Defining a Method to Value the City of Cape Town's Natural Environment

Stakeholder Interviews Report

Report prepared for

Environmental Resource Management Department
City of Cape Town

by

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FINAL REPORT

Contents

List of Tables and Figures

EXECUTIVE SUMMARY

The Environmental Resource Management Department of the City of Cape Town commissioned Natural Value Joint Venture to conduct a study which is intended to develop a method of valuing the City's natural capital (i.e. its natural environmental resources). One component of this study comprises a consultation process consisting of a series of interviews with the City's relevant line function departments. The purpose of the consultative process (i.e. interviews) is to compile an inventory of the ecosystem goods and services produced by the City's natural capital and, in so doing, identify the people who are benefiting from these goods and services.

In total, 13 people from within the City were interviewed during the consultation process (see Appendix 1). These people either work with the City's natural environment or have some information relating to it. A structured, generic questionnaire (see Appendix 2) comprising open-ended questions was compiled for use in interviewing key City line function people in order to understand from their perspective what they consider to be (a) the functions performed by these natural areas, (b) goods and services, and (c) the beneficiaries of these goods and services. Thus, the information provided in this report relates to the answers provided by the City-employed people as listed in Appendix 1.

Apart from the three key questions (functions, goods and services, and users) of the interview process, there was also a second set of questions which were intended to:

- establish the beneficiaries or users of the City's natural and semi-natural environment,
- describe the priorities for further study and research through resource economics,
- describe the threats and uncertainties facing the natural capital base of the City,
- describe the political choices which have been made with regard to the natural/ semi-natural environment.

Answers, as provided by the interviewees, were then clustered under each question. Some interpretation of the answers in these clusters was done.

Although a wide range of functions (see Table 1) were provided during the consultation process with the City line function departments, it is possible to categorise these into the four categories as illustrated by De Groot et al. (2002).

The nature of these categories include the following:

- *Regulatory functions:* The capacity of the natural and semi-natural environments to regulate essential processes and life-support systems through biogeochemical cycles and other biospheric processes. Examples from Table 1 include water purification, pollination, soil binding, and carbon sequestration.
- *Habitat functions:* This is the provision of habitat to wild plants and animals, and thereby contributing to conservation of biological and genetic diversity.
- *Information functions:* Natural and semi-natural environments provide almost unlimited opportunities and reference functions by providing opportunities for reflection, mental development, spiritual reflection and leisure. Examples from Table 1 include education function, and aesthetic space.
- *Production functions:* This relates to the capacity of the environment to produce material that benefits other living organisms. An example from Table 1 includes the production of resources.

Interviewees were further asked to provide a list of goods and services which might be associated with the City's natural/semi-natural environment or at least the areas which are managed by the line function departments. This question yielded a number of ecological and socio-economic goods and services provided by the City's natural and semi-natural environments. The full list is given in Appendix 3. This is clearly a long list which needed some form of classification and grouping. For this reason, the goods and services resulting from the interviews and presented in Appendix 3 were then categorised (see Table 2) according to the method followed by De Groot et al. (2002) and the functions discussed in section 4.2.

In trying to understand goods and services, and which environmental resources are important to sustainable development in the City of Cape Town, it is necessary to identify the users (beneficiaries) of these goods and services. For this purpose, a number of key natural/semi-natural environment beneficiaries were identified during the interviews (see Appendix 4 for a complete list). The detailed list in Appendix 4 was categorised as presented in Table 3.

From the interview process with City line function departments it became clear that the challenge for the current project and indeed the City's environmental department is how to explain to policy-makers and decision-makers that if natural/semi-natural environments are not maintained, the benefits from environmental goods and services will decline over time. This decline will have a threatening effect on certain industries in the City and also the social wellbeing of the City's residents. Conversely,

if we maintain our natural assets and use them more effectively, they will continue to perform a wide range of functions and their associated goods and services will continue to flow. The City, therefore, will benefit from greater returns on its natural asset base.

1 INTRODUCTION

1.1 Background

The Environmental Resource Management Department of the City of Cape Town commissioned Natural Value Joint Venture to conduct a study which was intended to develop a method of valuing the City's natural capital (its natural environmental resources). The study's main goal was to develop a generic method of valuing such environmental resources for the City, using standard economic valuation techniques in applied environmental and natural resource economics. This generic method will be tested by estimating the value of one pilot site in the City.

The valuation of natural and semi-natural environmental resources is vital when including nature's worth in decisions on exploitation and can assist in setting the standards for protecting critical natural resources. The objective of economic growth and consumption in itself is not to be the goal of sustainable development, as it may well ignore the scarcity of the natural environment and, ultimately, the cost of certain types of growth and consumption.

The valuation of natural and semi-natural environmental resources is not an end in itself, but a means to improve decision-making regarding the City's natural and environmental resources. In all cases, economic valuation of the environment does not, per definition, provide a carte blanche for tradability. The need for public goods remains a strong imperative and does not need to be argued on economic grounds only. When something carries economic value, the policy decision whether to privatise such values or keep them as public assets, still needs to be made.

The current study for the City of Cape Town will provide a method to value the flows of ecosystem goods and services from an economic perspective. The outcome of this study, which includes a pilot valuation study, will be used to support the development of a business case for investment in and maintenance of the City's natural capital assets.

1.2 Purpose of this report

A component of the study comprises a consultation process consisting of a series of interviews with the City's relevant line functions. The purpose of the consultative process (i.e. interviews) is to compile an inventory of the ecosystem goods and

services produced by the City's natural capital and, in so doing, identify the people who are benefiting from these goods and services. For the purposes of the consultation process we have included all open-space natural or semi-natural areas (e.g. floodplains, wetlands, City parks, sandy beaches or rocky beaches) when referring to natural and semi-natural environments. The specific purpose of this report is to present the outcomes of a series of interviews held with the City's relevant line function departments.

1.3 Structure of this report

This report is divided into five sections. Section 1 gives the background, purpose and structure of this report. Section 2 provides a general overview of the City of Cape Town. Section 3 is the outline of the method used to get perceived goods and services from the relevant line function departments. Section 4 deals with the outcome (flow of goods and services) of the consultative process and all other stakeholder issues emanating from the interviews. Section 5 presents the conclusions of the consultative process.

2 OVERVIEW OF THE CITY OF CAPE TOWN

2.1 General

The City of Cape Town occupies an area of 2477 km^2 in the Western Cape province of South Africa. The City is endowed with famous landmarks such as Table Mountain, Cape Point and Robben Island with its historical significance to South Africa. Cape Town is the centre of commerce and industry in the Western Cape and, due to its growing reputation as an attractive destination for both domestic and international tourists, Cape Town has experienced “intense movement of people, goods and services, extensive development of multiple business districts and industrial areas in recent years .

The City of Cape Town serves as an economic centre of the Western Cape province. In recent years, Cape Town has experienced a boom in the real estate and construction industry. The many wine and fruit farms located in the Cape Winelands District Municipality adjacent to Cape Town, take advantage of the Cape Town harbour and International Airport for the export and domestic transport of agricultural produce. These endowments, commercial activities, the City’s growing attractiveness as a tourist destination, and the boom in real estate have resulted in a great boost for the local economy and also contribute greatly to the country’s Gross Domestic Product (GDP).

2.2 The natural environment

The introduction to the City of Cape Town Integrated Metropolitan Environmental Policy (2001) states that the City’s greatest assets are its “people and natural environmental beauty and resources. It further states that the City is bounded by oceans and mountains, and situated in the smallest of the world’s six floristic kingdoms.

The City of Cape Town is a global urban biodiversity hotspot. It is located within an area of world-class biodiversity and unique conservation value. This is a result of both the inland aquatic and terrestrial ecosystems and the diverse coastal and marine habitats created by the relatively warm waters of False Bay and the colder waters of the Atlantic Ocean (CCT Biodiversity Strategy 2006). Also, the floral diversity relates to the steep environmental gradients, including altitudinal, geological

and rainfall gradients, which have combined to create a large number of different habitats.

This status of ‘biodiversity hotspot’ is further entrenched by the fact that the City of Cape Town is unique in that:

- an entire National Park, the Cape Peninsula National Park (CPNP), is situated within the City’s administrative borders,
- the City is bordered by, and overlaps with, two Biosphere Reserves (the Kogelberg and West Coast Biosphere Reserves) administered by the Western Cape Nature Conservation Board,
- the City of Cape Town itself administers 23 nature reserves which form part of the Cape Floral Kingdom. These reserves are seen as supporting species that are unique to Cape Town, many of which are under threat of extinction from mainly to habitat destruction and invasion by alien plants.

Besides the floral diversity, the environment in the City includes rivers, wetland bodies, coastal areas and other natural/semi-natural environments which add to the scenic nature of the city. The City also boasts numerous reserves and parks which are popular areas for recreation and relaxation.

This report attempts to show that the City’s natural and semi-natural environment is in fact a significant service provider, and that it provides “goods” (e.g. water for consumption) and “services” (e.g. waste treatment) that are important in meeting people’s basic needs and improving their quality of life.

The City’s environment provides a space for people to use and there are opportunities for the City to derive some financial value from its use. Currently, the environment is used for a variety of reasons, including recreation, tourism, historic, cultural heritage, and intangible attributes such as character and landscape. Apart from its aesthetic appeal, the City’s natural resources are considered to play a vital role in the regulation of its environment. The challenge here is how to put a monetary value on the different ways in which people perceive the environment.

3 METHODS

In total, 13 people from within the City were interviewed during the consultation process (see Appendix 1). These people are considered to either work with the City's natural environment or have some information relating to it. A structured, generic questionnaire (see Appendix 2) comprising open-ended questions was compiled and used for interviewing key City line function people in order to understand what they consider to be (a) the functions performed by these natural areas, (b) goods and services, and (c) the beneficiaries of these goods and services. Thus, the information provided in this report relates to the answers provided by the City officials listed in Appendix 1.

In developing the questions for the interviews, we adopted the conceptual framework of De Groot et al. (2002) which provides a framework for integrated assessment and valuation of ecosystem functions, goods and services. Figure 1 illustrates the framework by providing a comprehensive and consistent overview of all functions, goods and services provided by natural and semi-natural open-space ecosystems. It further describes their linkages with available valuation methods. (NB: The interviews were limited to the functions, goods and services, and beneficiaries and did not focus on valuation methods.)

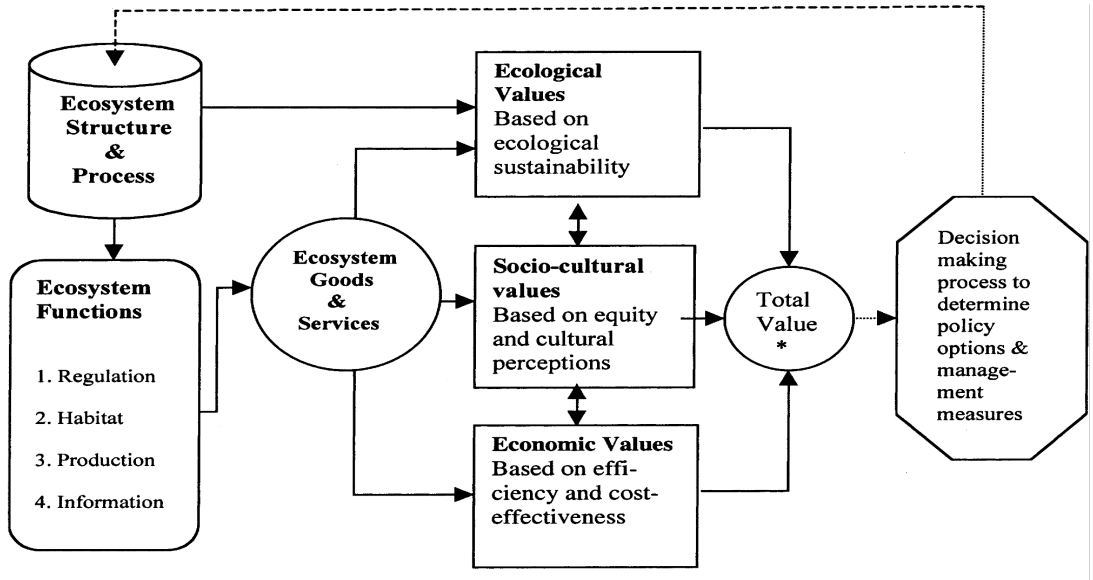

Figure 1: *Framework for integrated assessment and valuation of ecosystem functions, goods and services*

Source: Adapted from De Groot et al. (2002)

As shown in Figure 1, the first step towards a comprehensive assessment of ecosystem goods and services involves the translation of ecological or natural complexity (structures and processes) into a limited number of ecosystem or environmental functions. These functions, in turn, provide the goods and services that are valued by humans.

De Groot et al. (2002) defines ecosystem functions as “the capacity of natural processes and components to provide goods and services that satisfy human needs, directly (food for consumption, wood for energy) or indirectly (ecological regeneration, peoples appreciation of nature)”. Using this definition, ecosystem functions are best conceived as a subset of ecological processes and ecosystem structures (see Figure 1). Each function is the result of the natural processes of the total ecological sub-system of which it is a part. Natural processes, in turn, are the result of complex interactions between biotic (living organisms) and abiotic (chemical and physical) components of ecosystems through the universal driving forces of matter and energy.

Apart from the three key questions (functions, goods and services, and users) of the interview process there was also a second set of questions which were intended to:

- establish the beneficiaries or users of the City’s natural and semi-natural environments,
- describe the priorities for further study and research through resource economics,
- describe the threats and uncertainties facing the natural capital base of the city,
- describe the political choices which have been made regarding the natural/ semi-natural environment.

Answers to the questionnaire provided by the interviewees were then clustered under each question. Some interpretation of the answers in these clusters was done.

4 NATURAL RESOURCE FLOWS

This section provides the inputs gathered during the one-on-one interviews. Each question in the questionnaire is given here as a sub-section. For each question (sub-section), the inputs that were provided during the interviews are then tabulated or bulleted and discussed, giving an interpretation of the answers.

4.1 Natural or semi-natural areas managed by the interviewees

The City of Cape Town has a number of line function departments with branches that are tasked with managing the City's natural/semi-natural environment or areas. These departments are key participants in the consultative process. The majority of the officials interviewed were drawn mainly from these line function departments or branches. All interviewees were asked to describe the natural or semi-natural environment (or asset/amenities, open-space type areas) under their jurisdiction. A number of natural natural/semi-natural areas (assets) managed by the interviewees were identified. They are the following:

- *Blaauwberg Conservation Area (BCA)* is an area of approximately 2000 ha, comprising a rich mosaic of natural, cultural and historic elements. It is considered an important part of the City's biodiversity network. It consists of a coastal area, a wetland and an inland more terrestrial component. The BCA provides numerous economic, educational and recreational opportunities to the City's residents.
- *False Bay Ecology Park (FBEP)* is a multi-use park covering an area of 1200 ha. This includes Rondevlei and Zeekoevlei Nature Reserves, a coastal strip, waste water treatment works, and a solid waste landfill site. It provides numerous recreational, tourism and educational opportunities.
- *Biodiversity:* The Biodiversity Management Branch is responsible for the conservation of biodiversity within the City's boundaries. This includes the Biodiversity situated in the City's 23 reserves, as well as outside the City reserves (such as in City parks). Included in this are also the six endemic national vegetation types that occur in the City.
- *The City Parks:* All of the City's parks are managed under one department. City parks include playgrounds, cemeteries, crematoriums, landscaped road reserves, traffic intersection and scenic drives. City parks are seen as very important for recreational activities and also for aesthetic enjoyment.
- Freshwater river systems.
- Coastal areas which are mainly used for recreational purposes.

- Urban storm water and river management (including watercourses and wetlands) are managed by the City's Roads and Stormwater Department. *Watercourses and wetlands* are considered to be important components of the City's biodiversity network and represent an essential element in restoring the urban fabric of the City by providing both recreational and economic opportunities.

Apart from the people managing these areas, there were other interviewees who are not directly responsible for managing environmental areas/assets (e.g. finance, economic information, etc). This mix of people were able to speak about the specific areas under their jurisdictions and what they considered to be environmental goods and services emanating from the City's natural/semi-natural areas.

Given that different natural/semi-natural environments have varying abilities to perform functions and supply environmental goods and services, it was necessary to establish the areas managed by the interviewees. Thus, the first question was intended to establish the natural/semi-natural environments (assets) administered or managed by the interviewees. This is very important when one considers the goods and services answers provided by the interviewees. It is also important because it shows that the consultative process has covered a wide range of natural/semi-natural areas while seeking to understand the environmental functions, goods and services, and users of the City of Cape Town's natural/semi-natural environment.

4.2 Natural/semi-natural environment functions

Having described the natural/semi-natural areas under their jurisdiction, interviewees were then asked to describe the natural/semi-natural environment functions which deliver goods and services. These functions can be described as the physical, chemical, and biological processes or attributes that contribute to the self-maintenance of the environment, production of natural products or provision of space for other living organisms. In other words, the functions are defined as the capacity of the natural processes and components to provide goods and services that satisfy human needs, directly or indirectly (De Groot et al. 2002). With this definition illustrated, the nature of the City's natural/semi-natural environment functions were given by the interviewees as represented in Table 1.

Table 1: *Functions performed by natural and semi-natural environments which occur within the boundaries of the City of Cape Town. (Table based on answers provided by interviewees.)*

FUNCTIONS	**DESCRIPTION OF THE FUNCTION**
Oxygen production	This is the production of oxygen which is required to sustain life. The function also relates to the production of other atmospheric gases.
Waste absorption/ breakdown	Unwanted or undesired substances are broken down naturally by microorganisms in the environment. This is assuming that the waste is biodegradable.
Carbon sequestration	This is the absorption and removal of carbon from the atmosphere through photosynthesis.
Soil binding, Filtration and Erosion control	Relates to the role of soil components and vegetation in minimising soil loss and filtering sediments from water to improve water quality
Nutrient breakdown	The process of storing, recycling and re-distributing nutrients.
Water transport/capture	Collection and distribution of water through rivers, wetlands and groundwater water systems. The mitigation of floods is also included in this function.
Water treatment/ purification	This is the treatment or purification of water into a state which could be used by biota.
Plant Pollination	The pollination function is very important since it leads to the creation of new seeds that grow into plants.
Education function	The environment serves a subject of interest for numerous groups (e.g. school children)
Spiritual, cultural and historic information	The environment provides areas where people can practice spiritual and cultural rituals, gather information or use space for spiritual and cultural purposes.
Provision of shade and shelter	Trees provide numerous plants and animals with shade.
Aesthatic space/areas	Many areas provide attractive landscapes features.
Habitat space	Provision of space which could be used by plants and animals for reproduction, growth, etc.
Production of resources	This function relates to the capacity of the environment to produce food material and other products which could be useful to living organisms.

Genetic diversity	Genetic diversity plays a role in sustaining production systems and maintaining and regenerating natural habitat. It provides the basis for future development of species in horticulture, agriculture and medicine.

Although a wide range of functions were provided during the consultation process with the City line function departments, it is possible to categorise the functions given in Table 1 into the four categories as illustrated by De Groot et al. (2002). The nature of these categories include:

- *Regulatory functions:* The capacity of the natural and semi-natural environments to regulate essential processes and life-support systems through biogeochemical cycles and other biospheric process. Examples from Table 1 include water purification, pollination, soil binding and carbon sequestration.
- *Habitat functions:* This is the provision of habitat to wild plants and animals, thereby contributing to conservation of biological and genetic diversity.
- *Information functions:* Natural and semi-natural environments provide almost unlimited opportunities and reference functions by providing opportunities for reflection, mental development, spiritual reflection and leisure. Examples from Table 1 include education function and aesthetic space.
- *Production function:* This relates to the capacity of the environment to produce material that is of benefit to other living organisms. An example from Table 1 is the production of resources.

The functions listed in Table 1 help to illustrate how the City's natural and semi-natural environment regulates itself and contributes to the general aesthetic appeal of the City. The lesson here is that the management of the environment as a City line function will ensure that natural resources continue to perform these essential functions. Conversely, if the environment is not managed properly, some functions may cease to exist and this will affect the ability of the environment to deliver goods and services to the City.

4.3 Natural/semi-natural environmental goods and service

This section focuses on the range of goods and services provided by the City of Cape Town's natural/semi-natural environment. This concept is used to demonstrate that the City's natural environment is in fact a significant service provider and that it provides "goods" (e.g. water for consumption) and "services" (e.g. flood attenuation) that are important in meeting people's basic needs and improving their quality of life.

This contrasts with perceptions of the environment as an elite agenda focusing on plant and animal requirements rather than human needs (Roberts et al. 2005).

A total of 13 interviewees were asked to provide a list of goods and services which might be associated with the City's natural/semi-natural environments or at least the areas which are managed by the line function departments. This question yielded a number of ecological and socio-economic goods and services provided by the City's natural and semi-natural environments. The complete list is given in Appendix 3. This is clearly a long list which needed some form of classification and grouping. For this reason, the goods and services resulting from the interviews were categorised (see Table 2) according to the method followed by De Groot et al. (2002) and the functions given in section 4.2.

Table 2: *The various types of goods and services provided by the interviewees (see Appendix 3) can be sorted according to the specified categories.*

Information related	**Regulation related**	**Habitat space related**	**Production related**
Use for school excursions	Water for consumption	Space for biota to live and reproduce	Fuel and energy
Travel to historic/ religious sites	Storm water purification/drainage	Conservation of living resources	Material for craft and fashion
Use of scenic areas for enjoyment/ relaxation	Preventing flooding of areas		Small-scale urban farming
Use in the production of films/ events	Pollution abatement		Plant or animal material for medicines
Use in advertising and books	Healthy soils for production		Wild flowers for harvesting
Beauty, inspiration and recreation	Oxygen provision		Resources for collection
Use for scientific research	Waste assimilation		

The interviewees asserted that the above goods and services are essential to all communities living in the City of Cape Town but may, in specific cases, be particularly important in contributing to meeting the basic needs (such as water, firewood, etc.) of poorer communities that do not have access to adequate infrastructure and services.

4.4 Beneficiaries (Users)

In trying to understand goods and services, and consequently which environmental resources are important to sustainable development in the City of Cape Town, it is necessary to identify the beneficiaries (users) of the goods and services in the City. For this purpose, a number of key natural/semi-natural environment beneficiaries were identified during the interviews and are listed in Appendix 4. The detailed list given in Appendix 4 was categorised and represented in Table 3.

Table 3: *Categories, types and examples of natural/semi-natural environment beneficiaries. (A detailed list is given in Appendix 4.)*

Categories	**Types (examples)**	**Notes**
Tourist groups: Interviewees explained that Cape Town was a favoured tourist destination partly as a result of its natural environment.	International tourists National tourists Local tourists	Data and levies related to tourism is available at: • Nature reserves • Tourism organisations • City parks
Recreation groups: Interviewees noted that the Cape Town environment offers space for a wide variety of recreational activities.	Beach bathers Sailors, surfers and rowers, horse riding Picnics and braais Walkers, cyclists and hikers Sports	A number of the organised recreational groups keep data pertaining to their members. These will include sailing clubs, etc.
Harvest groups: The activity of harvesting natural resource and other resources is a limited activity.	Fishing Wild plant harvesting Urban agriculture Gathering fuelwood	
Information and cultural groups: The natural environment provides space for learning and human development.	School excursions Scientific research History enthusiast Religious experience Book writers	The nature reserves will have data related to school excursions, gate fees, etc.

Industry groups: These are business activities which make use of the City's natural environment.	Film and events industry	The City of Cape Town's economic information group has industry specific information/data that could be accessed.
	Shipping industry	
	Tourism industry	
	Manufacturing and construction	
	Advertising industry	
	Craft makers	
Residential groups: Residential household derive a variety of benefits from the natural environment. This is the protection from floods and natural drainage provided by the environment.	Households (Properties)	

These resource users have different needs with respect to goods and services supplied by the natural/semi-natural environment. Goods and services are sometimes used *directly* as an input for consumers (e.g. household water) and for production processes (e.g. water for industry), and also *indirectly* by land users to ameliorate their impacts on the environment. In many instances, the City's environmental services are often public goods, which mean that they may be enjoyed by any number of people at any given time without affecting other people's enjoyment. For example, an aesthetic view in Blaauwberg or any part of the City is a public good. No matter how many people enjoy the view, others can also enjoy it. The problem with public goods is that although people value them, no one person has incentive to pay or maintain the good.

4.5 Priorities for further study

Interviewees were also asked to provide what they consider to be priority research areas for the future. This is environmental economics research that could be useful in the management of the City's natural/semi-natural environment. Interviewees then suggested a number of key resource economics priorities (some of which are overlapping) for the future.
These include the following:

- There is a need to show the value of what is being lost due to development. This could help advance the case for biodiversity within the City.
- There is a need to show how we value the system so that we can get developers to pay for the natural drainage system and its maintenance. This should be part of the bulk infrastructure charge.
- We need to understand the value of ecosystem goods and services. This would enable us to motivate for the required budgets for the management of these areas.
- There is a need for a study to show how environmental management leads to tourism.
- Urbanisation, bulk service infrastructure, resource depletion, loss of habitat, inappropriate off-road vehicle use.

The main suggestion here is that it would be helpful if resource economics made it possible to convert the somewhat elusive value of natural/semi-natural environments and their associated goods and services into something understandable (i.e. a monetary value) to policy-makers and the general population. In a way this could help develop the required political understanding and support for natural resources within the City. This will avert situations where a lack of understanding of the interrelated nature of social, ecological and economic concerns results in natural resources concerns being marginalised when social and economic pressures are high.

4.6 Threats to the natural capital base

The City of Cape Town's natural beauty, perceived quality of life and vast economic opportunities create pressure on the City's natural resource base. Interviewees stated that the threats are numerous and are showing no signs of abating. In order to protect the natural capital of the City, it is necessary to understand where the threats are emanating from. For this purpose, a number of threats to the natural capital base have been identified by the interviewees as the following:

- Urban sprawl and urban development are seen as key driving forces behind the consumption of natural resources and replacement of natural space.
- Sand mining poses a threat to biodiversity.
- Privatisation of natural resources. If a space is privatised, it limits the number of people who might benefit from its goods and services, or the environment can be altered once it is in private hands.
- Exclusion of the environmental agenda from development planning.

- Illegal off-road driving in protected areas.
- Water pollution.
- Illegal water abstraction.

Interviewees agreed that Cape Town's environment has been steadily eroded by the combined effects of the above threats and especially by the patterns of urban developments which have dominated the City's recent history. It was noted that the price of allowing these threats to continue may be the extinction of species, the disappearance of accessible open space and ultimately the loss of the City's aesthetic appeal.

Although the interviews revealed threats to the environment, it is also important to note that City's residents value their access to the Cape Town natural landscape and the City has enacted some of South Africa's progressive laws in an attempt to protect the natural resource base of the City.

4.7 Current uncertainties

A number of uncertainties facing environmental management in the City were identified. These uncertainties include the following:

- It is not clear what the political decisions are going to be in the future, and these might have implications for the management of the City's natural resource base.
- It is uncertain how climate change will affect the natural environment.
- It is also not clear how the population growth is going to affect the natural environment. It is, however, expected that more people will require more resources and this would put pressure on the natural environment.

4.8 Other people to consult outside the City

As a conclusion to the interview sessions, each interviewee was asked to state any other person whom it would be useful to interview as part of the consultative process. The following names were provided:

- Natasha Willson from the CapeNuture's Cape Metro Business Unit: 021 957 5926
- Cliff Dorse, BMB, ERMD
- Niel Malan from MCM
- Theuns Vivian, Tourism Manager, City of Cape Town
- Richard Kotze at DWAF

- Lindi Buirski, Environmental Education, ERMD
- George Davies, Urban conservation at SANBI

5 CONCLUSIONS

The consultative process was designed to assist in the development of an inventory of goods and services flowing from the natural capital of the City of Cape Town. This approach was useful in that it focused on the goods and services that people discern from natural or semi-natural areas within the City of Cape Town.

From the interviews with City line function departments it was learned that the natural/semi-natural environments perform certain functions that are:

- important for the maintenance of the natural/semi-natural environment,
- producing a wide range of goods and services,
- of benefit to the City communities and its visitors.

The conclusion of this is that the City must act in a way that promotes the continued proper functioning of its natural/semi-natural assets to the benefit of its inhabitants and visitors.

The interviewees also considered it important to mention potential threats and uncertainties facing the natural/semi-natural environment and thus its ability to perform its functions and offer benefits for all communities in the City of Cape Town. It is concluded that interviewees see the biggest threat as the form and shape of the development occurring in the City.

Environmental goods services flow from natural assets (soil, water systems, plants, animals, other living organisms and the atmosphere) to provide the City with financial, ecological and cultural benefits. Examples of goods and services flowing from the City's natural environment include: provision of clean water, flood attenuation, tourism opportunities, pollution control, and fulfillment of cultural, religious and intellectual needs. Most importantly, the goods and services from the environment are clearly benefiting all communities of the City and this dispels the notion that the environment is only about maintaining plants and animals.

From the interview process with City line function departments it became clear that the challenge for the current project and indeed the City environment department is how to present to policy-makers and decision-makers the fact that if natural/semi-natural assets are not maintained the benefits from environmental goods services will decline over time. This decline will have an effect of threatening certain industries in the City and also the social wellbeing of the city's residents. Conversely, if we

maintain our natural assets and use them more effectively, they will continue to perform a wide range of functions and their associated goods and services will continue to flow, with the City benefiting from greater returns.

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APPENDIX 1: List of people interviewed

List of the interviewees from the City of Cape Town line function departments:

NAME	**CITY LINE FUNCTION**	**CONTACT DETAILS**
Patricia Holmes	Biodiversity Management Branch	021 710 9358
Barry Wood	Catchment, Stormwater & River Management Branch	021 400 1204 021 400 3088
Greg Oelofse	Environmental Strategy and Partnerships Branch	021 487 22 39
Joanne Jackson	Environmental Strategy and Partnerships Branch	021 487 2184
Craig Haskins	Information and knowledge management Branch	021 400 2066
Carol Wright Jeremy Marillier	Economic Development Department	021 483 9023
Joe Olivier Sakhi Tsotsobe	Sport, Recreation and Amenities Branch	021 400 4181
Johan Steyl	Budgets Department	021 400 2070
Phumla Mrubata Carl Theunissa	City Parks	021 400 2947
Candice Haskins	Catchment, Stormwater & River Management Branch	021 400 3088

APPENDIX 2: Questionnaire

1. Could you list and describe the natural or semi-natural ecosystems (or natural areas/amenities, open space type areas) falling under your jurisdiction? This could include area, size or number of areas, and might be wetlands, rivers, urban parks, urban amenities such as the planting of trees in road servitudes, etc.).

Box 1:

The term ecosystems on its own may lead to a limited response - there are very little full ecosystems in cities under city mananger control – for this question we rather speak of anything related to open space systems natural amenity/

2. Could you describe the ecosystem functions that deliver the goods and services in the natural area (e.g. habitat function, cycling carbon, trapping of nutrients).

BOX 2:

We are using a value approach rooted in people's appreciation of nature. Some functions may be production of goods and services (for consumption for instance), and some may be regulation of the systems (nutrient cycling) some

3. Please describe the goods and services that result from the functions, e.g. better fishing, better views, reduced human health, flood prevention.

BOX 3:
Examples of these could be appreciation of scenery (scenic roads, housing,etc.); fuel and energy (e.g. fuel wood, organic matter); provision of water for

4. Could you identify the users of the environmental services. These are those who benefits from the goods and services

BOX 4:

These could include Industrial users, formal and informal residential, tourist who visit the city etc). Informal

5. What are the priorities for further study and management for the area you manage?

6. What are the current threats to the natural capital base of the City and thus to the provision of ecosystem goods and services?

7. Could you describe the current uncertainties you have to deal with in managing these ecosystem/natural areas/amenities?

8. Could you describe any political choices that have already been made with regard to the management of these ecosystems/natural areas/amenities?

9. Are the identified value of ecosystem goods and services currently linked to your financial/budget processes? If so, how?

10. Any other expert outside the city who we need to consulted about your area of management?

APPENDIX 3: Goods and Services from the interviewees

List of goods and services as given by the Interviewees (these have been categorised in Table 2):

Goods and Services
Drainage, natural irrigation and flood attenuation
Clean air quality
Use for religious purpose
Scenic areas (roads, houses and parks)
Use of environment for school excursions
Tourism opportunities
Trapping of nutrients
Pollution abatement
Transport of water
Information that could be used for education, religious and cultural activities
Opportunities for eco-tourism and outdoor sports
Conservation of resource
Open quality space
Urban agriculture
Water recharge
Storm water purification
Fuel and energy
Drainage/natural irrigation
Collection of material for craft, shells
Oxygen and other atmospheric gases
Small-scale urban farming

Use of areas for filming and events
Supply of drinking water
Clean environment free of waste
Living space for plants and animals

APPENDIX 4: List of users as suggested by interviewees

Beneficiaries or user groups:

1. Cape Town residents
2. International tourist
3. National tourist
4. Industry
5. Information groups
6. Spiritual groups
7. Interest groups
8. Fishermen
9. People interested in History
10. Surfers and Kite people
11. Walkers/Hikers
12. Botanist
13. Animal/Plant enthusiast
14. Education sector
15. Bird watchers
16. Sailors/Rowers
17. Boating
18. Beach Bathers
29. Film Industry
20. Events companies
21. Craft designers
22. Film Industry
23. Oil and Gas sector
24. Transport sector (shipping)
25. Urban agriculture
26. Biota
27. School children
28. Harvest groups
29. Gathering fuel wood
30. Advertises
31. Tourism industry