape
- Get consent for urban agriculture on zone OS2
- Create demonstration garden in line with historical references (example in figure 4.7)
- Training for gardeners

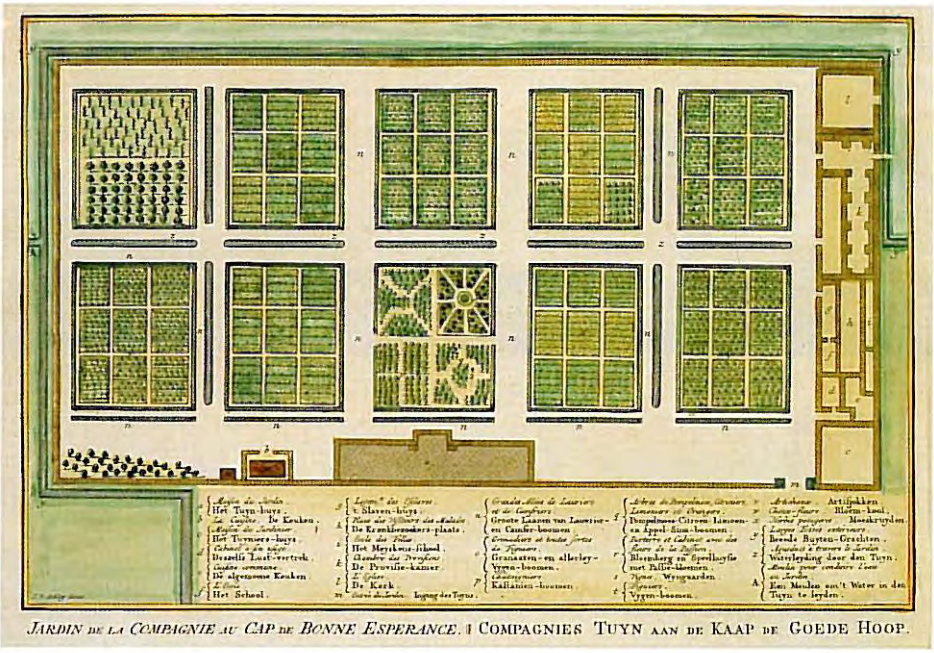


FIGURE 4.7: ONE OF THE ORIGINAL DESIGNS FOR THE COMPANY GARDENS (CAPETOWN.GOV.ZA/EN/PARKS)

3.RETAIL AND SCHOOL PRECINCT PROJECT:

This is a pilot precinct project that incorporates the Harold Cressey school, the Fruit and Veg City retail centre and a piece of vacant park land. The design of this precinct to connect the vacant land on Constitution Street with the High School facilitates the relationship between education and food production. The vacant land around the Fruit and Veg City presents an opportunity to create a 'full cycle' project, where food is grown, sold and disposed of on one site. This will also connect with the school and Constitution Street gardens for educational, demonstrative and training purposes. Students from the nearby CPUT may also play a role in the design and functioning of this site, as well as for educational purposes.

Purpose:

- Educational and awareness site for schoolchildren, tertiary students and the retail sector
- Feed schoolchildren
- Provide green jobs

Required Action:

- Merge land around Fruit and Veg City and permissions from National Government (landowner)
- Get consent use for urban agriculture in MU zone
- Merge land on Constitution Street
- Work with CPUT, Harold Cressey and Fruit and Veg City (and other businesses and community

organizations) to create demonstration gardens and composting sites
- Addition to the MOSS

Figure 4.8:Vacant land surrounding Fruit and Veg City (above) and vacant park land on Constitution Street (below) (Google Maps, 2013)

4. DE WAAL PARK ORCHARD PROJECT:

The De Waal Park and vacant land below Camp Street is an ideal site for an orchard project as this is a central and accessible public site. Creating awareness around food-producing trees is an essential component of urban agriculture and greening. Trees provide food, shelter and shade to humans and other creatures. The De Waal Park is well-used public space where a pilot orchard project would have a wide- reach. This project draws inspiration from the London Orchard Project, which aims to reinvigorate London's orchard heritage while improving access to fresh fruit and increasing urban biodiversity (case study 4.5). This organization is an NGO, compared to the Pro-Orchard Project in Belo Horizonte which is a state-led strategy to provide citizens with seedlings and organic fertilizers for private growing (Rocha and Lessa, 2009). The De Waal Park Orchard aims to combine these two approaches: to act as a demonstration and training site, a public orchard and a site for a nursery for the distribution and redistribution of trees.

Purpose:

- Educate and raise awareness of integrating food-producing trees into the urban environment
- Distribute and redistribute small and large-sized fruit tree seedlings and organic fertilizer
- Provide visitors to the park access to fresh fruit
- Provide green jobs

Required Action:

- Get consent for urban agriculture and nursery in OS2 zone
- Work in partnership with Friends of the De Waal Park, GreenPop or other NGOs
- Intersperse fruit-bearing trees into the Park with the current trees

Figure 4.9:De Waal Park south of Camp St (above) and north of Camp St, view from Molteno Rd (below) (Google Maps, 2013)

Case Study 4.5: The London Orchard Project (thelondonorchardproject.org)

THE LONDON ORCHARD PROJECT
URBAN FRUIT FOR URBAN COMMUNITIES

The London Orchard Project partners with local authorities, resident's associations, park user groups, schools and other initiatives to create orchards in community spaces around the city.

The aim is to promote community production and ownership of fruit trees, rediscover the heritage of London's orchards, improve access to fresh fruit and offer urban greening and habitats. The organization offers training to volunteers and access to small and large-sized seedlings.

ADDITIONS TO THE MOSS:

Other additions to the Metropolitan Open Space System include the Leeuwenhof Estate and

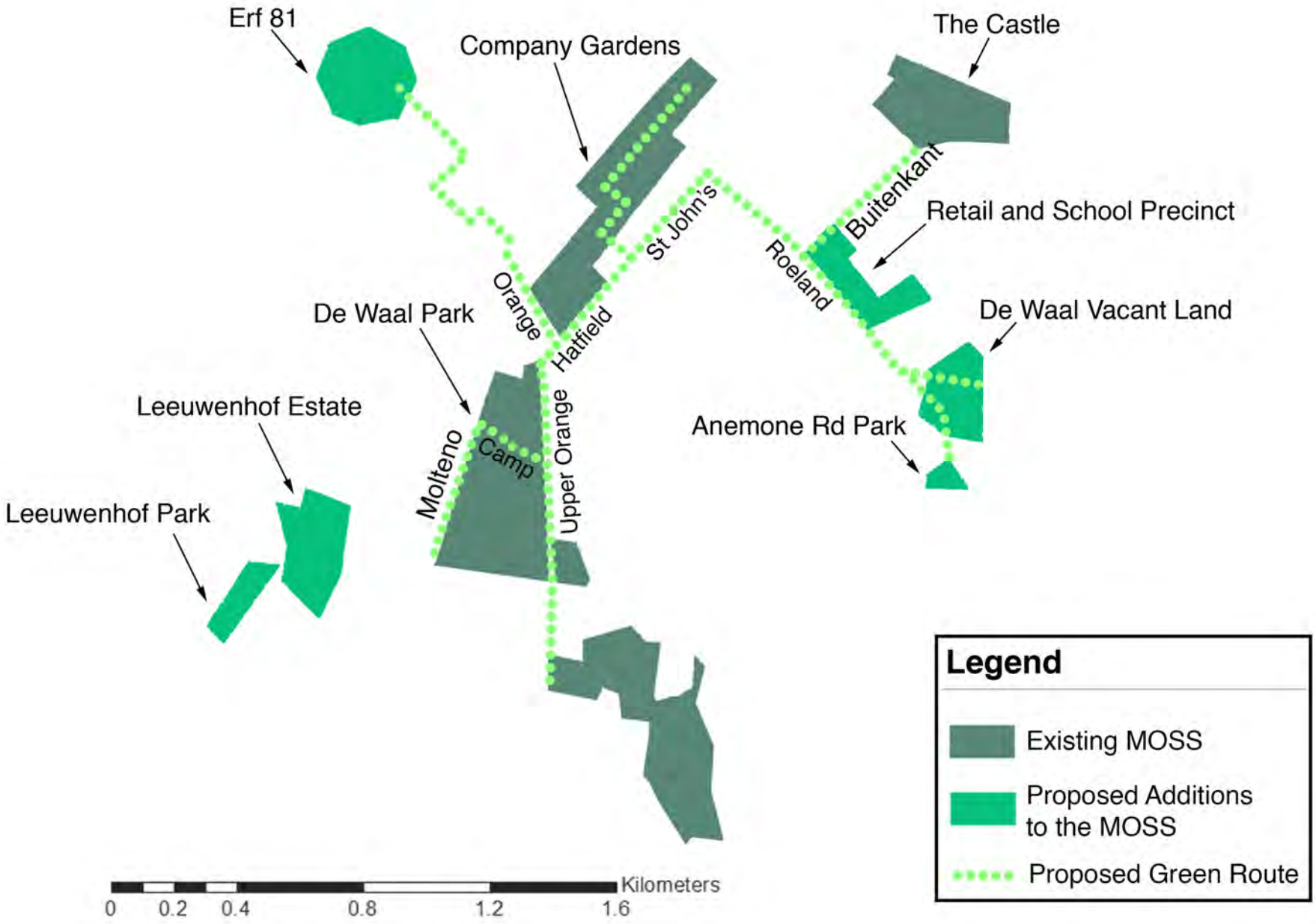


FIGURE 4.10: DETAIL OF THE PROPOSED ADDITIONS TO THE MOSS AND THE PROPOSED GREEN ROUTE THROUGH THE CITY BOWL.

properties on Leeuwenhof Rd, which need to be rezoned to OS2, the vacant land above De Waal Drive and that on Anemone Rd, Vredehoek. These can be seen on the map in figure 4.5 and in figure 4.10 on the previous page.

These properties all have the potential to be used for urban agricultural projects in one form or another, or simply as public open space, that can be realized after they have been added to the MOSS.

CREATE A GREEN CONNECTIVITY ROUTE:

An access route should connect the various existing and potential pilot projects. This route, shown in the dotted green line in figures 4.5 and 4.10, provides safe walking and cycling paths connecting various public open spaces with tree-lined streets, marked with information boards. The City of Cape Town is currently working on adding bike lanes in the city centre. This proposal would be an addition to these bike lanes.

This route follows some of the major roads in the City Bowl: Buitenkant Street connecting the Castle (part of the MOSS) to Roeland Street (School Precinct project) and De Waal Drive. From the bottom of Roeland St, in front of the Houses of Parliament, the route connects the Agricultural Heritage project with the rest of the Company Gardens up St Johns Street. Continuing along St John's and Hatfield Streets, the route connects with Orange St where it leads to the Food Hub project while following Upper Orange Street all the way to the Oranjezicht City Farm and part of the existing MOSS. At Camp Street, which intersects with Upper Orange, the route turns west through the Orchard project and then south into Molteno Road, ending at the Molteno Reservoir at the top of De Waal Park.

Facing south on Buitenkant St

Facing east on Roeland St

Facing south on St John's St

Facing south on Upper Orange St

Figure 4.11: Current imagery from parts of the proposed Green Route (Google Maps, 2013)

4.3 Further Recommendations

These recommendations are not specific to food production but are based on a broader understanding of food systems that makes links to other sectors.

These would include:

The managing of Parks and Recreation spaces in such a way that eventually no toxic chemicals and pesticides are used. Indigenous and diverse vegetation is to be encouraged on all City Parks land. This protects and enhances the quality of the soil for future generations. Research is needed to substantiate the reasons behind such an intervention. A phased approach should be used to ensure the suitability of this intervention and demonstrate the benefits thereof.

Wherever possible, hardened public surfaces should be converted to soft, green spaces to facilitate porosity and contribute to a more sustainable stormwater system. Businesses and private properties should also be encouraged to create soft spaces and gardens wherever possible through the creation of a bylaw in accordance with Cape Town's approach to Sustainable Urban Drainage Systrem.

Household organic waste needs to be diverted from landfills and rather be used a resource for composting and improving soil quality. In order to encourage this, and reduce overall waste going to landfills, municipal waste collection should only happen fortnightly instead of weekly. This needs to be communicated through awareness campaigns regarding the making of household compost and the provision of alternatives, such as local drop-off sites at agricultural project sites across the city. This would also require a phased approach for research and demonstration purposes.

4.4 Conclusion

The purpose of this chapter was to demonstrate the role that urban planners can take in facilitating, supporting and promoting urban food production in the City Bowl. This has been shown through both policy and spatial interventions. These interventions will be carried through into the following chapter so as to indicate what actors are necessary to implement these proposals and to strategize and prioritize these interventions.

Urban agriculture in the City Bowl is not simply about producing food and positively impacting on the metabolism of the City Bowl and Cape Town but also about raising awareness of the detrimental impacts of the current (local and global) food system and how these impacts can be mitigated through an alternative food system, one based on organic and sustainable methods that puts the health of the Earth and of the consumers first.

The City Bowl has a natural and cultural heritage that is already celebrated and there is huge potential to build on this and bring in aspects of the agricultural heritage combined with the natural beauty of the area. The interventions proposed here aim to bring about a new kind of normal: one

in which food production and indigenous biodiversity are part and parcel of the urban landscape. The public sector and local government is limited by resources, capacity and mandate, but the role they must play in facilitating urban agriculture is important in demonstrating to and leading the civil and private sectors to a better future, with the help of urban planners.

5

Implementation

The purpose of this chapter is to indicate how the interventions and proposals described in the previous chapter are to be carried out. This chapter seeks to take the key ideas and actions described in the previous chapter and make them implementable. This is where the institutional and policy context becomes critical. This chapter is arranged in such a way that the interventions are placed in order of priority and timeframe. These range from highest priority in section 5.1 to those that are dependent on earlier interventions and will be implemented further into the future in section 5.5. Each intervention is then given detail on the priority and timeframe (shown in table 5.1 on the following page), some of the key actors involved and the related interventions for that proposal. The urgency of the need to alter the food system and enter a stage where urban food production becomes normal, guides the thinking behind the timeframe of the implementation of these actions. While this chapter gives specific details to the interventions it is necessary to note that this is not intended to be a prescriptive blueprint but rather as a guideline as to how these interventions could potentially play out.

5.1 Short Term

FOOD POLICY COUNCIL

It is essential that a food policy council is formulated as a high priority action as the CTFPC must advise and work on all food-related policies in the future, as well as conduct a Food Systems Assessment and formulate a Food Systems Plan. This is a key action as the Council will need to advise on all food-related policy and actions The Council would act as a 'task-force' and would have both an advisory and legislatively supported role to the City of Cape Town as a quasi-development agency. There may be a need to establish a National Food Policy or Food Department, which gives statutory and legal backing to the Council. There is potential to take advantage of international organizations for expert advice, knowledge and experience sharing and funding opportunities. The list of key actors below is not exhaustive.

KEY ACTORS

State:

Mayor's Office

Intervention	5.1 Short Term (1 year)	5.2 Short to Medium Term (2-3 years)	5.3 Medium Term (4-5 years)	5.4 Medium to Long Term (6-10 years)	5.5 Long Term (11-15 years)
Food Perspective					
Food Policy Council					
Food Systems Assessment					
Food Systems Plan					
Food Planning Education					
Identify and Protect Land					
Amend the UA Policy					
Amend the Zoning Scheme					
New and Amended Bylaws					
Food Producing State Buildings					
Property Tax Credits and Incentives					
Affecting Behavorial Change					
Food Hub					
Agricultural Heritage Project					
Retail and School Precinct					
Orchard Project					
Additions to the MOSS					
Green Route					

TABLE 5.1: TABLE SHOWING THE TIMEFRAME OF IMPLEMENTATION OF INTERVENTIONS.

CT Department of Environmental Resources Management
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Spatial Planning and Urban Design
CT Department of Health
CT Department of Water and Sanitation
CT Department of Solid Waste
Heritage Western Cape
WC Department of Environment and Development Planning

Academic:

University of Cape Town
Cape Peninsula University of Technology
University of Western Cape

Civil Society:

Cape Town Partnership
Food and farming related NGOs
Water related NGOs
Waste disposal initiatives

Private Sector:

Independent Planning Consultants
Food and Retail Businesses
Banks

RELATED INTERVENTIONS:

Policy:

Creation of a Food Perspective for Cape Town
Conduction of a Food Systems Assessment
Formulation of a Food Systems Plan
Advisory on Food Planning and Education
Identifying and Protecting Land for Urban Agriculture
Amendments to the Urban Agriculture Policy
New and Amended Bylaws
Affecting Behavioral Change

Spatial:

All

FOOD PLANNING AND EDUCATION

This is a priority intervention as it necessary that food and outdoor experiential based education becomes integrated into the school syllabus in order for children to prepare for an uncertain future. Further, food planning must enter the syllabus for urban planning at university level so as to equip future planners with the tools necessary to integrate food and food systems thinking into the planning agenda.

KEY ACTORS:

State:

Department of Basic Education
Department of Higher Education
Western Cape Education Department
State primary and secondary schools
CT Department of Spatial Planning and Urban Design
CT Department of Health

Academic:

University of Cape Town: School of Architecture, Geomatics and Planning
Cape Peninsula University of Technology: Town and Regional Planning Department

RELATED INTERVENTIONS:

Policy:

Food Producing State Buildings
Amendment to CTZS: CO zones to have UA as primary use

Spatial:

Retail and School Precinct

AMENDMENTS TO THE UA POLICY

The provisions in the UA Policy regarding access to land and water must be made accessible to all citizens. This is a high priority action because of the amendments that are already being made to the UA Policy in terms of scope and scale can be improved through awareness and access to land and water provisions. These amendments must be put in place as soon as possible to facilitate urban agriculture amongst civil society. This intervention is primarily a state obligation.

KEY ACTORS:

State:

CT Department of Economic Development: Urban Agriculture Unit
CT Department of Spatial Planning and Urban Design
CT Department of Solid Waste

CT Department of Water and Sanitation

RELATED INTERVENTIONS:

Policy:

Food Systems Assessment
Food Systems Plan
Amendments to the Zoning Scheme

Spatial:

All

AMENDMENTS TO THE ZONING SCHEME

Amendments to the CTZS are necessary before several other actions can take place. A new zone OS4 must be added with urban agriculture as its primary use. This zone and the AG zones must have protective status equal to that of environmental conservation areas. CO1 zones must have UA as a primary use in order to promote the relationship between food production and schools. This is primarily a state obligation.

KEY ACTORS:

State:

CT Department of Planning and Building Development Management
CT Department of Spatial Planning and Urban Design

RELATED INTERVENTIONS:

Spatial:

Food Hub
Retail and School Precinct

5.2 Short to Medium Term

FOOD PERSPECTIVE:

This requires formulating a document that specifies the City of Cape Town's perspective on food and food systems, highlighting the interconnectedness of food to human and natural systems. This will be a reference document for all food-related policy creation and amendments. This is a secondary action only in that the CTFPC should partake in the creation of this document. The list of key actors is not exhaustive.

KEY ACTORS:

Cape Town Food Policy Council

State:
Mayor's Office
CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Spatial Planning and Urban Design
CT Department of Health
CT Department of Solid Waste
CT Department of Water and Sanitation
Heritage Western Cape

Academic:
University of Cape Town
Cape Peninsula University of Technology

Civil Society
Cape Town Partnership
Food and farming related NGOs

RELATED INTERVENTIONS:

Policy:
All

Spatial:
All

FOOD SYSTEMS ASSESSMENT

This is an essential intervention that requires action as soon as possible as other policy and spatial interventions depend on it. However, it is one the first mandates of the CTFPC and their input into such an assessment would be beneficial in terms of structure and perspective. This Assessment forms the basis of the Food Systems Plan. The list of key actors below is not exhaustive.

KEY ACTORS:

Cape Town Food Policy Council

State:
Mayor's Office
CT Department of Environmental Resources Management: Environmental Capacity Building

Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Planning and Building Development Management
CT Department of Spatial Planning and Urban Design
CT Department of Solid Waste
CT Department of Water and Sanitation

Academic:

University of Cape Town
Cape Peninsula University of Technology

Civil Society

Cape Town Partnership
Food and farming related NGOs
Water related NGOs

RELATED INTERVENTIONS

Policy:

Food Systems Plan
Identifying and Protecting Land for Urban Agriculture
Food Producing State Buildings
Property Tax Credits and Other Incentives
Affecting Behavioral Change

Spatial:

All

IDENTIFYING AND PROTECTING LAND FOR URBAN AGRICULTURE

This action will be part of the Food Systems Assessment and take the form of a vacant land audit for the purposes of urban food production. Available land will then be used in the Food Systems Plan as part of an Urban Agriculture Action Plan. This is primarily a state obligation in partnership with the CTFPC.

KEY ACTORS:

Cape Town Food Policy Council

State:

Mayor's Office
CT Department of Environmental Resources Management: Environmental Capacity Building

Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Spatial Planning and Urban Design

RELATED INTERVENTIONS

Policy:
Food Systems Plan
Food Producing State Buildings
Affecting Behavioral Change

Spatial:
Food Hub
Agricultural Heritage Project
Retail and School Precinct
Orchard Project

FOOD HUB

This is a secondary action only in that the CTFPC is crucial to its implementation. This will be one of the first mandates of the CTFPC as this space is intended to be used as the CTFPC base, with offices, workshop and resource centres as well as producing a demonstration garden and composting site.

KEY ACTORS:

Cape Town Food Policy Council

State:
Mayor's Office
CT Department of Environmental Resources Management: Environmental Capacity Building

Civil Society
Cape Town Partnership
Erf 81 Project and Occupants
Tamboerskloof Residents

RELATED INTERVENTIONS:

Policy:
Food Policy Council
Food Systems Assessment
Food Systems Plan

Identifying and Protecting Land for Urban Agriculture
Amendments to the Zoning Scheme
Affecting Behavioral Change

Spatial:
All

5.3 Medium Term

FOOD SYSTEMS PLAN

The Food System Plan follows on from the Food Systems Assessment and provides a strategic spatial plan for Cape Town's food system into the future. This will be a supplement to the CTSDF and therefore be conducted every five years. The list of key actors is not exhaustive.

KEY ACTORS:

Cape Town Food Policy Council

State:
CT Department of Spatial Planning and Urban Design
CT Department of Planning and Building Development Management
CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Health
CT Department of Solid Waste
CT Department of Water and Sanitation

Civil Society:
Cape Town Partnership
Food and farming related NGOs
Other related NGOs

RELATED INTERVENTIONS

Policy:
Food Policy Council
Food Systems Perspective
Food Systems Assessment
Identifying and Protecting Land for Urban Agriculture

Spatial:

All

FOOD PRODUCING STATE BUILDINGS

This is a policy intervention in that regulations must be put in place to institute food production on the property of public buildings. However, there is a spatial element.

KEY ACTORS:

State:

CT Department of Spatial Planning and Urban Design
CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Health
City Parks
WC Department of Education
WC Department of Arts and Culture
All departments (local, provincial and national) with premises in Cape Town

Civil Society:

Food and farming related NGOs
Education related NGOs
Health related NGOs
Other related NGOs, projects and initiatives
Residents Associations
Friends of libraries, parks and other amenities

RELATED INTERVENTIONS:

Policy:

Food Policy Council
Food Systems Assessment
Food Systems Plan
Identifying and Protecting Land for Urban Agriculture
Amendments to the Zoning Scheme
Amendments to UA Policy

Spatial:

Food Hub
Retail and School Precinct

AFFECTING BEHAVIORAL CHANGE

This is a tertiary action in that certain other (policy and spatial) interventions must be put in place before it is worthwhile to begin. This is an action that comes primarily from the state in partnership with CTFPC and other initiatives, as well as an advertising campaign.

KEY ACTORS:

Cape Town Food Policy Council

State:

CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
City Parks

Civil Society:

Cape Town Partnership
Food and farming related NGOs
Other related NGOs and initiatives

RELATED INTERVENTIONS:

Policy:

Food Policy Council
Food Systems Assessment
Food Systems Plan
Identifying and Protecting Land for UA
Amendments to the Zoning Scheme
Amendments to UA Policy
New and Amended Bylaws

Spatial:

All

ADDITIONS TO THE MOSS

The additions to the MOSS are to be included in the next CTSDF and are dependent on the Amendments to the Zoning Scheme and the vacant land audit as part of Identifying and Protecting Land for UA in the Food Systems Assessment. All spatial interventions are on sites that would be new additions to the MOSS and are therefore related. This is primarily a state obligation with input from processes of public participation.

KEY ACTORS:

State:
CT Department of Spatial Planning and Urban Design
CT Department of Environmental Resources Management
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Tourism
City Parks

RELATED INTERVENTIONS:

Policy:
Food Systems Assessment
Food Systems Plan
Identifying and Protecting Land for Urban Agriculture
Amendments to the Zoning Scheme
Amendments to UA Policy

Spatial:
All

5.4 Medium to Long Term

NEW AND AMENDED BYLAWS

Due to time and resource constraints, a medium to long term time period is allocated to the creation of new bylaws and amendments to existing bylaws. This is primarily a state obligation, with input from the CTFPC and with processes of public participation.

KEY ACTORS:

Cape Town Food Policy Council

State:
CT Department of Environmental Resources Management
CT Department of Economic Development: Urban Agriculture Unit
City Parks

RELATED INTERVENTIONS:

Policy:
Food Perspective
Food Policy Council

Amendments to UA Policy
Food Producing State Buildings
Affecting Behavioral Change

Spatial:
All

RETAIL AND SCHOOL PRECINCT

This intervention is dependent on several preceding actions, including the development of a policy regarding Food Education, and, combined with time and resource constraints is given medium to long period. Nevertheless, it is essential to get this pilot project off the ground as soon as possible so as to be able to implement similar school-based projects across the city.

KEY ACTORS:

Cape Town Food Policy Council

State:
CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Solid Waste
City Parks
WC Department of Education

Academic:
Harold Cressey High School
Other nearby schools
Cape Peninsula University of Technology:
- Town and Regional Planning Department
- Agriculture and Food Sciences: Biotechnology
- Agricultural and Food Sciences: Consumer Science: Food and Nutrition
- Department of Horticultural Sciences

Private Sector:
Fruit and Veg City
Nearby food retail outlets

Civil Society:
Food and farming related initiatives
Other related NGOs and initiatives
Residents associations

RELATED INTERVENTIONS:

Policy:

Food Planning and Education
Food Policy Council
Food Systems Plan
Amendments to UA Policy
Food Producing State Buildings
Affecting Behavioral Change

Spatial:

All

ORCHARD PROJECT

The implementation of this intervention is dependent of the implementation of other actions, and, with time and resource capacity constraints, this pilot project is given a medium to long term timeframe. Nevertheless, it is critical to get this project off the ground as soon as possible so as to implement similar projects around the city.

KEY ACTORS:

Cape Town Food Policy Council

State:

CT Department of Environmental Resources Management
CT Department of Economic Development: Urban Agriculture Unit
City Parks

Civil Society:

Food and farming related NGOs
Friends of the De Waal Park
GreenPop

RELATED INTERVENTIONS:

Policy:

Food Policy Council
Food Systems Assessment
Food Systems Plan
Identifying and Protecting Land for UA
Amendments to UA Policy

Food Producing State Buildings
Affecting Behavioral Change

Spatial:
All

5.5 Long Term

PROPERTY TAX CREDITS AND OTHER INCENTIVES

This is a policy intervention in that it requires the creation of new legislation and regulations regarding incentives for producing food on the private properties of businesses. This has been given long term timeframe status in that, although it is an important aspect of affecting behavioral change and the physical and mental landscape of the city, it is dependent on preceding actions and is given low priority in terms on time and resource allocation. While this is primarily a policy intervention there is a spatial aspect. The regulations must be put in place by the state but the manifestation thereof rests on the prerogative of the private sector.

KEY ACTORS:

Cape Town Food Policy Council

State:
CT Department of Environmental Resources Management
CT Department of Economic Development: Urban Agriculture Unit
CT Department of Planning and Building Development Management
CT Department of Spatial Planning and Urban Design
CT Department of Solid Waste
CT Department of Water and Sanitation

Private Sector:
Participation

RELATED INTERVENTIONS:

Policy:
Food Perspective
Food Policy Council
Food Systems Plan
Amendments to UA Policy
Amendments to the Zoning Scheme
Food Producing State Buildings
Affecting Behavioral Change

Spatial:
Food Hub
Green Route
Retail and School Precinct

AGRICULTURAL HERITAGE PROJECT

The implementation of an Agricultural Heritage food garden in the Company Gardens is an important action with regards to altering the physical and mental landscape of the city, affecting behavioral change and attracting tourism. Nevertheless, it is a low priority in terms of time and resource allocation.

KEY ACTORS:

Cape Town Food Policy Council

State:
CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Tourism
CT Department of Economic Development: Urban Agriculture Unit
City Parks
Heritage Western Cape
SA Department of Arts and Culture
Iziko Museums

Private Sector:
Surrounding businesses
Banks

Civil Society:
Food and farming related NGOs
Employment related NGOs

RELATED INTERVENTIONS

Policy:
Food Perspective
Food Policy Council
Food Systems Assessment
Food Systems Plan
Amendments to UA Policy

Amendments to the Zoning Scheme
Food Producing State Buildings
Affecting Behavioral Change

Spatial:
All

GREEN ROUTE

The implementation of this intervention is dependent on the preceding spatial interventions as it intend to connect all the pilot projects. It is also dependent on the enactment of certain policy interventions such as the Food Policy Council and a Food Systems Plan.

KEY ACTORS:

Cape Town Food Policy Council

State:
CT Department of Environmental Resources Management: Environmental Capacity Building Sustainable Livelihoods and Communication Branch
CT Department of Spatial Planning and Urban Design
CT Department of Transport and Public Works
CT Department of Tourism
CT Department of Economic Development: Urban Agriculture Unit
City Parks
Heritage Western Cape

Private Sector:
Surrounding businesses

Civil Society:
Food and farming related NGOs
Employment related NGOs

RELATED INTERVENTIONS:

Policy:
Food Policy Council
Food Systems Assessment
Food Systems Plan
Amendments to UA Policy
Amendments to the Zoning Scheme

Food Producing State Buildings
Affecting Behavioral Change
Property Tax Credits and Other Incentives

Spatial:
All

The intention of this chapter was to demonstrate the manner in which the interventions detailed in the previous chapter can be implemented. This and the previous chapter have begun to discern what actions can be taken to promote urban food production, from an urban planning perspective primarily. These are by no means the only actions that can or should take place but I have aimed to show some of the opportunities for engaging the discipline of planning with the topic of food.

This chapter has sought to illustrate what broad actions and what kind of role-players are needed to enact the intervention proposal in the previous chapter. It has proposed the establishment of a Food Policy Council, which will be able to advise, direct and enforce decisions made relating to the Cape Town food system. It has also highlighted the importance of key role-players and policy documents that already exist for Cape Town and the use of these as instruments to help create and transition to a more sustainable urban food system.

Ultimately, the creation of a healthy, transformed urban food system requires extensive involvement of all sectors of society and spheres of government. If this approach is enacted with sufficient commitment and will, it may result in a city that is not only food secure but more sustainable, equitable, resilient, healthy and desirable to live in.

6

Conclusion

The aim of this thesis was to better engage the discipline of planning with the topic of food and to elevate food systems and food concerns in the public agenda, within the context of Cape Town generally, and the City Bowl specifically. This was done in such a way that examines urban food production from different angles, not only for ensuring food security for the poor but also as an ecological and cultural tool. The purpose of the literature review in chapter 2 is to firmly ground the topic of food and food production within the urban realm, and as an issue of sustainability and ecological imperative as well as an issue of poverty and economics, of health and malnutrition, of culture, of politics and society. Chapter 3 examines the contextual relationship with food and food processes in Cape Town and the City Bowl. It presents the opportunities to engage with food from a trans-disciplinary perspective and the challenge for the field of urban planning to take on a role in planning for urban food production. Urban food production, especially within a context such as Cape Town's City Bowl, does not provide a solution to all the challenges that industrial agriculture presents. Nevertheless, it is a strategy for citizens to engage with some of the complex processes of food on an every day basis and thus imbibe personal responsibility over their food habits, following the lead of the public sector. The aim of chapter 4, the interventions chapter, is to explore ways in which urban planners and the local public sphere can bring this into Cape Town and the City Bowl in a variety of ways: firstly, a supportive legislative, policy and institutional environment is essential for all spheres of government, the private sector, NGOs and the general public to feel compelled, challenged and inspired to undertake a responsibility to the growing of and consumption of food, and to reduce food and organic waste; secondly, several pilot projects have been suggested as an example of how such a legislative environment could manifest spatially and in the urban consciousness. The four sites for food production each have a slightly different purpose in demonstrating societal relationships to food: from school and retail to history and heritage to the relationship between indigenous biodiversity, water conservation and food production in harmony with natural cycles and systems. These sites are providing spaces of interruption that allow for the articulation of alternative discourses to that of the dominant western cultural narrative of materialism and consumption. Chapter 5 presents an implementation framework of how these interventions could be carried out, with a strategic timeframe, the relationships between the interventions and some of the key actors necessary.

Food and food production is only one small piece of the puzzle towards sustainability and regeneration. As I attempted to convey in chapters 1 and 2, the processes of food, specifically

food production, fit into much broader global systemic challenges that cannot be fixed through one solution alone. However, industrial agriculture is one of humankind's most ecologically destructive activities, not only in the destruction of habitats and biodiversity, of soil pollution and erosion, carbon emissions, water waste and pollution but also of the disconnect and isolation of people to food and nature. Through my thesis research and my work at the Oranjezicht City Farm I have seen

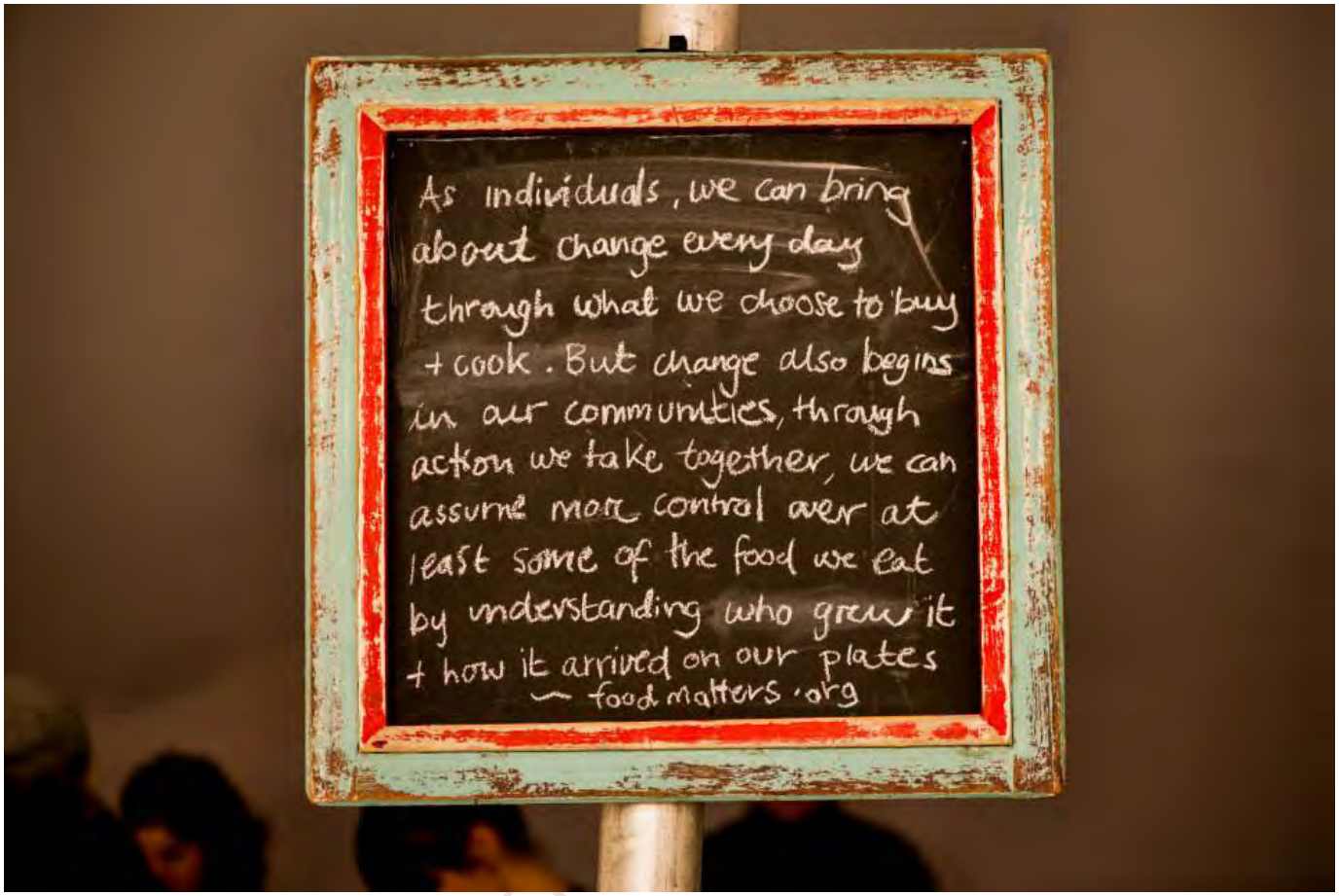


FIGURE 6.1: A QUOTE FROM FOODMATTERS.ORG AT THE OZCF MARKET DAY REMINDING SHOPPERS OF THE POLITICAL IMPERATIVE OF FOOD AND FOOD CHOICES (OZCF.CO.ZA)

the power of growing food not only for filling stomachs but also for feeding the being and the soul of humankind. The processes of food are not just physical but social, cultural and spiritual. Food has always been a central theme in my life, but since I began thinking about food and food production from a planning perspective, and began working at the OZCF, I have discovered a new kind of relationship to food. Food is not only about a connection to oneself, to family, to friends and to culture but also to the Earth and ultimately to the Universe. The energy that is passed from the sun, the water, the ancient geology and organic matter in the soil into plant and animal food products is given to us when we eat, connecting us to all other beings in the Earth eco-system. Making food choices does not only affect the individual, but every co-evolver on the planet.

Food has become a political imperative. The societal relationship with food is representative of the flaws of the global political economy. If the relationship with food can transform, there is potential to extend this into other realms of politics and economics. Never before have food choices been so politically important: with buying food and disposing of food and food products we are making a choice about how we wish to live and be governed.

The narrow conceptions of food and food systems that are relayed in the Cape Town municipal, and South African national, legislation and policy do not allow the space for planners, and other professional disciplines, to engage fully with the topic of food. Food production is primarily seen as a strategy to combat food insecurity and is not viewed through a holistic perspective, producing spatial, policy and behavioral barriers to food production. Nevertheless, there have been some moves to incorporate food production into the planning realm, primarily through the promulgation of the Urban Agriculture Policy for Cape Town, which has resulted in the incorporation of urban agriculture into the Cape Town Zoning Scheme. There is further opportunity to increase focus on food systems through the Cape Town Spatial Development Framework. These tools, the SDF and the CTZS, can be used more effectively to promote urban agriculture.

In this thesis I have attempted to show how planners can bring food production into the everyday consciousness and ordinary reality of regular citizens in order to combat the isolation of the global food regime. This is the role that planners can play: in altering the physical and imagined landscape of the built environment the very purpose of the city, and thus humankind, has the potential to change and transform. However, this thesis is only a small contribution to a much larger conversation that must take, and is taking, place regarding the relationship between planning and food systems, as well as the relationship that all people have to the food they consume. This is an issue that must not, and cannot, be tackled by one discipline alone. Input and collaboration is necessary from a multitude of fields, highlighting the fact that food is something that connects every person and many professional fields including those of health and psychology, ecology and biology, engineering and other built environment professionals.

Further research is needed in order to fully comprehend the complexities of Cape Town's food system. While urban agriculture presents an opportunity and potential strategy to raise awareness and educate citizens on the power of everyday choices, further study is required into the behavioral patterns of citizens, the factors that influence their choices at present and whether everyday exposure to the processes of food does raise a feeling of responsibility to make informed choices. This would be part of a study in environmental citizenship, rights and responsibilities that scrutinizes, critiques and challenges everyday practices.

Furthermore, the connections between food production and biodiversity preservation need to be explored. Agriculture is often posited as a competing interest to that of the conservation of the natural environment. A positive relationship between food production and nature preservation and production is a possibility that must be researched, based on both the expansion of the understanding of food (for example to include indigenous edibles as a norm) and the understanding of nature (as a non-static and ever-changing reality). Urban agriculture specifically is frequently cited as supportive of the natural environment in terms of the greening of public open space. The biggest threat to biodiversity in this instance is the use of chemical pesticides and fertilizers. Further study into this realm may bring conclusion to the false dichotomy and unhelpful opposition of the urban and the rural. Studies into organic agriculture (and other agricultural methods that work in harmony with natural cycles and systems) may work to address conceptions of productivity put forward by proponents of industrial agriculture. Part of this is the spiritual aspect of food, which is ensconced

in natural and societal relationships. Food prepared in a way that promotes a positive and loving relationship between people and the Earth creates connection between all Earthly beings.

Cape Town has an issue with overconsumption, production of waste and infrastructure (natural and human) that cannot support such habits. The relationship between food, food waste and organic waste should be explored in more detail. Urban food production and the composting of organic waste is a priority that has positive effects on both levels- reduced waste to landfills and increased soil fertility for food production. Further, food wastage is an issue that is gaining increased attention around the world. Research needs to be done into the amount of food that is wasted and disposed of, the reasons behind this and ways to reduce or redistribute wasted food products. The packaging of food is also an issue as a contributor to municipal solid waste and the production processes of the packaging itself. These factors should be researched in terms of their ecological impact and opportunities to reduce or alter food-packaging norms.

Water is intrinsic to all life processes, including food production. Cape Town is a water scarce city and yet has some of the highest precipitation levels in the country. The connection between local water systems and food production should be explored in more detail in order to discern whether there is a potential to use food production as a strategy to preserve natural water systems. Urban greening, of which urban agriculture is a part, has the potential to improve drainage, reduce run-off and increase evapo-transpiration. Urban infrastructure that works with, rather than against, natural systems could provide a space for food production to grow.

These recommendations for further study prove the complexities of food and food systems, and yet food is, next to air and water, the simplest and most basic need, desire and action. The physical and imagined space between people and the processes of food, related to the constructed binaries of humans and nature and of urban and rural, enforced by the industrial agriculture regime, has produced a multitude of ecological, including human, ills. Urban food production is not only about food security and reducing the impact of the city on natural systems but also about a heightened consciousness of the natural systems upon which we depend. This is an understanding of mine that has transformed and grown through the process of researching and writing this thesis. The role of planning here is to minimize that space through bridging the binaries and bringing food and food processes into the physical and imagined urban landscape and thus into the everyday consciousness of citizens. It is my hope that this thesis has enabled fresh, and potentially productive, conversations to take place in the Cape Town context.

7

References

AAPS (Association of African Planning Schools). 2011. *AAP Toolkit- Guidelines for Case Study Research and Teaching in Urban Planning*. Printed by MegaDigital.

Acosta, A. 2010. Towards the Universal Declaration of Rights of Nature: Thoughts for action. *AFESE*. August, 2010.

Alberti, M. 2007. Ecological Signatures: The Science of Sustainable Urban Forms. *Places*, 19(3).

Asomani-Boateng, R. 2007. Closing the Loop: Community-Based Organic Solid waste Recycling, Urban Gardening and Land-Use Planning in Ghana, West Africa. *Journal of Planning Education and Research,* 27, 132-145.

Barles, S. 2010. Society, Energy and Materials: The Contribution of Urban Metabolism Studies to Sustainable Urban Development Issues. *Journal of Environmental Planning and Management*, 53(4).

Battersby, J and Haysom, G. 2012. *Philippi Horticulture Area: A City Asset or Potential Development Node.* Report commissioned by Rooftops Canada Foundation Inc. Foundation Abri International in partnership with the African Food Security Urban Network.

Battersby, J and Marshak, M. 2013. Growing Communities: Integrating the Social and Economic Benefits of Urban Agriculture in Cape Town. *Urban Forum,* March 2013. Springer Science.

Battersby, J. 2013. Interviewed by Rabkin, NN. (4 July 2013).

Bellows, AC; Brown, K and Smit J. No Date. Health Benefits of Urban Agriculture. Paper by members of the Community Food Security Coalition's North American Initiative on Urban Agriculture.

Berke, PR. 2002. Does Sustainable Development Offer a New Direction for Planning? Challenges for the Twenty-First Century. *Journal of Planning Literature*, 17(1).

Born, B and Purcell, M. 2006. Avoiding the Local Trap: Scale and Food Systems in Planning Research. *Journal of Planning Education and Research* 26, 195-209.

Boukharaeva, LM and Marloie, M. No Date. Family Urban Agriculture as a component of Sustainable Development. Available at www.ivry.inra.fr. Accessed 20 August 2013.

Brenner, N. 2013. Theses on Urbanization. *Public Culture*, 25(1). Duke University Press.

Buchner, B; Fischer, C; Gustafson, E; Reilly, J; Riccardi, G; Ricordi, C and Veronesi, U. 2012. *Eating in 2030: trends and perspectives*. In collaboration with The European House Ambrosetti, Massimo Montanari. Publishing and editorial coordination: Edizioni, C. Available at: www.barillacfn.com. Accessed 1 August 2013.

Campbell, S. 1996. Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradictions of Sustainable Development. *Journal of American Planning Association,* Summer 1996.

Cape Town Partnership. 2011. *Life to the Fringe.* Prepared by Earthworks Landscape Architects.

Carey, J. 2011. *Who Feeds Bristol: Towards a Resilient Food Plan*. In Partnership with Bristol Green Capital, NHS Bristol and Bristol City Council. Available at www.bristolfoodpolicycouncil.org. Accessed 15 August 2013.

Carey, J. 2013. Urban and Community Food Strategies: The Case of Bristol. *International Planning Studies,* 18(1), 111-128.

CoCT (City of Cape Town). 2006. *Energy and Climate Change Strategy*. City of Cape Town Environmental Planning Department.

CoCT (City of Cape Town). 2007a. *The Economic Imperatives of Environmentally Sustainability.* Department of Economic and Human Development.

CoCT (City of Cape Town). 2007b. *Urban Agriculture Policy for the City of Cape Town*.

CoCT (City of Cape Town). 2008a. *City of Cape Town Agricultural Land Review*. Prepared by Ikapa Enviroplan, A Setplan- DJ Environmental Consultants Joint Venture in association with Agri Informatics and Prof. Kleyhans.

CoCT (City of Cape Town). 2008b. *Solid Waste Management Report*. CT Department of Solid Waste.

CoCT (City of Cape Town). 2010.Public Parks Bylaw 2010. *Provincial Gazette* 6788.

CoCT (City of Cape Town). 2011. *Table Bay District Plan: Spatial Development Plan and Environmental Management Framework*. Baseline Information and Analysis Report

CoCT (City of Cape Town). 2012a. *Table Bay District Plan: Spatial Development Plan and Environmental Management Framework*. Statutory Report.

CoCT (City of Cape Town). 2012b. *Cape Town Spatial Development Framework*. Statutory Report.

CoCT (City of Cape Town). 2012c. *City of Cape Town Zoning Scheme Regulations: A Component of the Land Use Management System.* Department of Planning and Building Development Management.

CoCT (City of Cape Town). 2012d. *Urban Agriculture Policy for the City of Cape Town*. Second Edition.

City of Seattle. 2005. *Towards a Sustainable Seattle: Seattle's Comprehensive Plan.* Available at www.seattle.gov. Accessed 15 August 2013.

Compton, JS. 2004. *The Rocks and Mountains of Cape Town*. Juta and Company Limited.

Conroy, MM and Berke, PR. 2004. What Makes a Good Sustainable Development Plan? An Analysis of Factors that Influence Principles of Sustainable Development. *Environment and Planning A,* 36, 1381-1396

Conway, K. 2006. Building the Food Secure City: Incremental Progress brings about Change. *Growing Better Cities: Urban Agriculture for Sustainable Development*

Cullinan, C. 2002. *Wild Law*. Siber Ink, South Africa.

Cullinan, C. 2009. Earth Governance: from colonization to participation. *State of the World Report.* World Resources Institute.

Daly, H. 1973. *Towards a Steady-State Economy*. W.H.Freeman & Co Ltd. San Francisco, California.

DEA (Department of Environmental Affairs). 2011. National Strategy on Sustainable Development.

Deelstra, T and Girardet, H. 1999. Urban Agriculture and Sustainable Cities: Thematic Paper 2 in N. Bakker, M. Dubbeling, S. Guendel, U. Sabel Koschella, H. de Zeeuw (eds.) 2001. *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda: A Reader on Urban Agriculture*. DSE, Feldafing.

De Zeeuw, H; Van Veenhuizen, R; Dubbeling, M. 2011. The role of urban agriculture in building

resilient cities in developing countries. *Journal of Agricultural Science*, 1-11.

Duncan, Y. 2012. Andre's Farm/Recycling Sanctuary: A Performance Environmental Intervention. Available at www.yasmin-duncan.tumblr.com. Accessed 1 October 2013.

Du Toit, J. 2013. Interviewed by Rabkin, NN. (16 July 2013).

Edible City: Grow the Revolution. 2013. Motion Picture. Produced by Grether, C. San Francisco, California.

Edwards, L. 1984. 'Area Study of Cape Town: Profile of Philippi.' *Second Inquiry into Poverty and Development*. Paper 10e.

FAO (Food and Agriculture Organization of the UN). 2012. *The State of Food Insecurity in the World 2012. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition*. Rome, FAO.

Foley, JA. 2011. Can we feed the world and sustain the planet. *Scientific American* November 2011 issue.

Gasson, B. 2002. *The ecological footprint of Cape Town: unsustainable resource use and planning implications*, Paper presented at the National Conference of the South African Planning Institution, 18–20 September, Durban.

Gasson, B. 2007. *Nature, Cities, and Impact Assessment: A Conceptual Framework.* Paper presented to First Regional Southern African IAIAsa Conference.

Ginn, F. 2012. Dig for Victory! New histories of wartime gardening in Britain. *Journal of Historical Geography*, 38 (3),294-305

Goodland, R and Daly, H. 1996. Environmental Sustainability: Universal and Non-negotiable. *Ecological Applications*, 6(4).

Havel, V. 1992. Speech to World Economic Forum at Davos, Switzerland, 4 February 1992.

Hennessy, K. 2013. Interviewed by Rabkin, NN. (30 August 2013).

Hewett, C. 2013. Interviewed by Rabkin, NN. (10 July, 2013).

Holt Giménez, E and Shattuck, A. 2011. Food crises, food regimes and food movements: rumblings of reform or tides of transformation? *Journal of Peasant Studies*, 38(1), 109-144.

Horrigan, L; Lawrence, RS and Walker, P. 2002. How sustainable agriculture can address

the environmental and human health harms of industrial agriculture. *Environmental Health Perspective*, 110(5), 445–456.

Kates, RW; Parris, TM and Leiserowitz, AA. 2005. What is Sustainable Development: Goals, Values, Indicators and Practice. *Environment*, 64(3).

Karstens, M. 1950. *The Old Company's Gardens at the Cape and its Superindent.* Maskew Miller, Cape Town.

Kruger-Fountain, L.2013. Interviewed by Rabkin, NN. (3 September 2013)

Kutiwa, S; Boon, E and Devuyst, D. 2010. Urban Agriculture in Low Income Households of Harare: An Adaptive Response to Economic Crisis. *Journal of Human Ecology*, 32(2), 85-96.

Leopold, A. 1949. *A Sand County Almanac.* Oxford University Press: Oxford.

Lemanski, C. 2007. Global cities in the south: Deepening social and spatial polarization in Cape Town. *Cities,* 24 (6), 448-61.

Lipietz, A. 2011. Fears and Hopes: The Crisis of the Liberal-Productivist Model and its Green Alternative. Presented at *Responding to the Crisis in International Development at the London School of Economics*, 8 September, 2011.

LDA (London Development Agency). 2006. *Healthy and Sustainable Food for London. Commissioned by the Mayor of London and London Food*. Available at www.london.gov.uk. Accessed 15 August 2013.

London, Greater Authority. 2011. *The London Plan*. Available at www.london.gov.za. Accessed 15 August 2013.

Maan Miedema, J and Pigott, K. 2007. A *Healthy Community Food System for Waterloo Region.* Health Determinants, Planning and Evaluation Division of Region of Waterloo: Public Health. In Partnership with Grand by Design.

Mansfield, B and Mendes, W. 2013. Municipal Food Strategies and Integrated Approaches to Urban Agriculture: Exploring Three Cases from the Global North. *International Planning Studies*, 18(1), 37-60.

Matthews, S. 2004. Post-Development Theory and the Question of Alternatives: A View from Africa. *Third World Quarterly*, 25(2), 373-384.

Mbiba, B. 1994. Institutional responses to uncontrolled urban cultivation in Harare: prohibitive or accommodative? *Environment and Urbanization*, 6(1), 188–202.

McClintok, N. 2010. Why farm in the city? Theorizing urban agriculture through a lens of metabolic rift. *Cambridge Journal of Regions, Economy, Society* 3, 191-207.

McHarg, IL. 1969. "Plight and Prospect" in Wheeler, SM and Beatley, T. 2004. *Sustainable Urban Development Reader*. Routledge Urban Reader Series. London, UK.

McMichael, P. 2009. A food regime analysis of the 'world food crisis'. *Agriculture and Human Values* 26, 281–295. Springer.

Molle, F. 2009. River-basin planning and management: The social life of a concept. *Geoforum*, 40, 484-494.

Morgan, K. 2009. Feeding the City: The Challenge of Urban Food Planning. *International Planning Studies*, 14(4), 341-348.

Morgan, K and Sannino, R. 2010. The urban foodscape: world cities and the new food equation. *Cambridge Journals of Regions, Economy and Society* 3, 209–224

Morgan, K. 2013. The Rise of Urban Food Planning. *International Planning Studies*, 18(4), 1-4.

Mougeot, L.J.A. 2005. Introduction, in Mougeot, L.J.A.(ed.). *Agropolis; the social, political and environmental dimensions of urban agriculture*. London: Earthscan, 1-30.

Mougeot, L.J.A. 2006. *Growing better cities: urban agriculture for sustainable development.* Ottawa: IDRC.

Murray, SA. 2005. Working for Water's 'AlienBusters': Material and metaphoric campaigns against 'alien invaders'. *Critical Arts*, 19 (1), 127-149.

Nederveen Pieterse, J. 1998. My Paradigm or Yours? Alternative Development, Post-Development, Reflexive Development. *Development and Change,* 29, 343-373.

NPC (National Planning Commission). 2011. National Development Plan Vision 2030.

Nteta, Z. 2013a. Interviewed by Rabkin, NN. (8 September 2013).

Nteta, Z. 2013b. *Green Clusters: Challenges, Possibilities and Collaboration*. Report from the First Green Clusters Workshop initiated by the Cape Town Partnership.

OFPC (Oakland Food Policy Council). 2005. Transforming the Oakland Food System: A Plan for Action. Available at www.oaklandfood.org. Accessed 15 August 2013.

Olivier, D. 2012. What have we learned from 30 years of urban agriculture research? Doctorate at Stellenbosch University.

O'Neill Karen, M. 2005. Can Watershed Management Unite Town and Country?, Society & Natural Resources: *An International Journal,* 18:3, 241-253

Pieterse, E. 2011. Recasting Urban Sustainability in the South. *Development,* 54 (3), 309-316.

Pothukuchi, K and Kaufman, JL. 1999. Placing the food system on the urban agenda: the role of municipal institutions in food systems planning. *Agriculture and Human Values,* 16, 213-224.

Pothukuchi, K. 2004. Community Food Assessment: A First Step in Planning for Community Food Security. *Journal for Planning Education and Research*, 23, 356-364.

Raja, S; Born, B and Kozlowski Russel, J. 2008. A Planners Guide to Community and Regional Food Planning: Transforming Food Environments, Facilitating Healthy Eating. *Planning Advisory Service Report Number 554*. American Planning Association (APA). Chicago, Illinois.

Ramdewor, K. 2009. *Vacant Land Audit in the city of Cape Town: Analysis for determining suitable vacant land for Social Housing.* Thesis written for the Geomatics Division, Faculty of Engineering and Built Environment, University of Cape Town.

Register, R. 2006. *Ecocities.* Gabriola, BC: New Society Publishers.

Rocha, C and Lessa, L. 2009. Urban Governance for Food Security: The Alternative Food System in Belo Horizonte, Brazil. *International Planning Studies*, 14(4), 389-400.

Roux, S. 2012. Urban Agriculture as a Resilience Strategy for Cities – exploring the implications in Cape Town. *Urban Seed Update*, 2(11).

SAInfo (South African Info). 2012. South Africa Still a Net Food Exporter. Available at http://www.southafrica.info/business/trade/export/agriculture. Accessed 30 September 2013.

Sheehan, L. 2013. Caring for Home through Nature's Rights. *United Nations Dialogue on Harmony with Nature.* Earth Law Center.

Sorlin, S. 2012. Environmental Humanities: Why should biologists interested in the environment take the humanities seriously? *BioScience*, 62(9), 788-789.

South Peninsula Municipality. 2000. Bylaw Relating to the Keeping of Bees. Provincial Gazette 5427.

Swilling, M. 2006. Sustainability and Infrastructure Planning in South Africa: a Cape Town Case

Study. *Environment and Planning*, 18 (1), 23-50.

TAU (Transvaal Agricultural University.) 2013. Protect SA Agriculture against Excessive Food Imports. Available at http://www.tlu.co.za/index.php/en/2012-03-05-06-29-7/latest-news/348-protect-sa-agriculture-against-excessive-food-imports. Accessed 30 September 2013.

Todes, A et al. 2005. Chapter 9: Discourses on Sustainability. *Planning and Transformation.*

Tonts, M and Haslam-McKenzie. 2005. Neoliberalism and changing regional policy in Australia. *International Planning Studies*, 10 (3-4), 183-200.

Turton, a. 2013. Reclaim Camissa Trust. Available at: www.reclaimcamissa.org. Accessed 2 September 2013.

UN-Habitat (United Nations Centre for Human Settlements). 1996. *An urbanizing world: Global report on human settlements*. Oxford: Oxford University Press for UN-Habitat

United Nations. 2013. *The Millennium Development Goals Report.* New York City, 2013.

United Nations Environmental Programme. 2013. *The Critical Role of Global Consumption Patterns in Achieving Sustainable Food Systems and Food for All*. Discussion Paper.

Van Breda, J. 2012. Presentation at the *Interdisciplinary and Transdisciplinary (IDTD) Research in the Faculty of Health Sciences*. 6 December 2012.

Visser, S. 2013. Interviewed by Rabkin, NN. (10 July 2013).

Whiston-Spirn, A. 2001. Urban Nature and Human Design: Renewing the Great Tradition. Ch10 in *Classic Readings on Urban Planning*. Stein, JM (ed). Island press, Canada.

Worden, N; van Heyningen, E; Bickford Smith, V. 1998. Cape Town: *The Making of a City: An Illustrated Social History.* David Philip Publishers, Claremont.

World Commission on Environment and Development. 1987. *Our Common Future*. Oxford: Oxford University Press.

WPI (Worcestor Polytechnic Institute). 2011. *Rooftop Gardens for Sustainable Livelihoods in Cape Town.* In Collaboration with Sustainable Livelihoods Office of the CT Department of Environmental Resource Management and Touching the Earth Lightly.

Yin, RK. 1998. "The Abridged Version of Case Study Research," in Leonard Bickman and Debra J. Rog (eds.), *Handbook of Applied Social Research,* Sage, Thousand Oaks, CA, 1998, pp. 229-

259.

Geospatial Data:

CoCT. 2013. Digital Spatial Data for Cape Town.

Google Maps. 2013. Maps and Streetview of Cape Town Centre. Available at www.maps.google.co.za/

GIS Department of the City of Cape Town. City Map Viewer. Available at www.capetown.gov.za/en/stats/Pages/CityMapViewerGo.aspx

Web Pages:

www.abalimi.org. Accessed 17 August 2013.
www.archivalplatform.co.za. Accessed 5 September 2013
www.beaconfoodforest.org. Accessed 15 August 2013
www.capetown.gov.za. Accessed 1 September 2013
www.capetown.gov.za/en/parks. Accessed 5 September 2013
www.capetown.gov.za/en/propertyvaluations. Accessed 12 September 2013
www.capetown.gov.za/en/solidwaste2. Accessed 16 September 2013
www.capetownpartnership.co.za. Accessed 5 September 2013
www.capetownpartnership.co.za/ccid. Accessed 1 September 2013
www.facebook.com/erf81. Accessed 5 September 2013
www.farmandgarden.co.za/pha. Accessed 4 September 2013
www.fringe.org.za. Accessed 6 September 2013
www.futurecapetown.com. Accessed 4 September 2013
www.greenpop.org. Accessed 5 September 2013
www.henryfordwestbloomfield.com/greenhouse. Accessed 1 October 2013
www.iolproperties.com. Accessed 5 September 2013.
www.justfood.ca. Accessed 1 October 2013
www.oaklandfood.org. Accessed 15 August 2013
www.ozcf.co.za. Accessed 1 August 2013
www.reclaimcamissa.org. Accessed 18 August 2013
www.sacgardens.org. Accessed 10 October 2013
www.sanparks.org. Accessed 10 September 2013
www.seed.org.za. Accessed 5 September 2013
www.soilforlife.org.za. Accessed 5 September 2013
www.tanap.net. Accessed 2 September 2013
www.ttel.co.za. Accessed 20 August 2013

Appendix

Ethics Approval

Consent Forms