Republic of Namibia
Ministry of Environment & Tourism

STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE TOURISM SECTOR FOR **WINDHOEK GREEN BELT LANDSCAPE**

2014

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ASSESMENT DONE BY:

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Department of Land Management,
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March 24, 2014

Namibia Protected Landscape Conservation Areas Initiative (NAM-PLACE)

The Namibia Protected Landscape Conservation Areas Initiative (NAM-PLACE) is a five year project established by The Ministry of Environment and Tourism (MET), with co-financing from the Global Environment Facility (GEF) and with the United Nations Development Programme (UNDP) as the Implementing Agency.

UNDP Empowered lives. Resilient nations.

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NAMPLACE namibian landscape conservation

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CONTENTS

LIST OF ACRONYMS

CPP-ISLM	Country Pilot Programme on Integrated Sustainable Land Management
DVGP	Daan Viljoen Game Park
MET	Ministry of Environment and Tourism
NAM-PLACE	Namibia Protected Landscape Conservation Areas Initiative
NDP	National Development Plan
NPV	Net Present Value
PLCAs	Protected Landscape Conservation Areas
SEA	Strategic Environmental Assessment
SWOT	Strength, Weakness, Opportunity and Threat
TIPEEG	Targeted Intervention Programme on Employment and Economic Growth
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WGB PLCA	Windhoek Green Belt Protected Landscape Conservation Areas
WGBL	Windhoek Green Belt Landscape

EXECUTIVE SUMMARY

The Vision of the Windhoek Green-Belt Landscape is to promote, support and facilitate the collaborative management biodiversity conservation and socio-economic development. This vision fulfils the broader goal to expand biodiversity conservation areas adjacent to national parks are referred as the Protected Landscape Conservation Areas (PLCAs).

Therefore, as indicated in the terms of reference, the objectives of this consultancy can be summarized in three components, these are:

- To conduct a strategic environmental assessment of the tourism sector in the Windhoek Green Belt Landscape (WGBL) and produce the SEA report.
- An assessment on achieving and optimizing a sustainable tourism industry to improve the quality of life within the principles of environmental carrying capacity and biodiversity conservation.
- To produce Strategic Management Plan of the landscape that guide implementation sustainable tourism development in the landscape

The following tasks were conducted:

- Task 1: Literature review;
- Task 2: Scoping;
- Task 3: Development of analytical framework;
- Task 4: Consultation; and
- Task 5: Impact assessment;

The following four scenarios were adopted for the SEA and are presented in detail in Chapter-5 & 6:

- Scenario 1: Business as usual
- Scenario 2: Low to medium product diversification strategies (40-60% product diversifications implementation)
- Scenario 3: High product diversification strategies (80% product diversifications implementation)

Overall consideration was given to economic and environmental sustainability, by presenting different product alternative that would make the WGBL unique. A more detailed economic analysis with respect to scenario development on the basis of (i) a business as usual; (ii) Low to Medium (conservative) implementation success; and (iii) optimistic scenarios is provided in this report.

- Economic benefit: revenue would be N$3.9million and N$5.1million by implementing 40% and 60% of the diversification products respectively from WGBL
- Daan Viljoen Game Park (excluding the WGBL) with the above two product implementation rates, similarly the revenue estimated at N$8.06 and N$9.25 respectively
- High: 80% of product diversification and development is achievement , estimated revenue to be NAD17million

The contribution of WGBL to the national income would be NAD3.48million, NAD4.09millon and NAD4.911million under the 40%, 60% and 80% product implementation strategies scenarios respectively; compared to NAD1.89million under business as usual scenario.

Multiplier effect for the job creation in the area could be 281 jobs, 336 jobs and 403 jobs under 40%, 60% and 80% product diversifications strategies respectively; compared to 155 jobs under business as usual.
The water consumption was expected to be 0.55 million liters, 0.60million and 0.612million respectively under the three product development strategies. Whereas, total solid waste in future under different scenarios which would be 154tons, 200tons and 218tons respectively.

Recommendations

- Provide guidance to minimize impacts on flora and fauna, including restriction of fishing, hunting and collection of flora.
- Provide training to tour guides at nature reserves so that environmental awareness and education are a key part of the message to visitors.
- Ecologically sensitive sites need to be closed for mass tourists.
- Restoration of vegetation should be considered and budgeted during design stage of site development to minimise erosion in the area.
- Preference should be given to upgrading of existing roads rather than construction of new routes.

CHAPTER 1 *INTRODUCTION*

1.1 Introduction

Namibia has a remarkable diversity of ecosystems, ranging from the hyper-arid Namib Desert receiving less than 10 mm of average annual rainfall, through the arid and semi-arid savanna ecosystems that receive 150 to 500 mm of average annual rainfall to the sub-humid tropical woodland savannas and wetlands with an annual rainfall of 600 mm. This diversity of ecosystems as determined by the erratic and spatially variable rainfall provides the basis for the need to conserve wide representative landscapes across the diverse ecosystems.

Following independence in 1990, the Government of the Republic of Namibia has realised that several landscapes of high biological diversity were outside existing national parks. The Community-Based Natural Resources Management (CBNRM) model was formally introduced in 1996 to promote conservation outside national parks and as a way to empower communities to manage wildlife and benefit directly from their conservation efforts. By the end of 2011, the total of surface area under conservation in Namibia stood at 41.5% of which 17.8% were communal conservancies, 16.7% state protected areas (national parks), and a further 6.1% under freehold conservancies (NACSO, 2013). Efforts are still being pursuit to implement nation-wide sustainable land management practices, through the promotion of land uses and production practices that are compatible with biodiversity conservation objectives. The Ministry of Environment and Tourism (MET), has undertaken a five-year project - the Namibia Protected Landscape Conservation Areas Initiative (NAM-PLACE) with the aim to promote land uses compatible with biodiversity conservation in areas adjacent to the existing protected areas, thus serving as corridors for wildlife mobility and exchange of genetic materials to ensure viability of populations across landscapes (MET, 2013).

The Windhoek Green Belt Landscape (WGBL) is being promoted to extend biodiversity conservation beyond the boundaries of the Daan Viljoen National Park. This park is the only formally protected area in the Khomas Highland Savanna ecosystem and is the smallest national parks in the country. Despite the limited area under protection in the central highlands, the Khomas Highland has a high biological diversity. Thus the WGBL will serve a crucial role in extending biodiversity conservation in the Khomas Hochland mountain ranges – an area of high biodiversity and an appreciated endemism of fauna and flora (Barnard, 1998). The WGBL approximately covers about 757.51 km^2 and includes the following farms: Malabar, Augeigas, the Daan Viljoen Game Park (DVGP), Ongos, Onduno, Otjiseva, Otjopaue, Monte Christo South, Monte Christo North, Düstenbrook Guest Farm (MET, 2009). The majority of the farms in the WGBL are used for cattle ranching, then tourism and hunting (Safari guest farms), one for game ranching and another as a protected area (the Daan Viljoen National Park).

The WGBL is faced with a number of challenges in its effort to promote land uses and practices compatible to biodiversity conservation. Amongst these challenges, the following are significant: urban sprawl from expanding informal settlements on its borders with the City of Windhoek, potential development of incompatible land uses by owners of land within or adjacent to the WGBL, the expansion of the Windhoek municipal land, bush encroachment and frequent bush fires.

CHAPTER 2 *VISION AND OBJECTIVES OF THE WINDHOEK GREEN-BELT LANDSCAPE*

2.1 The Vision of the Windhoek Green Belt Landscape

The Vision of the Windhoek Green-Belt Landscape is to promote, support and facilitate the collaborative management biodiversity conservation and socio-economic development. This vision fulfils the broader goal of the NAM-PLACE initiative which is to expand biodiversity conservation beyond proclaimed national parks by linking these parks with adjacent areas of high biodiversity and also by promoting compatible land uses adjacent to national parks. These expanded biodiversity conservation areas adjacent to national parks are referred to as the Protected Landscape Conservation Areas (PLCAs).

2.2 Alignment of the Windhoek Green Belt Landscape Objectives with National and International Policy Framework

The objectives of PLCAs are in line with Article 95 of Namibia's Constitution, the United Nations Millennium Development Goal #7 of achieving Environmental Sustainability, and the objectives of the United Nations Convention on Biological Diversity (UNCBD), the Ramsar Convention, the United Nations Convention to Combat Desertification (UNCCD) and the United Nations Framework Convention on Climate Change (UNFCCC) for the conservation and protection of species, habitats, ecosystems and landscapes, promotion of sustainable land management and reversal of land degradation, and elimination of atmospheric pollutants that lead to climate change.

Table 2.1. Alignment of the objectives of the WGBL with national and international policy and legal framework.

OBJECTIVES OF THE WINDHOEK GREEN-BELT LANDSCAPE	SYNOPTIC VIEW OF THE RELEVANCE OF OBJECTIVES TO NATIONAL PLANS, PROGRAMMES, POLICIES AND LEGISLATIONS	RELEVANCE TO INTERNATIONAL TREATIES, CONVENTIONS AND PROTOCOLS
To conserve and wisely manage the biomes, landscapes, ecosystems catchments and biological diversity of the Windhoek Green Belt Landscape (WGBL) as an integrated and fully functional ecosystem and, where necessary and feasible, to restore and rehabilitate degraded systems to their natural, productive states	Conservations of ecosystems and essential ecological services (Article 95(l) of Namibia's constitution; Nature Conservation Act; Environmental Management Act; Water Resources Management Act	Conservation of biological diversity and ecosystems supporting the diversity (UNCBD)
To manage wildlife populations and ecosystems to maintain optimal biological diversity and ecosystem stability under highly variable climatic Tablerebuild populations of plants and animals indigenous to the area within historic times, as might be appropriate under current and changing conditions.	Article 95 (l) of Namibia's Constitution; The Parks and Wildlife Management Bill (2009) aims at the protection, conservation and rehabilitation of indigenous biological resources, and the management of protected areas, in order to conserve biodiversity.	UNCBD
To remove, wherever practical and feasible and with the approval of the members concerned, artificial barriers impeding the natural movement of wildlife within the WGBL so as to restore or re-establish as far as possible their historic grazing and movement patterns	Parks and Wildlife Management Bill (2009);	

OBJECTIVES OF THE WINDHOEK GREEN-BELT LANDSCAPE	SYNOPTIC VIEW OF THE RELEVANCE OF OBJECTIVES TO NATIONAL PLANS, PROGRAMMES, POLICIES AND LEGISLATIONS	RELEVANCE TO INTERNATIONAL TREATIES, CONVENTIONS AND PROTOCOLS
To promote and support appropriate land and natural resource uses that are compatible with the above objectives, with emphasis on non-consumptive uses, sustainable land management practices, low impact tourism, environmental education, awareness and outreach initiatives and research, and to create strategic and focused economic opportunities without compromising on sound conservation principles and practices	In line with UNDP funded programme – the Country Pilot Programme on Integrated Sustainable Land Management (CPP-ISLM), and the Community-Based Natural Resources Management programme (CBNRM)	UNCCD, Rio+20 Declaration on the Future We Want
To establish strong public-private sector collaborative management and cooperation and an appropriate institutional mechanism between the various land owners, holders and administrators within the WGBL, so as to enhance the management and ecological and socio-economic viability of the WGBL to the mutual benefit of all partners	MET Strategic Plan 2007/8 to 2011/12 – has elements of public-private sector collaborative management. CBNRM programme – promotes joint venture approaches and public-private partnership; Town and Regional Planning Bill: advocates for coordinated action on socio-economic development; and optimum use of land for agriculture, tourism, mining, industry and infrastructure, human settlements and other uses.	
To harness the ecological, social and economic viability, sustainability and competitiveness of the WGBL as a model of collaborative management that could be further replicated elsewhere	Vision 2030 - Sustainable Development	UNCCD – promotion of sustainable land management through collaborative approach, application of best practices and up-scaling.
To explore ways of jointly marketing the WGBL and create synergies between the individual economic and financial activities and initiatives of the members to enhance the development of the overall WGBL to the mutual benefit of all members	Namibia National Co-operative Policy (December 1, 1992); Co-operatives Act 23 of 1996. The act promotes formation of co-operatives and provide for incentives for such voluntary associations for economic, social and cultural development of Namibia	

2.3 The Objectives of the Strategic Environmental Assessment

As indicated in the terms of reference, the objectives of this consultancy can be summarized in three components, these are:

- To conduct a strategic environmental assessment of the tourism sector in the Windhoek Green Belt Landscape (WGBL) and produce the SEA report.
- An assessment on achieving and optimizing a sustainable tourism industry to improve the quality of life within the principles of environmental carrying capacity and biodiversity conservation.
- To produce Strategic Management Plan of the landscape that guide implementation sustainable tourism development in the landscape

2.4 The Terms of Reference for the Strategic Environmental Assessment

The specific terms of reference, defining the scope of work, are as following:

- Use existing baseline survey to report the "business as usual scenario", and then develop, with the landscape committee, envisaged targets, and build an "envisaged future scenario/theory of change" based on socio-economic development (using tourism potentials) within the thresholds of the landscape. For example, comparing the returns of farming versus tourism (e.g. what can the industry support, assessing whether the tourism industry can be increased and be resilient, assessing the occupancy levels and associated profitability, as well as skills and capacity needs).

- The SEA consultant will work closely with partners and relevant key stakeholders in the landscape and use the existing information (e.g. detailed mapping of the landscape, baseline surveys).
- The consultant will also discuss and find agreement, at inception, on the extent of the landscape and include areas impacted by the landscape and not be limited to the "hard borders" of the landscape.
- The SEA should consider the development priorities of national planning, including the pillars of NDP4 (National Development Plan) and recent evolving objectives of the Targeted Intervention Programme on Employment and Economic Growth (TIPEEG) within the context of environmental carrying capacities and priorities, as well as the environmental objectives within the mandate of the Ministry of Environment and Tourism.

CHAPTER 3 *BASELINE AND CONTEXT*

3.1 Introduction

The WGB PLCA comprises of a total of nine commercial farms which are a mixture of livestock and game farms (in some instances a farmer practices both livestock and game ranching) in addition to the Daan Viljoen Game Park (DVGP). These properties are freehold (with the exception of the DVGP which is proclaimed as state owned land) and ownership is held through title deeds in the Ministry of Land and Resettlement (MLR). Most of the farms are used for game farming and these include farm Ongos, farm Monte Christo North, farm Malabar, Dustenbrook Guest farm and farm Augeigas. Farm Onduno is used for cattle and horses ranching, farm Otjiseva is used mainly for cattle farming and a bit of game hunting, and farm Otjopaue is been used mainly a cattle ranching.

3.2 Location of the Windhoek Green-Belt Landscape

The Windhoek Green-Belt (WGB) Protected Landscape Conservation Area is situated in the central plateau of Namibia, along the western side of Windhoek. Lying approximately 1650 m above sea level, the proposed area covers about 757.51 km^2 (Figure 1 & Figure 2).

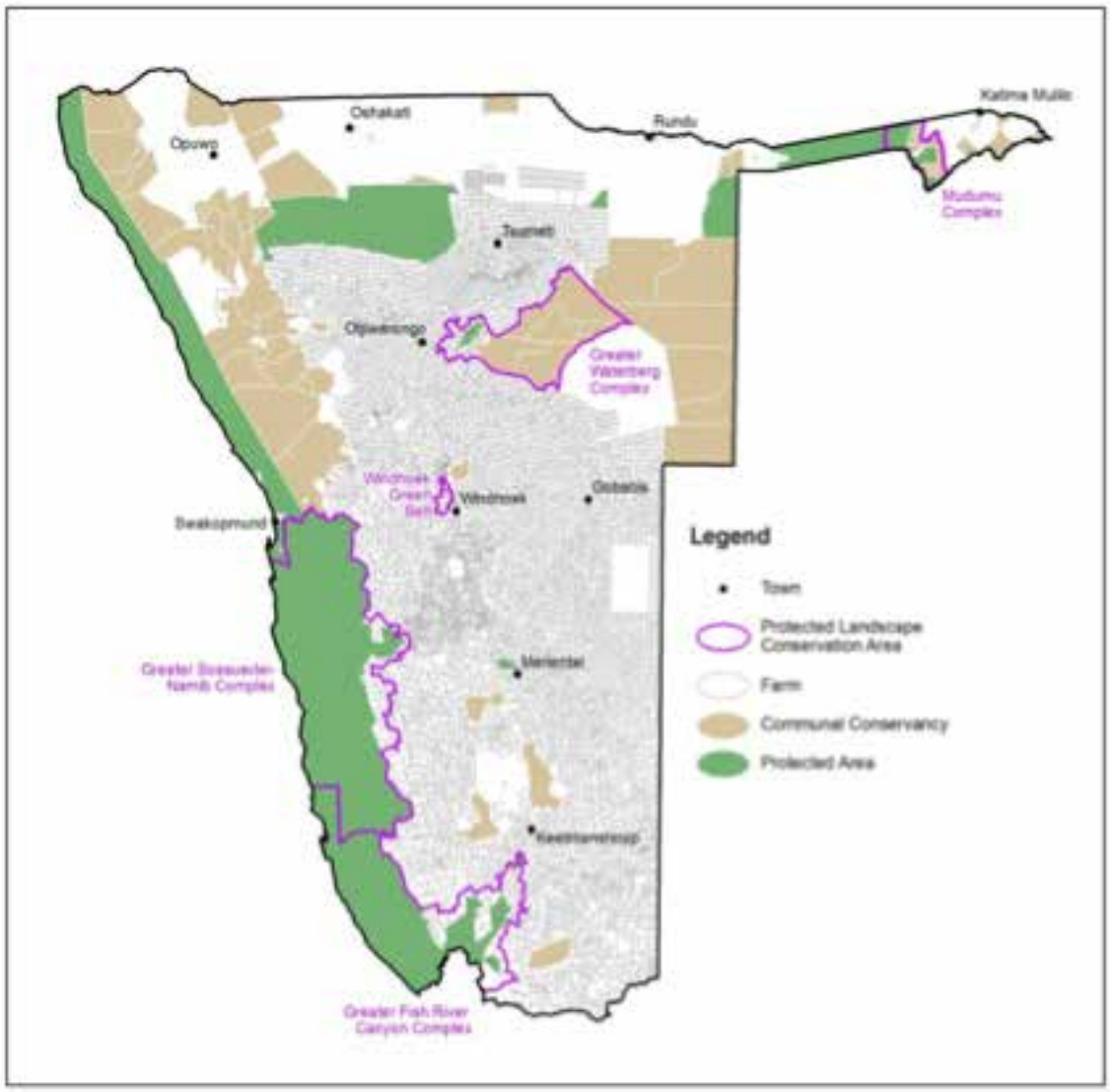


Figure 3.1: Proteted Landscape conservation area in Namibia

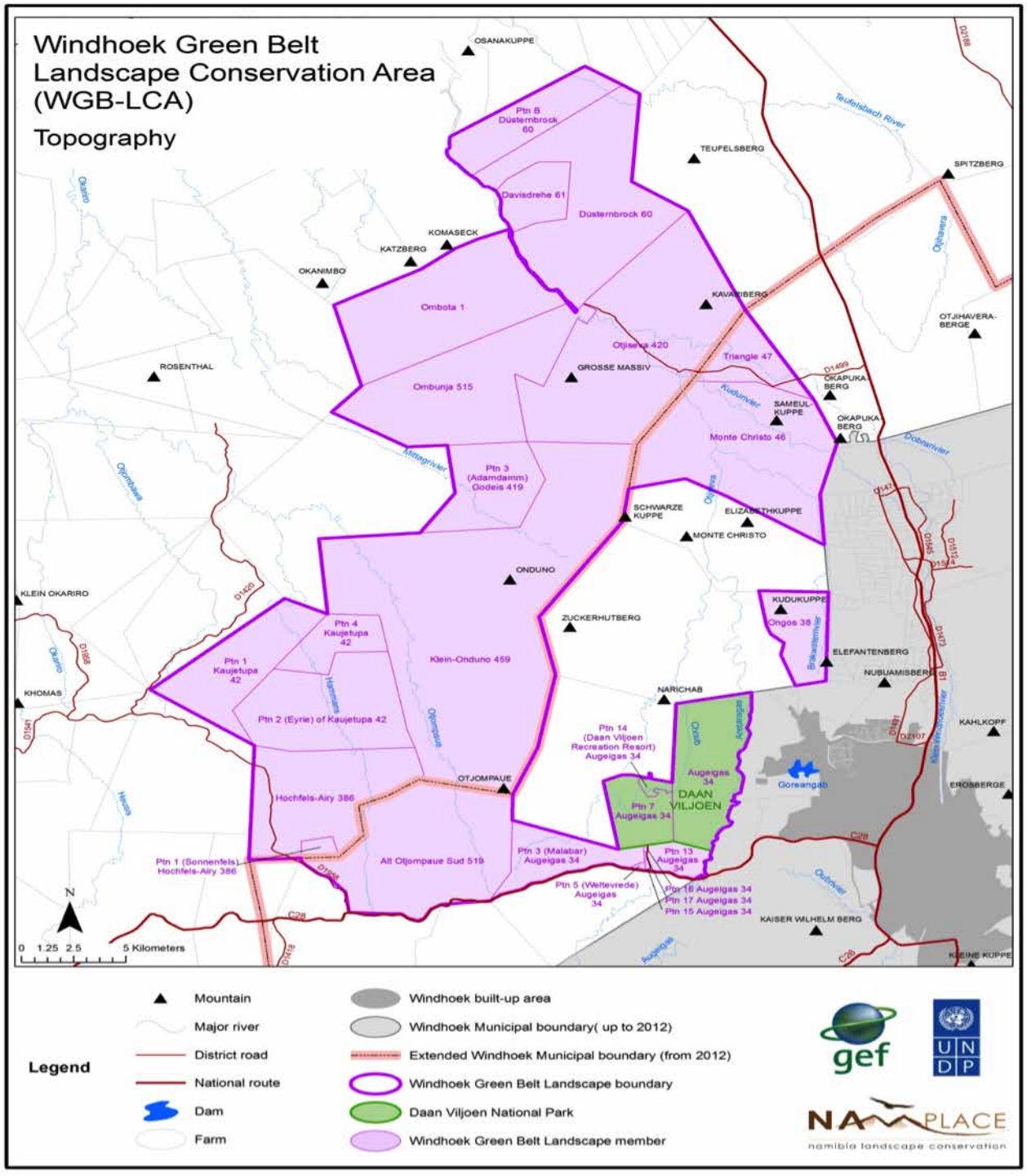


Figure 3.2: WGBL landscape conservation area

3.3 Climate

The climate of the area, resembling that of the City of Windhoek, is very hot and dry during the summer months (Dec – Feb) with occasional cool winds bringing a welcome relief from the hot day. The winter months (Jun – Aug) are regarded as mild and sunny with cloudless skies with minimum temperatures frequently below 5°C. The minimum temperature during summer is on average at 18°C. Rainfall is highly erratic and unpredictable over the entire Khomas Highland region. Rainfall occurs mostly in the summer months of January to March, with an average rainfall of 370 mm per year and average evaporation rate ranging between 3000 to 3200 mm a year (Mendelsohn et al., 2002).

3.4 Geology and topography

Windhoek is located in a natural basin, surrounded by distinctly undulating hills to the west side where the WGBL is located and the Auas Mountains to the south. The geological setting has undergone massive folding, faulting, thrusting and rifting episodes. The rock formations are composed of mica-rich and quart-rich schist that has many fractured quartz veins (Gold, Muller & Mitlin, undated). These rock formations are in the category of the Kuiseb formation of the Damara Sequence, with many summit heights reflecting older land surfaces of Khomas Hochland dating back 700 million years ago. There are abundant faults in the north-western area, with some of the rivers and streams following the fault lines. The southern zone is mainly characterized by Biotite schist while the Auas Mountains is dominated by the prominence of quartzite that is the metamorphic product of siliceous rock such as sandstone. It consists of recrystallized interlocking quartz crystals, which forms the Windhoek aquifer that has been utilized as a source of relatively clean water (Africon, 2004).

3.5 Fauna

The area is characterized by mountainous landscape which influences the species diversity and overall biodiversity of the area. The following table shows the diversity in WGBL is compiled based on the report on Biodiversity inventory for the City of Windhoek, Specialist contribution: Amphibian, Reptile & Mammal prepared by Enviro Dynamic (Versatile Environmental Consulting CC, 2010). The conservation status is based on the list IUCN Red List of Threatened Animals Version 2009.2.

Table 3.1: Fauna in proposed WGB PLCA

Scientific name	Common name	Conservation status
Antilocapra americana	Antelopes	
Aephyceros melampus	Impala	Endangered
Alcelaphus bucelaphus	Red hartebeest	
Antidorcas marsupialis	Springbok	
Canis mesomelas	Jackal	
Connochaetes taurinus	Blue wildebeest	
Equus Zebra	Hartmann's mountain zebra	Endangered, endemic
Giraffa camelopardalis	Giraffe	
Oreotragus oreotragus	klipspringer	
Sylvicapra grimmia	Common Duiker	
Oryx Gazella Gazella	Gemsbok	
Oryx leucoryx	Oryx	Endangered
Phacochoerus Aethiopicus	Warthog	
Procavia capensis	Rock hyrax (dassies)	
Taurotragus oryx (derbianus)	Eland	
Raphicerus campestris	Steenbok	
Tragelaphus strepsiceros	Kudu	
Felis caracal	Caracal	
Panthera pardus	Leopard	Near threatened
Acinonyx jubatus	Cheetah	Vulnerable
Hyaena brunnea	Brown Hyaena	Near threatened end
Proteles cristatus	Aardwolf	
Felis caracal	Caracal	
Cynictis penicillata	Yellow Mongoose	
Galerella sanguinea	Slender Mongoose	
Vulpes chama	Cape Fox	
Mellivora capensis	Ratel or Honey Badgar	Near threatened
Otocyon megalotis	Bat-eared Fox	
Canis mesomelas	Black-backed Jackal	
Suricata suricatta	Suricate	
Vulpes chama	Cape Fox	
Canis mesomelas	Black-backed Jackal	
Ictonyx striatus	Striped Polecat	

Source: Versatile Environmental Consulting CC(2010).

3.6 Flora

Windhoek is virtually surrounded by a band of Acacia erubescens savanna on the low undulating hills forming the shrublands. The high mountains of the Khomas Hochland support a moderate to high species diversity, including protected Aloe species and other endemics. The majority of the outlying areas in the WGBL could be classified as Highland Savana with Acacia hereroensis being dominance species. The open to semi-open Thronbush shrubland dominated by Acacia erubescens (Figure 3).

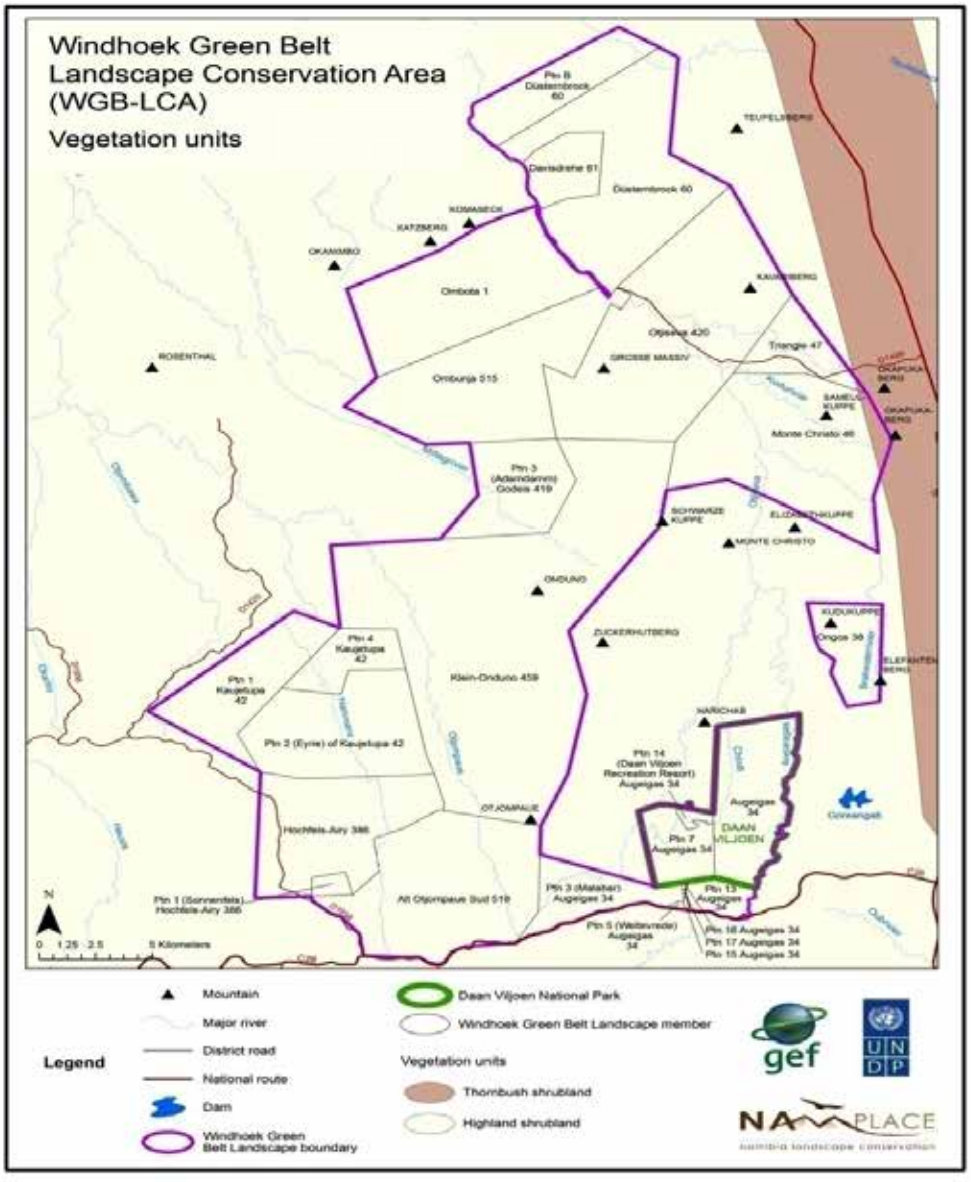


Figure 3.3: WGBL landscape conservation area: vegetation units

Acacia hereroensis savanna can be distinguished by the low cover of woody vegetation and more mesic grassland species, such as ***Brachiaria serrata, Themeda triandra*** (which are generally rare in Namibia). This vegetation supports a very high diversity of species (ranging from 27 – 67 species per ha, but 43 species per 0.1 ha average) (Strohbach, 2003). However the vegetation is prone to encroachment by ***Dichrostachys cinerea*** (Kalahari Christmas tree, sickle bush). It has been stated that it should be kept in good condition to ensure ecosystem functionality through ensuring proper grazing management of leased farmlands within the townland and littering and rubble dumping should be strictly controlled (Africon, 2004). The vegetation varies on the slopes and ridges to the riverbeds/ streams. Taller Acacia trees are quite abundant, specifically on the banks of drainage channels.

Table 3.2: Flora diversity in the proposed WGB PLCA

Species name	Common name	Conservation status
Acacia erioloba	Camelthorn	Protected by Forestry Ordinance No.37 of 1952 & or Forest Act No. 72 of 1968
Acacia erubescens	Yellow-bark Acacia	
Acacia hereroensis	Sand aloe	Protected by the Nature Conservation Ordinance (ordinance 4 of 1975)
Acacia karoo	Sweet-thorn	
Acacia mellifera	Black-thorn acacia	
Albizia anthelmintica	Worm-cure Albizia	Protected by Forestry Ordinance No.37 of 1952 & or Forest Act No. 72 of 1968
Aloe littoralis	Windhoek Aloe	Protected by Nature Conservation Ordinance
Acacia reficiens	Red-thorn/ Rooihaak	
Boscia albitrunca	Shepherd's tree	Protected by Forestry Ordinance No.37 of 1952 & or Forest Act No. 72 of 1968
Boscia foetida	Smelly shepherds-bush	
Brachiaria nigropedata		
Catophractes alexandri	Ghabbabos	
Combretum apiculatum	Kudu-bush	
Croton gratissimus	Lavender croton	
Diospyros lycioides	Bluebush	
Dombeya Rotundifolia	Wild Pear	Endemic
Grewia flava	Velvet Raisin	
Montinia caryophyllacea	Wild clove-bush	
Phaeoptilum spinosum	Brittle-thorn	
Prosopis spp	Fabaceae: Mimosoidae	
Rhus pendulina	White karee	
Maerua schinzii	Ringwood tree	
Rhus pyroides	Fire-thorn Rhus	
Tarchonanthus camphoratus	Camphor Bush	

Source: Versatile Environmental Consulting CC(2010).

3.7 Groundwater availability

Water availability is crucial for any development but in this context particularly for animal wildlife and tourism developments. There are about 70 boreholes in all the farms excluding boreholes in DVGP which have been sources of water for game and small wildlife in the park (Figure 4 boreholes). Apart from the boreholes, there are dams on all the farms and DVGP of which some of these can keep water for more than a year. Additionally to the mentioned dams and boreholes in farms and DVGP, is the all-year flowing Aretaragis River passing through some of the farms providing water a few kilometres into the different farms. The Aretaragis River owes its flow from the outflows of the Goreangab Dam. In general, this river route contains a number of wetlands and riverine forest which attract numerous bird species and thus providing food and shelter.

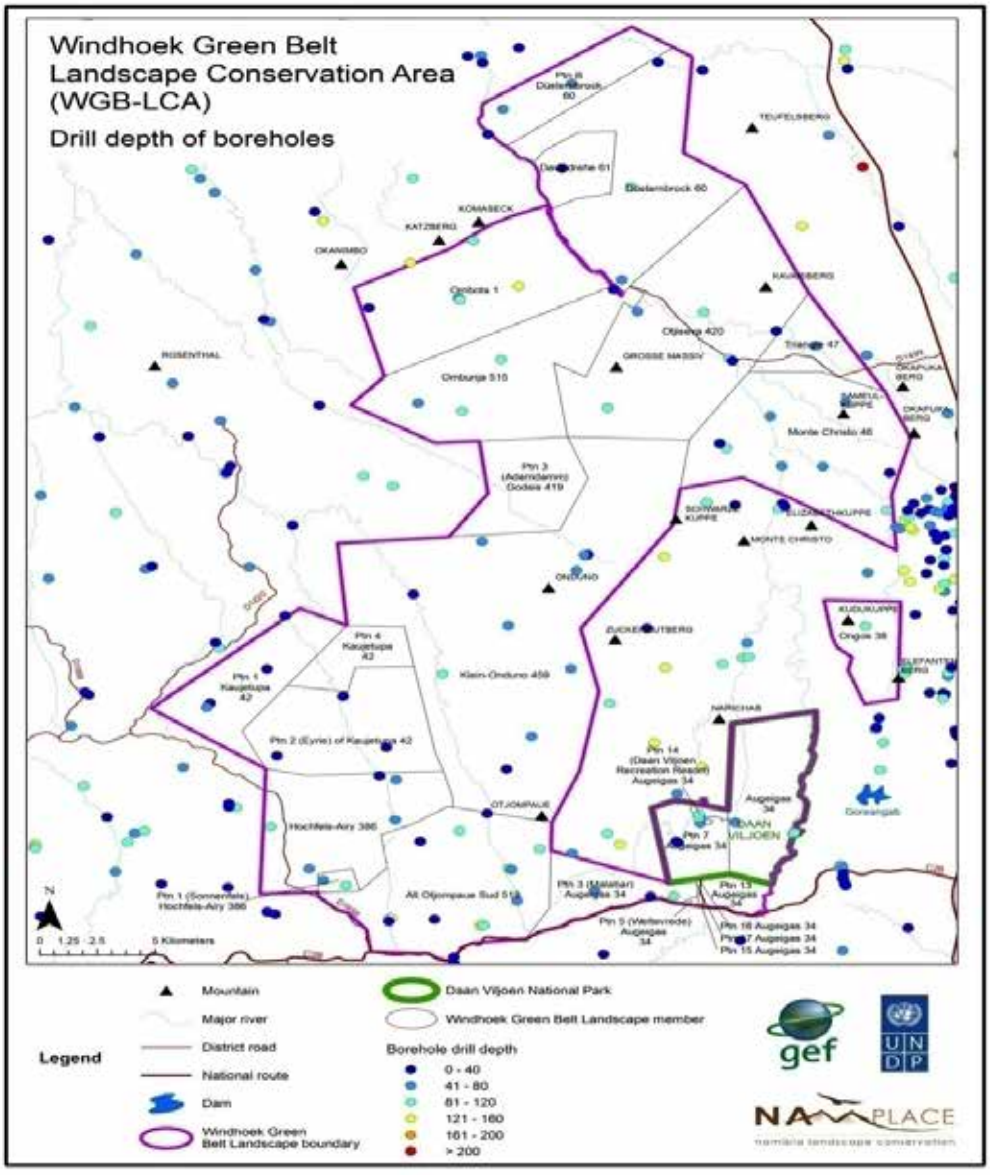


Figure 3.4: Boreholes in WGBL

3.8 Land uses

The WGBL comprises of a total of nine commercial farms which are a mixture of livestock and game farms (in some instances a farmer practices both livestock and game ranching) (Figure 5). Ownership of these lands is held through title deeds in the Ministry of Land and Resettlement (MLR). Most of the farms are used for game farming and these include farm Ongos, farm Monte Christo North, farm Malabar, Durstenbrook Guest Farm and farm Augeigas. Farm Onduno is used for cattle and horses ranching, farm Otjiseva is used mainly for cattle farming and a bit of game hunting and farm Otjopamue is been used mainly a cattle ranching.

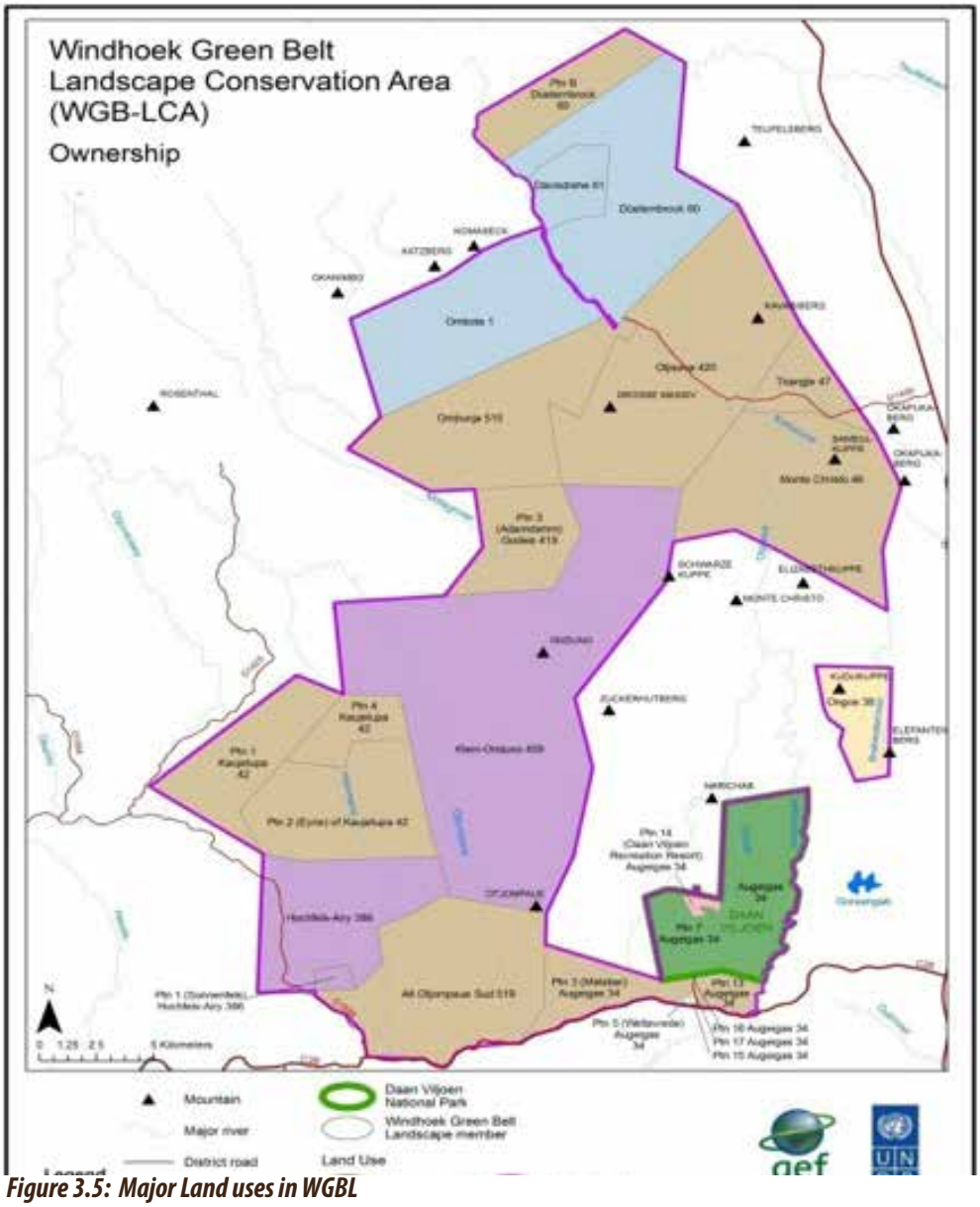


Figure 3.5: Major Land uses in WGBL

Some of the farms have had successful transformation from a mix of cattle and game ranching to only game ranching and a prime example of this is the Durstenbrook Guest Farm. Farm Monte Christo North has also successfully switched from cattle farming to game ranching.

The situation for Farm Monte Christo South is different where it is apparent that the owners of this farm intend to develop a prime real estate on the land, which will be very different from the current land uses. Such a proposed development will be incompatible with biodiversity conservation as large tracts of land would have to be cleared for construction. In addition, preliminary research has indicated that water is scarce within the proposed development site and as such a comprehensive environmental assessment of the project should be undertaken prior to the approval of the project.

3.9 Sources of income

Current sources of income for members of the WGBL include tourism activities (accommodation, trophy hunting, game drives, hikes, etc.), game and/ or cattle farming. Other sources of income at the individual household/member level could include small shops run by farm workers or farm owners, bartering among farm workers and income earned by family members who are employed in Windhoek/ elsewhere.

According to Versatile Environmental Consulting CC (2010 Namibia's pastures are severely bush encroached and it is estimated that Namibian farmers forgo approximately N$ 700 million (US$ 93 million) in lost livestock production annually. Rehabilitating degraded rangelands is expensive. At present, the cattle in commercial farming areas amount to only 36% of the numbers stocked in 1959. The total annual gross agricultural output of the Namibian large stock, small stock and crops in the commercial as well as subsistence sectors, amounts to N$ 1.9 billion, whilst gross annual output of the non-agricultural, natural resource-based sector, such as tourism, trophy hunting, wildlife products, indigenous plant products (commercial sector only) amounts to N$ 3.2 billion.

3.10 Threats to biodiversity and sustainability of the WGBL

At the time of establishment, the WGB PLCA bordered the western and northern perimeters of the City of Windhoek. However, the City of Windhoek has expanded its boundaries to include some of the farms of the WGBL (Monte Christo 48, Otjompane Sud 519, Malabar, Augeigas, Daan Viljoen Game Park and Ongos) (Figure 6). Urbanization in the city and urban sprawl on the periphery of the city is expanding increasingly towards the WGBL due to rural-urban migration. Incompatible land uses within the WGBL and off-site also pose a threat to the sustainability of the landscape. The threats to WGBL are outlined in the table below (Table 4).

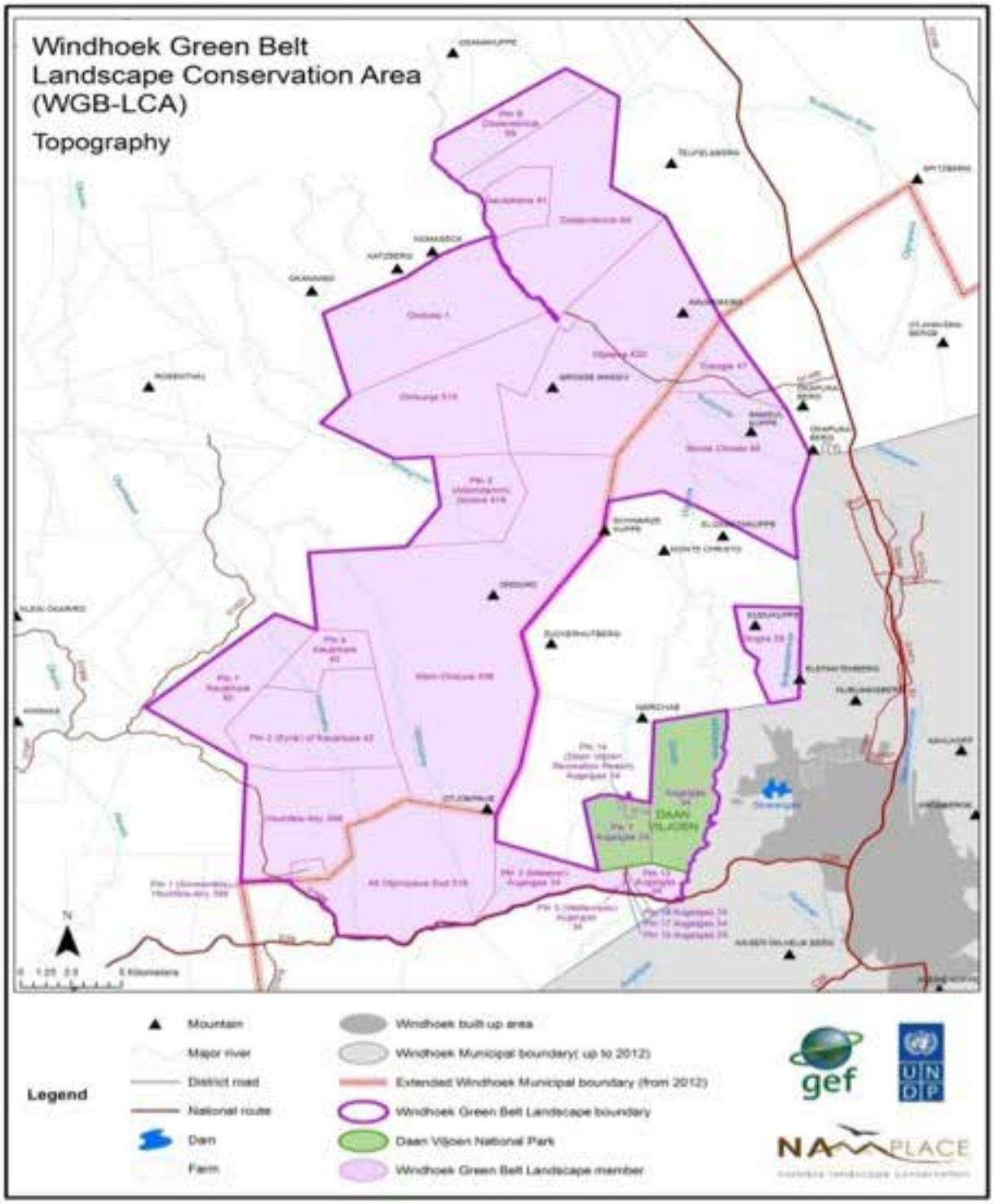


Figure 3.6: WGBL Landscape boundaries. Note the extended Windhoek Municipal boundary

Table 3.3: Threats to the Windhoek Green-Belt Landscape

Sources of threats	Description and potential impacts of threats
Expansion of the Windhoek boundaries	Farms that are included within the boundaries of Windhoek, will be subjected to laws and by-laws of the Windhoek City Council, thus paying rates and taxes as prescribed by the City Council.
Fuel wood harvesting	The increasing population of informal settlements adjacent to the WGBL continue to rely on fuel wood for heating and cooking. Thus residents of informal settlements enter these farms illegally in search of fuel wood.
Wildlife poaching	Illegally poaching of game on the farms of the WGBL is taking place. This could increase with increasing levels of population growth and poverty.
Bush fires	Recurrent natural and human induced bush fires are a threat to biodiversity, safety and damage to properties.
Bush encroachment	Bush encroachment limits options for game ranching and tourism activities, besides reducing range productivity for livestock production.
Incompatible land uses	Although members are encouraged to venture in biodiversity compatible land uses, socio-dynamics and changing ownership of land / farms to new owners may result in new owners to embark on land uses that may not be compatible with biodiversity such as estate development that could be accompanied by land clearance.
Undesirable cumulative impacts from upstream industries	Industries in the catchment of the WGBL such as the Okapuka Tannery and Namib Poultry have the potential to pollute groundwater resources in the WGBL.

CHAPTER 4 *METHODOLOGICAL FRAMEWORK AND APPROACH*

4.1 Introduction

There is no universally-agreed definition or accepted standard methodology for SEA that can be applied in a given situation. Rather, it is an expert investigation on common frameworks that include minimum acceptable component of good practices of SEA methodology; that is aligned with the realities and constraints of the local context, specific needs and objectives of the assessment. The wide range of methodologies framework lay between two extremes. At one extreme is what may be called "policy-level SEA", where the SEA is embedded within, or is part of, a decision making process. The objective and output of a policy-level SEA is informed decision-making itself, rather than producing a report. This approach is focused on strategic policies, rather than on plans or programs, and is most useful at the early stages in the development of policy where alternatives and scenarios can be assessed in wider spectrum (of differing environmental or social consequence) are still available. Consultation is the main methodological tool and cumulative, synergistic and indirect effects and externalities are fundamental aspects to assess (World Bank, 2007).

At the other end of the spectrum is what we referred to as Strategic Environmental Assessment (SEA) the fact that there are a number of sub-projects included within a plan or programme, the impact of which are assessed individually and cumulatively, to assess the environmental and social acceptability of the proposed plan or programme aiming at minimising negative impacts and maximising benefits (World Bank, 2007).

In this study the combination of both approaches mentioned above have been applied, the SEA was undertaken through the following tasks, which are subsequently elaborated on:

- Task 1: Literature review;
- Task 2: Scoping;
- Task 3: Development of analytical framework;
- Task 4: Consultation;
- Task 5: Impact assessment; and
- Task 6: Environmental Management Plan

4.2 Task 1: Literature Review

Relevant literature was reviewed in order to gain an understanding of the current land uses and envisaged tourism development plans to establish a baseline environmental and social context for the SEA. The key policies and landscape management plans on which the SEA was based, are reflected in the following documents:

- Project Document NAMIBIA Protected Landscape Conservation Areas Initiative (NAM-PLACE) Project Number: 00074796
- Legal Assessment of City of Windhoek's Boundaries Extension Status
- Policy on the tourism and wildlife concessions on state land, 2007
- Republic of Namibia Namibia's Fourth National Development Plan
- National Policy on Human – Wildlife Conflict Management 2009
- National policy on Community Based Natural Resource Management March
- National Tourism Policy of Namibia.

- Management (Draft) Plan of Daan Viljoen Game Park
- City of Windhoek documents such as Windhoek biodiversity Inventory report, Windhoek Environmental Structure Plan and Environmental Policy among others.
- Number 4801 Government Gazette of the Republic of Namibia, Notice number 184
- Windhoek Green Belt Landscape detailed maps.
- NAM-PLACE Project document
- NAM-PLACE Project inception report
- Draft Co-management and development Plan for the WGBL
- Draft Constitution of the Windhoek Green Belt (WGBL)
- Environmental, Social and Economic Profile for the proposed Windhoek Green Belt Protected Landscape Conservation Area
- Market analysis, review of existing and potential market within five Protected Landscape Conservation Areas
- Policy and legal review as part of a feasibility assessment for the establishing Protected Landscape Conservation Areas in Namibia.
- WGBL bush encroachment report

4.3 Task 2: Scoping

Scoping was undertaken during the initial stages of the SEA in order to identify interactions between the proposed tourism development plans, policies and environmental or social aspects (called "receptors"). Scoping gives particular emphasis to the types of activities to be implemented, particularly under the different tourism development scenarios. Furthermore, income from livestock production was compared with tourism. The scoping exercise therefore ensured that the SEA focuses on those issues that are most important for design and decision-making. SEA scoping was discussed with Ministry of Environment and Tourism representatives.

4.4 Task 3: Development Of Analytical Framework

For the purpose of this assessment, three tourism development scenarios were developed. The environmental and social impacts of these scenarios were considered and environmental management plan is provided.
The assessment was complemented with baseline information to evaluate the following scenarios, presented in detail in Chapter-6:

- **Scenario 1: Business as usual**
- **Scenario 2: Low to medium product diversification strategies (40-60% product diversifications implementation)**
- **Scenario 3: High product diversification strategies (80% product diversifications implementation)**

4.5 Task 4: Consultation

A common feature of all forms of SEA is stakeholder consultation. For policy–level SEAs, consultation is in fact the main methodological tool. Similarly at the SEA extreme of the continuum, there is a trend towards more or less constant consultation throughout the assessment.

During preparation of this report engagement was conducted through personal interviews with MET officials, local expert, stakeholder and other different formal consultation meetings included.

In addition to the above scenarios, livestock production considered. Spider diagram, cost benefit analysis and SWOT were applied to analyse the data.

4.1 Task 5: Impact Assessment

This task involved the evaluation of predicted impacts resulting from the implementation of the proposed tourism development plans and policies.

Outcomes of the evaluation were benchmarked against relevant objectives and targets for the three scenarios. Where policies and plans stated numerical objectives and targets, these were adopted for the assessment with reference to the environmental and social baseline.

CHAPTER 5 *FORMULATION OF TOURISM DEVELOPMENT SCENARIOS*

5.1 Introduction

This chapter focuses on comparing the predicted impacts of different tourism development scenarios. In addition to this livestock-related activities also reported. The method of analysis mainly cost-benefits analysis was applied, under those three alternative scenarios.
Each of the scenarios has been assessed over the short-term (2012-2016) medium term (2017-2021) and long-term (2022-2030) based on the tourist visitors to Namibia. The forecast growth in visitor arrivals to Namibia under each scenario projected.

5.2 Support services in WGBL

Before providing the strategic assessment of the tourism development in WGBL, it is important to provide insight the response of farmers' views and perception from the sample of interviewed farmers with regards to the challenges they are facing. That includes the support services from government, price of input and output, availability of education, amenities and infrastructure.

5.2.1 Challenges in Support services

Land owners expressed that biggest challenge of their enterprises is the low outputs while input costs remain at the same time a serious concern (Figure 7). Lack of government support for struggling freehold land owners was considered as a limitation to growth.

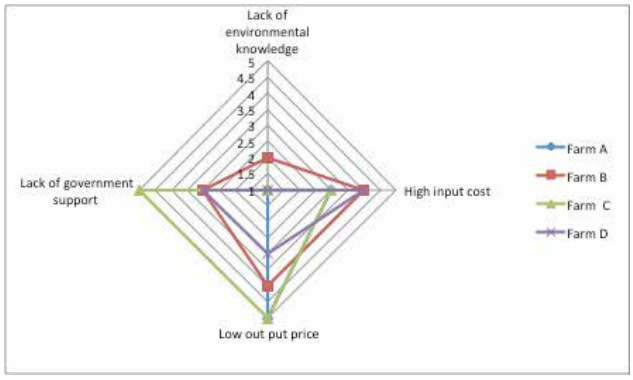


Figure 5.1: Challenges faced by enterprises in the WGBL.
(Key: Farm A, B, C and D represent the sampled interviewed farms).

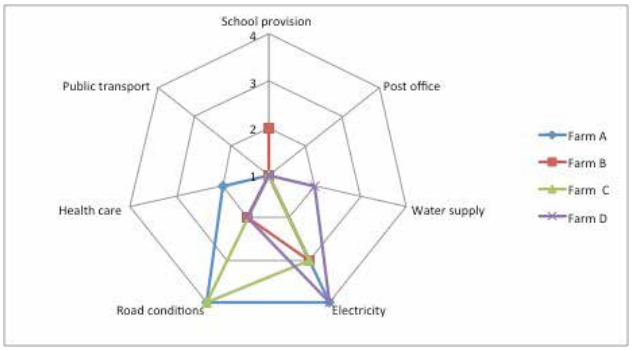


Figure 5.2: Public support service
(Key: Farm A, B, C and D represent the sampled interviewed farms).

5.2.2 Education, social amenities and infrastructure

The human population in the WGBL is about 300 people comprising of farm owners and employee families. However the population increases during school holidays when workers' children return to the farms. According to the 2011census, the Khomas Region has a total population of 342 141 people of which 172469 are females and 169672 are males, of which 69% between 15-59 years old (Namibia Statistics agency, 2011).

Figure 8 shows the response of the sampled interview of the farm owners with regards to the availability of the public support service around the area, as it was expected; there are no public facilities such as post offices, public transport, clinic and primary education institutions in the WGBL (Figure 8). In the case of health and postal services, and primary schools these are provided in the Windhoek. However, electricity supply and road conditions are satisfactory while residents are experiencing water stress.

Table 5.1. The value of the Windhoek Green Belt Conservation Landscape

Opportunity or value that can be offered by the Windhoek Green Belt	Descriptions
Exploring nature, self-directed, surprises awaiting	The Windhoek Green Belt can offer the opportunity to explore nature at one's own pace, unlike most game parks in the country where restrictions prohibit getting out of cars or driving at night.
Ecology and history of the area; preservation of cultural artefacts	Vast knowledge of the ecology, rainfall and livestock production exist over the past century. This information can be compiled and made accessible to visitors.
Great proximity to the City of Windhoek	The Green Belt presents an opportunity for business tourists to Windhoek to explore wildlife in less than a day and to return to Windhoek for business.
Nature meets urbanisation	The Green Belt with Daan Viljoen as its core area is the only true conservation area that is so close to a metropolitan city. The concept that urbanisation is in such proximity to a conservation area is an asset to tourists and nature lovers.

5.3 Assessment of Product identification and development

5.3.1 Product Identification

The development of the tourism potential of an area is first and foremost based on the identification of the value of the destination to tourists. The central question for this type of analysis is: What makes the destination unique? Hence what makes the Windhoek Green Belt valuable to a tourist? And which tourists are likely to visit the Green Belt? Once this value is ascertained, the second step is to come up with the topics / themes that broadly describe the sort of things that can be considered for tourism development. The third step is to develop products that can be made available to tourists. The final step is to package the products in terms of giving them the right names, right price and who would be selling the products.

For the purpose of this study only the first three steps will be analysed. Step 4 (Marketing/ Packages) can only be carried out at a later stage after a thorough analysis of the markets and viability of products and only on an individual basis for each enterprise within the Windhoek Greenbelt Landscape. The table below highlights the value of the Windhoek Green Belt.

5.3.2 Product Development

Following the identification of values of the tourist destination, products aligned to the value of the destination can be identified and developed. Here, we shall only identify the products, while the development of products can only be fully developed and implemented after identification of sites where products can be offered and market analysis. Below is a list and description of potential products for the Windhoek Green Belt.

Table 5.2: product description for possible diversification

Products	Product Description
Walking trails	Walking trails to enhance more intimate exploration of scenic landscapes and wildlife; placed on high sites of best panoramic views over scenic valleys and water sources; safety and low risk; provided with sign-boards and
Bicycle trails	Use of mountain bicycles for relaxation and exercise; scenic views over long stretches of landscape; can be combined with resting points equipped with some facilities (braai facilities, ablution, waste disposal points). These facilities could be based at farm-houses along the routes (to be used by cyclers, horse riders, those walking on foot).
Horse riding tours	Some people enjoy horse riding, and this can provide them with the opportunity to do it during weekends. Some basic horse-riding skills can be provided.
Mountain climbing	Mountain climbing can be an exciting experience to some visitors / tourists. Thus opportunities for this can be explored.
Game drives	Daan Viljoen Game Park and the rest of the farms in the Green Belt can provide a memorable half-day experience of game viewing to tourists who come to Windhoek for meetings and conferences
Hunting	Trophy hunting can be encouraged to manage wildlife populations in line with the ecological carrying capacity of the area
Kids nature adventures	The proximity to Windhoek can be used to attract groups of school kids for nature adventures and a variety of team building exercises; parents could also bring their children over weekends for kids' programmes.
Photo tours	Guided photo tours instructed by a professional local professional photographer.
Star-gazing	Star-gazing; exploring the night skies
Mini-museum	There might be an interest in knowing the past history of land use and farming strategies / practices over the last + 100 years of predominantly livestock production in the Green Belt. What did people do make a living? What farming practices and equipment were in used? What were incomes and living standards? How did land users cope with periods of scarcity and stress (droughts)?
Sun-downer	A sundowner over a scenic view is an experience valued by many. This can be in a form of a bar that provides light meals or a proper dinner arrangement.
Ox-wagon drive	How about an ox-wagon drive?
Innovative mode of transport (e.g. Horse or donkey carts)	A shuttle from the City of Windhoek to the Green Belt can be made an experience in itself! Some innovative mode of transport such as donkey cart, horse-carts, or a re-shape motorised vehicle. As an example – horse carts are still being seen in Stellenbosch (South Africa).
Restaurant	There is a good potential for each and every member to venture to offer good food, as day visitors will grow.

Overall consideration shall be given to economic and environmental sustainability. The following table presents the products on a ranked basis with respect to broad economic and environmental considerations. A more detailed economic analysis with respect to scenario development on the basis of (i) a business as usual; (ii) Low to Medium (conservative) implementation success; and (iii) optimistic scenarios is provided later in this report. Similarly more information on the potential environmental impacts is also provided.

Table 5.3: General assessment of the products

Products	Entry Barriers	Scale of possible environmental impacts	Scale of inferred economic benefit to enterprise from local tourists	Scale of inferred economic benefit (ROI) to enterprise from international tourists
Walking trails	Low	Low	Low	Low/Medium
Bicycle trails	L	Low	Low/Medium	Low/Medium
Horse riding tours	M	Low	Medium	Low/Medium
Mountain climbing	Low	Low	Low	Low/Medium
Game drives	Medium/High	Low/Medium	Low/Medium	Medium/High
Hunting	Medium	Low	Low	Medium/High
Kids nature adventures	Low/Medium	Low	Medium/High	Low/Medium
Photo tours	Low	Low	Low/Medium	Medium/High
Star-gazing	Low	Low	Low	Medium
Mini-museum	Medium	Low	Low/Medium	Low/Medium
Sun-downer	Low	Low	Medium/High	Medium
Ox-wagon drive	Low/Medium	Low	Medium	Medium
Innovative mode of transport (e.g. Horse or donkey carts)	Low/Medium	Low	Medium	Medium

Table 5.3: General assessment of the products

Criterion	Considerations In Developing Ranking
Entry Barriers	Capital investment costs; labour costs; maintenance costs; marketing costs; licensing requirements; complexity; etc
Scale of possible environmental impacts	Physical disturbance to flora and fauna as a direct result of the activity; Physical disturbance to flora and fauna as an indirect result of the activity; Physical and Non physical disturbances to the other non biotic natural resources in the landscape; Other aspects of environmental pollution, e.g. noise, air pollution, etc.
Scale of inferred economic benefit (ROI) to enterprise from local tourists	Revenue from fees; Uniqueness of product; Appeal of product (niche or mass market); Indirect revenue from cross selling of products; direct and indirect social benefits including employment creation; stimulation of local economy and trickle down effects; Multiplier effects, etc.
Scale of inferred economic benefit (ROI) to enterprise from international tourists	Revenue from fees; Uniqueness of product; Appeal of product (niche or mass market); Indirect revenue from cross selling of products; direct and indirect social benefits including employment creation; attraction of foreign exchange to the national economy; Multiplier effects, etc

5.4 Economic Evaluation of the Different Tourism Development Scenarios

Assumptions

i Assumptions for livestock production:

a. The calculation was based on the land size with two scenarios (7000ha and 10000ha) capacity, which possible farm size in the area.
b. bThe stocking rate assumed to be one large stock in 10ha;
c. Marketing plan: in the first five years to be 15% of the total stock; in the second five years to be 19% of the total stock and in the third phase to be 21%
d. Stocking capacity assumed to be 80%
e. The average price and cost to remain constant (see the enterprise budget which was drawn based on well managed farm in Namibia from).
f. Discounting rate at 6%, 8% and 10% inflation rate
g. The projection period from 2012 to 2030

ii Assumption for tourism:

a. Three guest houses each with six beds, occupancy rate 15% (which is half of Windhoek). Whereas, Daan Viljoen Game Park 44 beds and on average overnight visitor spent N$1200.

5.4.1 Livestock enterprise

Table 5.5 presents current estimated annual net income of the WGBL as the case the business as usual scenario with no enterprise diversification or additional tourism product development in the area. The current income generating activities around WGBL estimated to be around N$ 3.97 million.

Table 5.5: Summary of average Revenue per year: Business as usual scenario

Current income generating activities	Revenue (NAD) per year
From livestock (Seven farms)	2 800 000
From bed sales (Three Guest houses)	1 166 400
Total revenue per year	**3 966 400**

Table 5.6 shows the potential financial implication for the 7000 ha and 10 000 ha capacities, calculated based on the above mentioned assumptions. The NPV for 7000 ha capacity expected to be N$ 2.8 million at 6% and around N$ 2.03 million at 10%. Whereas, for the 10 000 ha capacity it would be N$ 5.02 million, 4.24 million and 3.63 million at 6%, 8% and 10% respectively over 20 years projection period (see Table 5.6). The cost revenue ratio for example at 6% rate shows at N$ 2.24 and N$ 3.20 for 7000 ha and 10 000 ha capacity respectively. This implying that every one Namibian dollar invested has a potential to generate around N$ 2.24 and N$ 3.20 respectively

Table 5.6: Summary of financial analysis (for both 7000 ha and 10 000ha capacity): Business as usual scenario

7000 ha capacity (equivalent to 700 cattle stock)			
Livestock	6%	8%	10%
NPV	N$2,825,495.20	N$2,378,345.66	N$2,026,976.92
Cost to Revenue ratio	N$2.24	N$2.21	N$2.19
Average NPV per year	N$148,710.27	N$125,176.09	N$106,683.00
10000ha capacity (equivalent to 1000 cattle stock)			
NPV	N$5,015,204.02	N$4,239,019.13	N$3,627,656.16
Cost to Revenue ratio	N$3.20	N$3.16	N$3.12
Average NPV per year	N$263,958.11	N$223,106.27	N$190,929.27

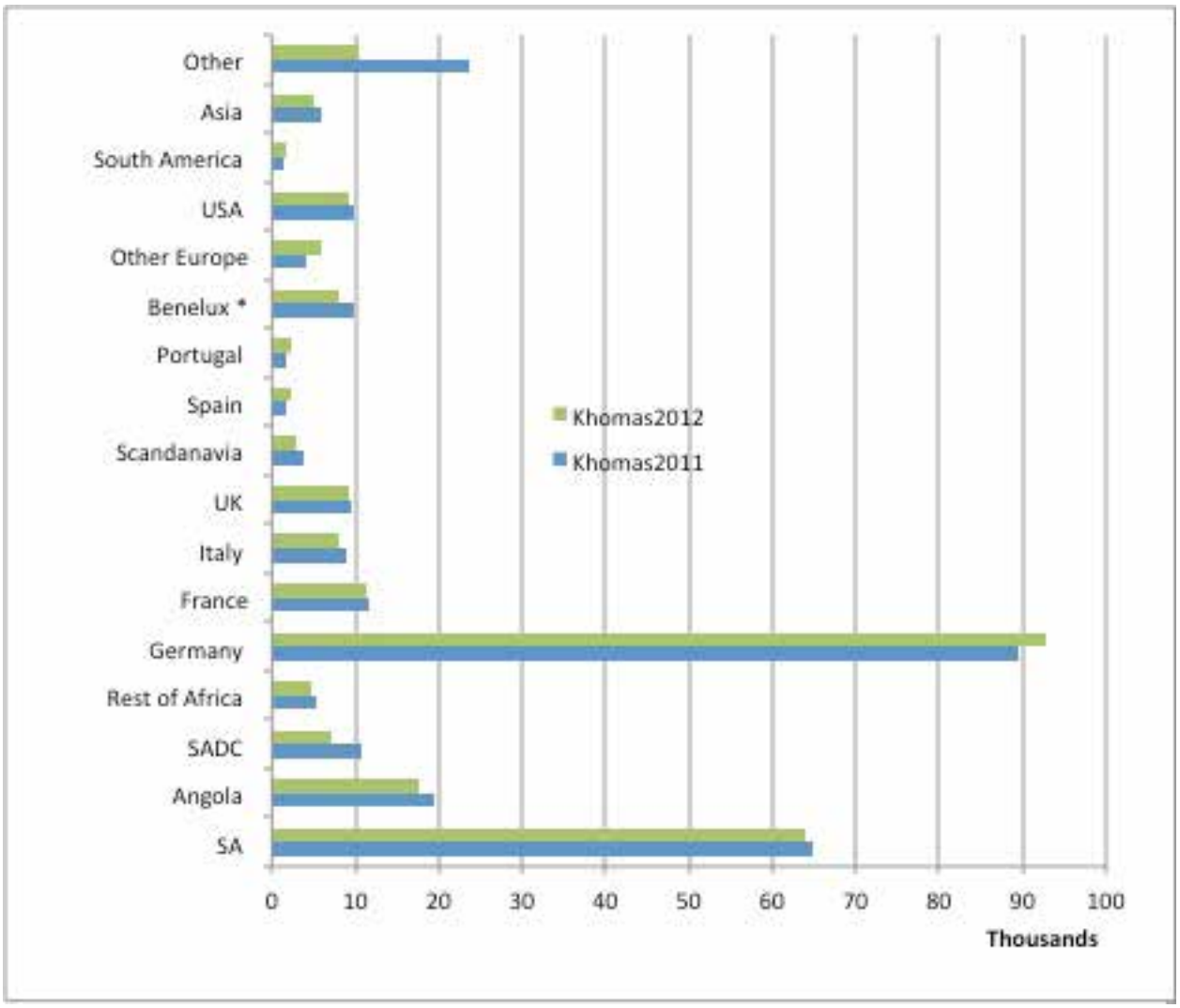
5.4.2 Tourism Development – Business as Usual Scenario

Current tourism activities in the Windhoek Green Belt Landscape are supported by mainly two land uses. These land uses are game ranching and the Daan Viljoen Game Park which provide for game viewing, hunting and accommodation. There are three guest farms in the Green Belt in addition to the Daan Viljoen Game Park.

The proximity of the WGBL to Windhoek, the capital city of Namibia, has added advantage because the majority of tourists (56%) visit Windhoek because of it being the centre of business in Namibia and its airports and good road infrastructures.

The Khomas Region, which includes Windhoek, receives on average 272,103 tourists a year (2011 and 2012 statistics, Figure 5.3). The region has on average 110 establishments, 1373 rooms with 2766 beds and occupancy of 30% (Namibia Tourism Board, Jan – Dec 2011 - 2012). Daan Viljoen Game Park has about 24 chalets with a total of 44 beds, while the rest of the WGBL has three establishments with an estimated total of 18 beds. We assumed occupancy of 25% for Daan Viljoen Game Park and 15% for the three establishments in the WGBL. Table 5.1 shows a total bed sale of 3960 per annum for Daan Viljoen Game Park and thus revenue of N$ 4,752,000 if each tourist spends N$ 1,200. This figure excludes local day visitors. Annual day visitation by locals is estimated at 2400 persons with an average spending of N$ 300, thus generating additional revenue of N$720,000. Thus the **Business As Usua**l case **for Daan Viljoen Game Park generates N$ 5,472,000 annually** (see Table 5.2).

Figure 5.3. Annual tourist visitations to the Khomas Region for the years 2011 and 2012.



As indicated in Table 5.7 the estimated annual bed sales at Daan Viljoen Game Park represent a 1.46% of the bed sales in the Khomas Region.

Table 5.7. Summary of average annual revenue in Daan Viljoen Game Park

Over night	Beds	Year	Bed Occupancy	Revenue
Daan Viljoen Game Park	44	360	25%	
No. Bed sales per Year	3960			4,752,000.00
As a % of Khomas tourists	1.46%			
Day visitors (2400ppl * NAD300)				720,000.00
Total revenue				**5,472,000.00**

Annual bed sales for three guest farms in the Windhoek Green Belt Landscape is estimated at 972, when multiplying 18 beds times 360 days times 15% occupancy rate (Table 5.8). Revenue of N$ 1,166,400 is generated under a Business As Usual scenario. The current low marketing of the guest farms among local tourists/visitors, led to the assumption that these facilities do not attract local day visitors. If it does happen, that figure is assumed to be very marginal and thus of little economic value to the establishments.

Table 5.8. Summary of average annual revenue from Guest farms in the WGBL

Over night	Beds	Year	Bed Occupancy	Revenue
WGBL	18	360	15%	
Bed sales per Year	972			1,166,400.00
As a % of Khomas tourists	0.36%			
Day visitors				-
Total revenue				**1,166,400.00**

Annual bed sales at three guest farms in the WGBL represent a 0.36% of the bed sales in the Khomas Region.

5.4.3 Low to Medium Tourism Activity Diversification strategies

The WGBL needs to use its proximity to Windhoek and abundant game to attract more international and local tourists. The local market is currently the least targeted in the Windhoek Green Belt Landscape although it has great potential to add to revenues and further development of leisure amenities.

In this section, we present a Medium Growth Scenario under which 40% of identified tourism products are implemented. Expert opinion suggested that no increase in demand for accommodation would be expected in the WGBL under the Medium Growth Scenario, but an increased in day visitors as the majority of such visitors (tourists) would prefer to be accommodated in Windhoek where they would be engaged other activities such as shopping and attending business meetings. The WGBL can provide game viewing, landscape touring, hiking, adventure sport, hunting and bird watching among others to expand its potential.

The following assumptions were made if 40% and 60% of identified products are implemented under a Medium Growth Scenario:

- Bed occupancy rate to be 20% and 40% respectively at an average spending of N$ 1200 per night;
- Assuming that international day visitors to be 0.71% and 1.07% of tourists visiting the Khomas Region under the above product implementation strategies respectively;
- Local day visitors to be 1% and 1.5% of the residents of the City of Windhoek under the same product implementation strategies respectively; and
- A spending of N$ 400 by local day visitors, and N$600 by international day visitors.
- Under the above scenario and assumption the revenue would be N$3.9million and N$6.65 million of the above product implementation strategies respectively.

Table 5.9. Summary of revenue under different product implementation in the WGBL (excluding Daan Viljoen Game Park).

Product development & marketing (%)	**40%**	**60%**	
Number of rooms	18	18	
YEAR (days)	360	360	
Occupancy rate	20%	40%	
Bed sales per year	1,296	2,592	
Total Revenue (bed sales)	**1,555,200.00**	**3,110,400.00**	**average spending per night N$1200**
INTERNATIONAL DAY VISITORS			
% tourists in Khomas visiting the WGBL	0.71%	1.07%	
Day visitors attraction (based on 272103 average tourist visitors of 2011 & 2012 to Khomas region)	1,932	2,911	
Total Revenue (international day visits)	**1,159,200.00**	**1,746,600.00**	**average spending per person N$600**
LOCAL DAY VISITORS			
Local visitors (1% , and 1.5% of Windhoek residents of 300,000)	3,000	4,500	
Total Revenue (Local day visitors)w	**1,200,000.00**	**1,800,000.00**	
Total Revenue	**3,914,400.00**	**6,657,000.00**	**average spending per person N$400**

Table 5.10 projects for the Daan Viljoen Game Park (excluding the WGBL) with the above two product considerations, similarly the revenue estimated at N$8.06 and N$12million respectively for those two product implementation consideration.

Table 5.10 Summary of revenue under different product implementation for the Daan Viljoen Game Park (excluding the WGBL).

Product development & marketing (%)	**40%**	**60%**	
Number of rooms	44	44	
YEAR (days)	360	360	
Occupancy rate	30%	45%	
Bed sales per year	4,752	7,128	
Total Revenue (bed sales)	**5,702,400.00**	**8,553,600.00**	**average spending per night N$1200**
INTERNATIONAL DAY VISITORS			
% tourists in Khomas visiting the WGBL	0.71%	1.07%	
Day visitors attraction (based on 272103 average tourist visitors of 2011 & 2012 to Khomas region)	1,932	2,911	
Total Revenue (international day visits)	**1,159,200.00**	**1,746,600.00**	**average spending per person N$600**
LOCAL DAY VISITORS			
Local visitors (1% , 1.5% and 2% of Windhoek residents of 300,000)	3,000	4,500	
Total Revenue (Local people day visits)	**1,200,000.00**	**1,800,000.00**	
Total Revenue	**8,061,600.00**	**12,100,200.00**	**average spending per person N$400**

5.4.4 Tourism Activity High Diversification strategies Scenario

When 80% of product diversification and development is achieved, demand for beds could exceed supply. Thus an increase in establishments or rooms (beds) is envisaged. However, this will not lead to a doubling of accommodation facilities as the majority of visitors will prefer to stay in the city. Hence, marketing for the WGBL should focus more on day visitors than overnight visitors.

Under this scenario the guiding assumptions:

i. There is combined range land management, free movement of animals and freely game driving;
ii. There is well integration of activities and plan activities during the implementation to make the products more attractive and convenient to the environment and tourist visitors; and
iii. As a result of the above unique product strategies attract 4% and 3% of the international and locally visitors respectively.

The table below shows projections of 20% increase in beds (a total of 82 beds) combined for all establishments in the WGBL.

Table 5.11. Summary of revenue under different product implementation for the combined Daan Viljoen Game Park and the rest of tourists' establishment in the WGBL.

Product development & marketing (%)	**80%**	
Number of rooms		
YEAR (days)		
Occupancy rate		
Bed sales per year	5,904.00	
Total Revenue (bed sales)	**7,084,800.00**	**average spending per night N$1200**
INTERNATIONAL DAY VISITORS		
% tourists in Khomas visiting the WGBL	4.00%	
Day visitors attraction	10,884.12	
Total Revenue (international day visits)	**6,530,472.00**	**average spending per person N$600**
LOCAL DAY VISITORS		
Local visitor attraction (3% of Windhoek residents of 300,000)	9,000.00	
Total Revenue (Local people day visits)	**3,600,000.00**	
Total Revenue	**17,215,272.00**	**average spending per person N$400**

5.5 ECONOMIC ASSESSMENT

5.5.1 WGBL Contribution to the National income

Table 5.12 projected the summary of potential contribution of WGBL to the national income. Assuming VAT 15% and income tax 30%; additionally assumed 40% operational costs .The contribution of WGBL to the national income would be NAD 4.30 million, NAD 6.13 millon and NAD 5.72 million with under the 40%, 60% and 80% product implementation strategies scenarios respectively; compared to NAD 2.86 million under business as usual.

Table 5.12: Summary of contribution of WGBL to National income from Tourism under different product implementation strategies

National income contribution	Business as usual	Low to Medium product diversifications strategies		High product diversification strategies
	0%	40%	60%	80%
WGBL (excluding DVGP)	1 385 856.00	2 128 356.00	2,868,318.00	
Daan V.Game Park	1 477 440.00	2,176,632.00	3,267,054.00	
Combined WGBL+DVGP				5,719,051.30
Total NIC-Gov't	**2,863,296.00**	**4,304,977.00**	**6,135,372.00**	**5,719,051.30**

5.5.2 Multiplier effect: Under different product implementations strategies

a. The labour multiplier for every NAD one million gross value of investment is estimated to be 11.4, 4.6 and 7.4 for direct, indirect and induced contributions respectively
b. The production multipliers estimated for every one unit of output are NAD 0.89 and NAD 1.09 for indirect and induced contributions respectively,

The above assumptions are based a study done in South Africa by Water Research commission (WRC) in 2005 cited in Dennison & Manona (2007).

Table 5.13: Summary of multiplier effect: under different product implementations strategies

Job creation	Business as usual	Low to Medium product diversifications strategies		High-product diversifications strategies
	0%	40%	60%	80%
WGBL (excluding DVGP) (revenue)	1,166,400.00	3,921,600.00	5,104,800.00	
Daan V.Game Park (excluding WGBL)	5,472,000	8,068,800.00	9,252,000.00	
Combined WGBL+DVGP				17,215,272.00
Total revenue	6,638,400.00	11,990,400.00	14,356,800.00	17,215,272.00
Labour Multiplier				
Direct	75.68	136.69	163.67	196.25
Indirect	30.54	55.16	66.04	79.19
Induced	49.12	88.73	106.24	127.39
Total Jobs to be created	155.34	280.58	335.95	402.84

As indicated the multiplier effect for the job creation in the area could be 281, 336 and 403 under 40%, 60% and 80% product diversifications strategies respectively; compared to 155 jobs under business as usual.

Table 5.14: Summary of Agric production multiplier effect: under different product implementations strategies

Agric production multiplier effect (NAD)	Business as usual	Low to Medium product diversifications strategies		High product diversifications strategies
	0%	40%	60%	80%
WGBL (excluding DVGP) (revenue)	1,166,400.00	3,921,600.00	5,104,800.00	
Daan V.Game Park (excluding WGBL)	5,472,000	8,068,800.00	9,252,000.00	
Combined WGBL+DVGP				17,215,272.00
Total revenue	6,638,400.00	11,990,400.00	14,356,800.00	17,215,272.00
Agric production multiplier effect				
Direct	5.91	10.67	12.78	15.32
Indirect	7.24	13.07	15.65	18.76
Agric production multiplier effect (NAD)	13.14	23.74	28.43	34.09

The multiplier effect to the agricultural income for the area would increase by NAD23.74, NAD28.43 and NAD34 to the agriculture activities as a result of this tourism product implementation in terms of production expansions to agriculture.

CHAPTER 6 *ENVIRONMENTAL IMPACT QUANTIFICATION UNDER TOURISM DEVELOPMENT SCENARIOS*

6.1 Introduction

Economic growth from tourism development does not come risk-free, if it is not planned well environmental problems will arise, such as environmental degradation and socio-cultural impacts. While the provision of roads, hotels and utility infrastructure may improve the accessibility and amenity of tourism sites, inadequate management and planning may endanger the natural and cultural heritage assets that attract visitors in the first place. Therefore, this chapter focuses on the impact of tourism development to the environment.

6.2 Environmental Impact Quantification Under Different Tourism Development Scenarios

Three scenarios are constructed under different assumptions of number of tourist visitors to Namibia and product diversification, which represent a business as usual, low to medium product diversification and high product diversification – and thus the accompanied growth potential.

6.2.1 Impacts identification of the different tourist visitor growth scenarios

Strategic Environmental Assessment (SEA) is an analytical and participatory approach for up-streaming and mainstreaming environmental and social issues into the decision-making process. SEA is particularly useful for evaluating the environmental and socio-economic consequences of plans, policies or strategies that have cross sectoral implications, such as tourism development. The SEA process assists policy-makers in balancing competing environmental and socio-economic priorities and in fine-tuning sectoral plans and policies (World Bank, 2007).

6.2.1.1 Impact on Water Resource usage

Demand for water in the WGBL was assessed based on those three different tourism development scenarios and assumption considerations. The water consumption was expected to be 0.55 million liters, 0.60 million and 0.612 million respectively under those three product development strategies.

Assumption used.

- Overnight water consumption of 100 liter per day per person
- Day visitors water consumption of 10 liter per day per person

Table 6.1: Water consumption (in liter)

Water consumption	Business as usual	Low Medium product diversifications strategies		High product diversifications strategies
	0%	40%	60%	80%
Overnight visitors	4,932.00	6048	9720	5,904.00
Day visitors	2,000	4932	7411	19,884.12
Total water consumption	513 200	654 120	1 046 110	789,241.20

With highly variable climatic conditions and the risk of extreme events, the above water demand has implication to policy and future planning to safeguard the limited water resources in the Windhoek municipal area.

6.2.1.2 Solid waste

Estimation of solid waste in this study was based on CSA & Smith (2007) study considering items relevant to WGBL from Table 6 (that is metal, glass, plastic containers, plastic and papers the percentage weight summation add up to 44%). In CSA and Smith study the total general waste estimated to be 19.2 kg from the household users in Windhoek. However, based on the stakeholders input 4 kg was estimated for WGBL.

Table 6.2 Contents of solid waste in Windhoek

General Waste	% Weight	% Volume
Metal	4	6
Glass	14	7
Ceramics	0	0
Plastic containers	4	14
Plastic (soft)	7	14
Organic food products	15	7
Garden refuse	32	16
Wood/timber	1	1
Paper (plain)	9	14
Paper (carton)	6	15
Total	**92**	**94**

Source: CSA & Smith (2007)

Table 6.3 projects the summary of total solid waste in future under different scenarios which would be 154tons, 200tons and 218tons respectively under the above mentioned different product implementations. This is implying that WGBL requires proper waste management strategies in place to keep the area clean and safe.

Table 6 3: Total solid waste projected under different assumption (in kg)

Sold waste	Business as usual	L-M product diversifications strategies		H-product diversifications strategies
	0%	40%	60%	80%
Overnight visitors	4,932.00	6048	9720	5,904.00
Day visitors	2,000	4932	7411	19,884.12
Total sold waste	**27 728**	**43 920**	**68 524**	**103 152**

6.3 Impacts on the landscape and habitats

Key impacts to the physical environment that may result from increased tourism development are considered below:

- Disturbance to fauna: tourism activities may disturb wildlife, especially during breeding seasons. Construction projects and traffic may generate air and noise pollution as well as vibrations that may disturb wildlife.
- Loss of habitats: may result from clearance of vegetation for hotels, access roads and utility infrastructure.
- Disruption of habitat corridors. Construction of footpaths, roads and utilities may disrupt wildlife habitat corridors; especially to migrating birds or animals foraging over extended areas.
- Degradation of biodiversity: may result from large number of tourist flow, and possibly over tramping of grassland, and causing fire accidents etc.
- Soil erosion: can be resulted from both development (such as clearance of land) as well as tourist activities (such as hiking and camping),
- Visual impacts. Landscape and visual impacts caused by road construction, unplanned development, illegal construction, and inappropriate solid waste storage and disposal
- Pollution from solid waste resulting from inadequate waste collection and treatment, which in turn may resulted in visual and water quality impacts;
- Deterioration of surface and groundwater quality due to inadequate wastewater treatment facilities and dumping of solid waste into surface water bodies;
- Poaching. Informal settlements around WGBL will continue to cause threat to the environment and poach of wildlife

6.4 Prediction of the impacts of envisaged plans, policy and programmes

Table 6.4: Predication of the effects of envisaged Plans, Policies and Programmes

	Physical Environment						Socio–Economic				Cultural Heritage		
Plans, Policies and Progarammes, activities and features	**Ecosystem and Nature (Biodiversity)**	**Physical landscape**	**Solid Wastes**	**Water Quality**	**Carrying Capacity of tourist sites**	**Infrastructure and public awareness**	**Standard of Living/ Poverty Alleviation**	**Household Income**	**Traditional Livelihoods**	**Equitable Distribution of Economic Benefits**	**Intangible Heritage**	**Protection of archeological features**	**Maintenance of culture**
Infrastructure Construction													
Upgrading/Provision of Transport Infrastructure	-	-	-		-	+	+					-	
Upgrading/Provision of Tourist Infrastructure (e.g. shops, exhibition centres, hotels, etc.)	-	-		-		+	+					-	
Activities of Tourism Development Plans													
Nature-based: Passive (relaxation and walking)	-	-	-	-	-	+/-	+	+			+/-	+/-	+/-
Nature-based: Active (hiking, camping, caving, climbing, and water-based activities (eg rafting, swimming, water skiing, etc).	-		-	-	-	+/-	+	+			+/-	+/-	+/-
Heritage-based: Cultural immersion tourism	-	-	-	-	-	+/-	+	+	+/-	+	+/-	+/-	+/-
Heritage-based: Visiting farms	-	-	-	-	-	+/-	+	+	+/-	+/-	+/-	+/-	+/-
Externalities													
Solid Waste	-		-	-							-	-	
Waste water	-		-	-								-	
Water consumption													
Implementation of Plans, Policies and Progarmmes													
Promotion of Service Sector							+	+	-				
Training and Basic Education							+	+	+/-	+			
Private Sector Investment	-	-					+	+	-	+/-	+/-	+	

CHAPTER 7 *STRATEGIC ENVIRONMENTAL MANAGEMENT PLAN*

7.1 Introduction

Government need to adopt a range of "hard" and "soft" measures to control the numbers of visitors to sites that are either sensitive or operating at close to their assessed carrying capacity. Hard measures could include requiring visitors to be accompanied by a restricted number of tour guides or apply a limited number of permits to visit assess in-line with carrying capacity which is not tested in this study. Soft measures could include raising entrance fees or removing references to popular sites from marketing materials in future. Similar measures could be adopted at appropriate times of the year (such as during breeding or migration periods) for ecologically sensitive sites.

7.2 Mitigation Measures

The following measures are recommended to minimise ecological impacts and enhance environmental awareness as part tourism development strategy. These recommendations are particularly important for the administrative authorities of natural reserves and sensitive areas.

1. Provide guidance to minimize impacts on flora and fauna, including restriction of fishing, hunting and collection of flora.
2. Provide training to tour guides at nature reserves so that environmental awareness and education are a key part of the message to visitors; and
3. Where ecologically sensitive sites need to have closing seasons or minimize the number of visitors to the area so that building carrying capacity can be maintained.
4. Restoration of vegetation should be considered and budgeted during design stage of site development to minimise erosion in the area.
5. Preference should be given to upgrading of existing roads rather than construction of new routes

7.3 STRATEGIC ENVIRONMENTAL MANAGEMENT PLAN

Table 7.1: Strategic environmental management plan

Issue/Risk	Activity or Feature of Policy or Plan	Recommended Action	Mitigation Plan	Responsible Agency
Promote compatible land uses in the WGBL	High value options for compatible land uses should be investigated and encouraged;	The members of WGBL should promote compatible land uses among all members and adjacent farms; highlight benefits for sustainable land management	Incompatible land uses should be encourage to incorporate stringent mitigatory measures to minimize landscape and visual impacts	
Expansion of the City of Windhoek onto farms of the WGBL is a risk to biodiversity conservation.	About six farms (including portions of Augeigas Farm) of the WGBL are now part of the City of Windhoek municipal land; Urban sprawl through the expansion of the informal settlements on the northern part of Windhoek – is leading to further land clearing through the harvesting of fuel wood, in addition to wildlife poaching.	The WGBL should seek synergies with the City of Windhoek's plan to conserve biodiversity and the implementation of the United Nations Local Agenda 21 which seeks wider stakeholder involvement in socio-economic development and biodiversity conservation.	Sustainable land management and conservation of ecosystems to which Namibia is committed through her constitution – should be used as a strong pillar for sustainable development anchored to the Millennium Development Goal #7 – Achieving Environmental Sustainability.	Ministry of Environment and Tourism, City of Windhoek, WGBL.
Ecology and Biodiversity	Infrastructure development in nature reserves, geo-parks and ecologically sensitive areas Active, nature-based tourism proposed under the management plan (eg trekking). Behaviour of visitor enjoying passive, nature-based activities such as sightseeing at nature reserves and sensitive sites	**Promotion of Eco-tourism and Enhancing Environmental Awareness** Provide visitors to ecologically sensitive areas guidance on appropriate behaviour to minimize impacts on flora and fauna. Provide training to tour guides at nature reserves so that environmental awareness and education are a key part of the message to visitors; and Adopt "hard" and "soft" measures to restrict visitor numbers to sensitive sites or during sensitive times of the year (e.g. breeding seasons). Hard measures include requiring visitors to be accompanied by a restricted number of tour guides Soft measures include raising entrance fees or removing references to sites from marketing materials		

Issue/Risk	Activity or Feature of Policy or Plan	Recommended Action	Mitigation Plan	Responsible Agency
Landscape and visual impacts	Road construction under the management plan. Construction of lodges, tourist reception facilities and entertainment venues within and outside classified scenic areas.	**Consideration of Landscape and Visual Impacts in Construction Projects** Include landscape and visual impact assessment in EIA procedures important	Establish regulatory protection and cultural landscapes that are a major tourist attraction	Members of WGBL
Solid waste disposal	Handling and disposal of solid waste generation by tourists	**Reconsider Arrangements for Solid Waste Management** Construct a smaller number of landfills of greater capacity that incorporate environmental controls such as lining, leachate collection and treatment and storm water diversion. Collect solid waste and transport to waste transfer stations by road and then to large, regional landfills.	Economies of scale offered by larger landfills allow for incorporation of improved environmental controls. Prevent secondary surface water and groundwater contamination from landfill runoff and leachate.	Members of WGBL
Surface and groundwater Contamination	Domestic wastewater discharges from informal, homestay accommodation and restaurants	Wastewater Treatment Lodges and guesthouses should be equipped with septic tanks as a minimum form of biological treatment of domestic wastewater.	Control surface and groundwater Pollution and avoid human health risk	Land owners / logde operators
Carrying capacity and visitor flow Control	Marketing and promotion might result in a substantial increase in the number of visitors.	**Carrying Capacity and Visitor Flow Controls** Undertake detailed carrying capacity assessments important to the sensitive sites. Control visitor numbers (e.g. by limiting ticket sales or tour group sizes). Restrict private vehicle access to sites that are environmentally sensitive. Transport people through sites by shuttle buses, battery operated vehicles or other means. Disperse tourists to less visited sites (using promotions or pricing controls). Seasonal restrictions to sensitive sites, e.g. breeding seasons.	Reduce pressure on most popular sites. Reduced environmental impacts at sensitive sites; Enhance sustainable tourism development	The Directorate of Tourism Development should provide guidelines for tourist carrying capacities; lodge / tour operators should implement

Issue/Risk	Activity or Feature of Policy or Plan	Recommended Action	Mitigation Plan	Responsible Agency
Environmental awareness	Promotion of tourism at ecologically sensitive sites Improve understanding of the concept of ecotourism and sustainable land management	**Enhance Environmental Awareness** Institutional training and capacity building atnmunicipal, constituency and regional level to ensure that environmental considerations are incorporated into development plans; Develop site specific environmental awareness booklets for private operators and guides, who can pass on relevant information to tourist groups; and Educate local communities about the importance of natural resource conservation.	Maintain and enhance sustainable ecotourism and reinforce appropriate visitor behaviour Maintain the attractiveness of tourism assets, which is critical to long-term sustainability.	Ministry of Environment and Tourism; Private sector entrepreneurs
Built heritage damaged or destroyed	Restoration of built and cultural heritage sites. Augeigas has a rich history of the Damara people of Namibia – but very little is written or displayed. Construction of new tourist infrastructure such as roads, accommodation and restaurants in the WGBL and improve marketing.	**Safeguard heritage** Liaise with the National Heritage Council and historians to document and design a cultural tourism portfolio for the WGBL	Enhance capacity to manage its cultural heritage;	Lodge owners / private sector stakeholder in collaboration with the National Heritage Council

REFERENCES

Ministry of Environment and Tourism (undated). Project Document NAMIBIA Protected Landscape Conservation Areas Initiative (NAM-PLACE) Project Number: 00074796 2011 – 2015

Ministry of Environment and Tourism (2009). A pre-feasibility assessment of areas in Namibia suitable to be established as protected landscape conservation areas (PLCAS). for the proposed Windhoek greenbelt protected landscape conservation area

Ministry of Environment and Tourism (2013). Term of Reference Strategic Environmental Assessment (SEA) of the Tourism Sector for the Windhoek Green Belt Landscape

World Bank (2007). Strategic Environmental Assessment Study: Tourism Development in the Province of Guizhou, China.

Versatile Environmental Consulting CC (2010). Consultancy Sub-report to MET: Namibia Protected Landscape Conservation Areas Initiative (NAM-PLACE)

Appendix A: *ENTERPRISE BUDGET FOR LIVESTOCK FARMING: USED ON THE REPORT*

(based on 700 cattle, equivalent to the 7000ha capacity)

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of sales	84	84	84	84	84	106.4	106.4	106.4	106.4
Price	4500	4500	4500	4500	4500	4500	4500	4500	4500
Total sales	378000	378000	378000	378000	378000	478800	478800	478800	478800
Production costs									
1. Production Inputs									
Fuel and lubricants	4000	4000	4000	4000	4000	4600	4600	4600	4600
Stock feed	40000	40000	40000	40000	40000	46000	46000	46000	46000
2. Labour									
Wages	48000	48000	48000	48000	48000	48000	48000	48000	48000
Rations	24000	24000	24000	24000	24000	24000	24000	24000	24000
Farm produce consumed									
Other farming income									
3. Depreciation									
Machinery and equipment	40000	40000	40000	40000	40000	40000	40000	40000	40000
4. Repair and maintenance									
Fixed improvements	10000	10000	10000	10000	10000	10000	10000	10000	10000
Machinery and equipment	10000	10000	10000	10000	10000	10000	10000	10000	10000
Sub-total		0	0	0	0	0	0	0	0
5. Other expenses									
Veterinary expenses	5000	5000	5000	5000	5000	5000	5000	5000	5000
Miscellaneous expenses	5000	5000	5000	5000	5000	5000	5000	5000	5000
Marketing costs	1170	1170	1170	1170	1170	1170	1170	1170	1170
Electricity	5000	5000	5000	5000	5000	5000	5000	5000	5000
Telephone	8400	8400	8400	8400	8400	8400	8400	8400	8400
Total GrossProduction Costs	200570	200570	200570	200570	200570	207170	207170	207170	207170
PROFIT	**177430**	**177430**	**177430**	**177430**	**177430**	**271630**	**271630**	**271630**	**271630**

Appendix B: *ENTERPRISE BUDGET FOR LIVESTOCK FARMING: USED ON THE REPORT*

(based on 1000 cattle, equivalent to the 10000ha capacity)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number of sales	120	120	120	120	120	152	152	152	152	152	168
Price	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Total sales	540000	540000	540000	540000	540000	684000	684000	684000	684000	684000	756000
Production costs											
1. Production Inputs											
Fuel and lubricants	4000	4000	4000	4000	4000	4600	4600	4600	4600	4600	4600
Stock feed	40000	40000	40000	40000	40000	46000	46000	46000	46000	46000	46000
2. Labour											
Wages	48000	48000	48000	48000	48000	48000	48000	48000	48000	48000	48000
Rations	24000	24000	24000	24000	24000	24000	24000	24000	24000	24000	24000
Farm produce consumed											
Other farming income											
3. Depreciation											
Machinery and equipment	40000	40000	40000	40000	40000	40000	40000	40000	40000	40000	40000
4. Repair and maintanace											
Fixed improvements	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Machinery and equipment	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Sub-total		0	0	0	0	0	0	0	0	0	0
5. Other expenses											
Veterinary expenses	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Miscellaneous expenses	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Marketing costs	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Electricity	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Telephone	8400	8400	8400	8400	8400	8400	8400	8400	8400	8400	8400
Total Gross Production Costs	200570	200570	200570	200570	200570	207170	207170	207170	207170	207170	207170
Profit	**474430**	**474430**	**474430**	**474430**	**474430**	**647830**	**647830**	**647830**	**647830**	**647830**	**737830**

NAMPLACE

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Greater Fish River Canyon Landscape | Greater Sossusvlei-Namib Landscape | Windhoek Green Belt Landscape | Greater Waterberg Landscape | Mudumu Landscape