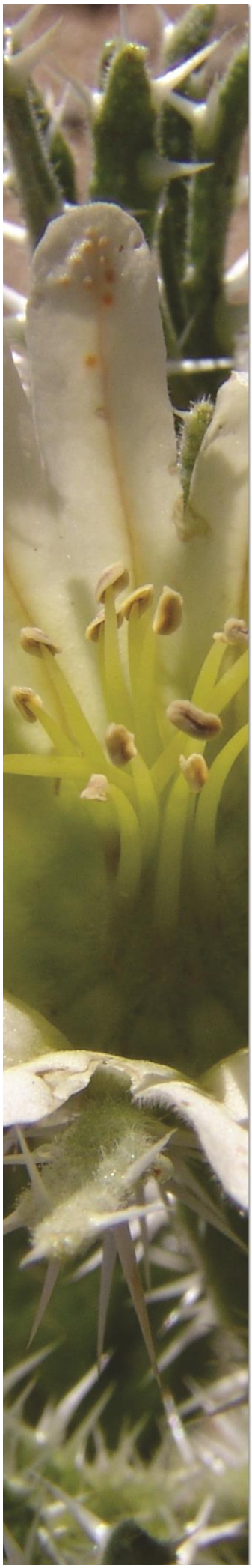

If you can't measure it
You can't control it

Final Environmental Impact Assessment Report

SAND ROSE INVESTMENTS (Pty) Ltd

Applicant: **Sand Rose Investments (Pty) Ltd**
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Building towards better

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Approved Inspection Authority

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Desert Rose

NAMIBIA INTERNATIONAL CONVENTION AND EXHIBITION CENTER

Scope of this report

Date:	October 2015
Client:	Sand Rose Investments (Pty) Ltd
Correspondence Address:	P. O. Box 8416 Swakopmund Namibia
Contact Person:	Mr. J. Cornelissen
Position:	Project Manager
Telephone no:	*+264 64 404 146*
Fax no:	*+264 64 404 179*
E-mail:	*info@nehc.co.za*
Title:	Establishment of the Namibia International Convention and Exhibition Centre: Desert Rose.
Project Location:	The Desert Rose urban node is to be developed on approximately 418ha of virgin land located between Walvis Bay and Swakopmund, approximately 24 km to the north of Walvis Bay and some 7 km to the south of Swakopmund as travelling along the B2 road connecting these two coastal towns.

Summary

Sand Rose Investments (Pty) Ltd (Reg. No. 2013/0641) is a 100% Namibian owned company, specializing in property development and management. We have identified the proposed opportunity in order to commit ourselves to the Vision 2030 of Namibia and to assist the Namibian Government in the process of determining the feasibility of such a project and to facilitate the initial stages until such time that the project is approved. It is also our vision that the Namibian Government and the private sector should strive together as one team to uplift the socio-economic wellbeing of Namibia and its people. The shareholders of Sand Rose Investments (Pty) Ltd consist of individuals who are well-experienced in these types of projects and are represented on various professional levels.

Convention Centres in recent years have for many cities around the world become a focus point of Municipal activity. In a way they almost took over the traditional role of the municipal centres or town halls. Convention Centres have developed into prestigious projects that represent the importance of the destination to the outside, international world. Convention Centres are also the place where large numbers of influential foreign visitors of a country or city, such as leaders in the scientific and business community, foreign government representatives, potential investors and Members of the media get their first impression of a destination.

In order for the Namibian Ministry of Environment and Tourism (MET) to make an informed decision as to whether or not the project should receive an environmental clearance certificate and be allowed to proceed, it is essential that potentially significant environmental and social impacts (both negative and positive) are investigated and well understood. It is therefore necessary to conduct an Environmental Impact Assessment (EIA) process. This led to National Environmental Health Consult is being appointed by Sand Rose Investment (Pty) Ltd to undertake the EIA for the proposed project.

The findings of the EIA Phase are presented in this Final EIA Report, and it is made available to Interested and Affected Parties (I&APs) for comment.

The purpose of the EIA Report is to:

- Provide a description of the proposed project, including a sufficient level of detail to inform the Ministry of Environment and Tourism;
- Describe the local environment within which the project is proposed, to assist further in identifying issues and concerns;
- Provide an overview of the process being followed in the Scoping Phase, in particular the public participation process, as well as present the Final EIA Report that would form part of the EIA phase as per Environmental Management Act, 2007;
- Present the issues and concerns identified to date by specialists and stakeholders, together with an explanation of how these issues will be addressed through the EIA process.

I&APs (including organs of state) were invited to submit comments on the Draft Scoping Report, to Felecia Schoeman at National Environmental Health Consult by 10 June 2014. Issues raised in response to the Draft Scoping Report are included in Appendix G of the Final Scoping Report.

Follow up consultation with the I&AP's (including organs of state) were done during 2015 following the Draft Scoping Report presented to MET.

The feedback received from the Office of the Environmental Commissioner:

First response Dated 25 February 2014:

- This is to acknowledge that your Scoping Report has been received in good order. You are therefore advice to proceed towards the development of a detailed Environmental Assessment and Management Plan.

Second response Date 09 December 2015:

- The Scoping report lacks(1) the CV of your Environmental Assessment Practitioner, (2) reference to EIA Regulation 2012(legal context), and (3) records an consultation e.g Swakopmund and Dorob National Parks (Section21 (b), EIA Regulation 2012)

Third response Dated 02 March 2015:

- Your scoping report provides an adequate identification of potentially significant environmental impacts. Please appreciate in your further reporting that the proposed site implies a change of the boundaries of Dorob National Park requiring Cabinets Approval and gazetting the new boundary.

Further, you consider the legal constraint for activities in protected areas as per Nature Conservation Ordinance 4 of 1975, section 14(1) and DOROB np Regulation 1.

- Your single site proposal within the Dorob National Park, including breeding and feeding areas of legally protected species as well as an Important Bird Area needs explicit justification. You are kindly advice to proceed with the identification and assessment of alternatives (EIA Regulations; paragraph 15(2): (d) and (f) and the preparation of an Environmental Management Plan (EMP). The EMP should include compensation measures for immitigable impact. Please provide in your EIA report alternative design maps of associated infrastructure including, but not limited to, access roads, water [power supply infrastructure, sewage, parking, fence, golf course, public beach access road, marina and nature reserves on the premises, if any.
- Please be kindly advised that the mandatory public consultation for EIA should be interpreted as public hearing at a public venue.

The following specialist studies are proposed to address the following issues identified in the Scoping Phase:

- Biophysical Assessment (Vertebrate Fauna & Flora): Desert Rose Development in Swakopmund /Walvis Bay Area
- Desert Rose Planning report (An innovation and premier urban development initiative
- Engineering services report
- Impact on traffic
- Macroeconomic Assessment of the proposed Desert Rose Development in Swakopmund
- Socio-economic impacts (incl. tourism, planning & land use)
- Vegetation Baseline Survey for Desert Rose Development
- Environmental Noise
- Heritage

Glossary and Abbreviations

ACCRONYM	**DESCRIPTION**
AIPC	Alliance Internationale des Palais de Congres
BID	Background Information Document
CMS	Conservation of Migratory Species
CO	Carbon Monoxide
Developers	Sand Rose Investment (Pty) Ltd
EA, EIA, EMP	Environmental Assessment, Environmental Impact Assessment, Environmental Management Plan
ESR	Environmental Scoping Report
FEIAR	Final Environmental Impact Assessment Report
GDP	Gross Domestic Product
I&AP	Interested and Affected Party
ICCA	International Congress and Convention Association
MAWF	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
MLSW	Ministry of Labour and Social Welfare
MWTC	Ministry of Works, Transport and Communication
NICC	Namibia International Convention Centre
NDP3	Third National Development Plan
Plume	A column of fluid, mixed with sediment released by dredging, which moves through the water column that is clear of the sediment.
NOx	Nitrogen Oxides
Project Name	Desert Rose: Namibia International Convention and Exhibition Centre
PPP	Public Private Partnership

ACCRONYM	**DESCRIPTION**
RDL	Red Data List
SAACI	Southern African Association for the Congress Industry
SAA	South Atlantic Anticyclone
SANS	South African National Standards
SOx	Sulphur Oxides
ToR	Terms of Reference
VOCs	Volatile Organic Compounds
WHO	World Health Organisation

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1 INTRODUCTION

This Final Environmental Impact Assessment Report (FEIAR) is part of the final phase of an Environmental Impact Assessment (EIA) that will determine what environmental issues need to be considered for a decision. In terms of the Environmental Management Act (7 of 2007) and the 2012 Environmental Impact Assessment Regulations, this proposal triggers the Environmental Impact Assessment (EIA) process.

The project proponent, Sand Rose Investment (Pty) Ltd has appointed National Environmental Health Consultants as the independent consultant for this EIA process.

National Environmental Health Consultants are responsible for stakeholder engagement throughout the process and to complete an Environmental Impact Assessment Report for this project. The report will be used as supporting document when the project details are presented to the relevant authorities for approval.

Completion of an Environmental Scoping Report during the planning stages of the project is consistent with the Namibian governments' Environmental Assessment Policy and the Environmental Management Act, (Act No. 7 of 2007). The objectives of this report as stipulated by the law are consequently as follows:

a) *Ensure that the significant effects of activities on the environment are considered in time and carefully*
b) *Ensuring that there are opportunities for timeous participation of interested and affected parties throughout the assessment period; and*
c) *Ensure that the findings of an assessment are taken into account before any decision is made in respect of activities*

Following the completion of an Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) Report of the project is consistent with the Namibian governments' Environmental Assessment Policy and the Environmental Management Act, (Act No. 7 of 2007). The objectives of this report as stipulated by the law are consequently as follows:

a) *Prepare specialist studies*
b) *Specialist Studies for purposed development design and layout optimisation*
c) *Preparation of EIA Report NEHC October 2015*

Sources for the information used in this report are listed in the Bibliography in Chapter 7.

Sand Rose Investments (Pty) Ltd (Reg. No. 2013/0641) is a 100% Namibian owned company, specializing in property development and management. We have identified the proposed opportunity in order to commit ourselves to the Vision 2030 of Namibia and to assist the Namibian Government in the process of determining the feasibility of such a project and to facilitate the initial stages until such time that the project is approved. It is also our vision that the Namibian Government and the private sector should strive together as one team to uplift the socio-economic wellbeing of Namibia and its people. The shareholders of Sand Rose Investments (Pty) Ltd consist of individuals who are well-experienced in these types of projects and are represented on various professional levels. The shareholders are:

- Desmond Amunyela
- Lazarus Jacobs
- Nardo Sardinha
- Paulo Coimbra
- Gerhard van der Merwe
- Brynard Kotze
- Werner Burger
- Johan Kok
- A Social Responsibility Trust (to benefit from this project and to be instituted on project inception)

1.1 Project Background Information

Namibia is currently one of the most favourable destinations in Africa, if not the world, on many levels. Today many countries (cities) in the world are recognized by iconic buildings or structures in these modern times. Currently Africa does not really share in this phenomenon, even though our natural inheritance is internationally known. The time has come for Africa, more specifically Namibia, to contribute to international architecture, even though we are a small nation. Namibia has already since independence proven that we can compete with the best in world on all levels of society. As Frank Lloyd Wright rightfully stated, "*without*

architecture of our own we have no soul of our own civilization." Even though this statement can be interpreted in many ways, it can just as well be applicable to Namibia. Iconic architecture has through the ages been the reflection of successful nations and their accomplishments. It is for this reason that the proposed Desert Rose – Namibia International Convention and Exhibition Centre (NICC) and village project at the coast between Swakopmund and Walvis Bay has been identified as the ideal platform to introduce Namibia to the rest of the world. The harmony between the Namib Desert and the Atlantic Ocean is probably the most published and sought after natural feature of Namibia and also represent the natural essence of the our country the best. The proposed site is unique in the sense that it does not only have both these natural components, but are complimented by the required infra-structure, such as bulk services, all types of transport networks, commercial and social functions, economical importance etc., necessary to sustain such a project. The Convention and Exhibition Centre with hotel will be an iconic building representing Namibia on an international level, of which the concept is unique to our country. The concept has been derived from the Namib Desert Rose, a calcite crystal that is found in the Namib Desert only and unique to this environment. These crystals have grown over many years under very rare and hares conditions to form the most beautiful structures, as Namibia's success has also been born from hardship and long fought battles. The Convention and Exhibition Centre will be supported by many facilities in order to make it both feasible and user friendly, such as more hotels and entertainment activities, shopping Centre, office parks, restaurants, low and high density accommodation, residential properties, golf course, public beaches and more. This project should be a project for Namibians, unifying everyone as a nation who conquered. This project should be the gateway to the Southern Africa and the symbol of a successful democratic nation that prospered from its own socio-economic evolvement. It should be an example to other developing countries all over the world of what is possible. It is for this reason that local authorities, regional councils, ministries, government, institutions, the private sector and the public should join hands to make this project a success story.

Namibia, land of the brave, willing to dare.

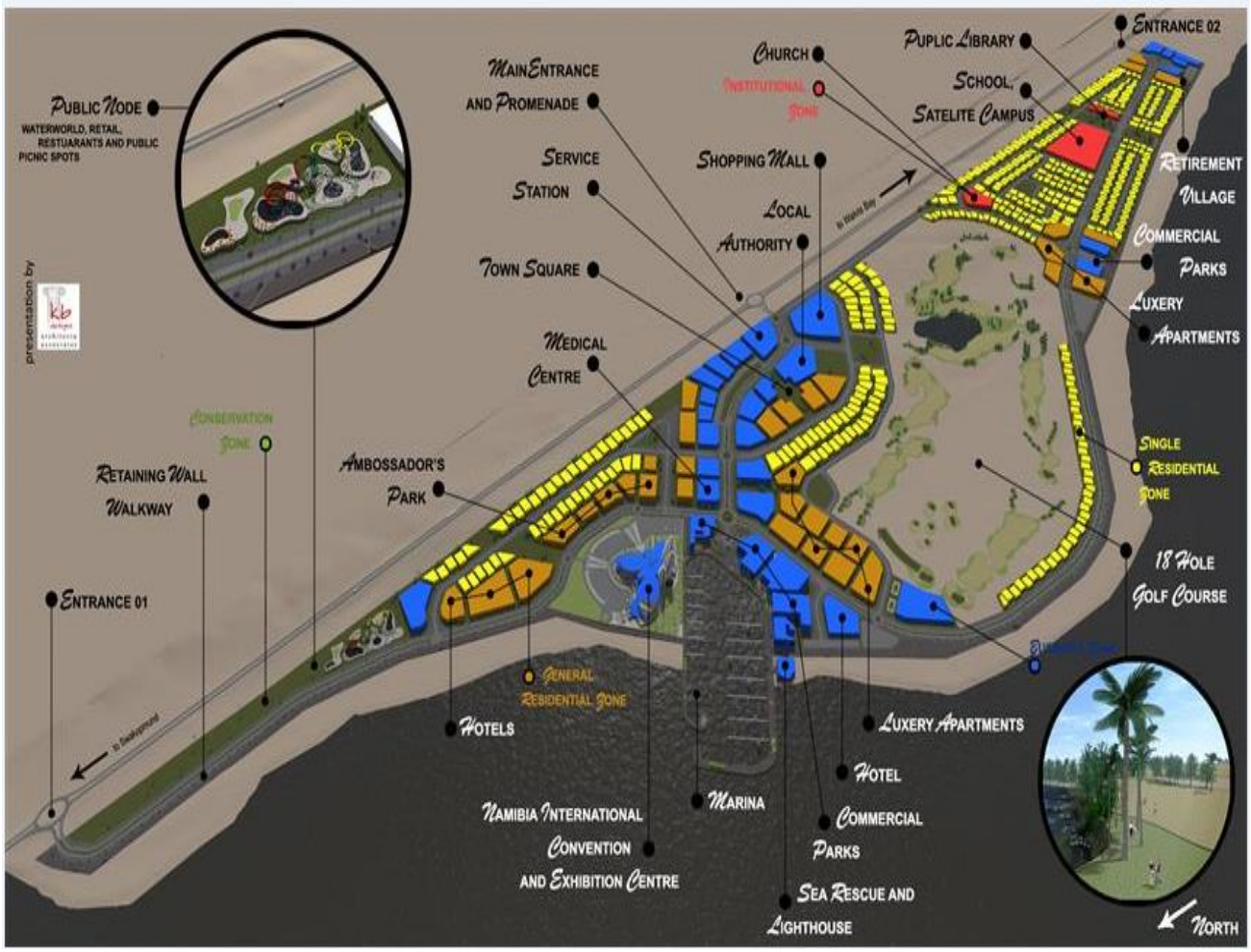


Figure 1.1 Desert Rose Conceptual Layout

1.2 Market environment for the Project

The urban areas in the Erongo Region are experiencing significant urban growth as a result of the mining and other industrial related activities taking place in the region. This has resulted that there is an increased demand for housing and business related developments within the coastal towns of Swakopmund and Walvis Bay.

It is envisaged that the planned development will have an iconic building, unique to the country and it will be a symbol representing Namibia on an international level. “The concept has been derived from the Namib Desert Rose, a calcite crystal that is found in the Namib Desert only and unique to this environment. These crystals have grown over many years under very rare and harsh conditions to form the most beautiful structures, as Namibia’s success has also been born from hardship and long fought battles”.

The Convention and Exhibition Centre will be supported by many facilities in order to make it both feasible and user friendly, such as more hotels and entertainment activities, shopping Centre, office parks, restaurants, low and high density accommodation, residential properties, golf course, public beaches and more.

Convention centres in recent years have for many cities around the world become a focus point of Municipal activity. In a way they almost took over the traditional role of the municipal centres or town halls. Convention centres have developed into prestigious projects that represent the importance of the destination to the outside, international world. Convention centres are also the place where large numbers of influential foreign visitors of a country or city, such as leaders in the scientific and business community, foreign government representatives, potential investors and Members of the media get their first impression of a destination.

This has been the reason that government owners of convention centres increasingly focused on the monumental value of a convention Centre for a city or for a country. Many examples of recently built convention centres demonstrate this vision (Singapore, Darmstadt, Reykjavik, Seville, Dublin, Kuala Lumpur, Melbourne, San Sebastian and Cape Town). In many instances much attention is given to the selection of a primary, prestigious site that also suits the typical operational requirements for a convention Centre. The monumental issue is frequently also enhanced by extensive design competitions and the involvement of famous international architects. The desired characteristics of the Namibia International Convention Centre (NICC) are very clear. It is uncertain what level of a development budget will become available, and if at all it will be possible to develop a prestigious Centre for this budget, but one should however make a serious effort. Cities do not develop convention centres on a regular basis such as other prestigious buildings like hospitals, government buildings, shopping malls etc. Theatres, Town halls and Convention centres are normally very unique projects that will have the potential possibility to dominate a City's architectural presence for many decades.

1.3 The need for the project

The Proponent is in the process of applying for the vacant land within the:

- Dorob National Park – conservation area
- Damara Tern Protected Area

that is intended for the development. As part of the application an Environmental Scoping Report is required to ensure the potential impacts on the environment and the necessary mitigation measures are considered during the planning stages. The developer understands that the specific site location falls within the Dorob National Park and will need Cabinets approval and the gazetting of the new boundaries.

Desert Rose Investments (Pty) Ltd appointed EnviroSolutions to complete the first stage of the EIA Process “Environmental Scoping Report” (ESR) that would form part of the project proposal to the authorities. Desert Rose Investments (Pty) Ltd then appointed National Environmental Health Consultants to complete the EIA Process. All relevant documents / Reports form therefore part of the final project proposal to the Authorities and register Interested and Affected Parties (I&AP).The completion of an Environmental Impact Assessment Report is consistent with the Namibian Environmental regulatory requirements.

Destination and site selection criteria

In order for a Convention Centre to be successful, a feasibility study has been conducted by independent consultants and the following site criteria have shown to be important. They obviously cannot all be fulfilled all the time, but the proposed site at least meets the majority of the criteria.

- The destination should have at least some scientific presence. One or more internationally active universities and scientific institutions. A site in a scientific precinct demonstrates the importance given to the science in the destination.

- The destination should be international accessible and the convention Centre site should be well connected to an international airport.

- The destination should have sufficient hotel; accommodation in a variety of grading's. It is definitely preferable if some (the more the better) of these hotels are in close – if possible: walking distance, otherwise short shuttle distance – of the convention Centre location. The preferred site of a convention Centre should have the possibility for the future construction of more hotels nearby.

- The destination should have a reasonable congress infra-structure (PCO's, DMC's, Stand building companies, Transportation Companies etc.) These have no significant effect on the site selection for the convention Centre, but the construction of a convention Centre will attract businesses in this sector.

- A convention Centre located in a prestigious part of the city/area enhances the feel of importance. This feel can also be the result of a location on a specifically beautiful location or a location with extra ordinary views (many examples in mountain areas, at sea fronts or lake shores). Sufficient space needs to be allocated to some serious landscaping around the Convention Centre.

- Retail outlets typically do not survive in a convention Centre because of the large variations in occupancy from day to day. Exhibitors and visitors/delegates however have of course a need to visit shops, restaurants, banks etc. A convention Centre located in the direct vicinity of at least some shops has an advantage.

- A combination of a convention and exhibition Centre, as proposed, comes with logistical challenges, mainly for the exhibition part of the building. Sufficient space need to be allocated to working terraces or marshalling yards (ideally 50% of the gross indoor exhibition area). Sufficient spaces need also to be available for certain outdoor activities (parties, festivals, arena seating, outdoor demonstrations, outdoor expo's etc.)

  The convention Centre at the coast between Swakopmund and Walvis Bay will be a success. From the outset sufficient space needs to be earmarked for future expansions.

Site Location

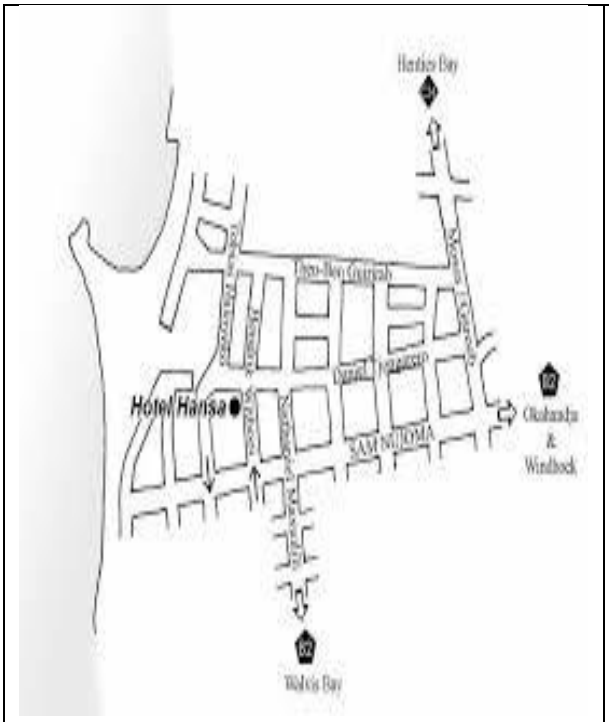
The current status of the location is a conservation area (Dorob National Park). It is demarcated more specifically for Damara Tern breeding. The specific site location history indicate that although the site is currently demarcated for a Damara Tern breeding area its previous utilisation indicate that this area was not virgin and undisturbed land prior its current demarcation. The history of the site ranges from the previously national road and railway line that went through the area to the site being used by the previous South African armed forces and mining/borrow puts (still visual on site) . The site is also part of the greater stretch of coastline between Walvis Bay and Swakopmund which was involved in a Coastline Strategic Environmental Assessment of August 2005 done by the Municipality of Walvis Bay and approved by the Ministry of Environment and Tourism. At that stage the specific area was earmarked for "low impact eco-tourism", thus indicating MET's support for developing this specific area.

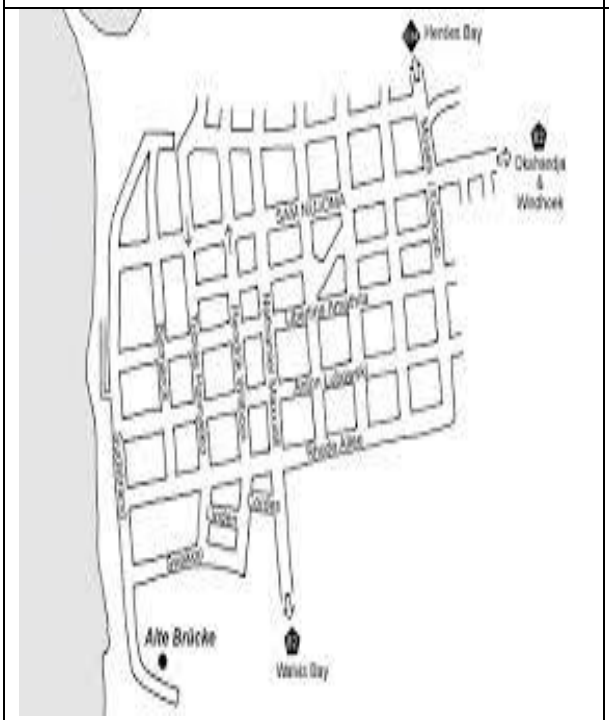
Figure 1.2 Old Railway line photos

This specific site has been chosen for the following reasons (with reference to the above criteria):

- It represents two of Namibia's major natural features i.e. the Namib Desert and the Atlantic Ocean.
- The site is unique in the sense that its surroundings are pristine areas offering the best views in the area.
- The site is located strategically in terms of transport routes such as the B2 National road, international airport and international harbour.
- Existing bulk services could be provided easily to the site from the neighbouring cities of Walvis Bay and back up support services can be provided by Swakopmund.
- The site forms the ideal platform to showcase an iconic structure such as a Convention Centre.
- More than enough land is available for supporting developments such as hotels, residential, commercial, recreational and institutional facilities.
- Neither Walvis Bay nor Swakopmund can currently provide the required space within their CBD's for this purpose. ***Please also take note*** that any further development outside the current Municipal Areas of Swakopmund and Walvis Bay will result in Dorob National Park Boundaries been effected.
- It is envisaged that the coast is fast becoming the commercial hub of Namibia, thus representing most of the activities needed for a Convention and Exhibition Centre.

Importance and Project Benefits to Namibia and the Erongo Region. ***Refer to: attached Economic Assessment of the Proposed Namibia International Convention Centre in Swakopmund Report for more detail also see photos and maps indicating growth over the years.***





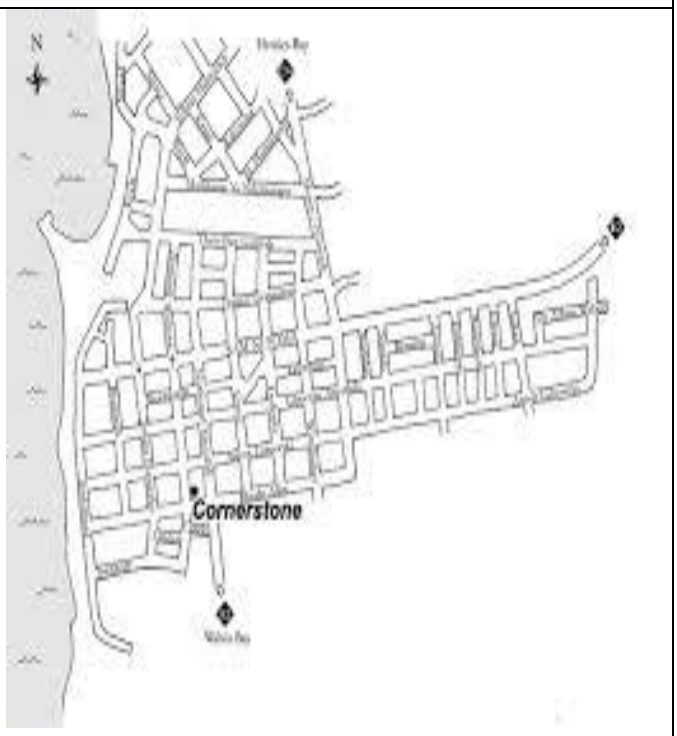


Figure 1.3 Swakopmund currently

Vision 2030

This project would be a typical catalyst development for the Erongo Region, which is also in line with Namibia's **Vision 2030** in terms of socio-economic upliftment. A catalyst development of this nature has the ability to attract new opportunities in a region which was previously not possible. Examples of such opportunities are tourist attraction and recreation, commercial entrepreneurship, local representation of major industries etc.

Critical success factors

It has been established that the most critical success factors for a new Namibia International Convention Centre are: State of the art exhibition and congress facilities; easy accessibility and adequate parking; sufficient hotel accommodation in all categories (not just 5 star hotels); competitive pricing; local scientific support for international meetings; availability of experienced congress support staff such as organizers (PCO's), transportation, destination management companies (DMC's), suppliers of Audio Visual and IT support; attractive ingredients for social programmes as part of international meetings; sufficient local and regional visitors for consumer exhibitions and sufficient potential African exhibitors for International Trade Fairs. Other important requirements are: An international presence of the destination or at least of its scientific institutes; a reasonable international accessibility of the destination through the airport, harbour and the Trans Kalahari Corridor; a stable and predictable political climate; and if possible some well know nearby tourist attractions.

Unknown destinations like Namibia will benefit from the fact that congress delegates want to explore the country. Statistics show that 25% of congress delegates stay on for a pre or post congress tour and, more importantly, another 25% comes back within a few years for a family holiday.

International statistics

In 2009 the International Congress and Convention Association registered a total of 4513 international association congresses. This number excludes international corporate meetings and international government meetings, because ICCA specializes in international associations. Of this number only 3.8% (314) took place in Africa. 36 of the 53 African countries benefitted from these 314 meetings, with South Africa, Egypt and Morocco on top of the list with respectively 90, 32 and 28 meetings. Namibia ranked number 22 in Africa with two meetings. Mozambique, Mali, Malawi, Ethiopia, DRC, Angola and Rwanda are just some of the countries that performed better than Namibia.

Local demand

Exhibition and trade fair organisers in Namibia have indicated that they would be very interested to host their events in a state-of-the-art facility. In similar situations in South Africa and in other countries the supply of new facilities had a snowball effect on the demand. Suddenly many local and international entrepreneurs saw the possibility to introduce new events, with of course a very positive effect on the local and regional economy. The building of the Namibia International Convention Centre (NICC) will of course have an effect on the existing conference industry in the country.

The new NICC can host many more events per year. Currently many events are not taking place in Namibia because of a lack of the right facilities. The new activities taking place in the NICC will have a serious effect on the demand for hotel rooms in at the coast. This demand will seriously increase in all categories, predominantly though in the three, four and five star accommodations. The centre will draw the attention of investors and hotel management companies and when the centre realizes its targets new hotel projects will very likely be initiated.

The NICC and more the marketing for the destination in general will have a positive effect on the meeting sector in the country and even more on the accommodation and restaurant sector. Not only will the convention industry benefit from the building of the NICC and a move towards a more professional service delivery, but eventually the full tourism industry of the country will reap the benefits.

A business case for the NICC

Meetings are an important element of the tourism industry in general. Many countries have discovered this in the past decades. Forerunners in this field are traditional meeting destinations like Austria, Spain, the UK and the USA. More recently many more, new destinations have joined in the international competition for the “meeting dollar”. The addition of a convention centre to the tourism inventory of Namibia would most surely also has a positive effect on other sectors of the meeting industry, such as the accommodation sector.

Discrepancy between present supply and future demand will lead to quality improvements and better room rates, and very likely also to a growth of the present number of facilities. The international association market alone counts 9 000 organisations of which approximately 50% organises global meetings. They keep a close eye on developments in Africa, and after all the successes of the new meeting facilities in South Africa. Now also the countries bordering on South Africa are benefiting from this increasing interest. Mozambique, Zimbabwe and Botswana have reasonable meeting and exhibition facilities. Namibia however is missing such venues.

A modern exhibition centre will stimulate the economy because business events generate an important revenue stream, not only for the new convention centre, but for the city and country in general. Particularly international conventions generate substantial economic effects. International delegates stay relatively long in the city and spend much more per day than the average leisure tourist. Trade fairs are important marketing tools and can play an important role in the growth of a particular economic sector.

The trade fair and exhibition industry itself also creates jobs, and certainly not only at a high level. The convention centre itself need staff at all levels, and so do stand building companies and suppliers of services such as carpeting, rigging, transportation, cleaning and security. The fact that no proper facilities in Namibia are available to accommodate larger international meetings, neither trade fairs nor exhibitions, it definitely has had a negative effect on the organization of such events in our country.

Event organizers both in Namibia and abroad confirm this opinion. A new Namibia International Convention Centre would change this situation dramatically. The time has come that Namibia should try and benefit from the increased interest in our continent. Our country is safe and has a political stable climate, the most important ingredients to successfully attract international meetings.

Namibia has limited airlift though and also a limited accommodation sector, so it should not have the ambition to host the biggest international events. But the average international association congress attracts just above 600 delegates, and that is a number that would very well fit in Namibia.

Namibia and its image in the international community

It is generally accepted that there is potential demand, that an NICC would stimulate the national economy, that hosting international conventions stimulates repeat visits of delegates with their families, which is good for our general tourism industry, that the Namibian population would most certainly benefit from an increase in trade fairs and consumer exhibitions and last but not least that the creation of such a building would also be a tangible demonstration of the role that our country wants to play in the African and in the international community.

The building of an International Convention Centre is an important moment in the history of every city or even country. It is a unique opportunity to create a modern icon that will draw international attention and demonstrates how a city or country wants to be seen by the international community. The centre will be the home away from home for attendees of events for business representatives, scientists, media and politicians. It is important to recognize how the design of the NICC can contribute to the image of Namibia. Good examples of cities that recently built convention centres with this image aspect in mind are Dublin, Reykjavik, Singapore, Doha, Vancouver and Puerto Rico.

Economic spin off and contribution to Gross Domestic Product (GDP) by the NICC

More important than the direct financial results of the NICC are of course the projections for its ability to generate positive economic spin off and new job opportunities. The feasibility study shows that the contribution to the Namibia GDP in year 1 will be N$ 455 million, an amount that in five years cumulates to a total of N$ 4,8 billion.

The job creation capacity of the NICC is in the pre-opening period already impressive with 715 jobs per year, mainly construction related. In year 1 of the operation the amount of jobs increases to 884. The total number of direct and indirect jobs that are a consequence of the building and operation of the NICC will slowly increase to 1617 in 2021. It is envisaged that the whole Desert Rose project will create over 5000 jobs in the first 5 years of the project. Convention Centres that have been built in the past decade have become successful contributors to their national economies.

It seems that the Namibia International Convention Centre will contribute substantially to the national Namibian economy. The market of international meetings in Africa is increasing. Africa's market share is minimal and will accelerate in the years to come. Namibia can ensure that it gets its fair share by investing in such a development.

Governance structure

It is important, at an early stage, to pay attention to the governance structure of a future Namibia International Convention Centre. In general it is recommendable to manage a convention centre according to commercial principles. The commercial decisiveness of the management organisation will improve if government funders restrict their involvement to a supervisory role, at arm's lengths of the day to day operation. Of course Management need to be instructed to report with prescribed intervals to a supervising Board of Directors in which also the government as founding partner should be well represented and benefit.

Management and mandate

The mandate of the centre will have to be defined either in NICC company articles or in a separate protocol. It describes the core business of the NICC, regulates the relationship between the supervisory structures of the company and its management, and indicates the limitations as well as the deliverables which in broader terms are expected from the company's management. The mandate helps in structuring the relationship between board and management providing both with a realistic picture of what on the short and on the longer term can be expected from the centre. The mandate forms the basis of the annually proposed activity plans and budgets. The management of Convention Centres around the world can basically be divided in three different models.

The first model is probably the most popular model, however not necessary the most successful. In this case the Convention Centre is being managed as a government – mostly a city – department. The second model is based on the Convention Centre as a parasternal company, in most cases a municipal- or state entity. The third option is the commercially driven management of the centre. This commercial management structure is also being used by governments that recognize that it is probably not government's core business to run this sort of facilities.

This model outsource the management to an independent management company, who accepts this responsibility based on a clear mandate and a list of agreed deliverables. An experienced top management, right from the start, is important because of their existing international client network. The practical experience and industry knowledge of the NICC management is also essential in the process of training and skills transfer, a very important management responsibility. The most successful operational model for a convention centre is one with a well-defined limited number of supervisory and executive duties at top level. This keeps the organisation lean and cost effective.

A typical total staff compliment of the NICC can be limited to around 50 to 60 employees only. Operating a convention centre gives the opportunity to involve many small and medium enterprises and create job opportunities at those places where they have a maximum effect on growing the economy. Many tasks, that has to be completed in order to be successful as convention centre can either be in-sourced or outsourced. Because business patterns of a convention centre are very inconsistent it makes good business sense to outsource particular services to specialized companies.

One of the main reasons for establishing a new convention centre is the fact that a big number of new job opportunities will be unlocked once Walvis Bay and Swakopmund (Erongo Region) becomes one of the host cities for international events in Africa. The establishment of an international convention centre at the coast opens an opportunity for the implementation of a large scale project of training and skills transfer in the hospitality industry. Based on the expected portfolio of events the ideal configuration of the centre has to be established and also a calculation of the expected occupancy rates of the NICC should be prepared.

Financial perspectives from NICC

The most important question of course is what the financial perspectives will be for the NICC. Most international convention centres (ICC's) in the world are unable to develop a sustainable business model. Governments take the decision to create convention centres with an eye on the expected contribution of such a facility on the GDP of the country and on its effect on the job market. This is a very important study to undertake to determine a realistic feasibility.

The feasibility study shows that the convention centre would have economic costs with a present value (PV) of N$1.10bn and economic benefits of N$1.45bn. This results in a net economic benefit, or project NPV, of N$350m. The associated BCR is 1.32 and the IRR is 17%. These results indicate that, since the benefits outweigh the costs, the project is economically efficient and it would be desirable from an economic perspective for Namibia to construct and operate the NICC. Furthermore, it is estimated that the cumulative contribution to taxes is set to exceed N$ 663 million by 2021. Indirect household income is expected to be cumulatively N$ 1 billion by the end of 2021.

Overall

The construction of a Namibia International Convention Centre is economically viable. Such a facility will have a substantial effect on the national economy. Its effect on the tourism industry will be even more impressive, whilst the project could generate up to 3500 job opportunities. Africa is becoming increasingly popular as a destination for international meetings. South Africa and some other neighbouring countries benefit already from this increased interest. If funding for such an ambitious project could be found it is very recommendable to establish the NICC, rather sooner than later.

1.3.1 Feasibility of the proposed project

The proposed Desert Rose development would be one of the largest private funded single developments in Namibia in recent times it would, in essence be a small town. As a result it would require all the support services that would be found in a small town including retail, entertainment, health and education services and business. The intention is to develop an iconic mixed-use development that would showcase the region to the world. It would, in consequence, also make a major economic contribution to the Namibian economy.

1.3.2 Limitations and High Level Results

The analysis faced two limitations.

- Some of the business and people choosing to move to Desert Rose are likely to come from elsewhere in Namibia. This would be the case particularly in the early years. This is called a displacement effect. These displacement effects are clearly not a net economic gain to Namibia and need to be taken into account in the analysis.

- Some of the business that would be established at Desert Rose would be support firms to other business. An example would be the establishment of a stationary supplier that services other firms in the development. In macroeconomic analysis these support firms are part of the second round effects. Including them in the first round effects would be double counting.

As a consequence a range of assumptions had to be made about the magnitude of these two effects. This section reports the subsequent range of high level macroeconomic results. The results reported here are for the direct jobs at Desert Rose and the overall contribution to GDP. The results are reported for the range of assumptions. The results for year 1 are the same for all assumptions because this is a pure construction phase where neither effect is relevant.

- In year 2 there would be 811 new direct jobs as a low estimate and 877 as a high estimate. By year 20 the range lies between 3 459 and 5 859. This is approximately a 30% difference from the mid-range estimate in year 20.

- In year 2 the low estimated contribution to GDP is N$2 042m and the high estimate is N$2 083m. By year 20 the estimate lies between N$8 635m and N$13 037m. This is approximately a 23% difference from the mid-range estimate in year 20.

It was found that the proposed Desert Rose development would have a major economic impact. Based on the low estimate assumptions Desert Rose can be expected to add between 0.9% and to 1.6% to GDP. The variation depends on the year. The mid-range estimate adds between 1.0% and 1.7% while the high range estimate lies between 1.0% and 1.9%.

1.3.3 Detailed Mid-Range Impacts

This section reports on the macroeconomic contribution of the proposed Desert Rose development. These results are based on the mid-range assumptions for displacement effects and support businesses.

Contribution to Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is the total value of all final goods and services produced in the country. It is a fundamental measure of the economic quality of life of all people in the country. It is also the most important and all-encompassing measure of the macroeconomic effect of the Desert Rose project.

The total nominal contribution to GDP from all forms of expenditure at the Desert Rose is estimated to increase from N$1 378m in year 1 to N$10 604m in year 20. In real terms the contribution to GDP is expected to increase from N$1 378m in year 1 to N$3 263m in year 20.

GDP is important not just because it is income but also because income has the capacity to add to wealth. Based on expected projections the Desert Rose is estimated to add over N$125bn to Namibian GDP after twenty years. This is approximately N$61bn in real terms.

Figure ES 1 illustrates the contribution to GDP of the various components of the proposed development.

- It is estimated that the Desert Rose excluding the NICC would contribute between N$1 208m and N$4 911m to GDP from capital expenditure.

- The contribution to GDP from operations at the Desert Rose excluding the NICC would increase from N$47m in year 2 to N$5 197m in year 20.

- The contribution due to capital expenditure of the NICC would increase from N$171m in year 1 to N$601m in year 3. It tapers off after that and in year 20 the ongoing capital expenditure would contribute N$14m to GDP.

- Operations and other expenditure due to the NICC would increase from N$455m in year 4 to N$2 426m in year 20.

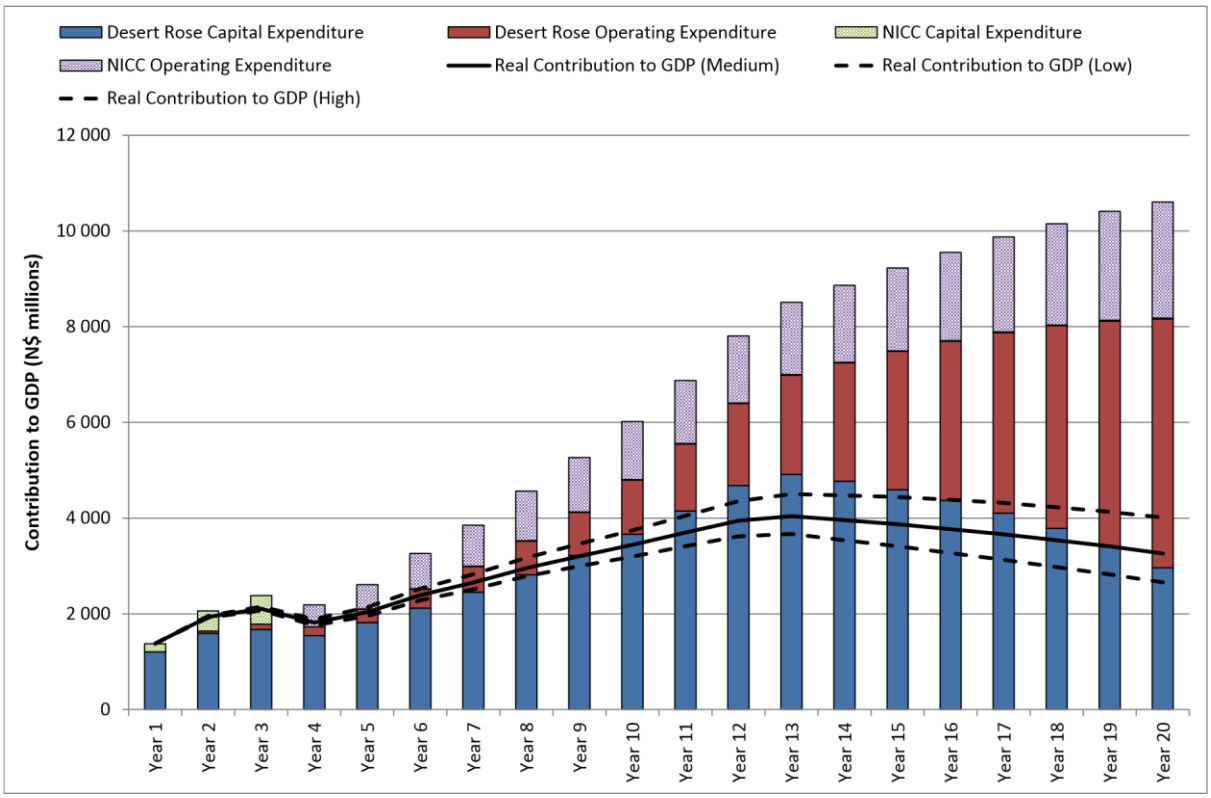


Figure 1.4 Detailed contribution to GDP

The black line in the figure indicates the real contribution to GDP (without inflation). This allows one to compare successive years. The contribution to real GDP increases for the first three years and then tapers off in the fourth once the construction of the NICC is complete. From years 5 to 13 there is steady growth, after which the real contribution steadies and then declines slightly as the development costs taper off. The decline in capital expenditure from year 14 onwards is generally offset by an increase in operations. The net effect is a steady increase in contribution to real GDP until year 14 after which there is a slight decline. The dotted black lines relate to the high and low estimate contribution to GDP as discussed earlier and have been provided for comparison purposes.

1.3.4 Job Creation

According to the 2011 Census there were 46 879 employed persons in the Erongo region and 10 297 unemployed persons. The development has the potential to significantly address unemployment in the region.

The development and operation of the Desert Rose would result in changes to two types of jobs. The first are the direct jobs that would be created over the project period. These are jobs as a result of the:

- construction of the facilities;

- operational expenditure at Desert Rose and NICC;
- expenditure of delegates attending events;
- expenditure of delegates returning as tourists; and
- business orders generated from trade fairs.

The second are the so-called indirect jobs that are due to multiplier effects of the direct expenditure.

The direct and indirect job numbers that are reported below are annual full time equivalents.

- The total number of direct jobs is set to increase from 546 in year 1 to 4 539 in year 20. The number of jobs is expected to remain constant once operational maturity is reached. However, the number of jobs directly created because of induced tourism as a result of the NICC would increase slightly each year as an increasing number of tourists become regular visitors to the country.

- Indirect jobs at Desert Rose and country-wide would also be created. The indirect jobs at Desert Rose would be in the support industries. Total indirect jobs are set to increase from 1 432 in year 1 to 4 314 in year 20.

- Total jobs are the sum of the direct and indirect jobs. The total number of direct and indirect jobs, due to both capital and operating expenditure, are set to increase from 1 979 in year 1 to 8 853 in year 20.

1.3.5 Other Macroeconomic Effects

Apart from the key macroeconomic effects discussed above, there are many other macroeconomic effects that would flow from Desert Rose. These include the generation of tax and contribution to indirect household income.

- The combined generation of direct and indirect taxes is set to increase from N$147m to N$1 077m by year 20. The cumulative contribution to taxes is set to exceed N$12bn by year 20.

- Total household income is set to increase from N$266m in year 1 to N$2 384m in year 20. Cumulatively over the twenty year period it is estimated that household income would benefit by nearly N$27bn.

1.4 The proposed project: Desert Rose

Convention Centre's in many cities around the world have become focus points for hosting prestigious events that benefit the local authorities. Convention Centre's are also the place where large numbers of influential foreign visitors, such as leaders in the scientific and business community, foreign government representatives, potential investors and members of the media get their first impression of a destination.

This has been the reason that Convention Centre's are increasingly focusing on the monumental value of such facilities. Many examples of recently built Convention Centre's demonstrate this vision (Singapore, Darmstadt, Reykjavik, Seville, Dublin, Kuala Lumpur, Melbourne, San Sebastian, and Cape Town).

The development concept is as follows:

Mixed Use Exclusive Development: The project will consist of residential, recreational, institutional, commercial and public zonings in order to create a multi-layered network of activities supporting each other. This will ensure that the development caters for all major levels of our society i.e. conventions, exhibitions, tourists, investors, general public, residents etc.

Iconic Convention and Exhibition Centre: It is intended that the iconic structure should become the Face of Namibia. This project will not only represent the country's economic well-being and status, but also the professional capabilities, technological advancement, political stability and international importance on a global level.

Accessibility of the Beach for the Public: – Public access to the beach will be maintained from all areas.

Location: The Development will be located close to the Walvis Bay International Airport, The Port of Walvis Bay, Railway lines and the Trans Kalahari Corridor. The Erongo Region has become one of the major transport hubs in not only the SADC region, but also in Africa and internationally. This is crucial for the location of this project, which will be supported by all four major transport options.

Potential PPP: This project is the ideal project for a Public Private Partnership (PPP) where all can join hands to realize a national project for Namibia, the government, local authorities and the private sector in order to showcase our ability to cooperate as a nation to the world.

Ambassador's Park: The project will have a high security profile park where ambassadors and international delegates can own residences in order to represent their respective countries in Namibia.

Site security to comply with Presidential Security Protocol: The design and layout of the project and the Convention and Exhibition Centre with hotel will comply with international and presidential security protocol to ensure the safety of any high level delegation visiting the development.

Site Details: The project site is located about 8km south of Swakopmund between the Atlantic Ocean and the B2 national road. The project site identified for this development is located in an area that is currently used as a conservation area. The area is fenced with cable fences and it serves as the main breeding area for the Damara Tern.

During 2005, the Municipality of Walvis Bay appointed EnviroSolutions to conduct a Strategic Environmental Assessment for the coastline between Walvis Bay and Swakopmund. The recommended zoning for the site was "Low impact Eco-Tourism, i.e. Activities that support and promote conservation".

Dorob National Park: Is a Protected area in the Erongo Region, along the central Namibian Coast, which is 1,600 km in length and was established in December 2010.

Map of entire Dorob National Park

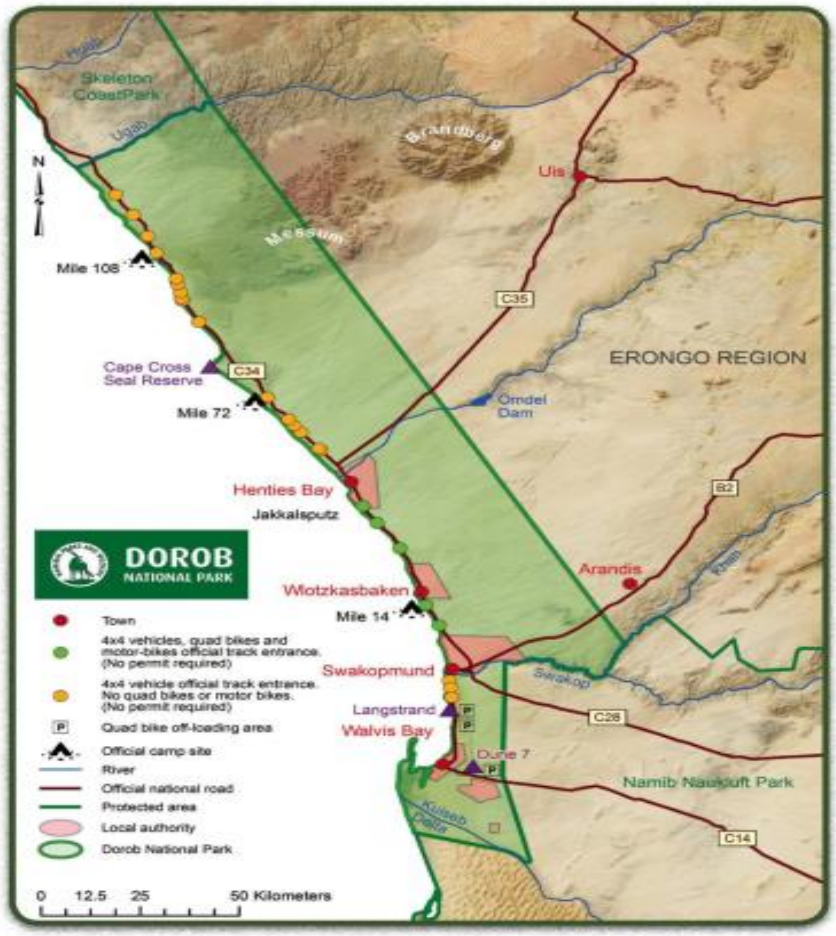


Figure 1.5 Dorob National Park

The location of the site is best appreciated in the figures below:

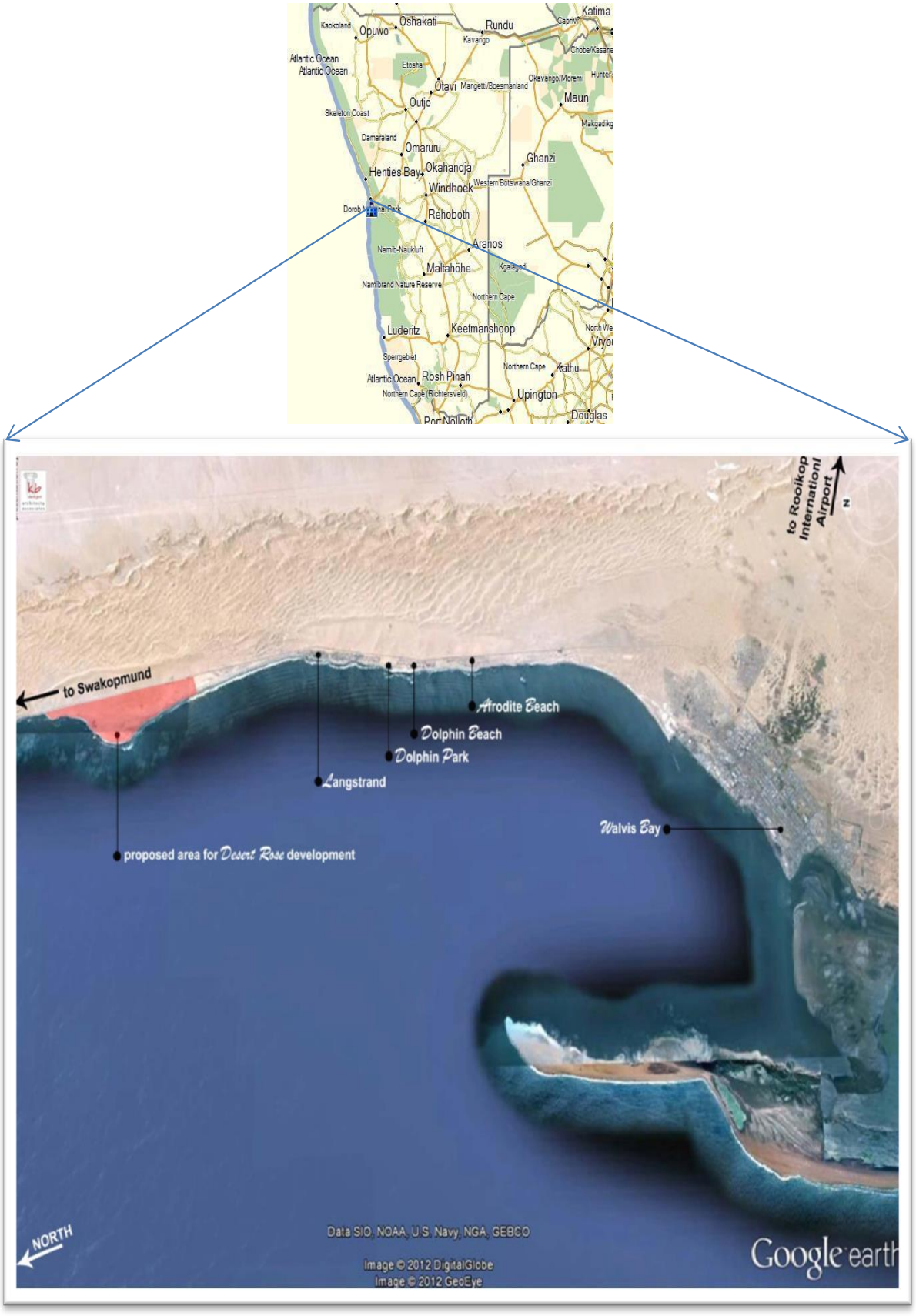


Figure 1.6 Project Site Location

Figure 1.7 Proposed Project Site

Figure 1.8 Conceptual of the Iconic Desert Rose Structure

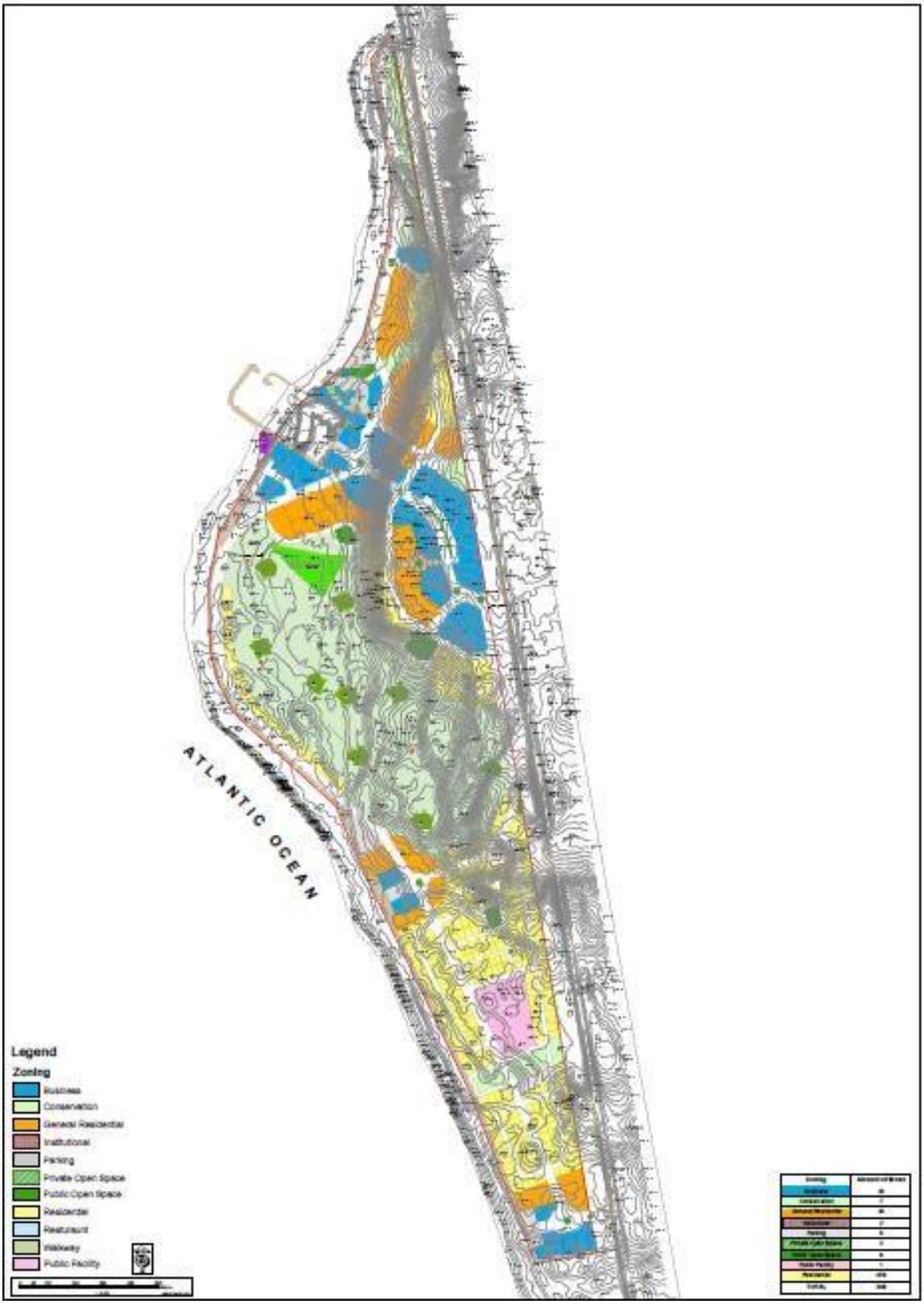


Figure 1.9 Envisaged Layout for the development.

Large sections of open spaces, which will be fenced off, has been incorporated into the layout of the development to ensure some of the natural features of the site are maintained. The layout of the development has been planned to ensure current vehicle access to the beaches and shoreline is not effected or restricted but will be properly manage and controlled by Developers.

Spring Tides along the project site coastline were also considered during the layout design to ensure all infrastructures within the development will be located at a safe distance from the shoreline. This will also ensure that biodiversity of the intertidal zone is not affected.

A large section of the development will be allocated to a golf course that will primarily consist of indigenous vegetation. It is envisaged that all the all species found within the project area should be present within the area allocated to the golf course. This will serve as zone where natural occurring vegetation is protected and the species that are supported by the vegetation as incorporated as part of the development.

Project Concept

- Mixed Use Exclusive Development – The project will consist of residential, recreational, institutional, commercial and public zonings in order to create a multi-layered network of activities supporting each other. This way the project will cater for all major levels of our society i.e. conventions, exhibitions, tourists, investors, general public, residents etc.

- Unique Environment of Namibia – The idea is to make use of the two most unique natural features of Namibia, namely the Namib Desert and the Atlantic Ocean, to showcase this national project to the international world by creating a sensitive harmony between nature and mankind.

- Accessibility of the Beach for the Public – As this pristine piece of land forms part of the local society, public access to the beach will be maintained from all areas.

- Iconic Convention and Exhibition Centre to become the Face of Namibia – Internationally these types of structures has become the symbol of a country's well-being and economic status. There are none of these iconic structures in Africa (except for the pyramids in Egypt which is only historic symbols) and Namibia should be the first to introduce this concept in Africa. This project will not only represent our economic well-being and status, but also our professional capabilities, technological advancement, political stability and international importance on a global level.

- International Significance – Namibia is in the position to contribute on an international level in terms of national governance, democracy, HIV Aids, mining, agricultural, tourism, environmental conservation, fishing, economical governance and many more. This project will address all these elements and at the same time promote Namibia on an international level.

- Close to International Airport, Harbour, Railway and Trans Kalahari Corridor –The Erongo Region has become one of the major transport hubs in not only the SADC region, but also in Africa and internationally. This is crucial to the location of a project. Thus, the project will be supported by all four major transport groups which are very essential.

- Public-Private Partnership (PPP) – This project is the ideal project for a Public Private Partnership (PPP) where all can join hands to realize a national project for Namibia, the government, local authorities and the private sector in order to showcase our ability to cooperate as a nation to the world. The NICC project itself will be divided into two elements; the NICC will be owned by the Namibian Government and developed with the assistance of the private sector, while the accommodation / hotel element of the project will be funded and developed by the private sector. The relationship in terms of the PPP applicable to the funding and management can however be established trough different scenarios. Some of these options, but not limited to, can be proposed as follows:

- Ambassador's Park – The project will have a high security profile park where ambassadors and international delegates can own residences and offices in order to represent their respective countries in Namibia.

- Site security to comply with Presidential Security Protocol – The design and layout of the project and the Convention and Exhibition Centre with hotel will comply with international and presidential security protocol to ensure the safety of any high level delegation visiting the site.

Namibia International Convention & Exhibition Centre Concept

- The Convention and Exhibition Centre with hotel will be an iconic building representing Namibia on an international level, of which the concept is unique to our country. The concept has been derived from the Namib Desert Rose, a calcite crystal that is found in the Namib Desert only and unique to this environment. These crystals have grown over many years under very rare and harsh conditions to form the most beautiful structures.

- The secondary part of the building which also accommodates the convention and exhibition space is inspired by the typical structure of the ant heap. It has been scientifically proven that the ant heap structure is one of the best natural ventilated systems to be known. The system also naturally controls temperature inside the structure through the insulation properties found in the structure. This concept is introduced in the building structure to have the same effect in order to save on energy costs associated with mechanical ventilation temperature regulation.

Project Information

Hotels

There will be three hotels within the project. The main hotel will be directly linked to the convention centre to ensure easy access for convention goers and also for security protocol. The main hotel will be a 5 star hotel which will accommodate restaurants, casino, gym, pools, health spa, shops, 120 luxury rooms, conferencing facilities, management offices, etc. The other two hotels will be 4 star hotels with similar accommodation lists as the main hotel.

Namibia International Convention and Exhibition Centre

a) Entrance hall with reception and registration area.
b) Colum free exhibition space ± 3000sqm, sub dividable into smaller venues, with height at least 8m, floor load up to 3000kg/m². Inserted patterns of trenches for water. Three phase power, data and telecommunication. Exhibition space directly linked to meeting space.
c) Marshalling yard and goods delivery space.
d) Fixed auditorium, seating 1000 people.
e) Smaller committee rooms (10 rooms ranging from 20sqm to 250sqm in size).
f) Auditoria with larger and technical facilities.
g) Lounges and foyers, sufficient public circulation space also to be used for catering purposes.
h) Banqueting hall.
i) Central kitchen facilities.
j) Coffee Shop, Business Centre, ticket desk, cloak room, restaurant.
k) Sufficient toilet facilities.
l) Storage space.
m) Building Management systems and 24 hour control rooms.
n) Secure parking.
o) Dedicated smoking areas.
p) Bus, car and taxi drop off facilities.
q) Easily accessible via an attractive route, particularly for International delegates.
r) Landscaping around the building.

Retail and Office Blocks

The town centre will accommodate a shopping mall with all necessary facilities to create a revitalizing shopping experience to any visitor. Ample parking would be available to visitors, connecting also to public transport hubs. The mall and office blocks will be developed around a plain in order to create a sense of place and orientation. The office blocks would accommodate all business sectors, government and private sector.

Gymnasium and Lifestyle Centre

The town centre will also accommodate a Lifestyle Centre with health retail facilities, spa's, gymnasium, restaurants for the client with a healthier outlook.

Single Residential Plots

Single Residential plots with sizes ranging from 700 to 1000m² will be available for purchase. These plots are situated in between the golf course and also on parts of the beach front. The plots are scattered in groups to avoid ribbon development.

General Residential Plots

These plots are situated closer to the town centre as these are more concentrated accommodation areas. The plots will be developed with either luxury apartment blocks or town house complexes.

Golf Course

An 18 hole (9 holes reversible) international class golf course will be developed in order to support the project. This will also allow for landscaping and greenery within the development to make it more pleasing and to create a contrast with the desert landscape.

Club House with Halfway Houses

A main club house with two more halfway houses will be developed within the golf course with easy access by locals, tourists and professional golf players. The club houses will offer luxury facilities associated with international class golf course estates.

Recreational Facilities

Recreational facilities will be available throughout the development such as beach bars, beach coffee shops, restaurants, cinema, jetties into the ocean, beach walkways, public swimming pool and many more. This is to ensure that a pleasant atmosphere is created for visitors to this area and also to attract even more.

Public Amenities & Recreation

A public node will also form part of the project where proper public amenities and recreation will be introduced by way of public braai facilities, ablution facilities, recreational sport areas, water park with swimming pool, restaurants and parking areas.

Marina & Yacht harbour

The project will feature a man-made inland marina with yacht harbour. The reason for an inland marina is due to the aggressive nature of the Atlantic sea current. By having an inland marina, the safety of the envisaged harbour is ensured.

Please note: *There is not clarity about the marina yet and should the marina be approved as part of the proposed development an independent consultant shall be appointed to do an impact study.*

Institutional facilities

Provision will be made to accommodate institutional facilities such as i.e. satellite university campus, hotel school, sea rescue facility and marine navigational training etc.

1.5 The purpose of the EIA process and this report

This EIA is produced in accordance with the principles of integrated environmental management, the Environmental Assessment Policy of Namibia (1995), and the Environmental Management Act , 2007 (Act 7 of 2007), namely, to:

- Better inform decision makers and promote accountability for decisions taken;
- Strive for a high degree of public participation and involvement by all sectors of the Namibian community in the Environmental Assessment process;
- Take into account the environmental costs and benefits of proposed policies, programmes and projects;
- Incorporate internationally accepted norms and standards where appropriate to Namibia;
- Take into account the secondary and cumulative environmental impacts of policies, programmes and projects;
- Promote sustainable development in Namibia, and especially ensure that a reasonable attempt is made to minimise anticipated negative impacts and maximise the benefits of all developments;
- Be flexible and dynamic, thereby adapting as new issues, information and techniques become available.

The purpose of the EIA process is to:

- Identify any interactions between the proposed activity and the environment;
- To document current environmental conditions as a baseline for future reference purposes.
- Consider which of these aspects, if any, are likely to have a significant impact on the environment; and
- Recommend measures that will enhance any positive impact and avoid any adverse negative impact, and if the latter cannot be avoided, to reduce its impact and ensure adequate protection during construction and operation of the proposed activity.

The Scoping Phase / draft EIA Report refers to the process of determining the spatial and temporal boundaries for the EIA. In broad terms, this involves three important activities:

- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope and alternatives to be covered; and
- Identify key issues to be addressed in the impact assessment phase and the approach to be followed in addressing these issues.

The Impact Assessment Phase: Prepare specialist studies, studies for the purposed development design and layout optimisation and preparation of EIA Report.

This is done through parallel processes of consulting with lead authorities that are associated with this EIA; with the public to ensure that local issues are well understood, and with the EIA specialist team to ensure that their scientific and professional expertise informs the identification of issues. The EIA process is supported by a review of relevant background literature on the local area. Through this comprehensive process, the environmental assessment can identify and focus on key issues requiring assessment and identify reasonable alternatives.

The primary objective of the Scoping Report / Draft EIA Report was to present key stakeholders (including affected organs of state) with an overview of the project and key issues that require assessment in the EIA Phase; and allow the opportunity for the identification of additional issues that may require assessment.

Due to the fact that a Scoping Report was completed by EnviroSolutions in September 2013 and the comments received by the Office of the Environmental Commissioner dated 25 February 2014 stating:

- This is to acknowledge that your Scoping Report has been received in good order. You are therefore advice to proceed towards the development of a detailed Environmental Assessment and Management Plan.

The proponent Sand Rose Investments (Pty) Ltd (Reg. No. 2013/0641) appointed National Environmental Health Consultants (NEHC) to proceed in developing a detailed EIA and EMP for the proposed development.

After the appointment of NEHC, NEHC then reassessed work done in regard to the existing Scoping Report done by EnviroSolutions in September 2013. The following needed more clarification:

- Public Participation Process “"public consultation process" means a process referred to in regulation 21, in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters;
- Define the Specialist Studies needed for this proposed project;

NEHC then completed a second Environmental Scoping Report / Draft EIA Report, incorporating above mentioned point and including specialist reports and Daft EMP. This document was placed on the web side of NEHC (www.nehc.co.za) since October 2014. All interested and or Affected Parties (I&AP’s) had direct access to this document since date of placement. The same document was then submitted to MET for final review and approval. NEHC then received two Reponses from the Office of the Environmental Commissioner dated 09 December2014 and 02 March 2015:

Date 09 December 2015:

- The Scoping report lacks(1) the CV of your Environmental Assessment Practitioner, (2) reference to EIA Regulation 2012(legal context), and (3) records an consultation e.g Swakopmund and Dorob National Parks (Section21 (b), EIA Regulation 2012)

Dated 02March 2015:

- Your scoping report provides an adequate identification of potentially significant environmental impacts. Please appreciate in your further reporting that the proposed site implies a change of the boundaries of Dorob National Park requiring Cabinets Approval and gazetting the new boundary. Further, you consider the legal constraint for activities in protected areas as per Nature Conservation Ordinance 4 of 1975, section 14(1) and DOROB np Regulation 1.
- Your single site proposal within the Dorob National Park, including breeding and feeding areas of legally protected species as well as an Important Bird Area needs explicit justification. You are kindly advice to proceed with the identification and assessment of alternatives (EIA Regulations; paragraph 15(2): (d) and (f) and the preparation of an Environmental Management Plan (EMP). The EMP should include compensation measures for immitigable impact. Please provide in your EIA report alternative design maps of associated infrastructure including, but not limited to, access roads, water [power supply infrastructure, sewage, parking, fence, golf course, public beach access road, marina and nature reserves on the premises, if any.

- Please be kindly advised that the mandatory public consultation for EIA should be interpreted as public hearing at a public venue.

After receiving above mentioned feedback from MET, NEHC then started to address shortcomings and started compiling the Final Environmental Assessment Report (FEIAR) Final Environmental Management Report (FEMP).

1.6 Structure of this report

Chapter 1 of this Final EIA Report presents the need for the project and the requirement for an EIA to be conducted. **Chapter 2** outlines the relevant environmental legislation that applies to this project, and the approach and methods used in the EIA and public participation**. Chapter 3** provides an overview of the proposed project. The affected environment is described in **Chapter 4,** in order to assist stakeholders in identifying potential impacts that could arise from the project. A summary of the issues identified to date from the Scoping process is provided in **Chapter 5. Chapter 6** presents the plan of study for the EIA phase, in the Scoping Report, listing the summary of key issues that were addressed in the EIA process. Lastly, a Bibliography used in preparing this report is provided in **Chapter 7.**

Appendices at the end of this report provide copies of newspaper advertisements regarding the EIA process, an issues trail with responses to the issues from the EIA team, records of correspondence and notes from meetings with stakeholders, and comments received from I&AP's.

1.7 Comment on the draft Scoping Report

As part of the EIA process all Interested and Affected Parties were invited to provide comment on the Draft Scoping Report / Draft EIA Report. The comments period for this report was from 20 May 2014 to 10 June 2014. All comments received have been responded to and are included in Appendix J.

Comments were submitted to the following address:

Felecia Schoeman
E-mail: legal@nehc.co.za
Swakopmund
Tel: 264 64 404 146
Fax: 264 64 404 179

2 DESCRIPTION OF THE EIA PROCESS

Regulatory Agencies

The relevant regulatory agencies guarding or implementing the relevant environmental regulations are listed as follows:

Table 2.1 Government agencies regulating environmental protection in Namibia.

REGULATING AGENCY	ROLE IN REGULATING ENVIRONMENTAL PROTECTION
Ministry of Environment and Tourism (MET)	MET is the lead government agency charged with Environmental Monitoring, Assessment and Management. The mission of MET is to maintain and rehabilitate essential ecological processes and life-supported life-support systems, to conserve biological diversity and to ensure that the utilization of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as the international community, as provided for in the Constitution. MET lays a foundations to implementation and promulgation of regulations relevant to this project including; the Environmental Act no7. Of 2007, The MET plays an important role in approval of Environmental Impact Assessments (EIAs) which are prepared under Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1995). Provisions in other line ministries' legislation (strengthens MET's position.

Environmental Management Requirements

2.1 Policy and statutory framework

The Government of the Republic of Namibia wants to ensure that the aims and objectives of sustainable development are achieved and maintained. Policies and statutes, and structures within Ministries, such as the Directorate of Environmental Affairs in the Ministry of the Environment and Tourism, have been established to deal with environmental issues.

2.1.1 The Constitution of the Republic of Namibia (1990)

Article 95 (1) of the Constitution provides that

> "…the State shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at.... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of natural resources on a sustainable basis for the benefit of all Namibians both present and future; in particular the Government shall provide measures against dumping or recycling of foreign nuclear and toxic waste on Namibian Territory."

Article 101 of the Namibian Constitution further states that the principles embodied within the constitution

> "shall not of and by themselves be legally enforceable by any court, but shall nevertheless guide the Government in making and applying laws .... The courts are entitled to have regard to the said principles in interpreting any laws based on them."

The Environmental Management Act (EMA) No.7 of 2007 and the Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1995) set the guiding policy/ legal framework for environmental management in Namibia. The intended activity is listed under the EMA regulation of 2012. Section 5 **LAND USE DEVELOPMENT ACTIVITIES** states that an environmental assessment is required.

These instruments make it mandatory for any proposed development to be subjected to an Environmental Assessment procedure. Both promote sustainable development and economic growth while safeguarding the environment in the long run. The figure below illustrates the Environmental Assessment process in Namibia.

2.1.2 National Policies

In 1992, Namibia's Green Plan was formally tabled at the United Nations Conference on Environment and Development ("Earth Summit") in Rio de Janeiro, on behalf of the Republic of Namibia. It created a national common vision around its environmental issues, priorities and future actions, and drew together government, non-government organisations (NGOs), private sector and civil society towards a common future. The Green Plan led to Namibia's 12-Point Plan for Integrated and Sustainable Environmental

Management in 1993, which was incorporated into the first 5-year National Development Plan (NDP1), 1994/5 – 1999/2000.

2.1.2.1 Vision 2030: Third National Development Plan of Namibia, 2006/7 – 20011/12

President Hifikepunye Pohamba launched the ambitious Third National Development Plan (NDP3) on 26 November 2008, which requires investments of N$60 billion over the next five years until March 2012. The broad thrusts and goals of the NDP3 are derived from the Vision 2030, the 2004 SWAPO Party Manifesto, the directions from the November 2005 Cabinet Retreat, the Millennium Declaration, and the lessons learned from implementing the NDP2. Vision 2030 states that:

> "The nation shall develop its natural capital for the benefit of its social, economic and ecological well-being by adopting strategies that: promote the sustainable, equitable and efficient use of natural resources; maximize Namibia's comparative advantages; and reduce all inappropriate use of resources. However, natural resources alone cannot sustain Namibia's long-term development, and the nation must diversify its economy and livelihood strategies."

2.1.2.2 Environmental Assessment Policy, 1995

The Cabinet of the government of Namibia approved the Environmental Assessment (EA) Policy in August 1994, published as "Environmental Assessment Policy for Sustainable Development and Environmental Conservation, January 1995". It provides that all policies, projects and programmes should be subjected to EA procedures, regardless of where these originate. These procedures must aim for a high degree of public participation, and consider the environmental costs and benefits of projects proposed. Policies, areas and activities that may have significant environmental effects are specified. In line with best practice, EAs are conducted at an early phase of project development, allowing for identification and avoidance of adverse impacts.

The Policy provides that once a project has been approved, the proponent (both Government and private enterprise) shall enter into a binding agreement based on the procedures and recommendations in the EA report for construction, operational and decommissioning phases, as well as monitoring and auditing. This ensures that mitigation and other measures recommended in the EA, and accepted by all parties, are complied with.

The Policy contains two appendices. Appendix A explains the EA procedure that should be followed, Appendix B contains the listed activities that require an EA. These include ports and harbours (activity 24), and waste disposal (activity 50) that includes land and sea disposal of harbour sediment.

The Environmental Management Act 7 of 2007 supports this policy, and is discussed later in this chapter.

2.1.2.3 *Green Paper: Coastal Policy for Namibia (Feb 2009)*

The Green Paper sets the overall framework for development in the coastal area. This will be used to draft Coastal Policy in the form of a White paper, with the final Namibian Coastal Policy planned to be completed by 2011. This will be followed by an Integrated Coastal Area Act to replace the outdated Sea Shore Ordinance (1958) referred to later in this chapter. The coastal policy process does not impact on the project at this time, but its general tenor should serve as a guideline.

2.1.2.4 *Draft Wetland Policy of 2003*

Statutory measures for the management of wetlands include the Aquaculture Act 18 of 2002, Inland Fisheries Resources Act 1 of 2003, the Water Resources Management Act 24 of 2004, the Environmental Management Act of 2007, the Parks and Wildlife Management Bill, and the Ramsar Convention.

The Wetland Policy of 2003 aims to integrate sustainable management into decision-making at all levels by stating that:

> "Namibia shall manage national and shared wetlands wisely by protecting their biodiversity, vital ecological functions and life support systems for the current and future benefit of people's welfare, livelihoods and socio-economic development."

The objectives of the policy are to:

- Protect and conserve wetland diversity and ecosystem functioning without compromising human needs;
- Promote the integration of wetland management into other sector policies; and
- Recognise and fulfil Namibia's international and regional obligations concerning wetlands, including those laid down in the Ramsar Convention and the SADC Protocol on Shared Water Systems.

2.1.2.5 The National Environmental Health Policy

Throughout construction, implementation and decommissioning of any of its components, operations must be guided by the aim of this Policy, which includes the following:

- Facilitate the improvement of the living and working environments of all Namibians, through pro-active preventative means, health education and promotion and control of environmental health standards and risks that could result in ill-health; and
- Ensure provision of a pro-active and accessible integrated and co-ordinated environmental health services at national, regional, district and local levels.

2.1.3 National statutes

Promulgated statutes as well as proposed Bills are discussed in this section.

GOVERNMENT GAZETTE OF THE REPUBLIC OF NAMIBIA, Government NOTICES, dated 06 February 2012 number 4878.

- No. 28 Commencement of the Environmental Management Act, 2007,
- No. 29 List of activities that may not be undertaken without Environmental Clearance Certificate: Environmental Management Act, 2007,
- No. 30 Environmental Impact Assessment Regulations: Environmental Management Act, 2007

2.1.3.1 *Environmental Management Act 7 of 2007*

The Environmental Management Act (2007) (EMA) was promulgated in December 2007 and will be administered by the Directorate of Environmental Affairs (DEA), under the auspices of the Ministry of the Environment and Tourism. It has not commenced yet. Its main objectives are to ensure that:

- Significant effects of activities on the environment are considered carefully and timeously;
- There are opportunities for timeous participation by interested and affected parties throughout the assessment process; and
- Findings are taken into account before any decision is made in respect of activities.

Section 3(2) provides a set of principles which give effect to the provisions of the Constitution for integrated environmental management. Decision makers must take these principles into account when deciding on the approval of a project.

Schedule 1 specifies a list of 35 activities that require an EIA, broadly grouped as follows:

- Construction and related activities that include roads, dams, factories, pipelines and other infrastructure;
- Land-use planning and development activities that include rezoning and land-use changes;
- Resource extraction, manipulation, conservation and related activities, such as mining and water abstraction; and
- Other activities such as pest-control programmes.

The Act promotes public participation, and makes provision for external review by the Environmental Commissioner, where required, at the proponent's expense.

The Minister may, on the recommendation of an Advisory Council, make regulations that include:

- Disposal of certain types of waste;
- Requirements for listing or delisting of projects in Schedule 1, and what constitutes a project for purposes of listing or delisting, in terms of size, production or storage capacity, timing, geographical location, potential for significant effects, type of industry to which the projects are related, and type of proponent;
- Form and content of an application, for environmental clearance certificate;
- Fees payable for any application made in terms of this Act;
- The assessment process, the form and content of an assessment report; and
- The procedure and time limits within which organs of state must do anything required to be done in terms of this Act.

Contravention of the Act, or failure to comply with any provision in the Act, may incur a penalty not exceeding a fine of N$ 500,000.00 or imprisonment for a period not exceeding 25 years or to both such fine and imprisonment.

2.1.3.2 The Water Resources Management Act 24 of 2004

This Act is administered by the Department of Water Affairs, Ministry of Agriculture, Water and Forestry (MAWF), and came into operation on 8 December 2004. It repeals the Water Act of 1956. Its objective is to ensure that Namibia's water resources are managed, developed, protected, conserved and used in ways which are consistent with or conducive to fundamental principles set out in section 3 of the Act.

2.1.3.3 The Marine Resources Act 27 of 2000

The Act provides for the conservation of the marine ecosystem; for the responsible utilisation, conservation, protection and promotion of marine resources on a sustainable basis; and for the control of marine resources for these purposes. It replaces the Sea Fisheries Act 29 of 1992, which in turn replaced the Sea Fisheries Act 58 of 1973. The Sea Fisheries Act dealt mainly with:

- Dumping at sea;
- Discharge of wastes in marine reserves;
- Disturbance of rock lobsters, marine invertebrates or aquatic plants; and
- Areas in which catching/disturbing fish or aquatic plants or disturbing/damaging the seabed are prohibited.

It also replaces the Sea Birds and Seals Protection Act 46 of 1973. The Act commenced on 1 August 2001. Regulations made under previous legislation remain in force, in terms of section 64(2) of the Act.

2.1.3.4 Labour Act of 1992: Regulations for the Health and Safety of Employees at Work

The Regulations relating to Health and Safety at the Workplace in terms of the Labour Act 6 of 1992 came into force on 31 July 1997. These regulations prescribe conditions at the workplace, and inter alia deal with the following:

- Welfare and facilities at work-places, including lighting, floor space, ventilation, sanitary and washing facilities, usage and storage of volatile flammable substances, fire precautions, etc.;
- Safety of machinery;
- Hazardous Substances including precautionary measures related to their transport, labelling, storage, and handling. Exposure limits, monitoring requirements, and record keeping are also covered;
- Physical hazards including noise, vibration, ionising radiation, non-ionizing radiation, thermal requirements, illumination, windows and ventilation;
- Requirements for protective equipment;
- Emergency arrangements;
- Construction safety; and
- Electrical safety.

The new Labour Act 11 of 2007 commenced on 31 December 2007.

Chapter 5 of the Health and Safety Regulations under the Labour Act covers hazardous substances including transport, handling and storage. The supplier and transporter of hazardous substances must ensure that the marking, labelling and storage of hazardous substances for safe transport, especially the labelling of the transport vehicle and the storage of the hazardous substances during transport, must be in accordance with existing legislation, or where such legislation is not in place, in accordance with the recommendations on the transporting of hazardous substances or dangerous goods made by the United Nations (Section 177).

Of relevance to the intended construction activities is that hazardous substances that are kept onsite should be stored in such a manner that they do not create a risk to the health and safety of employees or other people, nor any risk of contamination of the environment, due to seeping, leaking, fire or accidental release (Section 182(1)). Areas designated for storage of hazardous substances must be isolated from other activities and be clearly marked with appropriate warning signs (Section 182(2)).

Hazardous waste and deposits must be removed at intervals and by methods appropriate to the type of hazard, which they constitute (Section 183(1)). Contaminants collected must be disposed of without risk to the health of any person or to the environment, and according to the applicable statutory provisions and regulations (Section 183(2)).

2.1.3.5 Nature Conservation Ordinance 4 of 1975 (as amended 1996)

The Nature Conservation Ordinance deals with *in situ* and *ex situ* conservation by providing for the declaration of protected habitats as national parks and reserves, and for the protection of scheduled species wherever they occur. It regulates hunting and harvesting, possession of, and trade in listed species.

2.1.3.6 Atmospheric Pollution Prevention Ordinance 11 of 1976

The Ordinance provision on air pollution is administered by the Namibian Ministry of Health. In terms of Section 5 any person carrying on a "scheduled process" within a "controlled area" has to obtain a registration certificate from the administering authority, in this case the Department of Health. The Act lists 72 processes in Schedule 2 which must be registered and a registration certificate (air pollution permit) obtained.

Air pollution is controlled primarily by the Atmospheric Pollution Prevention Ordinance (11 of 1976). This Ordinance generally provides for the prevention of the pollution of the atmosphere.

Part IV of this ordinance deals with dust control. The Ordinance is clear in requiring that any person carrying out an industrial process which is liable to cause a nuisance to persons residing in the vicinity or to cause dust pollution to the atmosphere, shall take the prescribed steps or, where no steps have been prescribed, to adopt the best practicable means for preventing such dust from becoming dispersed and causing a nuisance.

2.1.3.7 Petroleum Products and Energy Amendment Act of 2000

The Act grants more comprehensive powers to the Minister of Mines and Energy to make regulations, provide for reasonable and just contractual rules and principles in the petroleum industry, and for increased penalties for contravention in certain cases of the regulations and the Act. In particular, in terms of Section 2A(1)(h) the Minister may regulate

> "the cleaning-up of petroleum product spills, leaks and other accidents or incidents relating thereto, and the insurance and recovery of costs in respect thereof;"

2.1.3.8 Legislation related to soil conservation

The objectives of the Soil conservation Act 76, 1969 are to make provision for the combating and prevention of soil erosion, and for the conservation, protection and improvement of the soil, the vegetation and the sources and resources of the water supplies.

Part II, deals with soil conservation works and it further states that in section 4(1) The Minister may by means of a direction order the owner of land to construct the soil conservation works referred to in such direction either on land belonging to such owner or on land belonging to another person, in such manner and within such period as may be mentioned in such direction, if the Minister is of the opinion that the construction of such soil conservation works is necessary in order to achieve any object of this Act in respect of the land belonging to such owner.

2.1.3.9 Legislation related to effluent and waste water disposal

It is not clear which of the two local authorities will be responsible to ensure that effluent discharge from the development is in compliance with The Model Drainage Regulations, 1996, which states the following:

Connection to public sewer

Until a drainage installation has been connected to the public sewer, no person shall discharge or cause to discharge any substance expect unpolluted water for the purpose of testing the function of the drainage installation or any part thereof during or upon completion construction. Application must be made to the local council to connect to public sewer and may have restriction in terms of peak sewage flow. Alternatively a sewage treatment work may be constructed.

Sewage or other prohibited discharges not to enter storm water drains or roads

The occupier of any premises shall provide for facilities necessary to prevent any discharge, leakage or escape of such hazardous liquids onto any street or any premises or into any storm water drains or watercourse. No person shall cause or permit any storm water to enter any drainage installation on any premises.

Control of industrial effluents

No person shall discharge or cause or permit to be discharged into any public sewer any industrial effluent or any other liquid or hazardous substance, other than soil water or wastewater. Any occupier of a premise from which industrial effluent is discharged into a public sewer, shall: provide overflow detection devices, pre-treatment where necessary to comply with regulations and ensure that no prohibited discharges enter into public sewer systems. Application to discharge effluent into public sewer prohibited substances is listed under the regulations.

2.1.3.10 Legislation related to water quality and resources

The Water Resources Management Act (Act 24 of 2004) governs the quality of both fresh- and seawater used for industrial purposes. Restrictions imposed on users are as follows:

- any water used for industrial purposes must be purified to standards prescribed by the Minister. purified or treated effluent must be returned to the source from which it was originally drawn. This may, however, be changed subject to ministerial intervention.
- inspections may be carried out at any time by the Department for Water Affairs (or a nominee). The Secretary has the power to suspend or restrict operations which may be causing water pollution and to impose certain conditions on the offender.

2.1.3.11 Hazardous Substances Ordinance 14 of 1974, and amendments

This ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export.

2.1.3.12 Draft Pollution Control and Waste Management Bill (1999)

The Bill amalgamates a variety of Acts and Ordinances that provide protection for particular species, resources or components of the environment. These include, but are not limited to, the Nature Conservation Ordinance No.4 of 1975, the Sea Fisheries Act 29 of 1992, the Sea Birds and Seals Protection Act 46 of 1973, Seashore Ordinance No. 37 of 1958, Hazardous Substances Ordinance No. 14 of 1974 and amendments, the Namibia Ports Authority Act 2 of 1994, and the Atmospheric Pollution Prevention Ordinance No. 11 of 1976.

2.1.3.13 International Conventions and Protocols

Multilateral environmental agreements that are most relevant for the project are discussed in the sections that follow.

2.1.3.14 The Stockholm Declaration on the Human Environment, Stockholm 1972

The United Nations Conference on the Human Environment, which led to the Stockholm Declaration on 16 June 1972, aimed to provide “a common outlook and common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment” (UNEP 1972). Namibia adopted the Stockholm Declaration on the Human Environment on 28 August 1996; it includes

- Principle 2. The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate
- Principle 4. Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development.
- Principle 7. States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

2.1.3.15 Convention on Biological Diversity, Rio de Janeiro, 1992

Namibia signed the Convention on Biological Diversity (CBD) on 12 June 1992 in Rio de Janeiro, at the United Nations Conference on Environment and Development, and ratified it on 18 March 1997. Namibia is accordingly now obliged under international law to ensure that its domestic legislation conforms to the CBD’s objectives and obligations. Article 14 requires each contracting party to carry out EIAs for projects that are likely to adversely affect biological diversity. It further requires that the EIA be aimed at avoiding or minimising such effects and, where appropriate, allow for public participation in the assessment.

2.1.3.16 Ramsar Convention (1971)

Wetlands are among the world's most productive environments, on which large numbers of plant and animal species depend for survival. They are also among the world's most threatened ecosystems.

The Ramsar Convention is, more properly, *The Convention on Wetlands of International Importance especially as Waterfowl Habitat*. It was adopted in 1971 at a conference held in Ramsar, Iran, and entered into force in December 1975. It covers all aspects of wetland conservation and wise use, with three main focus areas:

- Designation of wetlands of international importance as Ramsar sites;
- Promotion of wise-use of all wetlands in the territory of each country; and
- International co-operation with other countries to further the wise-use of wetlands and their resources.

2.1.3.17 Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals was concluded in Bonn, Germany, in 1979. It is usually referred to as the CMS, or the Bonn Convention. It covers migratory species, including whole populations or geographically separated populations. Contracting Parties to the Convention must:

- Prohibit the killing or other taking of any endangered migratory species that occur in their territories, conserve and restore important habitats, eliminate impeding activities or obstacles to migration, and tackle other factors that endanger them. These species are listed in Appendix I of the Convention, and include the Blue Whale *Balaenoptera musculus*, Over 60 birds are included, from albatrosses to warblers.
- Parties must endeavour to conclude Agreements with other states for a list of species appearing on Appendix II. These species are not threatened, but they would benefit from international co-operation.

Namibia has not signed nor ratified the CMS, but it monitors and implements its main provisions through national programmes that support the CBD and Ramsar Convention.

2.1.3.18 Agenda 21

Agenda 21 was adopted by the United Nations Conference on Environment and Development, also known as the Earth Summit, on 14 June 1992, in Rio de Janeiro, Brazil. It is a comprehensive 700-page global plan of action for the 21st century, representing the consensus reached by 178 States. The programme should be studied in conjunction with the Rio Declaration on Environment and Development and the principles for the sustainable management of forests. These were also adopted at the Conference.

Agenda 21 addresses critical issues such as continuing damage to ecosystems, the worsening of poverty, hunger and ill health, increasing world population and illiteracy. It contains 40 chapters that propose solutions to specific challenges.

2.1.4 International Standards and Guidelines

In addition to the regional, national and international legislative requirements, there are international standards, protocols and guidelines that are applicable as best practice.

- The International Finance Corporation (IFC), a member of the World Bank Group, has developed operational policies that, *inter alia*, require an impact assessment to be undertaken within the country's overall policy framework and national legislation, as well as international treaties, and that natural and social aspects are to be considered in an integrated way. IFC in 2007 published Environmental, Health, and Safety Guidelines (known as the 'EHS Guidelines') containing guidelines and standards that are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The objective is to avoid and minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. It outlines a project approach to pollution prevention and abatement in line with internationally disseminated pollution prevention and control technologies and practices. Other institutions, such as the European Bank for Reconstruction and Development (EBRD) and the Japan International Cooperation Agency (JICA), have similar guidelines and standards for EIAs. In terms of JICA's environmental guidelines, for example, the proposed terminal expansion is classed as a Category A project because of its proximity to a lagoon that is protected under the Ramsar Convention.

- The Rio Declaration of 1992 on Environment and Development calls for the use of EIA as an instrument of national decision making (Principle 17), and establishes important principles for sustainable development that should be reflected in EIAs, such as the application of the precautionary principle (Principle 15).

2.1.5 Water Quality Guidelines

The Water Resources Management Act 24 of 2004 does not contain any target values for water quality. South Africa is the only southern African country that currently has an official set of water quality guidelines for coastal marine waters. Environmental quality objectives for the marine environment are based on the requirements of the site-specific marine ecosystems, as well as other designated beneficial uses (both existing and future) of the receiving environment. To ensure that environmental quality objectives are practical and effective management tools, they need to be set in terms of measurable target values, or ranges for specific water column and sediment parameters, or in terms of the abundance and diversity of biotic components. The South African Water Quality Guidelines for Coastal Marine Waters (DWAF, 1995) provide recommended target values (as opposed to standards) for a range of substances, but these are not exhaustive. This must be supported by published literature and best available international guidelines, such as target values reviewed and summarized in the Benguela Current Large Marine Ecosystem (BCLME) document on water quality guidelines for the BCLME region (CSIR 2006).

Other Specific Legislation

Nature Conservation legislation

Nature Conservation Ordinance amendment Act, Act 5 of 1996 progressed from the old South African Nature Conservation Ordinance, Ordinance 4 of 1975. The Amendment act provides for community based natural resource management. The Draft Parks and Wildlife Management Bill is anticipated to replace the Nature Conservation Ordinance amendment Act, Act 5 of 1996. The state protected areas are governed by the amended act.

Tourism

The National Policy on Tourism for Namibia, 2008 aims to provide a framework for the mobilisation of tourism resources to realise long term national goals defined in Vision 2030 and specific targets of the NDP3, namely, sustained economic growth, employment creation, reduced inequalities in income, gender as well as between the various regions, reduced poverty and the promotion of economic empowerment.

National Heritage Act

The National Heritage Act provides for the preservation and registration of places and objects of national significance. Moreover, it establishes a National Heritage Council and a National Heritage Register.

Water Resource Management and Regulations

The Water Act, Act No. 54 of 1956 inherited from South Africa is still in force because the National Water Resource Act, Act No. 24 of 2004 is not yet promulgated. The Act makes provision for a number of functions pertaining to control and use of water resources, water supply and protection of water resources. Once the National Water Act of 2004 is promulgated it will provide specific procedures for water abstraction permitting that are much more adapted to Namibia's climate and geohydrology than the Water Act of 1956.

2.2 Terms of Reference for the EIA

NEHC were appointed by Sand Rose Development (Pty) Ltd to undertake this EIA.

It is expected from the consultant NEHC to conduct or carry out a complete Environmental Impact Assessment Study which includes setting up a detailed Environmental Management Plan for the specific Project: Sand Rose Project (Pty) Ltd.

2.3 EIA procedure

This EIA is produced in accordance with the principles of integrated environmental management, the Environmental Assessment Policy of Namibia (1995), and the Environmental Management Act, 2007 (Act 7 of 2007), namely, to:

- Better inform decision makers and promote accountability for decisions taken;
- Strive for a high degree of public participation and involvement by all sectors of the Namibian community in the Environmental Assessment process;
- Take into account the environmental costs and benefits of proposed policies, programmes and projects;
- Incorporate internationally accepted norms and standards where appropriate to Namibia;
- Take into account the secondary and cumulative environmental impacts of policies, programmes and projects;
- Promote sustainable development in Namibia, and especially ensure that a reasonable attempt is made to minimise anticipated negative impacts and maximise the benefits of all developments;
- Be flexible and dynamic, thereby adapting as new issues, information and techniques become available.

The EIA process consists of overlapping, interactive “streams”:

- A central assessment process involving NEHC where inputs are integrated and presented in documents that are submitted for approval by the authorities;
- A public participation process which facilitates communication between the project proponent, NEHC team and wider public;
- An authority process that interacts with the central process.

The proposed EIA process is illustrated in Figures 2.2 and 2.3 that follow.

The EIA consists of the following steps:

Project inception

- Meetings, Site visits
- Project registration with MET.
- Compile Draft Scoping Report EnviroSolutions Sep 2013

2. Scoping phase

- Advertising and site notices
- Identification of Interested and Affected Parties (I&APs)
- Announcement of EIA Process and Identification of Issues
- Identify specialist studies for purposed development.

3. Impact assessment phase

- Prepare specialist studies
- Studies for purposed development design and layout optimisation
- Preparation of EIA Report

4. Environmental Management Plan (EMP)

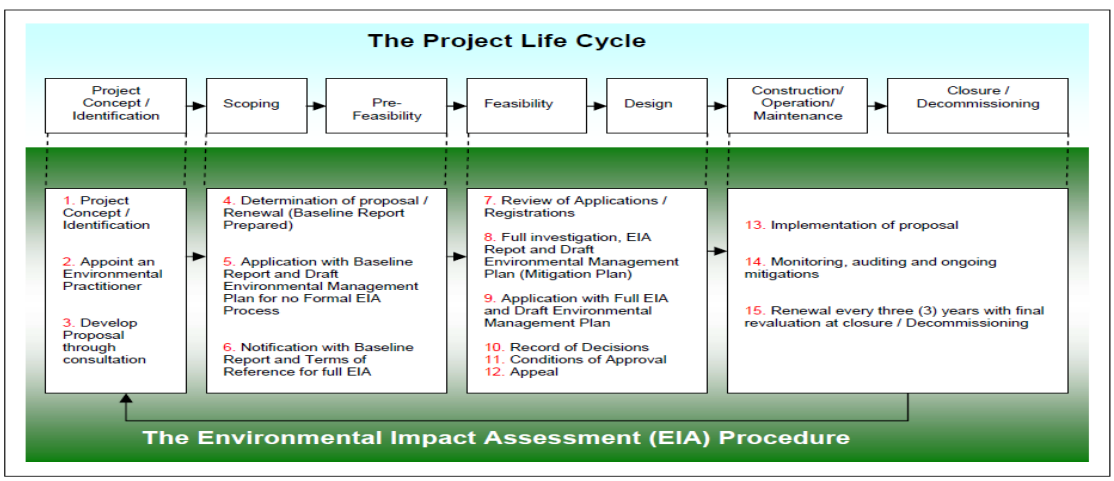


Figure 2.1 Project life cycle

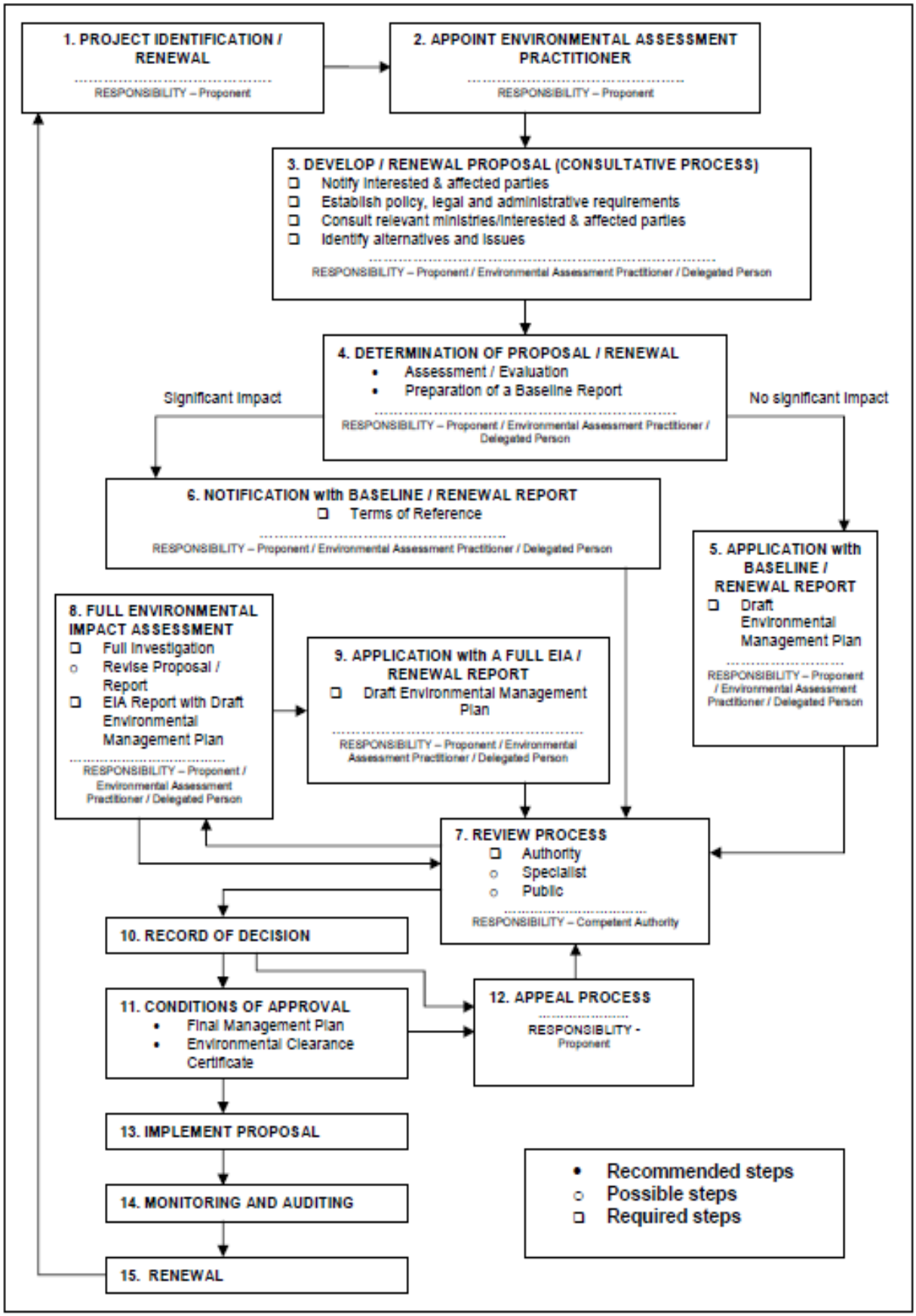


Figure 2.2 EIA process: EIR and EMP phase

2.3.1 Public participation programme (stakeholder engagement)

The public participation programme (PPP) is an integral part of the EIA process, and continues throughout this process. By its very nature, it is a dynamic process where different societal needs, values and interests must be recognised and managed. This requires that public participation provide the opportunity for participation in an open and transparent manner. The fact that Interested and Affected Parties (I&APs) do not always agree is acknowledged and accommodated in the process.

The objectives of the public participation process are to:

- Build credibility through instilling confidence in the integrity and independence of the team conducting the EIA.
- Educate the stakeholders on the process to be undertaken and opportunities for their involvement.
- Empower stakeholders through establishing an agreed framework according to which the process will be conducted. This requires accessible, fair, transparent and constructive participation at every stage of the process.
- Inform stakeholders on the proposed project and associated issues, impacts and mitigation, using the most effective manner to disseminate information.

2.3.2 Scoping phase

The Scoping process is intended to provide sufficient information for the authorities to be assured about the scope of issues to be addressed in this EIA process and to identify specialist studies to be included as part of the Environmental Impact Reporting Phase of the EIA, as well as the approach to these studies.

The objectives for this Scoping process are to:

- Identify and inform all stakeholders about the proposed development;
- Clarify the scope and nature of the proposed activities and the alternatives being considered;
- Conduct an open, participatory and transparent approach to facilitate the inclusion of stakeholder concerns in the decision-making process;
- Identify and document the key issues to be addressed in the forthcoming Environmental Impact Reporting Phase of the EIA;
- Ensure due consideration of alternative options in regard to the proposed development, including the “No development/No Go” option.

The following outcomes should follow the conclusion of the Scoping process:

- *Stakeholders* have been effectively identified and incorporated into the scoping process;
- *Alternatives* for achieving the objectives of the proposed activity have been given due consideration;
- *Closure* has been reached on the significant issues to be addressed;
- The *roles* and *responsibilities* of various stakeholders in the process have been clarified;
- All participants have *agreed* on the process to be followed;
- *Adequate terms of reference for specialist investigations that were highlighted by I&A Parties.*

2.3.3 Tasks for the Scoping process

The following tasks have been undertaken, or are still in progress:

- **Compile Background Information Document (BID)**
  A Background Information Document (BID) was distributed on request by I&A Parties. As the name implies, it provides a description of the proposed project, and the project proponent. The BID is intended both to encourage interest in the project and provide adequate information for stakeholders to start identifying issues and possible concerns regarding the proposed activity.

- **Identification of Interested and Affected Parties (I&APs)**
  The public participation activities to be undertaken for this EIA process are integrated into the overall approach to the EIA. Public Notice Boards were placed on proposed site and advertise in Local Newspapers. Key Stake holders were identified. Notices were given to relevant Authorities. The newspaper advertisements that requested I&AP’s to register for the EIA supplemented this database, which were updated up until closing date 10 June 2014.

- **Announcement of EIA Process**
  The start of the EIA process was announced publicly through placement of newspaper adverts and distribution of notices as indicated as above and placement of site notice boards. Advertisements

requesting I&AP's to register their interest in the project were placed in the *Namib Times* (local newspaper), the *Republikein* and the Independent *Namibian*, as detailed in Table 2.

- *Identification of issues and concerns*
  A first round of public consultation was ended by closing of 10 June 2014. I&AP's, Registration Period.

  Issues and concerns raised by I&AP's have been integrated into an Issues and Response Trail (Appendix G) that have been identified through:
  - Written submissions and telecommunication in response to invitations to comment;
  - Meetings with applicable Authorities,

  In the interest and concerns, responses and clarification are provided where possible, or deferred to the Environmental Impact Report phase for resolution.

- **Preparation of Draft Scoping Report**
  This Draft Scoping Report concludes the consultation process for the scope of the EIA.

Table 2.2 Media announcements at the commencement of the EIA process

Newspaper	Area of distribution	Language	Date placed
Namib Times	Coastal. Limited number of copies available nationally	English	20 May 2014 27May 2014
Namib Independent	National	English	29 May 2014
Republikein	National	Afrikaans	20 May 2014
Additional sources			
Notice Boards	On site	English	20 May 2014 – 10 June 2014

- **Final Scoping Report**
  On the basis of the public review, this Final Scoping Report (FSR) was submitted to the lead authority (MET) Oct 2014.

2.3.4 Impact assessment phase

2.3.4.1 Finalise specialist terms of reference

The Scoping Report presents a Plan of Study for the EIA, which has detailed Terms of Reference for the specialist studies, and any additional issues that need to be taken account of by the design and optimisation studies.

2.3.4.2 Prepare draft specialist studies

Specialists will conduct their specialist studies to address issues and concerns and other requirements that emerge from the Scoping process. Any findings relevant to the design and optimisation studies will be passed over to those specialists also. The potential risks and associated impacts of various environmental factors of the proposed new development project will be assessed in the EIA for both construction and operations. If unacceptable changes are determined, modifications to the terminal layout or mitigating measures shall be investigated for optimised solutions, so that the impacts on the environment are reduced to acceptable levels.

2.3.4.3 EIA Report

EIA Report was compiled on the basis of the specialist and design and optimization studies. In broad terms this report include the following structure:

- Introduction
- Approach and methodology for the EIA
- Legal and Planning framework
- Description of project and alternatives
- Description of affected biophysical and socio-economic environments
- Public issues and concerns
- Impact assessment

- Recommended management actions
- Conclusions
- Supporting information.

2.3.4.4 Specialist studies, EIA Report and EMPs in the public domain

The draft specialist study, Draft EIA Report and EMP was placed in the public domain (NEHC's web site www.nehc.co.za) for review. In addition to the availability of the reports in the public domain, meetings and presentations to the authorities was also used to solicit further comment on the documents.

A Comments and Response Trail was formulated to detail how the comments raised by I&APs have been addressed in the EIA Report. The Comments and Response Trail will be included in a Final EIA Report along with an outline of the process implemented, database of I&APs and record of proceedings for the EIA phase of the Project.

- **Preparation of EIA Report**

  This EIA Report concludes the consultation process for the scope of the EIA.

Table 2.3 Media announcements at the commencement of the EIA process

Newspaper	Area of distribution	Language	Date placed
Namib Times	Coastal. Limited number of copies available nationally	English	28 July 2015 04 August 2015
The Namibian	National	English	27 July 2015 03 August 2015
Additional sources			
Notice Boards	At Kuisebmond Community Hall, Diamond Street Walvis Bay	English	05 August 2015

- **Final EIA Report**

  On the basis of the public review, the Final EIA Report will be submitted to the lead authority (MET) October 2015.

2.3.4.5 Environmental Management Plan (EMP)

In parallel to the drafting of the EIA Report, a stand-alone EMP Report will be compiled for the construction and operation phases. The EMP Report will be practical and effective, based on the environmental management philosophy of the ISO 14001 Environmental Management Systems standard and will thus be structured to define an environmental policy, planning, implementation and operation, checking and corrective action and management review (see Figure 2.5).

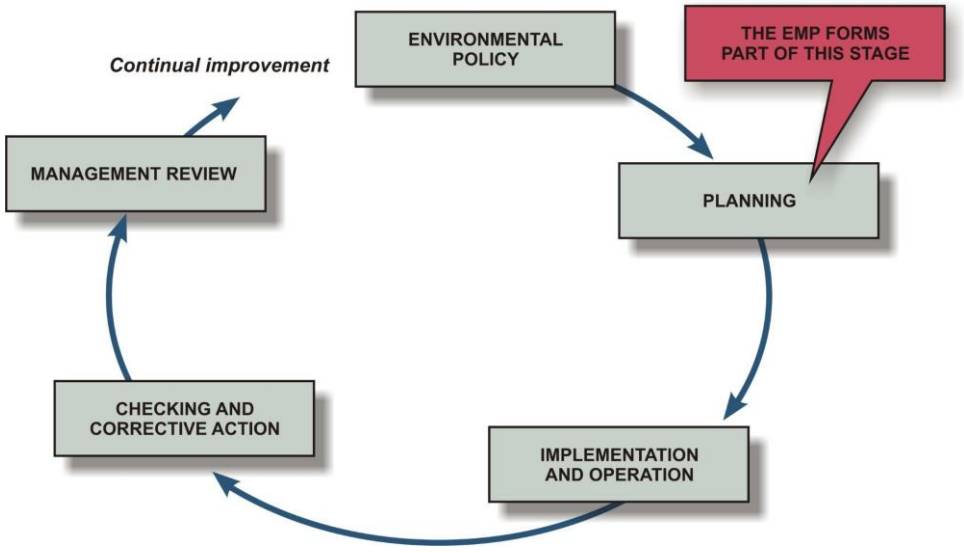


Figure 2.3 Summary of the ISO 14001 process for Environmental Management Systems

2.4 Issues for consideration by the EIA

Baseline information on the environmental setting and for similar developments in the coastal regions was reviewed in order to identify potential issues and their associated impacts that should be considered by the EIA. These are the following:

- BIOPHYSICAL ASSESSMENT (VERTEBRATE FAUNA & FLORA): DESERT ROSE DEVELOPMENT (Swakopmund/Walvis Bay area)
- VEGETATION BASELINE SURVEY FOR DESERT ROSE DEVELOPMENT
- ARCHAEOLOGICAL AND HERITAGE ASSESSMENT OF SAND ROSE PROJECT
- MACROECONOMIC ASSESSMENT OF THE PROPOSED DESERT ROSE DEVELOPMENT IN SWAKOPMUND
- ROAD TRAFFIC
- HIGH LEVEL FEASIBILITY PAPER ON THE NAMIBIA INTERNATIONAL CONVENTION CENTRE (NICC) SWAKOPMUND
- SOIL AND LAND USE
- DESERT ROSE PLANNING REPORT FOR THE INNOVATIVE AND PREMIER URBAN DEVELOPMENT INITIATIVE
- GROUND- AND SURFACE WATER IMPACT ASSESSMENT
- ENGINEERING SERVICES REPORT: PRELIMINARY INVESTIGATION INTO THE BULK SERVICES REQUIRED FOR THE DEVELOPMENT OF THE DESERT ROSE CONVENTION CENTRE DEVELOPMENT

Table 2.4 Summary of Key findings of the Environmental Scoping Study indicate that the project can be implemented, provided the recommendations are implemented.

Biodiversity	Potential Mitigation Measures for initial identified impacts
The site that is earmarked for this development is regarded as a sensitive biodiversity area and is currently zoned as a conservation area within the Dorob National Park.	Large sections of open spaces, which will be fenced off, will be incorporated into the layout of the development to ensure some of the natural features of the site are maintained.
The coastline along the project site is regarded as one of the richest in terms of shoreline and seabird density in Southern Africa.	The layout of the development will be planned to ensure that current vehicle access to the beaches and shoreline is maintained but mitigation measures will be implemented to controlled current utilisation to the minimum. This will ensure beaches and the shoreline are protected. Furthermore, a survey was conducted to determine the highest Spring Tides along the project site coastline to ensure all infrastructures within the development will be located at a safe distance from the shoreline. This will also ensure that biodiversity of the intertidal zone is not affected.
The entire project area is currently fenced and during summer, when bird numbers are the highest, it helps to protect the breeding and roosting birds from off-road vehicular traffic. The area also supports a large colony of Damara Terns	Damara Tern breeding data obtained from the MET indicated that there are larger breeding colonies located towards the north east of the project area, at the “Horses Graveyard site”. Previous research programmes has indicated these colonies. It has been suggested by the Developer to initiate a site specific research project under the protection of the Regional Governor to monitor the actual effect of the proposed development on the current Damara Tern breeding colony for similar future developments.
The vegetation of the project is not unique to this area but is does support a wide variety of species. The species that may be affected will require further assessment.	A large section of the development will be allocated to a golf course that will primarily consist of indigenous vegetation. It is envisaged that all the all species found within the project area should be present within the area allocated to the golf course.

Water Supply: There is a potable water pipeline along the eastern section of the project site but it needs to be upgraded to cater for the requirements of the envisaged development. The routing options for a new water pipeline will require further assessment to ensure minimum impact to the surrounding environment.
Waste water: Waste water from the development will primarily be of a domestic nature since no industrial activities will be permitted. Waste water / sewage treatment technologies will also require further assessment to ensure the best options are implemented to prevention pollution.
Energy Supply The nearest power line infrastructure is at Swakopmund. Power lines to the project site will be required. The route for a power line and the associated impacts will require further assessment. Alternative "green" technologies, like solar, will also be considered for specific activities and processes at the development.
Access routes Access to the development will be from the B2 national road. The location of the access roads will be done in consultation with the Roads Authority. Vehicular traffic from the development to the beach areas will not be considered in the road layout plans.
Construction and Operation Certain areas within the intended development area will be left undisturbed to serve as conservation areas within the development. The conceptual layout plan developed by the proponent will require further review with the Ministry of Environment and Tourism. Construction activities, i.e. heavy vehicle traffic, earthworks, excavations etc. needs to be limited to the identified areas that are planned for development and the conservation areas within the project site boundary should not be disturbed.

In the sections that follow, these issues are separated into construction and operational phases. Together with environmental objectives and management goals that will form part of the EMP-environmental management programme, a methodology and approach for the EIA is then discussed for each issue with a post-construction survey, followed by a regular long-term survey programme.

All additional or lacking information as requested by the Office of the Environmental Commissioner dated 09 December 2014 were followed up by supplying all such documentation dated 17 February 2015 (Chapter 8).

The concern raised by the Office of the Environmental Commissioner to conduct public meeting/meetings resulted in the following outcome:

- To ensure that I&AP who could not participate in the previous I&AP process could now do so.
- To determine if any new concerns objection could be accomplish by such public meeting/meetings.

The Key findings of this public meeting and responses received by the I&AP's are summarised below and indicate that the project can be implemented, provided the recommendations are implemented.

30 I&AP's responded on the notice of the public meeting, some of these I&AP's also participate during May – June 2014 Public Consultation Process.

583 I&AP's attended the public meeting held on the 05th of August 2015 at Kuisebmond Community Hall, Diamond Street Walvis Bay.

It must be noted that this meeting was also attended by I&AP's who wanted clarity on the highly sensitive housing topic and was not interested or affected by the proposed development.

Table 2.5 Summary of forms received from I&AP's attending this public meeting:

Number of forms received back after public meeting	Response received by I&AP's
64	I&AP's Responded that they support the proposed development.
2	I&AP's Responded with concerns related to the proposed development.
76	I&AP's Responded only by completing their name & surname, cell nr and email address.

8	I&AP's Responded by returning blank forms.
1	I&AP's Responded by stating they do not agree to such development to commence.

The following form was handed out at the public meeting held on the 05th of August 2015. Please also take note that the form was double sided printed.

NEHC National Environmental Health Consultants
ACCREDITED OCCUPATIONAL HYGIENISTS
Reg. No.: CC1998/044367/23 | VAT Reg.: 4260157756
South Africa | P. O. Box 2477 | BRITS | 0250
Tel: +27 82 514 1532 | Fax: 086 515 5972
E-mail: Info@nehc.co.za
Reg. No.: D/2013/2359 | VAT Reg.: 5550230-01-5
Namibia | P.O. Box 8416 | SWAKOPMUND
Tel: +264 64 –404 146 | Fax: +264 64 –404 179
E-mail:Info@nehc.co.za

Name & Surname:	Cell Nr:	E-mail:

The following concerns has already been lodged:

1	*Ecology and birdlife*	*Will migration and breeding patterns of birds, particularly Red Listed species, be disturbed or disrupted as a consequence of these impacts?* *Will there be significant changes to ecological systems?* *What will the impact of changed noise levels be?*
2	*Socio-Economic (including tourism, planning and land use)*	*What will be the visual impact of new buildings and structures?* *What will the impact on tourism be?* *How will the increased population influx increase pressure on resources and services, and exacerbate growth in unemployment, informal settlements and communicable diseases?* *What temporary (construction phase) and permanent (operations phase) employment will be created. What further employment would result from downstream developments?*
3	*Traffic and roads*	*Will traffic densities increase during construction and operations, and how will this affect road and pedestrian safety?* *Will the quality of the roads be reduced as a consequence of increased trucking, or will the roads be upgraded?*
4	*Noise*	*What is the current noise profile by day and night?* *What will be the social impact of changes in noise levels during construction and operation of the proposed development on neighbouring areas?* *In other words, noise caused by road traffic.*
5	*Issues related to the EIA Process*	*How does the EIA link up with the SEA for the Erongo coast?* *An alternative location should be considered* *Will the project be stopped if the EIA uncovers highly significant impacts that will result in irreversible negative changes economically and environmentally?* *Who will take responsibility for errors in impact prediction, and how can this risk be reduced or avoided?* *How will maximum participation of the general public be ensured?*
6	*Fauna Issues related to the EIA Process*	*Damara Tern breeding data obtained from the MET indicated that there are larger breeding colonies located towards the north east of the project area, at the "Horses Graveyard site". The introduction of open spaces at strategic location within the development to create flight paths to the "Horses Graveyard site" has been incorporated into the design.*

Other or new concerns?	

Dear Mr Cornelissen,
Copy: Swakopmund Matters for circulation to mailing list at own discretion
BCC: Selected friends
Posted on Facebook: https://www.facebook.com/hartmut.dichtl.1

I am referring to a string of communication with regard to the above project.
Furthermore, I want to inform you that I am not able to make it to the Public participation meeting scheduled for 5 August 2015, due to work commitments.
I wish you to keep me on the contact list as an interested and affected party and rely on you to communicate with me as such and consider the points below as items to be addressed in the next revision of the EIA scoping that you wish to commission.
I would have wanted to attend the meeting, but I am prevented from doing so. Could I ask you to read out the points, please so that they are properly recorded.

Kindly address the following:

1. Namibia's prime need is for affordable housing for the economically disadvantaged. Kindly explain how the plight of the poor will be addressed in this development funded on the back of a government project using tax payer's money to build houses and golfing greens for the elite. It would be far more beneficial to spend government money on housing where the people are now and where there is work for them (during construction and at the conference centre.) Surely Walvis Bay or Swakopmund are more appropriate putting into question the proposed locality.
2. Has the user ministry considered alternative sites? Any EIA of substance takes this as the departure point. I refer to the extensive effort that major projects (example: Gecko Visons Industrial Park) have put into the evaluation of sites in their EIA.
3. The conference centre and the residential development must be viewed as separate entities in isolation, seeing that one is a government initiative, the other a private, profit generating development. Seeing that the Conference centre is the prime reason for the development, the conference centre must be reviewed first.
4. I would like to gain transparency on the appointment of the project management team and the relationship with the consultants for which purpose an appointment letter by the ministry should be presented. Please confirm and provide documentary proof that the Ministry of Trade and Industry has commissioned Sand Rose Investment as the developer for the conference centre. Is Sand Rose acting on behalf of the ministry and are you being paid by the Ministry for conducting the EIA?
5. Can you submit to all the credentials of NEHC that qualify you as an environmental expert on the area, noting that the company is a South African company. Has the Ministry of Trade and Industry endorsed NEHC as the duly qualified party to conduct the EIA?
6. As a minimum, the project must consult with the Walvis Bay and Swakopmund strategic management plans in order to evaluate sites for a conference centre. Communication circulated openly so far suggests that very limited interaction has taken place.
7. Kindly update the forum on the status of all work presented so far. In particular, the status of the "Final Scoping Report" as is presented on the NEHC website. In particular, we would need the feedback on what is best described as a Draft report form the authorities (Municipalities, Ministries, including Trade and Industry, Nacoma etc.).
8. I want to note that the feedback to registered stakeholders has been extremely poor. I was not informed of the Public participation meeting by e-mail where your response has been selective at best.
9. Please inform the forum of the results of the interaction and applications to the ministries so far.
10. Can you brief us on the progress of the Strategic EIA that is in the making for the Coastal area? Surely, this must be completed before we commit to a project specific EIA in a sensitive area for a project of this magnitude?
11. Can you brief the people of Namibia on the price that you have offered for the land, should you be successful in the rezoning application? (it is a major cost and as a developer you would have factored the cost of land into this proposal) We need to note that the conservation reserve is a national asset and that this should not be sold off cheaply, if at all.
12. Please include a complete assessment of the reasons for establishing the nature conservation status and why it should be changed for reasons other than personal enrichment of a developer. I insist on a complete review of all scientific publications, most of which can be found on the Nacoma website.) that led to the nature reserve proclamation in the first place.
13. The German Government has recently committed major funding on the economic development of coastal regions. Can you ensure that the German initiative is consulted so that the efforts are aligned. As a Namibian I fear that funding will be cut if we do not adhere to studies commissioned by international development aid.
14. In your EIA, I insist that an independent scientific assessment is made on the effectiveness of the Environmental Management plan of the Dolfyndrif "Eco Village" development. The projects are similar and by the same developer. It is thus the most suited case study, where the impact of the proposed development can be assessed in practice, rather than at desktop study level. Please note that simple GPS co-ordinate checks of nests by non-scientists taken outside of the Damara tern breeding season do not convince anyone.
15. Kindly indicate the level of government and private funding. I would be surprised if International Banks and lenders, or local Commercial banks with a green portfolio would want to be associated with the destruction of an environmentally sensitive area for the benefit of a private investor.

As a private individual living at the coast all my life I see that the last bit of coastline is being sacrificed to developers seeking profits at the expense of the environment and thus the inhabitants as a whole. I am by no means a scientist, yet know that the caution reef area has been identified by many renowned scientists as an ecologically sensitive area leading to the proclamation of the nature reserve. This development spells certain doom for endangered species and the environment of this coast at large. For the sake of current and future generations I am not prepared to give that up for a development from which few are to benefit.

I truly hope that this proposal follows a complete, transparent and legally conforming assessment cycle making it unsuccessful now and forever. The developers will at least be given the assurance that that their initiative has resulted in a complete and final ban on infrastructural development in this nature reserve by anyone else anytime in the future. If so, that would be money well spent leaving a legacy that the developer and every Namibian can be proud of.

I trust that you will acknowledge receipt of this mail and that you will address the above in your scoping report.
Hartmut Dichtl P O Box 198 Swakopmund

2.4.1 BIOPHYSICAL ASSESSMENT (VERTEBRATE FAUNA & FLORA): DESERT ROSE DEVELOPMENT (Swakopmund/Walvis Bay area)

A desktop study (i.e. literature review) was conducted between 24 and 26 June 2014 on the vertebrate fauna (e.g. reptiles, amphibians, mammals and birds) expected to occur in the general coastal area between Swakopmund and Walvis Bay. A rapid site assessment was conducted between 29 June and 2 July 2014 to determine the actual vertebrate fauna and flora on site and which potentially could be affected by the proposed Desert Rose urban developments.

This literature review was to determine the actual as well as potential vertebrate fauna associated with the general area commonly referred to as the Southern Namib or Southern Desert (Giess 1971, Mendelsohn *et al.* 2002, Van der Merwe 1983). This area is bordered inland by the Central Namib or Central Desert (Giess 1971, Mendelsohn *et al.* 2002). Climatically the coastal area is referred to as Cool Desert with a high occurrence of fog (van der Merwe 1983). The Namib Desert Biome makes up a large proportion (32%) of the land area of Namibia with parks in this biome making up 69% of the protected area network or 29.7% of the biome (Barnard 1998). Four of 14 desert vegetation types are adequately protected with up to 94% representation in the protected area network in Namibia (Barnard 1998). With the exception of municipal land, the area falls within the recently proclaimed Dorob National Park. No communal and freehold conservancies are located in the general area with the closest communal conservancy being the ≠Gaingu Conservancy in the Spitzkoppe area approximately 100 km to the northeast (Mendelsohn *et al.* 2002, NACSO 2010).

The main issues to be considered for the EIA are described below.

2.4.1.1 Construction phase

Potential for:
- Direct negative impact on the existing vertebrate fauna (e.g. reptiles, amphibians, mammals and birds).
- Direct habitat loss.
- Relocation and movement of vertebrate fauna (e.g. reptiles, amphibians, mammals and birds).
- Potential disturbance to sea- and shore-bird populations.

2.4.1.2 Operational phase

- Possibility of permanently relocation and movement of vertebrate fauna (e.g. reptiles, amphibians, mammals and birds) resulting from changes in their existing ecosystem.
- Direct habitat loss.
- Potential disturbance to sea- and shore-bird populations.
- Potential for impact on bird movements.
- Potential for impact associated with noise and light generated by the development.

2.4.1.3 Methodology and approach to EIA

Environmental quality objective: Maintenance of ecosystem integrity.

Environmental management goals: Mitigate the development to minimize the impact on existing vertebrate fauna (e.g. reptiles, amphibians, mammals and birds). Document possible impacts on the existing vertebrate fauna (e.g. reptiles, amphibians, mammals and birds) for future similar coastal developments. Mitigate the integrity and ecological functions of the receiving environment.

2.4.2 VEGETATION BASELINE SURVEY FOR DESERT ROSE DEVELOPMENT

A basic vegetation survey was required from this consultant. Plant species expected to occur in the area must be identified through desktop study and this verified during fieldwork on the ground. It included identifying and describing habitats present and the plants contained therein, assessing habitat sensitivity, listing plants of special importance and compiling this information in a report.

A desktop study revealed a potential 159 plant species in the vicinity of the study area, including six protected by law, 33 with restricted distribution and none threatened. During a field survey six plant species were found of which four have restricted distribution, none are threatened or protected by law.

Two habitat types - Beach and Dune-Hummock-Gravel - were identified, both of which were evaluated as having "moderate" sensitivity. Compared with surrounding areas, the study area is more densely vegetated. The importance of plants in this harsh environment was observed and highlighted. It is recommended that as much natural habitat as possible should be retained if the development goes ahead.

The issues that are most relevant for the EIA are described below.

2.4.2.1 Construction phase

Potential for:
- Direct impact on the basic vegetation.
- Accidental spillages of building materials such as cement, hydraulic fluids, oils.
- Unnecessary excavation and disturbance of top soil.

2.4.2.2 Operational phase

Potential for:

- Unnecessary disturbance of top soil
- Changes on the basic vegetation due to erosion and development layout actions.
- Accidental spillages of materials.

2.4.2.3 Methodology and approach to EIA

Environmental quality objective:	Ensure that as much natural habitat as possible should be retained.
Environmental management goals:	Mitigate the development to minimize the impact on the basic vegetation. Maintain the integrity and ecological functions of the receiving environment.

2.4.3 MACROECONOMIC ASSESSMENT OF THE PROPOSED DESERT ROSE DEVELOPMENT IN SWAKOPMUND

The proposed Desert Rose development would be one of the largest single developments in Namibia in recent times. It would, in essence be a small town. As a result it would require all the support services that would be found in a small town including retail, entertainment, health and education services and business. The intention is to develop an iconic mixed-use development that would showcase the region to the world. It would, in consequence, also make a major economic contribution to the Namibian economy.

The analysis faced two limitations.
- Some of the business and people choosing to move to Desert Rose are likely to come from elsewhere in Namibia. This would be the case particularly in the early years. This is called a displacement effect. These displacement effects are clearly not a net economic gain to Namibia and need to be taken into account in the analysis.
- Some of the business that would be established at Desert Rose would be support firms to other business. An example would be the establishment of a stationary supplier that services other firms in the development. In macroeconomic analysis these support firms are part of the second round effects. Including them in the first round effects would be double counting.

The issues that are most relevant for the EIA are described below.

2.4.3.1 Construction phase

- Potential direct socio-economic impacts.
- Potential indirect effect on local and national economy.

2.4.3.2 Operational phase

- Potential increase in direct employment.
- Potential multiplier effects.
- Strategic importance.

2.4.3.3 Methodology and approach to EIA

Environmental quality objective:	Optimise benefits to the people of Namibia.
Environmental management goals:	Strike a balance between economic, social and environmental responsibilities. Provide opportunities for local business, promote industrial relations, and otherwise contribute to socio-economic stability

The proposed project expansion will have social impacts that may be both positive and negative. An example is the creation of new job opportunities that leads to in-migration of people and increases the number of people in the area, with the concomitant increase in the demand for infrastructure and services from local and regional authorities.

- The change in worker demographics, and any social impacts, such as increases in crime and sexually transmitted diseases, will be assessed.
- Other issues to be considered are impacts on aesthetics, recreation, fisheries and aquaculture, land use and settlements, traffic, tourism, municipal services and livelihoods.

2.4.4 ARCHAEOLOGICAL AND HERITAGE DESK ASSESSMENT OF DESERT ROSE PROJECT

The desk study presented below is based on a consultation of existing inventories of known sites/remains in the project locality, as well as a cursory inspection of the property carried out on 6th August 2014. The report presents an estimation of site significance and vulnerability, and an estimation of impact risk on chance/previously unrecorded finds based on existing data from adjacent parts of the Namib coast. The report considers palaeontological, archaeological and historical remains, the latter including historic shipwrecks as defined by Paragraph 57 (1) of the National Heritage Act.

The area of the proposed project footprint is extensively covered by mobile windblown sand, partially stabilized as thinly vegetated hummock dunes, and by a broad sandy beach, lying above a mainly horizontally-bedded shoreline of sedimentary rock with limited outcrop of Damara metasediments and related rock. Much of the area within the proposed project footprint is enclosed by a barrier erected to protect a suspected breeding and roosting site used by the rare and endemic Damara Tern Sternula balaenarum.

A number of well-established tracks run between the high water mark and the westernmost hummock dunes. A short stretch of surfaced road leads from the B2 highway to the beach at the northern end of the property. There is also a large disused borrow pit with associated spoil heaps, a relic of the railway between Swakopmund and Walvis Bay, that used to run along the shoreline. The railway earthworks, running from north to south through the property, are still clearly discernible, with localized concentrations of steam engine cinders noticeable in the sand on either side of the earthworks.

Visible over a limited part of the seaward edge of the hummock dune belt is a discontinuous accumulation of what appear to be Donax rogersi, the now extinct precursor on this shoreline of the prevailing sandy beach mollusc Donax serra. The shoreline adjacent to these accumulations is no longer sandy, and this, together with their elevation at approximately 4m above mean sea level indicates that the shell accumulations represent a relic of the Eemian beach associated with the sea-level rise of between 5 and 7 m which occurred Marine Isotope Stage 5, in the period 110 to 130 000 years ago.

The main issues to be considered for the EIA are described below.

2.4.4.1 Construction phase

- Direct loss of potential archaeological objects or remains on site.

2.4.4.2 Operational phase

- No foreseeable impact.

2.4.4.3 Methodology and approach to EIA

Environmental quality objective:	Management of potential archaeological objects or remains on site.
Environmental management goals:	Report the finding of any archaeological objects or remains on site to the relevant authority.

The proposed Sand Rose project appears to have no implications for sites and remains protected under the provisions of the National Heritage Act. However, it is recommended that project staff and contractors are made aware of the provisions of the Act regarding the protection of heritage sites and remains; in particular that such sites and remains should be immediately reported to the National Heritage Act. To this end, it is further recommended that the project Environmental Management Plan (EMP) should adopt the chance finds procedure set out below to assist the process of reporting.

2.4.5 ROAD TRAFFIC

An increase in traffic during construction and operation of the proposed project will increase the levels of noise, nuisance and vehicle emissions, and risks associated with traffic accidents.

The development of the Namib and Walvis Bay Corridors, and Trans-Caprivi and Trans-Kalahari Highways will link the most of Namibia's neighbours. Construction of the proposed Sand Rose Investment Development will lead to an increase in traffic from these corridors, with concomitant increases in traffic accidents, noise and vehicle emissions.

Construction vehicles will be required to transport building material during the construction of quay walls, rock revetments, surfacing, buildings and workshops.

The main issues for the EIA are described below.

2.4.5.1 *Construction phase*

- Potential increased congestion and loads due to construction vehicles on the road network.

2.4.5.2 Operational phase

Potential impact on:
- Existing road network capacity due to generation of additional traffic.
- Existing community on the possible changes to major container traffic routes.

2.4.5.3 Methodology and approach to EIA

Environmental quality objective: Maintenance of business efficiency and urban amenity.
Environmental management goals: Protect amenity values and business efficiency by ensuring that adverse impacts from traffic density, haulage loads and associated noise are minimised or avoided.

2.4.6 ENVIRONMENTAL NOISE

New sources of noise within the proposed development will include vehicle / truck traffic, and loading and hauling, earthmoving equipment, maintenance of infrastructure and equipment and operation of cranes. This will necessarily introduce changes in ambient noise levels at the proposed development site and its environment.

Potential noise sources will be identified, with operating times;
Noise levels will be estimated and impacts assessed.
Test method employed will be SANS 10103:2008, with results compared to, amongst others:
- SANS 10103:2008 Version 6 - The measurement and rating of environmental noise with respect to annoyance and to speech communication.
- SANS 10210, Calculating and predicting road traffic noise.
- SANS 10328, Methods for environmental noise impact assessments.
- SANS 10357, The calculation of sound propagation by the Concawe method.
- World Bank Guidelines on Pollution Prevention.
- World Health Organisation guidelines for community noise limits for outdoor living areas and to prevent sleep disturbance.

The main issues for the EIA are described below.

2.4.6.1 Construction phase

- Potential increase in noise and vibration levels due to construction activities.
- Potential increase in noise and vibration levels due to on site batching plant/s activities.

2.4.6.2 Operational phase

- Potential increase in the ambient noise levels due to the proposed development.

2.4.6.3 Methodology and approach to EIA

Environmental quality objective: Maintenance of social amenity and ambient environmental noise values.

Environmental management goals: Protect amenity values by ensuring that noise levels from construction and operations are minimised. Ensure that noise levels meet the statutory requirements and acceptable standards.

The impact of noise associated with construction and operation of the proposed development will be compared with baseline conditions and assessed against international criteria developed by the World Health Organisation (WHO), World Bank Group and South African National Standards (SANS) for environmental noise.

2.4.7 HIGH LEVEL FEASIBILITY PAPER ON THE NAMIBIA INTERNATIONAL CONVENTION CENTRE (NICC) SWAKOPMUND

This high level feasibility paper has been prepared after substantial desk research complemented with limited additional field research. In the process of finalizing this feasibility paper role players in the Southern African meeting industry were interviewed during the annual conferences of SAACI (Southern African Association for the Congress Industry) and AIPC (Alliance Internationale des Palais de Congres). Extensive use has been made from research material provided by ICCA (International Congress and Convention Association) as well as from AIPC.

Already for quite some time interested parties in Namibia as well as the government of the country are considering the development of a dedicated international convention centre.

It was observed that in several African countries and particularly in South Africa the (international) convention business had started to flourish. National and particularly international conventions and trade fairs contribute substantially to the economy of the cities and countries where they are hosted, as well as to the growth of leisure tourism. These are important reasons to find out if an International Convention Centre in Namibia would be feasible.

Most convention centres in the world are not or hardly profitable however, these centres are almost always developed because of the considerable contribution to the GDP of a country as well as their ability to create a significant amount of jobs.

Recently the initiative was taken to investigate if a dedicated Namibia International Convention Centre (NICC) could be developed in Swakopmund in the Erongo region. The project has the firm support of both the Regional Governor of the Erongo region, the Honourable C.J. Mutjavikua and Councillor J. Kambueshe, Mayor of Swakopmund. The developers of the project, Sand Rose Investments (Pty) Ltd in Swakopmund have asked Convention Industry Consultants to prepare a high level feasibility paper for this proposed development.

Through capital expenditure associated, suppliers in the local economy will have a multiplier effect by distributing part of their income for taxes, wages, and goods and services through their own supply chains. However, the increase in revenue for the local, regional and national fiscus through such multiplier effects, will be offset by the cost to Government of supplying additional infrastructure in Walvis Bay and the Erongo region as its economic base grows.

The main issues for the EIA are described below.

2.4.7.1 Construction phase

- Potential direct socio-economic impacts.
- Potential indirect effect on local and national economy.

2.4.7.2 Operational phase

- Potential increase in direct employment.
- Potential multiplier effects.
- Strategic importance.

2.4.7.3 Methodology and approach to EIA

Environmental quality objective: Optimise benefits to the people of Namibia.
Environmental management goals: Strike a balance between economic, social and environmental responsibilities. Provide opportunities for local business, promote industrial relations, and otherwise contribute to socio-economic stability

The proposed project expansion will have social impacts that may be both positive and negative. An example is the creation of new job opportunities that leads to in-migration of people and increases the number of people in the area, with the concomitant increase in the demand for infrastructure and services from local and regional authorities.

- The change in worker demographics, and any social impacts, such as increases in crime and sexually transmitted diseases, will be assessed.
- Other issues to be considered are impacts on aesthetics, recreation, fisheries and aquaculture, land use and settlements, traffic, tourism, municipal services and livelihoods.

2.4.8 GROUND- AND SURFACE WATER IMPACT ASSESSMENT

SLR Environmental Consulting (Namibia) (Pty) Ltd was appointed by Desert Rose Investments (Pty) Ltd to compile a ground- and surface water impact assessment for the planned Namibia International Convention and Exhibition Centre, about 8 km south of Swakopmund in a flat area between the B2 national road and the coast line. This study provided an overview of the regulatory framework and listed best management practices related to water conservation and Marinas. Ten possible impacts on ground- and surface water resources were identified that were addressed with mitigation measures as detailed on Page 14, TABLE 2: GROUNDWATER – AND SURFACE WATER IMPACT ASSESSMENT AND MITIGATION MEASURES of the ground- and surface water impact assessment done by SLR Environmental Consulting (Namibia) (Pty) Ltd. In the mitigated scenario, all the impacts are rated as low, except for the impact of the increased demand on the local coastal aquifers. This impact however, assumes that additional desalination plants will not be constructed in the near future.

Groundwater for potable use in Walvis Bay is extracted from aquifers associated with the Kuiseb River and piped from there to the town.

The main issues for the EIA are described below.

2.4.8.1 Construction phase

- Potential risk to construction workers

2.4.8.2 Operational phase

- Potential for contamination of groundwater and surface water

2.4.8.3 Conclusion and Recommendation to EIA

Conclusions drawn from this study are outlined as follows:
1. The project site underlain by a fractured saline aquifer that is vulnerable to contamination due to the high infiltration capacity of the overlying dune sand, and the shallow groundwater table;
2. The economic value for consumptive use are related to the possible use future desalination, aquaculture, brine production and the irrigation of crops tolerant to brackish/saline water;

3. The economic value for non-consumptive use relates to groundwater and its connection with other ecosystems. The role that groundwater plays as an agent that transports pollutants to other downstream areas should not be overlooked, and in this context the shoreline where it could impact aquatic – and bird life and human health;
4. From the impact assessment it was determined that issues with a low significance include groundwater contamination from chemicals used during construction activities EXCEPT the handling and storage of fuel;
5. From the impact assessment it was determined that issues with a medium significance include groundwater contamination from sewage, the impact on local groundwater resources due to the increased water demand, groundwater contamination coming from "water treatment plant sludge", groundwater impacts due to landscape – and golf course irrigation, surface and groundwater contamination form storm water drainage;
6. From the impact assessment it was determined that issues with a high significance include groundwater contamination from construction activities related to fuel spillage and/or other hydrocarbon products, groundwater contamination from fuel stations, seawater contamination in the marina, sea - and groundwater contamination from storm water drainage;
7. A potential for surplus water from the sewage treatment plant exists, that will exceed the irrigation water demand for the golf course.

It is recommended that:
1. The mitigation measures detailed under Table 3, 4, 5 and 6 are implemented through the Environmental Management Plan (EMP);
2. Compliance to the Namibian Water Resources Act of 2013;
3. Compliance to the Petroleum Products Act of 1990;
4. Compliance to the Labour Act of 2007;
5. Monitoring boreholes for leak detection should be drilled at fuel stations; the sewage treatment plant and evaporations ponds (if any);
6. That the best practices for water conservation should be implemented as far as practically and financially possible, and provided that it is not contradictory with Namibian legislation;
7. That the best practices for Marinas should be implemented provided that it is not contradictory with Namibian legislation;
8. A water balance should be made for the entire estate, and additional "downstream" users/facilities for surplus purified irrigation water should be identified in order to minimise wastage of water, and to maximise the economic potential of water;
9. Water requirements of the estate that can make use of saline groundwater should be identified in order to safe on fresh water demand.

2.4.9 DESERT ROSE PLANNING REPORT FOR THE INNOVATIVE AND PREMIER URBAN DEVELOPMENT INITIATIVE

"Desert Rose" the name chosen for this development, is the colloquial name given to rosette formations of crystal clusters of gypsum or baryte which contain abundant included sand grains. (Wikipedia)

These individually formed and unique rosettes are found in arid and sandy conditions commonly found along Namibia's shoreline. The desert rose urban development is to capture, express and symbolise the beauty of the individually formed rosettes, the composition and shape of the urban form and the buildings to be developed reflecting the form and uniquely structured elements of the desert rose.

The layout design prepared for the Desert Rose Development indicates the development holds the potential to formalize approximately 582 erven. In line with the Namibian planning policies these erven are to be formalized by creating two new township extensions.

The Desert Rose development is located within the Dorob National Park which can be described as a conservation area of larger national importance. The development of an urban node in a national park is normally not in line with the general land uses of a national park and as such support for such development needs to be obtained from the Ministry of Environment and Tourism. As freehold title is to be made available to investors (thus selling of land) the entire development is to be de-proclaimed out of the national park prior to township establishment taking place.

The Desert Rose development falls within the 'former Walvis Bay Enclave' area the general administration of which was entrusted by the Namibian Government onto the Walvis Bay Municipality although not forming part of the municipal area of Walvis Bay. As such the administration and control of the new urban node is to be entrusted as a satellite urban node onto the Walvis Bay Municipal Council by including this development into the municipal area and placing it under the development control of the Walvis Bay Municipality rather than to establish a new local authority for the area in terms of the Local Authorities Act (Act 23 of 1992).

The township establishment will have a cross-sectorial impact on planning restrictions and on utility providers and the support of other Line Ministries and Parastatal organisations must be solicited prior to submitting the final approval for the development in terms of the Namibian Planning and Environmental legal frame. The following key stakeholders need to be formally approached prior to submitting the application for township establishment and layout approval with Nampab and Townships Board respectively:

- Ministry of Environment and Tourism (Environmental Commissioner)
- Erongo Regional Council
- Ministry of Lands and Resettlement
- Ministry of Regional Government Housing and Rural Development
- Ministry of Fisheries and Marine Resources
- Ministry of Works and Transport (Roads Authority)
- Municipality of Walvis Bay
- Nacoma
- Namwater
- ErongoRed

After the Ministry of Environment and Tourism has formally endorsed the idea that the area required for the Desert Rose development is to be de-proclaimed from the Dorob National Park the township establishment process may be initiated. The following actions and approvals need to be completed:

(a) Erongo Regional Council and Walvis Bay Municipal Council support for the development of the Desert Rose development as a satellite urban node.

(b) Ministry of Lands and Resettlement approval for the survey and creation of a new “Farm” within the Dorob Park area and ownership transfer thereof to the Walvis Bay Municipality, or then the developer of Desert Rose.

(c) Approval of layout by developer and Walvis Bay Municipal Council. This includes the provision of bulk services to the Desert Rose development as well as agreements for service delivery, the land use requirements for the local authority and Government purposes as well as any other restrictions to be registered against the development.

(d) Inclusion of the area into the local authority area of Walvis Bay in terms of Section 4 of the Local Authorities Act (Act 23 of 1992).

(e) Approval for ‘Need and Desirability for Township establishment on the newly created farm portion by the Namibian Planning Advisory Board (Nampab) This submission is to be made in accordance with the Townships and Division of Lands Ordinance (Ordinance 11 of 1963, as amended).

(f) Formal environmental clearance for the development by the Environmental Commissioner is to be obtained in according to the Environmental Management Act (Act 7 of 2007).

(g) Township establishment and layout approval for the new urban area by Townships Board

(h) Inclusion of the Desert Rose township area into the Walvis Bay Town Planning Scheme in terms of the Town Planning Ordinance (Ordinance 18 of 1954 as amended).

(i) Survey and approval of General Plan by the office if the Surveyor General which resorts under the Ministry of Lands and Resettlement.

(j) Promulgation of new township in Government Gazette and opening of Deeds Registry.

Once the above statutory requirements have been met the developer can commence with the bulk infrastructure provision as well as the installation of municipal services (to satisfaction of Walvis Bay Municipal Council) where after the serviced land may be developed or sold.

Barring the time it takes to de-proclaim the development area out of the Dorob National Park (project steps (a) and (b) above) the time required for obtaining the necessary statutory approvals as set out under project steps (c) to (j) may take between 24 to 30 months to complete. The servicing of the individual properties can be initiated, this process to be driven by the demand for serviced land.

The layout design strongly hinges on the acceptance that the Desert Rose international convention centre is top form the heart of the development. This iconic building complex is to send a strong signal out to visitors to the area that Namibia has the will and capacity to become a leading nation in terms of hosting international conventions and events. As such the Desert Rose Convention Centre is to dominantly present itself standing taller and raising out above the remaining buildings to be erected within the Desert Rose urban node. The buildings of the convention centre should form a prominent skyline and viewing corridors onto the centre form a major feature in the layout design.

The general planning approach adopted is highlighted in the following section. More detailed design information are highlighted in the sections referring to the various precinct plans developed in support of the layout plan prepared for the desert Rose development.

The layout design prepared for the Desert Rose development has been undertaken in close consultation with the project architect, engineer and environmentalist. The layout prepared for the Desert Rose development informs overall report as prepared by the project architect.

A freestanding report on the installation of the engineering services in support of the Desert Rose development has been compiled. The findings of this report should be read together with the planning report.

A freestanding environmental report on the Desert Rose development has been compiled. The findings of this report should be read together with the planning report.

In the two neighbouring towns, tourism is a focus for growth in the residential and holiday accommodation sectors. The value of landscape views for tourists is very important for this burgeoning sector in Walvis Bay. The main issues for the EIA are described below.

2.4.9.1 Construction phase

- Potential impact on the visual environment due to the presence of construction activities.

2.4.9.2 Operational phase

- Potential for impact on landscape and visual character.

2.4.9.3 Methodology and approach to EIA

Environmental quality objective: Maintenance of aesthetic values.
Environmental management goals: Ensure that aesthetic values and public experience of the landscape are considered.

2.4.10 AIR QUALITY

Swakopmund and Walvis Bay do house some industries that may be a source of substantial amounts of harmful emissions and pollutants to the receiving environment taking the number and visual effect of the stacks into consideration.

Pollutants associated with the proposed development would originate from construction work, handling and storage, and emissions from exhausts of earthmoving equipment and road, traffic. These pollutants are nitrogen oxides (NO_x, carbon monoxide (CO), volatile organic compounds (VOCs), sulphur oxides (SO_x) and particulate matter (TSP/PM_{10}). The main sources of air pollution are anticipated during contraction phase.

Dust emissions that will escape from construction areas can be a nuisance to neighbouring Swakopmund Town and bypassing traffic on the Swakopmund / Walvis Bay as travelling along the B2 road connecting these two coastal towns' by soiling of surfaces. A Proportion of the dust emitted will also be in the form of fine particles, which can have an adverse effect on human health.

Increased truck traffic during construction and increase in general vehicle traffic can be anticipated during the operational phase of the proposed development will also add to the existing inventory of exhaust fuel emissions.

Quantifying accurately the effect of construction dust is influenced by the activity taking place, the type of dust emitted, local dispersion conditions and the location and nature of sensitive environmental and human receptors. Mitigation measures to minimize dust would therefore be dealt with qualitatively, following best practice guidance.

Air quality will not be dealt with through a separate specialist study, but through the construction environmental management plan, where mitigation measures will be recommended for minimizing vehicle emissions and dust generation.

Issues of relevance for the EIA are described below.

2.4.10.1 Construction phase

- Potential for dust and pollutant emissions during construction works.
- Potential dust and pollutants due to onsite batching plants.

2.4.10.2 Operational phase

- Potential for increased emission pollutants due to:
- The new proposed development.
- Increased road traffic.

2.4.10.3 Methodology and approach to EIA

Environmental quality objective: Maintenance of social amenity and health values.
Environmental management goals: Protect social health and amenity by ensuring that dust and pollutant from construction and operations are minimised or avoided. Ensure that such emissions meet statutory requirements and acceptable standards.

2.4.11 SOIL, LAND CAPABILITY AND LAND USE ASSESSMENT

2.4.11.1 Construction phase

- Potential risk to construction workers

2.4.11.2 Operational phase

- Potential for contamination of groundwater and surface water

2.4.11.3 Conclusion and Recommendation to EIA

CONCLUSION

Soils and land capability

The soils within the Soil Study Area are dominated by the Namib soil form, consisting mainly of deep Aeolian sand. Due to the severe arid climatic conditions and poor growth medium of the aeolian sand, no soil types within the Soil Study Area were classed as arable, grazing or wetland potential.

The total Soil Study Area was classed as wilderness land due to the fact that it is too arid to sustain any plants of economic value. The area barely support adapted desert type flora. The area has no dry land crop production potential due to the low annual precipitation and the pure sandy texture of the aeolian sand which subsequently provides a low quality growth medium. The area's uses rather lie in the fields of recreation and wildlife conservation which can include residential and business developments.

Considering the extreme low land capability of the soil resource, the impact of a land transformation from the current status to a residential development will be rendered very low. The long term economic value of such a development to Namibia will justify and by far exceed the economic value that could ever be generated via the soil resource.

RECOMMENDATIONS

The allege breeding area of the Damara Tern is the only factor that provides significant value to the proposed Development Area. The proposed Development Area consists more or less of 3 topographical zones and various habitat types was observed within each of the zones such as lower lying depressions,

patches with miniature dune formation and slight to moderate undulating dunes. It is assumed that the Damara Tern will probably not breed all over the area but will prefer 1 or more of the existing habitats.

It is recommended that the exact extent and type of breeding habitat is studied and monitored by specialists during the breeding season. It might be possible to adapt the development plan to accommodate the breeding area. Furthermore, with a development of such a scale it will be possible to generate funds on a continuing basis to promote and support the conservation of other possible existing breeding areas.

2.4.12 ENGINEERING SERVICES REPORT: PRELIMINARY INVESTIGATION INTO THE BULK SERVICES REQUIRED FOR THE DEVELOPMENT OF THE DESERT ROSE CONVENTION CENTRE DEVELOPMENT

Windhoek Consulting Engineers have been appointment to do a preliminary investigation and cost estimate for the development of bulk services to the proposed site as well as internal services required for the development of the proposed new Desert Rose Conference Centre and associated urban development.
The Desert Rose Conference Centre and Associated infrastructure will consist of the following:

- Conference Centre and associated hotels and restaurants;
- 9 hole golf course;
- Marina with associated break water structures;
- Business developments consisting of office, retail and other business opportunities;
- General Residential erven;
- Single residential erven;
- Public open spaces including sea front walkways, parks etc.

Due to the size of the development, special consideration was given to the provision of bulk services to the site to ensure sustainable development. This was done through talks with all the role players of which NamWater, Erongo RED, Swakopmund Town Council, Walvis Bay Town Council and The Roads Authority of Namibia was the most significant contributors.

Consideration was also given to ensure that the existing road users of the already congested road between Swakopmund and Walvis Bay is positively affected by the development, and that the Environment is considered by ensuring responsible development and using “Green” concepts such as renewable energy and water purification.

The main focus of the report is the following:

- Listing all aspects of the development that was considered;
- Discussing the services requirements for the development;
- Investigating the available services in the area;
- Noting upgrading of existing services in the area to be able to provide the required service delivery;
- Indicating any challenges in providing the required services;
- Providing a preliminary cost estimate for the required services.

Issues that might be relevant for the EIA are described below.

2.4.12.1 Construction phase

Potential for impacts on:

- Infrastructure during the proposed development
- Tunnels, pipelines, outfalls and abstractions

2.4.12.2 Operational phase

Potential for impacts on:

- Infrastructure during maintenance of the proposed development
- Outfalls and abstractions

2.4.12.3 Methodology and approach to EIA

Environmental quality objective: Maintenance of infrastructure and bulk service supply.
Environmental management goals: Protect infrastructure and land drainage by ensuring that adverse impacts from construction and operations are minimised.

2.5 Issues that will require further investigation in the EIA

In order to confirm which issues will require further investigation in the EIA, a risk assessment method based on the qualitative method recommended by the UK Department of Environment, Food & Rural Affairs (DEFRA)[1] was used to filter the aforementioned list of potential impacts in Section 2.4. This method consisted of the following steps:

1: Identify the hazard[2].

2: Estimate the likelihood of the consequences, namely, that:
- *The hazard will occur;*
- *Receptors are exposed to the hazard;*
- *Harm will result from exposure to the hazard.*

3: Estimate the magnitude of consequences:

4: Evaluate the significance of a risk.

The risk associated with an impact was defined as a combination of the **likelihood** of the impact occurring, and the **intensity** of the consequences in relation to the sensitivity of the receiving environment. This is illustrated in Table 2.6 below.

Since this method is qualitative, it doesn't easily accommodate uncertainty about predictions – for example, the absence of results from hydrodynamic modelling of currents in the Bay. The conservative approach was then adopted, where "worst-case" likelihood values are adopted.

Table 2.6 Qualitative risk rating of impacts – likelihood and intensity

A. *Likelihood*		
Rare	The incident may occur only in exceptional circumstances and may never happen	E
Unlikely	The incident could occur at some time during the life of the project	D
Moderate	The incident should occur at some time	C
Likely	The incident will probably occur in most circumstances	B
Almost certain	The incident is expected to occur most of the time	A
B. *Intensity*		
Insignificant	No detectable impact to the existing environment.	1
Minor	Short term of localised impact	2
Moderate	Prolonged but recoverable impact on the environment and commercial industries.	3
Major	Prolonged impact to the environment which may not be recoverable and threatens an ecological community, the conservation of a species or the sustained viability of commercial industries.	4
Catastrophic	Non-recoverable change to existing environment leading to loss of endangered species or creation of human health risk	5

The level of risk was determined using the Risk Matrix in Table 2.7 to determine the level of risk from the point at which the consequence severity and likelihood rankings intercept.

[1] *"Guidelines for Environmental Risk and Management." Online at http://www.defra.gov.uk/environment/risk/eramguide/, accessed 14 January 2008.*

[2] The term *hazard* used in the assessment is defined as a situation that in particular circumstances could lead to damage to, or changes in, the ecosystem.

Table 2.7 Risk matrix to determine level of risk

Likelihood		Consequences				
		1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
A	Almost certain	S	S	H	H	H
B	Likely	M	S	S	H	H
C	Moderate	L	M	S	H	H
D	Unlikely	L	L	M	S	H
E	Rare	L	L	M	M	S

Where:		
H	High impact	Senior management involvement and planning needed; MET must be consulted.
S	Significant impact	Senior management attention needed and careful planning and implementation.
M	Moderate impact	Management responsibility must be specified.
L	Low impact	Manage by routine procedures.

All impacts categorized with a risk level of High, summarised in Table 2.7 below, will require new specialist investigations for assessment in this EIA. Any new issues arising from the Scoping process will be integrated with this list in Chapter 5 of this report.

Table 2.8 Key issues that require new specialist studies

Construction impacts	Operations impacts
BIOPHYSICAL ASSESSMENT (VERTEBRATE FAUNA & FLORA): DESERT ROSE DEVELOPMENT (Swakopmund/Walvis Bay area)	
VEGETATION BASELINE SURVEY FOR DESERT ROSE DEVELOPMENT	
ARCHAEOLOGICAL AND HERITAGE ASSESSMENT OF SAND ROSE PROJECT	
MACROECONOMIC ASSESSMENT OF THE PROPOSED DESERT ROSE DEVELOPMENT IN SWAKOPMUND	
HIGH LEVEL FEASIBILITY PAPER ON THE NAMIBIA INTERNATIONAL CONVENTION CENTRE (NICC) SWAKOPMUND	
SOIL, LAND CAPABILITY AND LAND USE ASSESSMENT	
DESERT ROSE PLANNING REPORT FOR THE INNOVATIVE AND PREMIER URBAN DEVELOPMENT INITIATIVE	
GROUND- AND SURFACE WATER IMPACT ASSESSMENT	
ENGINEERING SERVICES REPORT: PRELIMINARY INVESTIGATION INTO THE BULK SERVICES REQUIRED FOR THE DEVELOPMENT OF THE DESERT ROSE CONVENTION CENTRE DEVELOPMENT	

2.5.1 Specialist investigations for the EIA

Pursuant to this, specialist scientists have been commissioned to review existing information and collect new data in order to assess the following topics:

- BIOPHYSICAL ASSESSMENT (VERTEBRATE FAUNA & FLORA): DESERT ROSE DEVELOPMENT (Swakopmund/Walvis Bay area)
- VEGETATION BASELINE SURVEY FOR DESERT ROSE DEVELOPMENT
- ARCHAEOLOGICAL AND HERITAGE ASSESSMENT OF SAND ROSE PROJECT
- MACROECONOMIC ASSESSMENT OF THE PROPOSED DESERT ROSE DEVELOPMENT IN SWAKOPMUND
- ENVIRONMENTAL NOISE
- HIGH LEVEL FEASIBILITY PAPER ON THE NAMIBIA INTERNATIONAL CONVENTION CENTRE (NICC) SWAKOPMUND
- SOIL, LAND CAPABILITY AND LAND USE ASSESSMENT
- DESERT ROSE PLANNING REPORT FOR THE INNOVATIVE AND PREMIER URBAN DEVELOPMENT INITIATIVE
- GROUND AND SURFACE WATER IMPACT ASSESSMENT ENGINEERING SERVICES REPORT: PRELIMINARY INVESTIGATION INTO THE BULK SERVICES REQUIRED FOR THE DEVELOPMENT OF THE DESERT ROSE CONVENTION CENTRE DEVELOPMENT

2.6 EIA team

The EIA team listed in Table 2.9 consists of three groups, namely,

- EIA project manager team;
- Specialist consultants
- Specialist environmental studies

Table 2.9 Members of the EIA team

EIA PROJECT MANAGEMENT TEAM		
Team member	***Role***	***Organisation***
Johan Cornelissen	Project manager	National Environmental Health Consultants
	Manager, EIA process	National Environmental Health Consultants
SPECIALISTS		
Specialist environmental studies		
Peter Cunningham	Biophysical Assessment (Vertebrate Fauna & Flora): Desert Rose Development in Swakopmund /Walvis Bay Area	Environment & Wildlife Consulting
G Stubenrauch	Desert Rose Planning report (An innovation and premier urban development initiative	Stubenrauch Planning Consultants cc
	Engineering services report	Windhoek Consulting Engineers (Pty) Ltd
Namibia Roads Authority	Impact on traffic	SSI Engineers and Environmental Consultants (Pty) Ltd

SPECIALISTS		
Specialist environmental studies		
Barry Standish Antony Boting	Macroeconomic Assessment of the proposed Desert Rose Development in Swakopmund	Strategic Economic Solutions
	High level Feasibility Paper on the Namibia International Convention Centre (NICC) Swakopmund	Convention Industry Consultants (Pty) Ltd Cape Town
Johan Cornelissen	Environmental Noise	National Environmental Health Consultants
Piet Steenkamp	Soils –Soil and Land use	Rehab Green
Braam van Wyk	Hydrology Surface H_2O	SLR Environmental Consulting
Herta Kolberg	Vegetation Baseline Survey for Desert Rose Development	Herta Kolberg Botanical Consulting
Stubenrauch Planning Consultants cc	Town Planning	Desert Rose Planning Report An innovative and premier urban development initiative

3 PROJECT DESCRIPTION

Convention Centre's in many cities around the world have become focus points for hosting prestigious events that benefit the local authorities. Convention Centre's are also the place where large numbers of influential foreign visitors, such as leaders in the scientific and business community, foreign government representatives, potential investors and members of the media get their first impression of a destination.

This has been the reason that Convention Centre's are increasingly focusing on the monumental value of such facilities. Many examples of recently built Convention Centre's demonstrate this vision (Singapore, Darmstadt, Reykjavik, Seville, Dublin, Kuala Lumpur, Melbourne, San Sebastian, and Cape Town).

The development concept is as follows:

Mixed Use Exclusive Development: The project will consist of residential, recreational, institutional, commercial and public zonings in order to create a multi-layered network of activities supporting each other. This will ensure that the development caters for all major levels of our society i.e. conventions, exhibitions, tourists, investors, general public, residents etc.

Iconic Convention and Exhibition Centre: It is intended that the iconic structure should become the Face of Namibia. This project will not only represent the country's economic well-being and status, but also the professional capabilities, technological advancement, political stability and international importance on a global level.

Accessibility of the Beach for the Public: – Public access to the beach will be maintained from all areas.

Location: The Convention Centre's will be located close to the Walvis Bay International Airport, The Port of Walvis Bay, Railway lines and the Trans Kalahari Corridor. The Erongo Region has become one of the major transport hubs in not only the SADC region, but also in Africa and internationally. This is crucial for the location of this project, which will be supported by all four major transport options.

Potential PPP: This project is the ideal project for a Public Private Partnership (PPP) where all can join hands to realize a national project for Namibia, the government, local authorities and the private sector in order to showcase our ability to cooperate as a nation to the world.

Ambassador's Park: The project will have a high security profile park where ambassadors and international delegates can own residences in order to represent their respective countries in Namibia.
Site security to comply with Presidential Security Protocol: The design and layout of the project and the Convention and Exhibition Centre with hotel will comply with international and presidential security protocol to ensure the safety of any high level delegation visiting the development.

3.1 Project Location

The Desert Rose urban node is to be developed on approximately 418ha of virgin land located between Walvis Bay and Swakopmund, approximately 24 km to the north of Walvis Bay and some 7 km to the south of Swakopmund as travelling along the B2 road connecting these two coastal towns.

As the urban nodes of Afrodite Beach, Namib Eco-Village, Dolphin Beach and Long Beach the Desert Rose development is to be located between the B2 and the area generally 100metres inland of the high water mark of the Atlantic Ocean.

The current status of the location is a conservation area. It is demarcated more specifically for Damara Tern breeding. The history of the site however ranges from the previously national road and railway line that went through the area to the site being used by the previous South African armed forces. The site was also part of the greater stretch of coastline between Walvis Bay and Swakopmund which was involved in a Coastline Strategic Environmental Assessment of August 2005 done by the Municipality of Walvis Bay and approved by the Ministry of Environment and Tourism. This specific area was earmarked for "low impact eco-tourism", thus ideal for the proposed project.

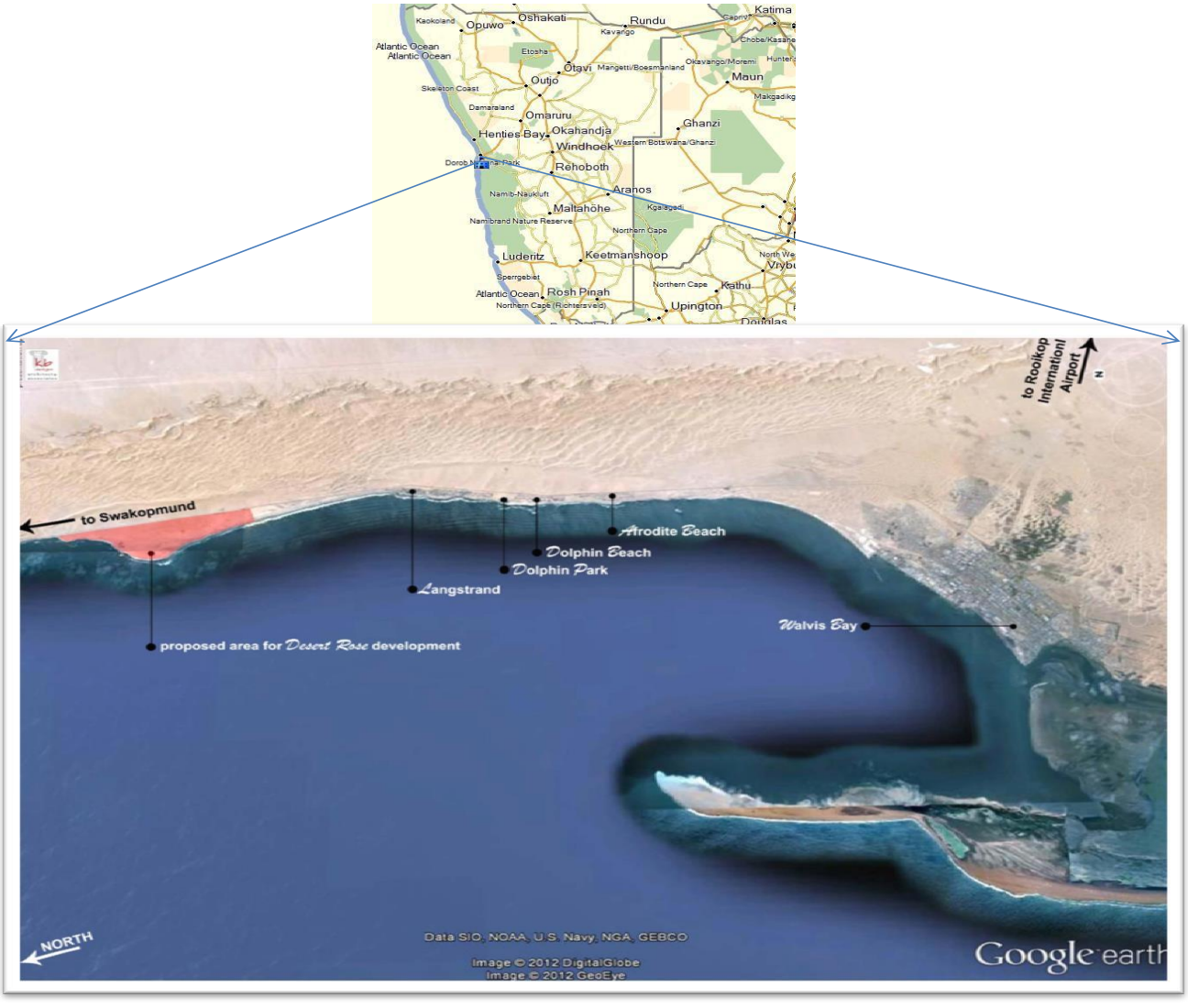


Figure 3.1 Project Site Location

Figure 3.2 Proposed Project Site

Large sections of open spaces, which will be fenced off, has been incorporated into the layout of the development to ensure some of the natural features of the site are maintained. The layout of the development has been planned to ensure current vehicle access to the beaches and shoreline is not effected or restricted but will be properly manage and controlled by Developers.

Spring Tides along the project site coastline were also considered during the layout design to ensure all infrastructures within the development will be located at a safe distance from the shoreline. This will also ensure that biodiversity of the intertidal zone is not affected.

A large section of the development will be allocated to a golf course that will primarily consist of indigenous vegetation. It is envisaged that all the all species found within the project area should be present within the area allocated to the golf course. This will serve as zone where natural occurring vegetation is protected and the species that are supported by the vegetation as incorporated as part of the development.

Infrastructure and Services

Potable Water Supply and Reticulation

The proponent intends to install fresh water reticulation network for the new development. The network will be connected to the existing pipeline towards the east of the B2 national road. The exact freshwater quantities that will be required are not known yet. Fresh water will primarily be used for normal residential purposes. The services will be handed over to the Local Authorities to charge rates and taxes on this infrastructure.

Waste water disposal

The proponent intends to install a sewer network with waste water treatment works. The location of the waste water treatment works and the capacity has not been finalised yet. The services will be handed over to the Local Authorities to charge rates and taxes on this infrastructure. The Proponent will consult with the two local authorities regarding the management and ownership of the waste water treatment facility.

Treated effluent will also be utilized for watering of the parks and gardens within the development.

Water supply

Water is a scarce resource in Namibia. A desalination plant has already been developed to supplement the fresh water resource specifically for the supply to uranium mines within the area. Recently, NamWater has signed an agreement to secure potable water for future development in the Erongo Region

Discussions with the Local & National Authorities

The bulk potable water supply will have to be supplied from the NamWater Reservoirs situated to the east of Swakopmund, next to the B2 highway. This facility is currently being upgraded with the addition of a third reservoir. Although there is currently a 300mm diameter link between Swakopmund and Walvis Bay, next to the B2 coastal road, it will not be sufficient for the new proposed development. The line is also old and un-reliable. It could cater for temporary supply to the development during the construction phase.

A dedicated new water main line will have to be constructed prior to the occupation of top structures in order to ensure water quantity and reliability.

The only challenge in the bulk water supply is the fact that the water will be provided from the Swakopmund reservoirs whilst the project area currently falls within the jurisdiction of the Walvis Bay Municipality. Discussions between the two local authorities and NamWater will have to be conducted, in order to determine which local authority claims ownership of the infrastructure, and on what terms.

Portable Water

Water demand

The new proposed development consists of a variety of developable erven and a golf course as noted in the introduction. Table 4.1 below indicates the development zoning.

Table 3.1 Development Zoning

Zoning Description	Quantity
Single Residential	492
Multi / General Residential	32*
Business	34

***Taking the density zonings into consideration the 32 general residential erven equate to 1740 residential units.**

The calculated estimated demands are as follows:

- Average Annual Daily Potable water demand: 2950 m³/day
- Instantaneous Peak Demand: (Peak Factor : 4) 11 800 m³/day
- Design Supply Demand for Supply main: 4 425 m³/day

The design supply demand for the supply main is based on 1.5 times the Average Annual Daily Demand.

The golf course will be supplied with purified effluent. During the initial construction phase of the development, there will be little demand for potable water. There will also be little purified effluent for irrigation of the golf course. As the water demand increases (houses being occupied), the purified effluent available for irrigation will increase and the potable water demand for irrigation will de-crease. For the reasons stated above, no additional provision is made for potable water irrigation when the development is completed.

Bulk Water Distribution Network

The new development will have to be supplied by a dedicated main water supply from the NamWater Reservoirs. This was discussed in preliminary meetings with NamWater. The route will start at the reservoirs, and then move along an approved route through the Swakopmund Townlands, cross the

Swakopmund River and follow the B2 highway on the eastern side until it reaches the development. The pipeline will have an estimated length of 12 km.

Initial design considerations indicate a supply main of minimum Ø450mm for the demand indicated. The reservoirs are located at a height of 48m above mean sea level and the development's highest natural ground level being 26m. The available static pressure taking losses into consideration will be approximately 16.3m at this point with an Ø450mm supply main.

The development itself has a static pressure difference of approximate 22m and will result in an available pressure head of between 18m and 40m (35m taking minor losses into consideration).

Taking this into consideration it can be safely stated that certain parts of the development will have to be boosted on site in order to achieve the minimum required design static pressure of 24m. Pressure boosting will specifically be required on high lying ground with multi-story buildings as well as the proposed Convention Centre. During the detail design of the water infrastructure, local boosting can be investigated.

The estimated development Cost of the bulk water supply is contained in **Annexure U "Engineering Service Report"** of this document.

Internal Potable Water Distribution Network

The internal potable water network will consist of various diameter mains, sufficient to provide the required static pressure to the erven. As stated, boosting may be required in certain parts in order to achieve the minimum required static pressure of 24m.

The network will follow a dual network design methodology which do not require any erf connections to cross the internal roads and will consist mainly of uPVC Class 9 and HDPE Class 10 pipework ranging from 250 mm diameter down to 32 mm diameter.

The estimated development cost of the internal water supply is contained in **Annexure U "Engineering Service Report"** of this document.

Solid Waste Management

During the construction phase of the project suitable waste containers will be available onsite to ensure construction is managed effectively. All waste generated during construction will either be kept for recycling or disposed at the Swakopmund or Walvis Bay landfill sites.

Waste collection will be done by the Local Authorities once the project has been completed.

Solid waste management

The project area cannot cater for solid waste management. Solid waste will have to be collected by either the Swakopmund Town Council or Walvis Bay Town Council. As soon as the jurisdiction of the development has been finalized, the discussion with the local authority can start. The provision for solid waste will not have any significant impact on the development cost and will be part of the municipal monthly rates and taxes charged to the property owners.

Energy Supply

The electrical supply for the development will be connected to the existing electrical grid. The nearest electrical grid is in Swakopmund located about 10km towards the north. The route for a new power line will still require a more detailed assessment. This will be done in consultation with Erongo RED.

Electrical Infrastructure

Estimated Supply Required

Table 3.2 A total electricity load of approximately 11MVA is forecast for the Desert Rose Development as indicated below:

1	Residential:	474	Stands	Approx. 1.7 MVA

2	General Residential:	1,704	Stands	Approx. 6.0 MVA
3	Business:	30	Stands	Approx. 1.3 MVA
4	Convention Centre:	1	Stand	Approx. 2.0 MVA

Currently there is no formal contribution toward bulk electrical supply. The supply authority is however working on a policy for bulk electrical network contribution. Provision for the network contribution is made in the cost estimate contained in **Annexure U "Engineering Service Report"** of this document.

Medium voltage supply

The development will be supplied directly from the NamPower Main Intake **Feld Switching Station** situated in Mandume Ya Ndemufayo Street approximately 4km from the development. It is projected that enough capacity is available at the intake station. A proposal to supply the development via 2 x 185mm^2 11kV XLPE underground cables is made.

A new Switching Station will be required at the development from where 3 x 11kV 70mm^2 rings will supply the residential and business areas and 2 x 11kV 70mm^2 cables will supply the Convention Centre.

Desert Rose MV,LV Reticulation and services connections

An underground electrical reticulation will supply 13 Substations in the development. Underground service connections will be via approximately and initially 90 electrical metering kiosks fed from the substations. The Electrical Reticulation is according to Erongo RED standards

Street Lighting

Approximately 180 streetlights are planned for the main streets, while approximately 200 streetlights are planned for secondary roads. Streetlights are according to Erongo RED standards.

Streets and Access to the development

Access to the development will be via the B2 main road. The turn-offs locations, and the width of the road at the turn-off points, will be done in consultation with the Roads Authority to the development.

The entrance will be built to specifications of Roads Authority and will also be landscaped. The internal street network for the development will range from 16 meters to 18 meters in width, creating wide enough streets for the necessary service provision and landscaping of the development.

Road Infrastructure

A key aspect of any development is the consideration towards access to such development and the associated safety and level of services. Poor consideration to these aspects will result in a failed project and therefore forms an integral part of the investigation.

The proposed road infrastructure does not pose any challenges and the proposed upgrading of TR 2/1 and construction of internal roads and pedestrian walkways will ensure a pleasant experience when visiting the development.
The Development Cost of all roads, parking areas and public walkways is contained in **Annexure U "Engineering Service Report"** of this document.

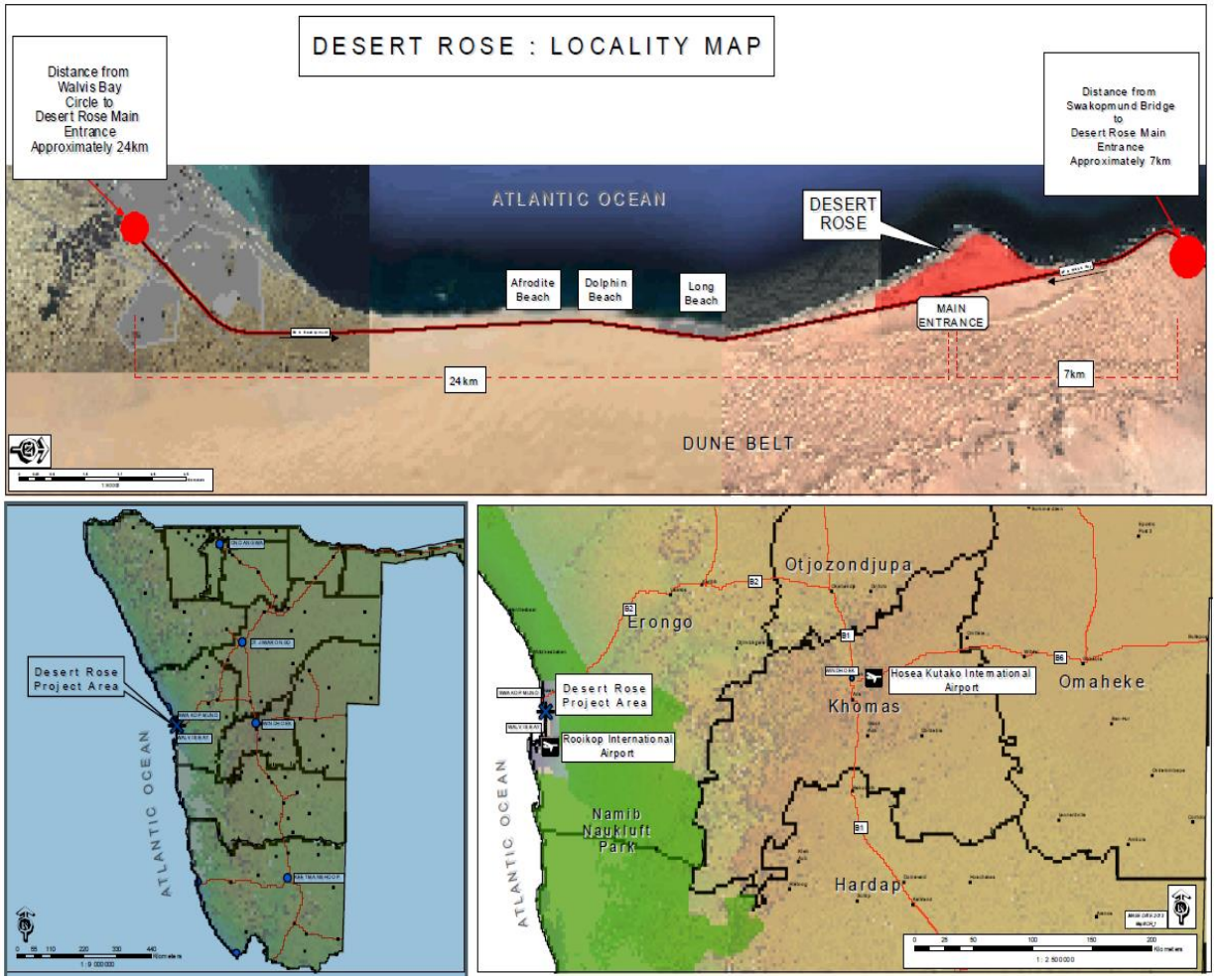


Figure 3.3 Desert Rose Locality Map

Figure 3.4 Desert Rose Informants

Figure 3.5 **Desert Rose Layout**

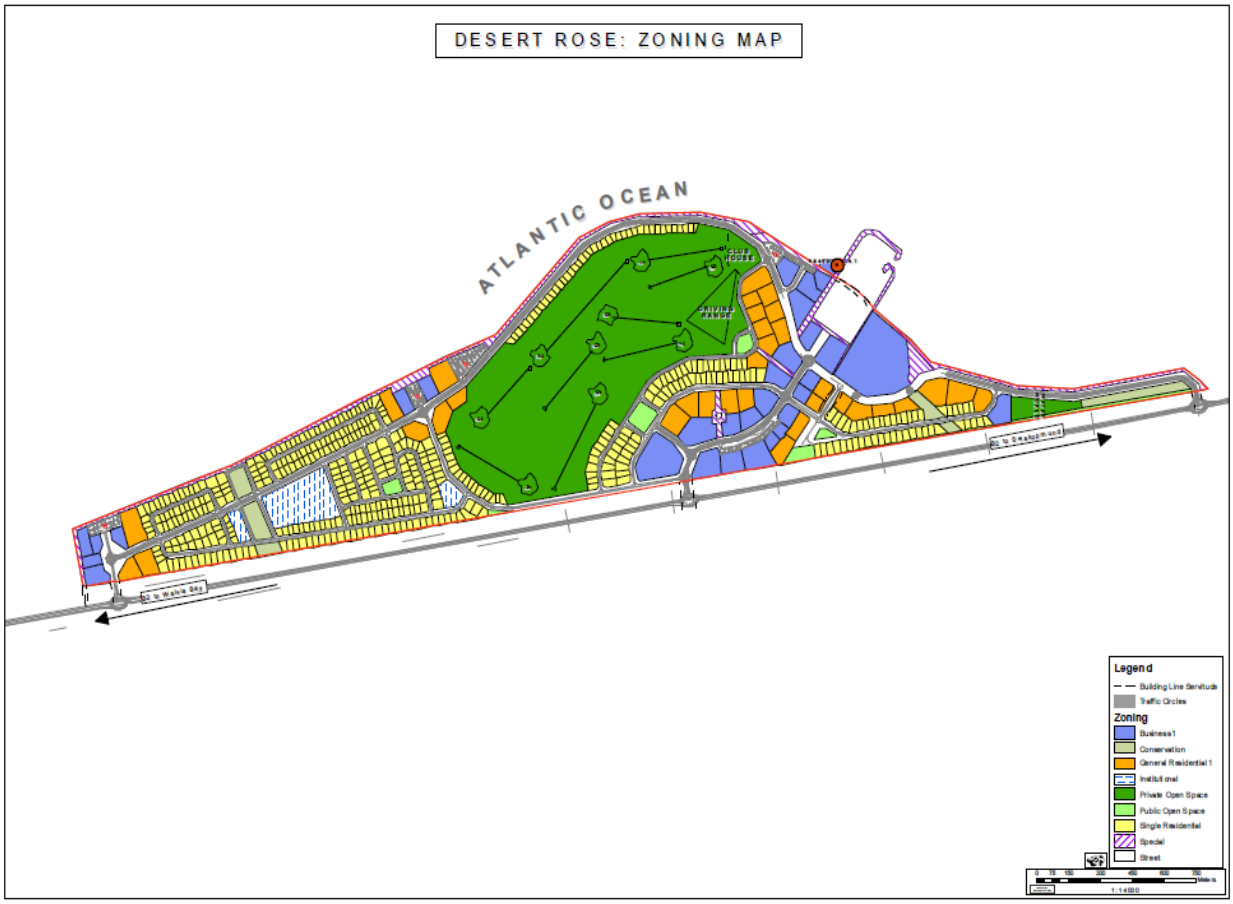


Figure 3.6 **Desert Rose Zoning**

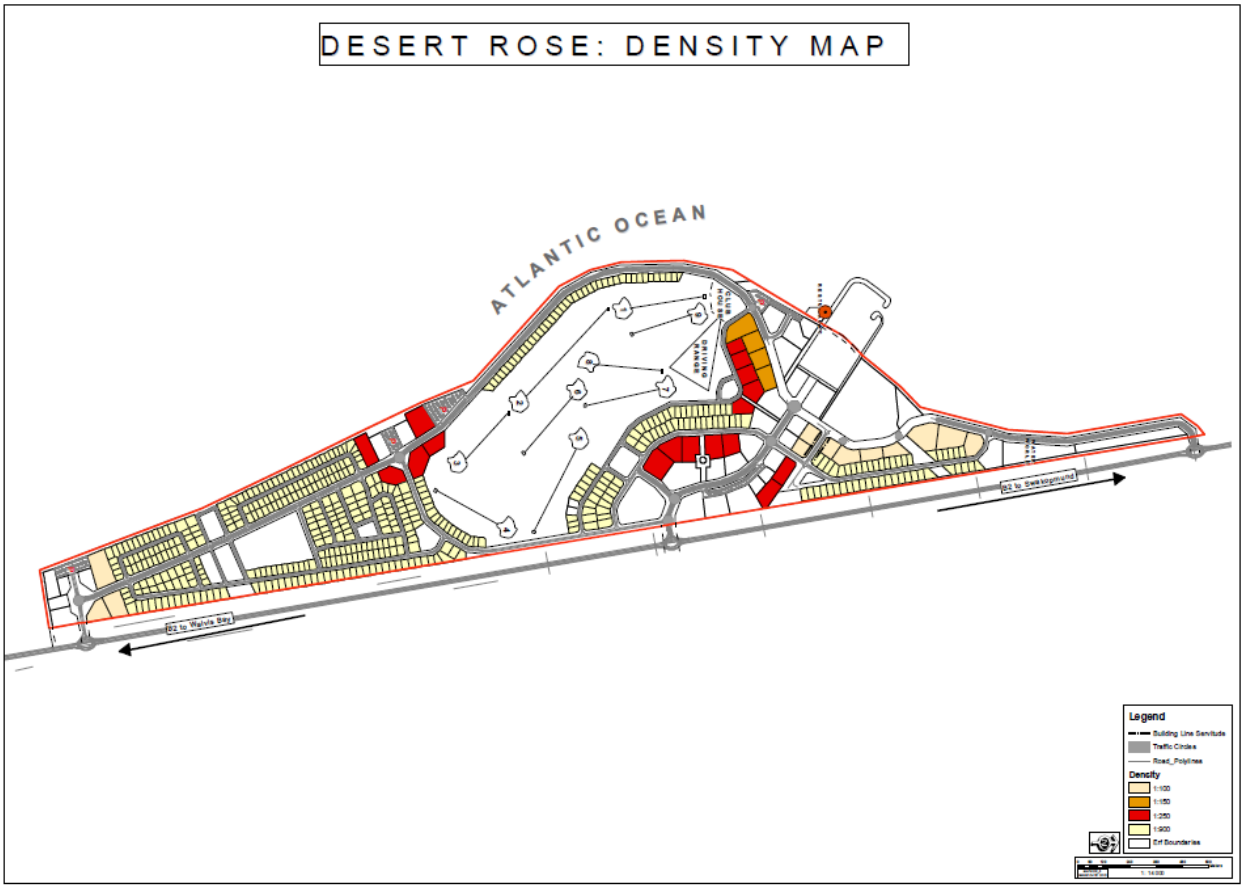


Figure 3.7 **Desert Rose Density Map**

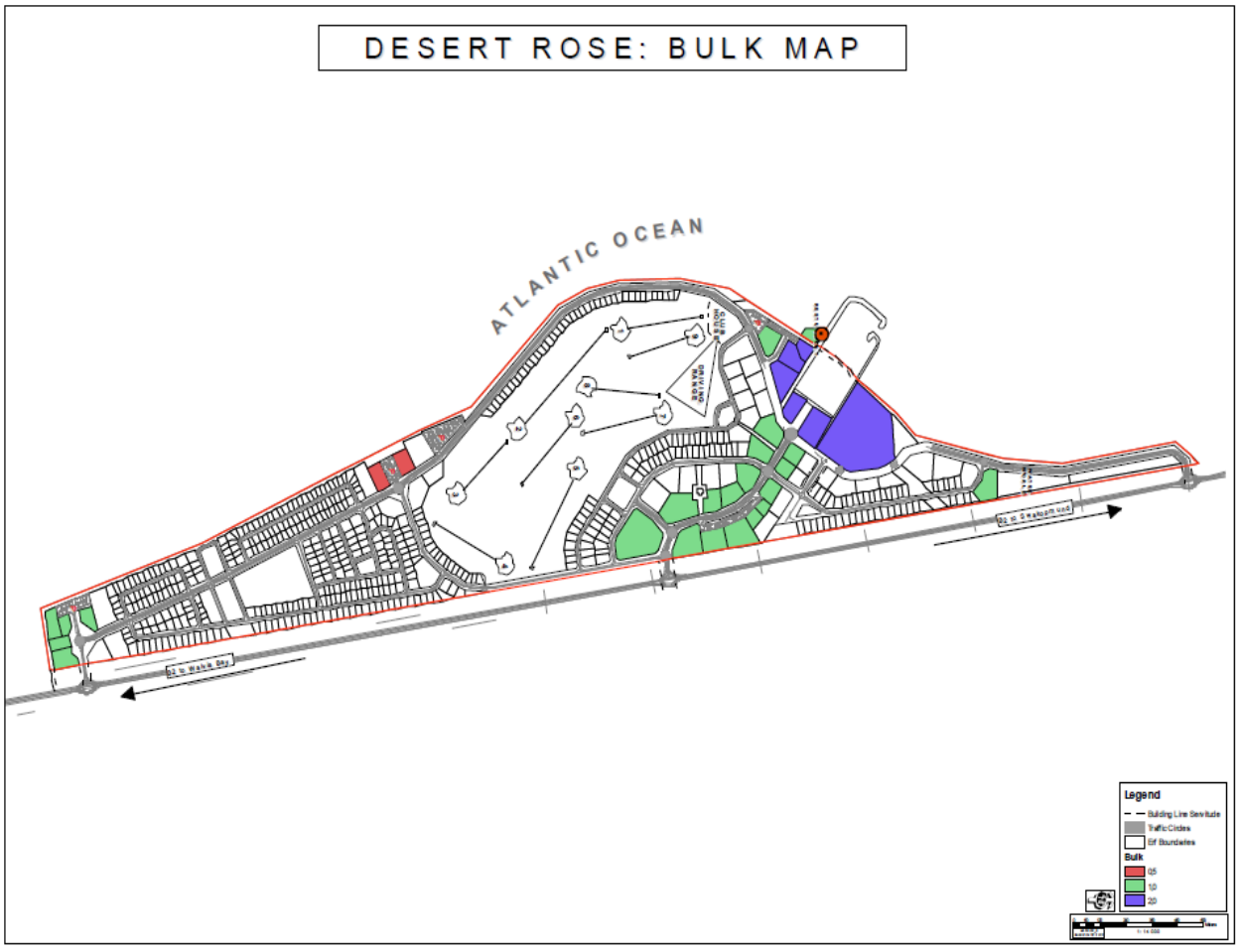


Figure 3.8 **Desert Rose Bulk Map**

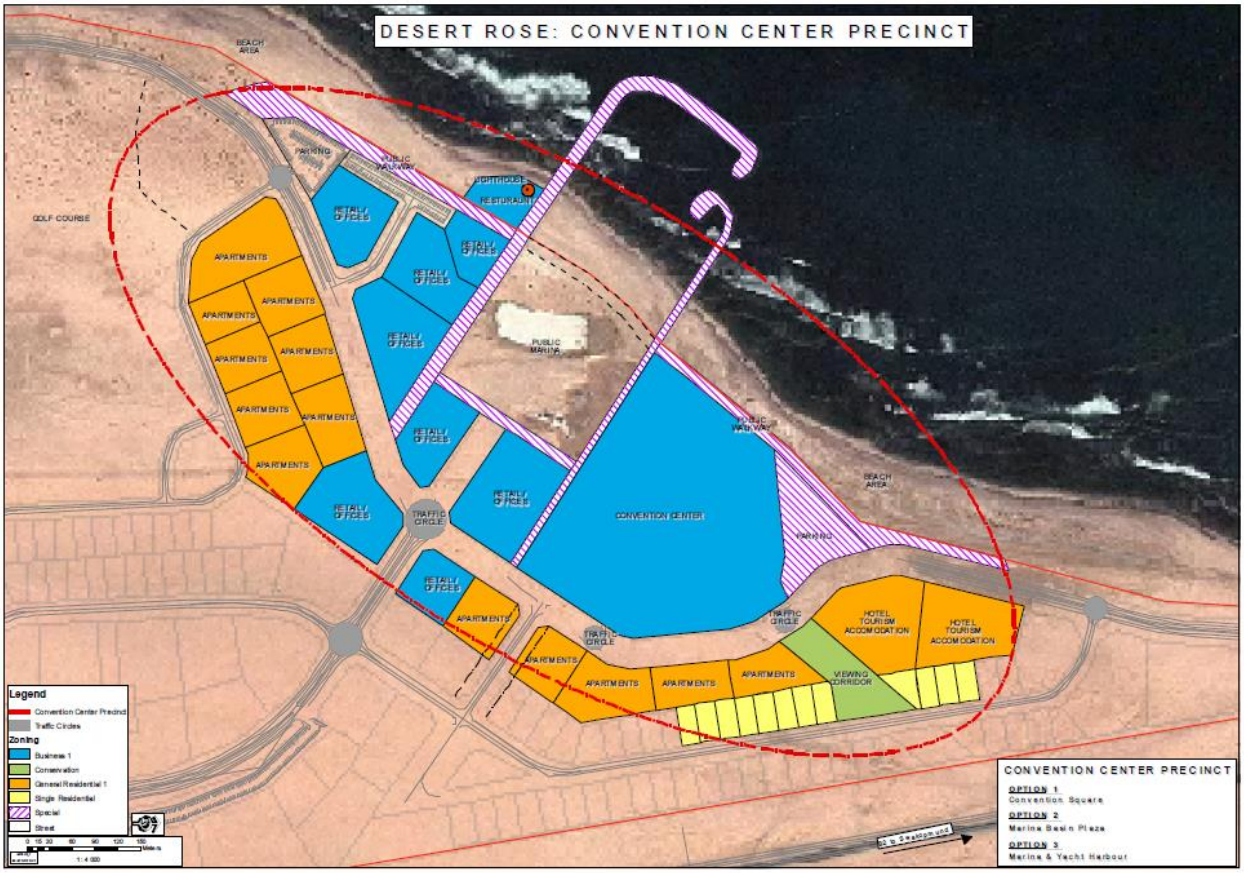


Figure 3.9 Convention Centre Precincts

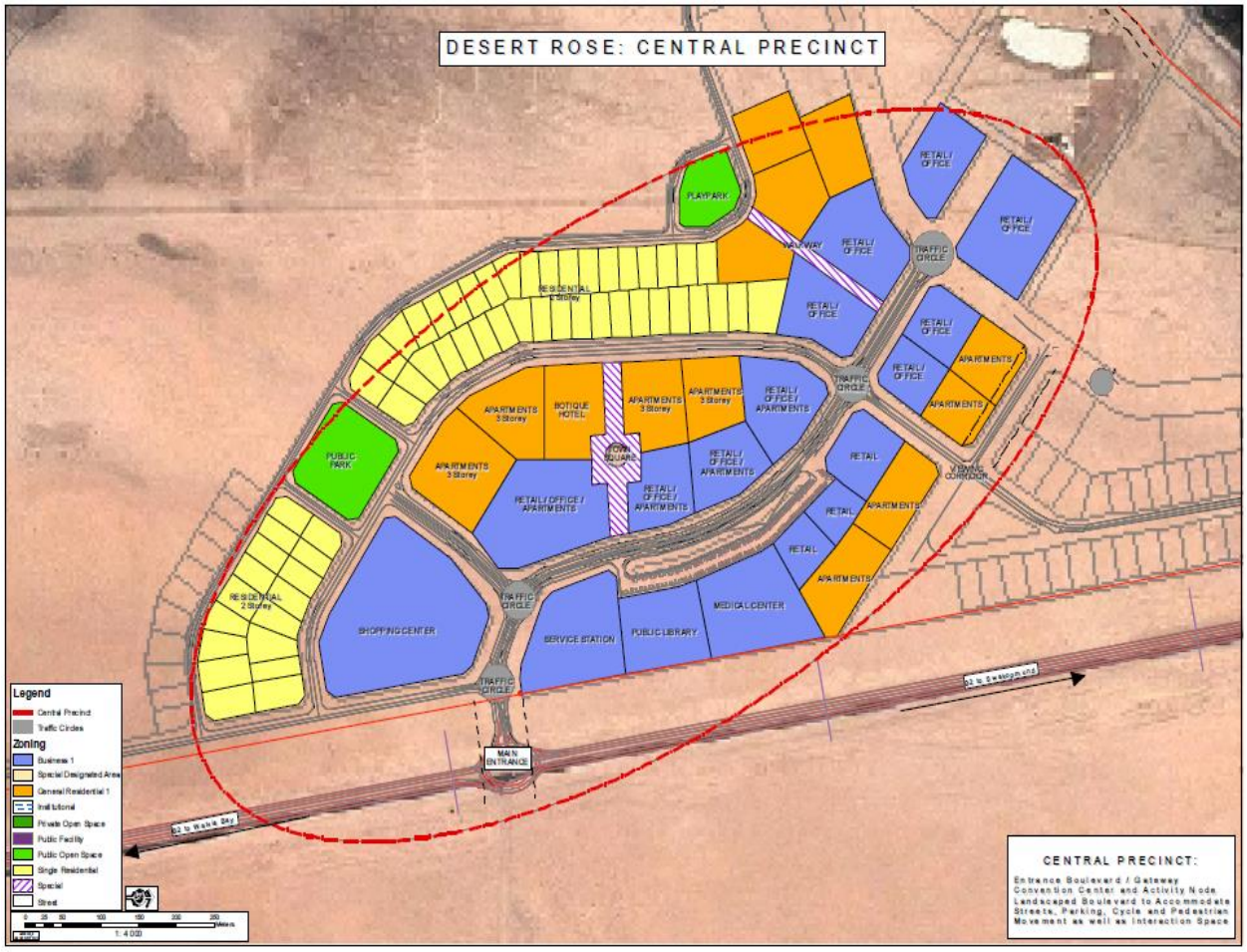


Figure 3.10 Desert Rose Central Precincts

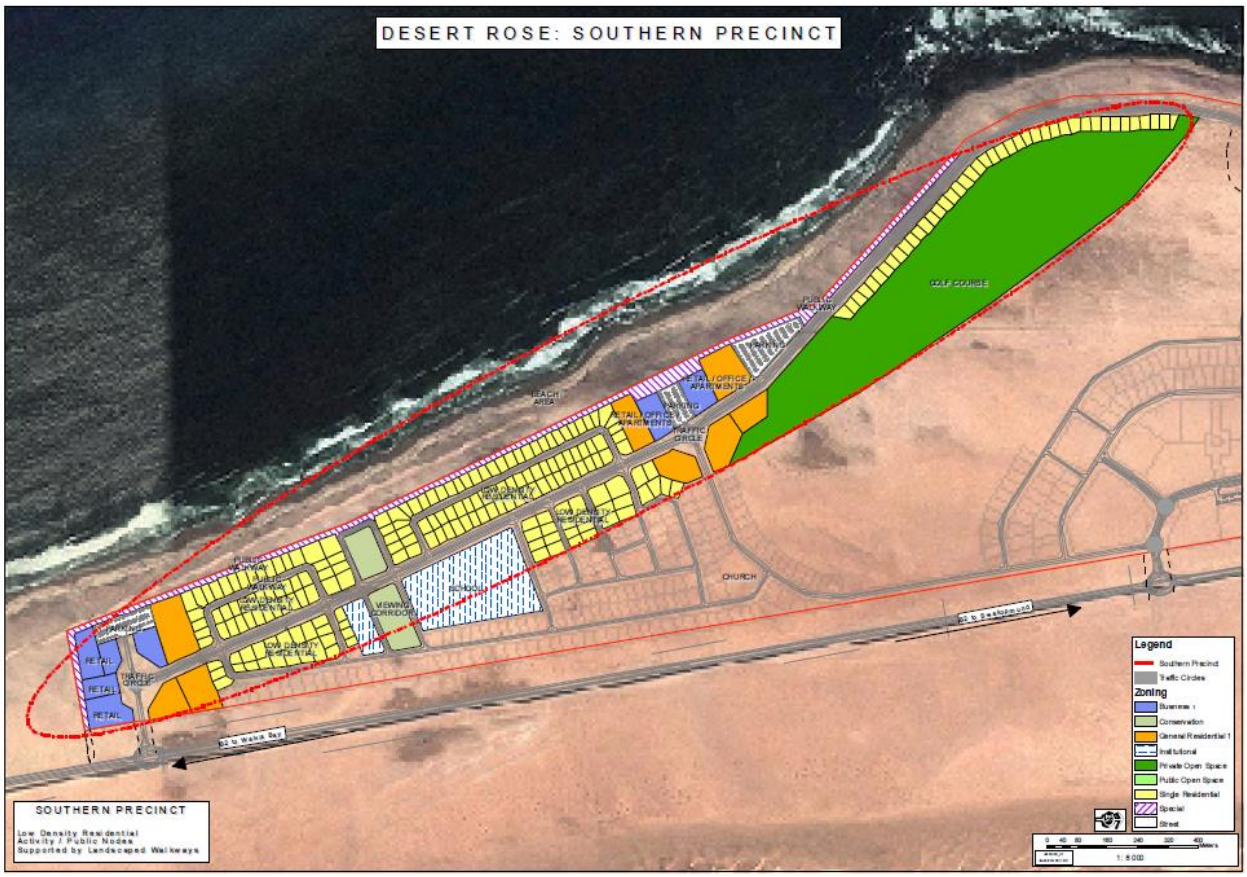


Figure 3.11 Desert Rose Southern Precincts

Existing situation

Sand Rose Investments (Pty) Ltd is proposing the Desert Rose development in Dorob National Park - conservation area on the coast between Swakopmund and Walvis Bay. The development would consist of single and general residential units, business and governmental space, public open space, a golf course, hotels and the proposed Namibian International Convention Centre (NICC). The intention is to develop an iconic mixed-use development that would showcase the region to the world.

Desert Rose approached Strategic Economic Solutions (SES) to perform the macroeconomic feasibility of the NICC component of the development. That report was produced in September 2013 and has been incorporated into the promotional brochures for the development. SES has extensive experience in the economic assessment of conventions and convention centres. It compiled the original economic assessment for the Cape Town International Convention Centre (CTICC) and has assessed various expansion options for the CTICC. It also performed the initial feasibility analysis of the NICC in Windhoek in 2011.

The company produces annual economic assessments for the CTICC, International Convention Centre Durban and occasional economic assessments for the Sandton Convention Centre (SCC). It makes an annual assessment of the economic contribution of the internationally renowned Design Indaba that is hosted at the CTICC each year and attracts buyers from around the world.

Sand Rose Investments consequently requested that SES expand its macroeconomic analysis to include the full Desert Rose development. The macroeconomic impacts outlined in this report are based on the Desert Rose business plan as supplied to SES by Sand Rose Investments. This report includes summaries of the macroeconomic analysis of the NICC and should be read in conjunction with that report.

This report has five sections:

- It starts by describing macroeconomic analysis;
- Section 2 describes the limitations that were faced and gives a range of high level results;
- Section 3 reports on the macroeconomic results for the mid-range assumptions;
- Section 4 describes the methodology and assumptions that were used;

- Section 5 concludes the report.

Future growth

The results reported are for the direct jobs at Desert Rose and the overall contribution to GDP. The results for year 1 are the same for all assumptions because this is a pure construction phase where neither effect is relevant.

- In year 2 there would be 811 new direct jobs as a low estimate and 877 as a high estimate. By year 20 the range lies between 3 459 and 5 859. This is approximately a 30% difference from the mid-range estimate in year 20.

- In year 2 the low estimated contribution to GDP is N$2 042m and the high estimate is N$2 083m. By year 20 the estimate lies between N$8 635m and N$13 037m. This is approximately a 23% difference from the mid-range estimate in year 20.

It was found that the proposed Desert Rose development would have a major economic impact. Based on the low estimate assumptions Desert Rose can be expected to add between 0.9% and to 1.6% to GDP. The variation depends on the year. The mid-range estimate adds between 1.0% and 1.7% while the high range estimate lies between 1.0% and 1.9%.

Detailed results based on the mid-range assumptions for displacement effects and support businesses were reported.

Contribution to Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is the total value of all final goods and services produced in the country. It is a fundamental measure of the economic quality of life of all people in the country. It is also the most important and all-encompassing measure of the macroeconomic effect of the Desert Rose.

The total nominal contribution to GDP from all forms of expenditure at the Desert Rose is estimated to increase from N$1 378m in year 1 to N$10 604m in year 20. In real terms the contribution to GDP is expected to increase from N$1 378m in year 1 to N$3 263m in year 20.

- It is estimated that the Desert Rose excluding the NICC would contribute between N$1 208m and N$4 911m to GDP from capital expenditure

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- The contribution to GDP from operations at the Desert Rose excluding the NICC would increase from N$47m in year 2 to N$5 197m in year 20.

- The contribution due to capital expenditure of the NICC would increase from N$171m in year 1 to N$601m in year 3. It tapers off after that and in year 20 the ongoing capital expenditure would contribute N$14m to GDP.

- Operations and other expenditure due to the NICC would increase from N$455m in year 4 to N$2 426m in year 20.

GDP is important not just because it is income but also because income has the capacity to add to wealth. Based on expected projections the Desert Rose is estimated to add over N$125bn to Namibian GDP after twenty years. This is approximately N$61bn in real terms.

Job Creation

According to the 2011 Census there were 46 879 employed persons in the Erongo region and 10 297 unemployed persons. The development has the potential to significantly address unemployment in the region.

The development and operation of the Desert Rose would result in changes to two types of jobs. The first are the direct jobs that would be created over the project period. These are jobs as a result of the:

- construction of the facilities;
- operational expenditure at Desert Rose and NICC;
- expenditure of delegates attending events;
- expenditure of delegates returning as tourists; and business orders generated from trade fairs.

The second are the so-called indirect jobs that are due to multiplier effects of the direct expenditure.

The direct and indirect job numbers that are reported below are annual full time equivalents.

- The total number of direct jobs is set to increase from 546 in year 1 to 4 539 in year 20. The number of jobs is expected to remain constant once operational maturity is reached. However, the number of jobs directly created because of induced tourism as a result of the NICC would increase slightly each year as an increasing number of tourists become regular visitors to the country.

- Indirect jobs at Desert Rose and country-wide would also be created. The indirect jobs at Desert Rose would be in the support industries. Total indirect jobs are set to increase from 1 432 in year 1 to 4 314 in year 20.

- Total jobs are the sum of the direct and indirect jobs. The total number of direct and indirect jobs, due to both capital and operating expenditure, are set to increase from 1 979 in year 1 to 8 853 in year 20.

Other Macroeconomic Effects

Apart from the key macroeconomic effects discussed above, there are many other macroeconomic effects that would flow from Desert Rose. These include the generation of tax and contribution to indirect household income.

- The combined generation of direct and indirect taxes is set to increase from N$147m to N$1 077m by year 20. The cumulative contribution to taxes is set to exceed N$12bn by year 20.

- Total household income is set to increase from N$266m in year 1 to N$2 384m in year 20. Cumulatively over the twenty year period it is estimated that household income would benefit by nearly N$27bn.

The consequences of not expanding

- Some of the business and people choosing to move to Desert Rose are likely to come from elsewhere in Namibia. This would be the case particularly in the early years. This is called a displacement effect. These displacement effects are clearly not a net economic gain to Namibia and need to be taken into account in the analysis.

- Some of the business that would be established at Desert Rose would be support firms to other business. An example would be the establishment of a stationary supplier that services other firms in the development. In macroeconomic analysis these support firms are part of the second round effects. Including them in the first round effects would be double counting.

The economic consequences of not proceeding with the proposed expansion

3.2 Project Alternatives

During the initial planning stage alternative locations were also considered away from the cost – Windhoek – Feasibility Study. The government of Namibia is considering funding an international convention centre located in Swakopmund. Initially the convention centre was to be located in Windhoek and in 2011 Strategic Economic Solutions (SES) undertook a feasibility analysis of that centre. The results indicated that the centre was economically beneficial and would bring significant benefits to Windhoek and Namibia. The proposed relocation of the international convention centre to Swakopmund means a reduction the scale of the project and the number of events. This report presents the results of a convention centre located in Swakopmund. SES has extensive experience in the economic assessment of conventions and convention centres. This experience has been used in the economic assessment of the proposed Namibian International Convention Centre (NICC).

Two Alternatives sites on the coastline between Langstrand and Swakopmund were considered for the envisaged development. The option of “no go” is the base case, which is described as the affected environment in Chapter 4 of this report, against which to measure the performance or benefits of the proposed project.

The main criteria used by Sand Rose Investments (Pty) Ltd to evaluate the various locations were:

- Capital cost of the project,
- Possible environmental and social impacts,
- Feasibility,
- Benefits to local receiving community,
- Special criteria for a Convention Centre

In order for a Convention Centre to be successful, a feasibility study has been conducted by independent consultants and the following site criteria have shown to be important. They obviously cannot all be fulfilled all the time, but the proposed site at least meets the majority of the criteria.

- The destination should have at least some scientific presence. One or more internationally active universities and scientific institutions. A site in a scientific precinct demonstrates the importance given to the science in the destination.

- The destination should be international accessible and the convention Centre site should be well connected to an international airport.

- The destination should have sufficient hotel; accommodation in a variety of grading's. It is definitely preferable if some (the more the better) of these hotels are in close – if possible: walking distance, otherwise short shuttle distance – of the convention Centre location. The preferred site of a convention Centre should have the possibility for the future construction of more hotels nearby.

- The destination should have a reasonable congress infra-structure (PCO's, DMC's, Stand building companies, Transportation Companies etc.) These have no significant effect on the site selection for the convention Centre, but the construction of a convention Centre will attract businesses in this sector.

- A convention Centre located in a prestigious part of the city/area enhances the feel of importance. This feel can also be the result of a location on a specifically beautiful location or a location with extra ordinary views (many examples in mountain areas, at sea fronts or lake shores). Sufficient space needs to be allocated to some serious landscaping around the Convention Centre.

- Retail outlets typically do not survive in a convention Centre because of the large variations in occupancy from day to day. Exhibitors and visitors/delegates however have of course a need to visit shops, restaurants, banks etc. A convention Centre located in the direct vicinity of at least some shops has an advantage.

- A combination of a convention and exhibition Centre, as proposed, comes with logistical challenges, mainly for the exhibition part of the building. Sufficient space need to be allocated to working terraces or marshalling yards (ideally 50% of the gross indoor exhibition area). Sufficient spaces need also to be available for certain outdoor activities (parties, festivals, arena seating, outdoor demonstrations, outdoor expo's etc.)

Alternative 1:

First alternative is next to the B2 between Swakopmund and the Park Homes. This area will be considerate the lowest impact on the receiving environment, but due to the fact that this area is located under the sea water level and thus creating a catastrophic impact on the receiving environment (proposed development).

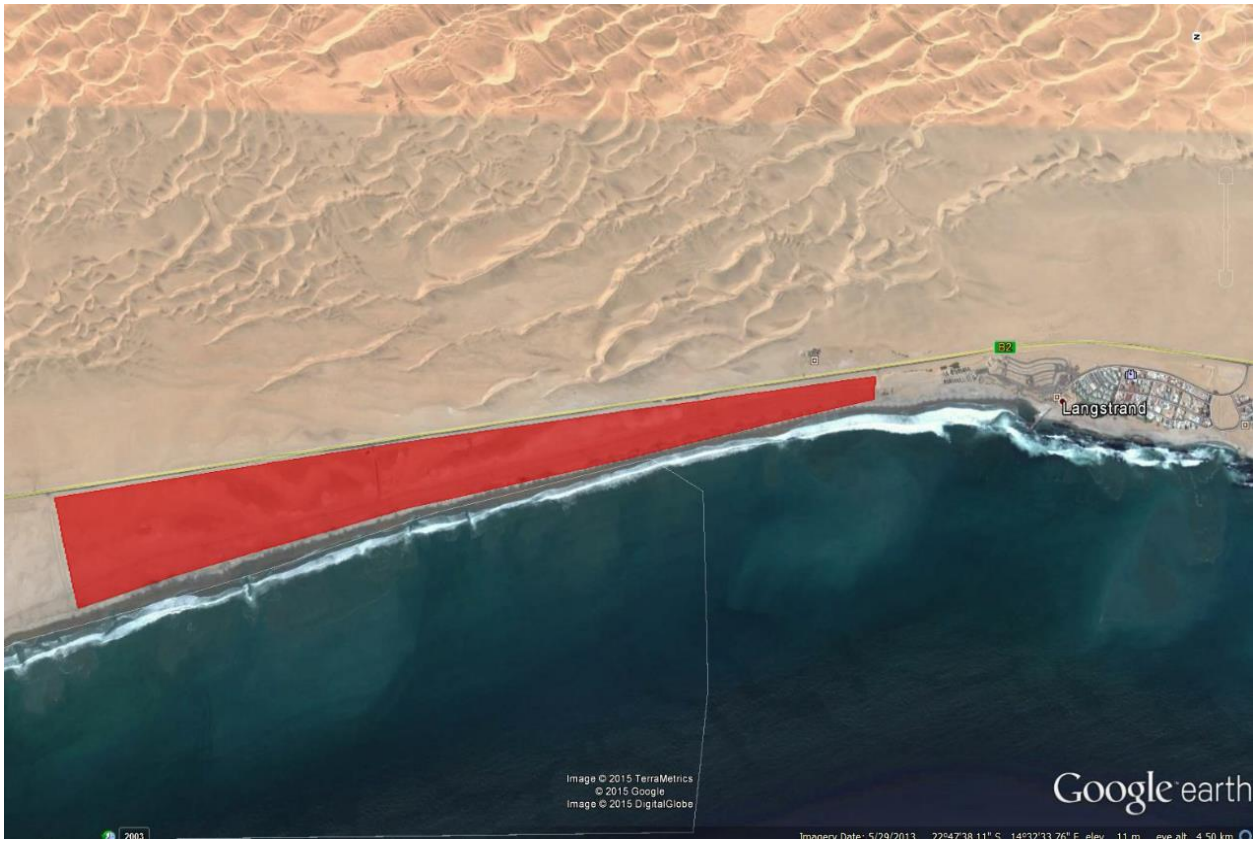

Figure 3.12 Desert Rose Alternative site 1

Alternative 2:

Second alternative next to the B2 between Swakopmund and Langstrand / Park homes, just over the Swakopmund River Bridge. This site will have less impact on the receiving environment, but this area has its own environmental challenges (e.g. Horse graveyard and the demarcated Damara Tern area). The B2 must also be diverted to accommodate the site. This site will be the best suited for this proposed development. By diverting the B2 the traffic flow will be easier and safer for commuters.

Figure 3.13 Desert Rose Alternative site 2

The No-Go alternative is the option of not proceeding with the activity, which implies a continuation of the status quo. Should this particular development not go ahead, none of the potential impacts (positive and negative) identified would occur on the identified site.

Alternatives that were considered during the planning phase of the project are discussed below.

Due to the unique requirements in terms of the site selection criteria from the Feasibility Study for the Convention Centre, this site posed the most favourable conditions in order for the project to be successful within the Erongo Region. Taking in consideration all the requirements, no other site adequately addressed these.

4 DESCRIPTION OF THE AFFECTED ENVIRONMENT

4.1 Background

A desktop study (i.e. literature review) was conducted between 24 and 26 June 2014 on the vertebrate fauna (e.g. reptiles, amphibians, mammals and birds) expected to occur in the general coastal area between Swakopmund and Walvis Bay. A rapid site assessment was conducted between 29 June and 2 July 2014 to determine the actual vertebrate fauna and flora on site and which potentially could be affected by the proposed Desert Rose urban developments.

This literature review was to determine the actual as well as potential vertebrate fauna associated with the general area commonly referred to as the Southern Namib or Southern Desert (Giess 1971, Mendelsohn *et al.* 2002, Van der Merwe 1983). This area is bordered inland by the Central Namib or Central Desert (Giess 1971, Mendelsohn *et al.* 2002). Climatically the coastal area is referred to as Cool Desert with a high occurrence of fog (van der Merwe 1983).

The Namib Desert Biome makes up a large proportion (32%) of the land area of Namibia with parks in this biome making up 69% of the protected area network or 29.7% of the biome (Barnard 1998). Four of 14 desert vegetation types are adequately protected with up to 94% representation in the protected area network in Namibia (Barnard 1998). With the exception of municipal land, the area falls within the recently proclaimed Dorob National Park. No communal and freehold conservancies are located in the general area with the closest communal conservancy being the ≠Gaingu Conservancy in the Spitzkoppe area approximately 100 km to the northeast (Mendelsohn *et al.* 2002, NACSO 2010).

Two important coastal wetlands – i.e. Walvis Bay Wetlands and Sandwich Harbour – both Ramsar sites, occur in the area. According to Curtis and Barnard (1998) the entire coast and the Walvis Bay lagoon as a coastal wetland, are viewed as sites with special ecological importance in Namibia. The known distinctive values along the coastline are its biotic richness (arachnids, birds and lichens) with the Walvis Bay lagoon's importance being its biotic richness and migrant shorebirds as well as being the most important Ramsar site in Namibia.

The Ramsar site covers 12,600 ha with regular counts of birds varying between 37,000 and well over 100,000 individuals, albeit mainly migratory species (Kolberg n.d.). The Walvis Bay wetland is considered the most important coastal wetland in southern Africa and one of the top 3 in Africa (Shaw *et al.* 2004). The Sandwich Harbour Ramsar site covers 16,500 ha and falls within the Namib-Naukluft Park and enjoys full protection (Kolberg n.d.). This area is a centre of concentration of migratory shorebirds, waders and flamingos regularly supporting over 142,000 and 50,000 birds during summer and winter, respectively (Kolberg n.d.).

The area is bordered by the Kuiseb River to the south (Walvis Bay area) and the Swakop River to the north (Swakopmund area) with catchment areas of 15,500 km² and 30,100 km², respectively with common riparian species including Ana tree, Tamarix, Camelthorn, Salvadora, Fig, Euclea, !Nara and Mesquite (Jacobson *et al.* 1995).

The central coastal region, and the Swakopmund/Walvis Bay area in particular, is regarded as "relatively low" in overall (all terrestrial species) diversity (Mendelsohn *et al.* 2002). Overall terrestrial endemism in the area on the other hand is "moderate to high" (Mendelsohn *et al.* 2002).

The overall diversity and abundance of large herbivorous mammals (big game) is viewed as "low to medium" with 1-2 species while overall diversity of large carnivorous mammals (large predators) is determined at 4

species with brown hyena being the most important with "medium" densities expected in the area (Mendelsohn *et al.* 2002).

It is estimated that at least 54 reptile, 7 amphibian, 43 mammal and 182 bird species (breeding residents) are known to or expected to occur in the general/immediate Swakopmund/ Walvis Bay area of which a high proportion are endemics (e.g. reptiles with 50%).

According to Maggs (1998) there are approximately 4344 higher plant species with the most species being within the grasses (422), composites (Asteraceae) (385), legumes (Fabaceae) (377) and fygies (Mesembryanthemaceae) (177), recorded from Namibia. Total species richness depends on further collecting and taxonomic revisions. High species richness is found in the Okavango, Otavi/Karsveld, Kaokoveld, southern Namib and Central Highland (Windhoek Mountains) areas. Endemic species – approximately 687 species in total – are manly associated with the Kaokoveld (north western) and the succulent Karoo (south western) Namibia. The major threats to the floral diversity in Namibia are:
1). Conversion of the land to agriculture (with associated problems) and,
2). poorly considered development (Maggs 1998, Mendelsohn *et al.* 2002).
The vegetation in the Desert Biome is characterised by a dominance of therophytes which persist in the form of seeds during unfavourable conditions (Lovegrove 1999). According to Mendelsohn *et al.* (2002) the dominant vegetation structure in the Southern Desert is grassland and dwarf shrub land.

These Namib grasslands – mainly annual species – are very sparse, but nevertheless still dominate the little vegetation that grows there. The average plant production is extremely low with 0-5% variation in green vegetation biomass (Mendelsohn *et al.* 2002). The overall plant diversity (all species) in the general Walvis Bay/Swakopmund area is estimated as <50 species (Mendelsohn *et al.* 2002). These estimates are limited to "higher" plants as information regarding "lower" plants is sparse. Burke (2003), estimates that over 400 species – 10% of the flora of Namibia – occur in the central Namib and although it has not been identified as a centre of endemism, it is dominated by endemics such as *Arthraerua leubnitziae*. The greatest variants affecting the diversity of plants are habitat and climate with the highest plant diversity generally associated with high rainfall areas.

Pockets of high diversity are found throughout Namibia in "unique" habitat – often transition zones – e.g. mountains, inselbergs, etc. Plant endemism is viewed as "medium" – with between 1-15 endemics expected from the general area (Mendelsohn *et al.* 2002). Furthermore, Mendelsohn *et al.* (2002) views the grazing and browse as virtually non-existent in the general area. The tourism potential of this area is viewed as moderate (Mendelsohn *et al.* 2002, van der Merwe 1983).
It is estimated that up to 39 species of larger trees and shrubs and up to 48 grasses are known to or expected to occur in the general/immediate Swakopmund/Walvis Bay area.

4.1.1 REPTILE DIVERSITY

Table 4.1 indicates the reptile diversity known and/or expected to occur in the general area between Swakopmund and Walvis Bay as well as species actually confirmed during the fieldwork (√*) or using the authors previous sightings ($\surd^{1,2,3}$) from the area:

Table 4.1 Reptile diversity known and/or expected to occur in the general area – i.e. Swakopmund/Walvis Bay area – and species confirmed during the fieldwork and/or the author's previous records ($\surd^{1,2,3}$) from the area.

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status		
				SARDB	IUCN	CITES
TURTLES AND TERRAPINS						
Pelomedusa subrufa	Marsh/Helmeted Terrapin		Secure			
SNAKES						
Thread Snakes						
Leptotyphlops occidentalis	Western Thread Snake		Endemic; Secure	P		
Leptotyphlops labialis	Damara Thread Snake		Endemic; Secure			
Burrowing Snakes						
Xenocalamus bicolour bicolor	Bicoloured Quill-snouted Snake		Secure			
Typical Snakes						
Lamprophis fuliginosus	Brown House Snake		Secure			
Lycophidion capense	Cape Wolf Snake		Secure			

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status		
				SARDB	IUCN	CITES
Pseudaspis cana	Mole Snake		Secure			
Dipsina multimaculata	Dwarf Beaked Snake	√[1]	Endemic; Secure			
Psammophis trigrammus	Western Sand Snake		Endemic; Secure			
Psammophis notostictus	Karoo Sand Snake		Secure			
Psammophis namibensis	Namib Sand Snake	√[1,2,3]	Secure			
Dasypeltis scabra	Common/Rhombic Egg Eater		Secure			
Aspidelaps lubricus infuscatus	Coral Snake		Secure			
Aspidelaps scutatus scutatus	Shield-nose Snake		Secure			
Naya nigricincta	Black-necked Spitting Cobra	√[1,3]	Endemic; Secure			
Bitis arietans	Puff Adder	√[1]	Secure			
Bitis caudalis	Horned Adder	√[1,2,3]	Secure			
Bitis peringueyi	Péringuey's Adder	√*,√[1]	Endemic; Secure		LC	
LIZARDS						
Skinks						
Typhlosaurus braini	Brains's Blind Legless Skink		Endemic; Secure			
Typhlacontias brevipes	FitzSimmons' Burrowing Skink	√*,√[1]	Endemic; Secure			
Trachylepis occidentalis	Western Three-striped Skink		Secure			
Trachylepis striata wahlbergi	Striped Skink		Secure			
Trachylepis sulcata	Western Rock Skink	√[1]	Secure			
Trachylepis variegata variegata	Variegated Skink		Secure			
Old World Lizards						
Heliobolus lugubris	Bushveld Lizard		Secure			
Meroles anchietae	Shovel-snouted Lizard	√[1]	Secure			
Meroles cuneirostris	Wedge-snouted Desert Lizard	√[1,3]	Endemic; Secure			
Meroles micropholidotus	Small-scaled Desert Lizard		Endemic; Rare?			
Meroles reticulatus	Reticulated Desert Lizard	√*,√[1,2]	Endemic; Secure			
Meroles suborbitalis	Spotted Desert Lizard	√[1,3]	Secure			
Pedioplanis breviceps	Short-headed Sand Lizard	√[1]	Endemic; Secure			
Pedioplanis namaquensis	Namaqua Sand Lizard	√[1]	Secure			
Pedioplanis inornata	Plain Sand Lizard	√[1,2,3]	Endemic; Secure			
Plated Lizards						
Cordylosaurus subtessellatus	Dwarf Plated Lizard		Endemic; Secure		LC	
Monitors						
Varanus albigularis	Rock Monitor		Vulnerable; Peripheral Protected Game	V		C2
Agama						
Agama planiceps	Namibian Rock Agama		Secure			
Chameleons						
Bradypodion pumilum	Cape Dwarf Chameleon	√[1]	Introduced alien Secure			C2
Chamaeleo namaquensis	Namaqua Chameleon	√[1,2,3]	Secure		LC	C2
Geckos						
Afroedura africana africana	African Flat Gecko		Endemic; Rare?			
Chondrodactylus angulifer namibensis	Giant Ground Gecko	√[1,3]	Secure			
Narudasia festiva	Festive Gecko		Endemic; Secure			
Pachydactylus bicolour	Velvety Thick-toed Gecko	√[1,3]	Endemic; Secure			

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status		
				SARDB	IUCN	CITES
Pachydactylus kockii	Koch's Thick-toed Gecko	√[3]	Endemic; Secure			
Pachydactylus turneri	Turner's Thick-toed Gecko	√[1]	Secure			
Pachydactylus scherzi	Schertz's Thick-toed Gecko		Endemic; Secure			
Pachydactylus rugosus rugosus	Rough Thick-toed Gecko		Endemic; Secure			
Pachydactylus weberi werneri	Weber's Thick-toed Gecko		Endemic; Secure			
Palmatogecko rangei	Wed-footed Gecko	√[1]	Endemic; Secure			
Ptenopus carpi	Carp's Barking Gecko	√[1,3]	Endemic; Secure			
Ptenopus garrulus maculatus	Common Barking Gecko	√[1,3]	Secure			
Ptenopus kocki	Kock's Barking Gecko	√[1]	Endemic; Secure		LC	
Rhoptropus afer	Common Namib Day Gecko	√[1,2,3]	Endemic; Secure			
Rhoptropus boultoni	Boulton's Namib Day Gecko	√[1]	Endemic; Secure			
Rhoptropus bradfieldi	Bradfield's Namib Day Gecko		Endemic; Secure			

Namibian conservation and legal status according to the Nature Conservation Ordinance No 4 of 1975 (Griffin 2003)
Endemic – includes Southern African Status (Branch 1998)
SARDB (2004): V – Vulnerable; P – Peripheral (South African Red Data Book)
IUCN (2014): LC – Least Concern (Most reptiles not yet assessed by the IUCN Red List)
CITES: Appendix 2 species
√[1] – Cunningham (2011a); √[2] – Cunningham (2010a); √[3] – Cunningham (2010b)
Source for literature review: Alexander and Marais (2007), Branch (1998), Branch (2008), Boycott and Bourquin 2000, Broadley (1983), Buys and Buys (1983), Cunningham (2006, 2010a,b & 2011), Griffin (1998a), Griffin (2003), Hebbard (n.d.), Marais (1992), Tolley and Burger (2007).

4.1.2 AMPHIBIAN DIVERSITY

Table 4.2 indicates the amphibian diversity known and/or expected to occur in the general area between Swakopmund and Walvis Bay.

Table 4.2 Amphibian diversity known and/or expected to occur in the general area – i.e. Swakopmund/Walvis Bay area.

Species: Scientific name	Species: Common name	Namibian conservation and legal status	International Status: IUCN
Toads			
Poyntonophrynus dombensis	Dombe Toad	Endemic	LC
Poyntonophrynus hoeschi	Hoesch's Toad	Endemic	LC
Amietophrynus poweri	Power's Toad or Western Olive Toad		LC
Rain Frogs			
Breviceps adspersus	Common/Bushveld Rain Frog		LC
Rubber Frog			
Phrynomantis annectens	Marbled Rubber Frog	Endemic	LC
Bull and Sand Frogs			
Tomopterna tandyi	Tandy's Sand Frog		LC
Platannas			
Xenopus laevis	Common Platanna		LC

IUCN (2014): LC – Least Concern
Source for literature review: Carruthers (2001), Channing (2001), Channing and Griffin (1993), Du Preez and Carruthers (2009), Passmore and Carruthers (1995)

4.1.3 MAMMAL DIVERSITY

Table 4.3 indicates the mammal diversity known and/or expected to occur in the general area between Swakopmund and Walvis Bay as well as species actually confirmed during the fieldwork (√*) or using the authors previous sightings (√[1,2,3]) from the area:

Table 4.3 Mammal diversity known and/or expected to occur in the general area – i.e. Swakopmund/Walvis Bay area – and species confirmed during the fieldwork and/or the author's previous records (√[1,2,3]) from the area.

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International Status		
				SARDB	IUCN	CITES
Moles						
Eremitalpa granti	Grant's Golden Mole	√[1]	Endemic; Secure	V	LC	
Elephant Shrews						
Macroscelides proboscideus flavicaudatus	Round-eared Elephant-shrew	√[1]	Endemic; Secure		LC	
Bats						
Lissonycteris angolensis	*Angolan Soft-furred Fruit Bat		Not listed		LC	
Tadarida aegyptiaca	Egyptian Free-tailed Bat		Secure		LC	
Cistugo seabrai	Namibian Wing-gland Bat		Endemic; Rare	V	LC	
Laephotis namibensis	Namib Long-eared Bat		Endemic; Insufficiently known		LC	
Nycteris thebaica	Common Slit-faced Bat		Secure		LC	
Rhinolophus clivosus	Geoffroy's Horseshoe Bat		Secure	NT	LC	
Rhinilophus darlingi	Darling's Horseshoe Bat		Secure	NT		
Rhinolophus capensis	*Cape Horseshoe Bat		Secure	NT	LC	
Taphozous mauritianus	*Mauritanian Tomb Bat		Secure		LC	
Chaerephon ansorgei	*Ansorge's Free-tailed Bat		Not listed		LC	
Sauromys petrophilus	Roberts's Flat-headed Bat		Secure		LC	
Miniopterus natalensis	Natal Long-fingered Bat		Secure	NT	LC	
Eptesicus hottentotus	Long-tailed Serotine		Secure		LC	
Neoromicia zuluensis	*Zulu Serotine		Secure		LC	
Pipistrellus rueppellii	*Rüppell's Pipistrelle		Insufficiently known; Peripheral		LC	
Hares and Rabbits						
Lepus capensis	Cape Hare	√[1]	Secure			
Rodents						
Rats and Mice						
Parotomys littledalei namibensis	Littledale's Whistling Rat		Endemic; Secure	NT	LC	
Rhabdomys pumilio	Striped Mouse	√[1,2]	Secure		LC	
Mus musculus	House Mouse	√[1]	Invasive alien		LC	
Aethomys chrysophilus	Red Veld Rat		Secure		LC	
Aethomys namaquensis	Namaqua Rock Mouse	√[1]	Secure		LC	
Rattus rattus	House Rat	√[1]	Invasive alien		LC	
Rattus norvegicus	Brown Rat		Invasive alien		LC	
Rats and Mice						
Desmodillus auricularis	Short-tailed Gerbil		Secure		LC	
Gerbillurus paeba	Hairy-footed Gerbil		Endemic; Insufficiently known		LC	
Gerbillurus tytonis	Dune Hairy-footed Gerbil	√*,√[1,2]	Endemic; Secure		LC	
Gerbillurus setzeri	Setzer's Hairy-footed Gerbil or Namib Brush-tailed Gerbil		Endemic		LC	
Petromyscus collinus	Pygmy Rock Mouse		Endemic; Secure		LC	

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International Status		
				SARDB	IUCN	CITES
Mastomys coucha	Southern Multimammate Mouse		Secure		LC	
Petromys typicus	Dassie Rat		Endemic; Secure	NT		
Carnivores						
Hyaena brunnea	Brown Hyena	√*,√[1,2]	Insufficiently known; Vulnerable? Peripheral; Protected game	NT	NT	
Crocuta crocuta	Spotted Hyena		Secure? Peripheral	NT	LC	
Felis silvestris	African Wild Cat	√[1]	Vulnerable		LC	C2
Vulpes chama	Cape Fox	√[1]	Vulnerable?		LC	
Canis mesomelas	Black-backed Jackal	√*,√[1,2]	Secure; Problem animal		LC	
Otocyon megalotis	Bat-eared Fox		Vulnerable?; Peripheral		LC	
Ictonyx striatus	Striped Polecat		Secure		LC	
Suricata suricatta marjoriae	Suricate	√*,√[1]	Endemic; Secure		LC	
Antelopes						
Sylvicapra grimmia	Common Duiker		Secure		LC	
Antidorcas marsupialis	Springbok	√[1,2]	Secure; Huntable game		LC	
Oryx gazella	Gemsbok	√[1]	Secure; Huntable game		LC	

SARDB (2004): NT – Near Threatened; V – Vulnerable
IUCN (2014): NT – Near Threatened; LC – Least Concern
CITES: Appendix 2 species
* Unconfirmed bat species although potentially could occur in area according to habitat modelling (Monadjem *et al.* 2010)
√[1] – Cunningham (2011a); √[2] – Cunningham (2010a); √[3] – Cunningham (2010b)
Source for literature review: Cunningham (2010a,b & 2011), De Graaff (1981), Griffin (2005), Estes (1995), Joubert and Mostert (1975), Monadjem *et al.* (2010), Skinner and Smithers (1990), Skinner and Chimimba (2005) and Taylor (2000)

4.1.4 AVIAN DIVERSITY

Table 4.4 indicates the bird diversity known and/or expected to occur in the general area between Swakopmund and Walvis Bay as well as species actually confirmed during the fieldwork (√) or using the authors previous records (√*) from the area:

Table 4.4 Bird diversity known and/or expected to occur in the general area – i.e. Swakopmund/Walvis Bay area – and species confirmed during the fieldwork (√) and/or the author's previous records (√* - e.g. Cunningham 2010a,b and Cunningham 2011a, etc.) from the area. This table excludes migratory birds (e.g. Petrel, Albatross, Skua, etc.) and species breeding extra limital (e.g. stints, sandpipers, etc.) and rather focuses on birds that are breeding residents or can be found in the area during any time of the year. This would imply that many more birds (e.g. Palaearctic migrants) could occur in the area depending on "favourable" environmental conditions.

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
Struthio camelus	Common Ostrich	√*			
Podiceps cristatus	Great Crested Grebe	√*	CE		
Tachybaptus ruficollis	Little Grebe	√*			
Podiceps	Black-necked Grebe	√*			

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
nigricollis					
Pelecanus onocrotalus	Great White Pelican	√	E		
Pelecanus rufescens	Pink-backed Pelican	√*			
Phalacrocorax lucidus	White-breasted Cormorant	√			
Morus capensis	Cape Gannet	√*	SP	Breeding End	V
Phalacrocorax capensis	Cape Cormorant	√		Breeding End	E
Phalacrocorax neglectus	Bank Cormorant	√*	SP	End	E
Phalacrocorax africanus	Reed Cormorant				
Phalacrocorax coronatus	Crowned Cormorant	√*		End	NT
Anhinga melanogaster	Darter				
Ardea cinerea	Grey Heron				
Ardea melanocephala	Black-headed Heron				
Ardea purpurea	Purple Heron				
Egretta garzetta	Little Egret				
Egretta intermedia	Yellow-billed Egret	√			
Egretta alba	Great Egret				
Egretta ardesiaca	Black Egret				
Bubulcus ibis	Cattle Egret				
Ardeola ralloides	Squacco Heron				
Ixobrychus minutes	Little Bittern				
Scopus umbretta	Hamerkop				
Ciconia nigra	Black Stork				
Phoenicopterus ruber	Greater Flamingo	√	V		
Phoenicopterus minor	Lesser Flamingo	√*	V		NT
Dendrocygna viduata	Whitefaced Duck	√*			
Alopochen aegyptiacus	Egyptian Goose	√*			
Anas capensis	Cape Teal	√*			
Anas hottentota	Hottentot Teal	√*			
Anas erythrorhyncha	Redbiled Teal	√*			
Anas smithii	Cape Shoveller	√*			
Netta erythrophthalma	Southern Pochard	√*			
Sagittarius serpentarius	Secretarybird				V
Gyps africanus	White-backed Vulture		NT		
Aegypius tracheliotus	Lappet-faced Vulture		V		
Circaetus pectoralis	Black-chested Snake-Eagle	√*			
Elanus caeruleus	Black-shouldered Kite				
Aquila verreauxii	Verreaux's Eagle				

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
Aquila rapax	Tawny Eagle		E		
Polemaetus bellicosus	Martial Eagle	√*	E		V
Buteo augur	Augur Buzzard				
Melierax canorus	Southern Pale Chanting Goshawk	√*		N-end	
Falco peregrinus	Peregrine Falcon		NT		
Falco biarmicus	Lanner Falcon	√*			
Falco chicquera	Red-necked Falcon				
Falco rupicolus	Rock Kestrel	√			
Falco rupicoloides	Greater Kestrel	√*			
Francolinus adspersus	Red-billed Francolin				
Trunix sylvatica	Kurrichane Buttonquail				
Porphyrio porphyrio	African Purple Swamphen				
Gallinula chloropus	Common Moorhen	√*			
Fulica cristata	Red-knobbed Coot	√*			
Ardeotis kori	Kori Bustard				NT
Neotis ludwigii	Ludwig's Bustard	√*		N-end	E
Eupodotis rueppellii	Rüppell's Korhaan	√*	End	N-end	
Eupodotis afra	Black Korhaan				
Actophilornis africanus	African Jacana	√*			
Rostratula benghalensis	Painted Snipe				
Haematopus moquini	African Black Oystercatcher	√*	V	End	NT
Charadrius marginatus	White-fronted Plover	√			
Charadrius pallidus	Chestnut-banded Plover	√*	V		NT
Charadrius pecuarius	Kittlitz's Plover	√*			
Charadrius tricollaris	Three-banded Plover	√*			
Vanellus armatus	Blacksmith Lapwing	√*			
Recurvirostra avosetta	Pied Avocet	√*			
Himantopus himantopus	Black-winged Stilt	√*			
Burhinus capensis	Spotted Thick-knee				
Cursorius rufus	Burchell's Courser				
Rhinoptilus africanus	Double-banded Courser				
Larus dominicanus	Kelp Gull	√			
Larus cirrocephalus	Grey-headed Gull	√*			
Larus hartlaubii	Hartlaub's Gull	√		End	
Sterna bergii	Swift Tern	√			
Sterna balaenarum	Damara Tern	√*	End; E	Breeding endemic	NT
Chlidonias	Whiskered Tern				

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
hybridus					
Pterocles namaqua	Namaqua Sandgrouse			N-end	
Pterocles bicinctus	Double-banded Sandgrouse			N-end	
Columba guinea	Speckled Pigeon				
Columba livea	Rock Dove	√			
Streptopelia capicola	Cape Turtle Dove				
Streptopelia senegalensis	Laughing Dove	√*			
Oena capensis	Namaqua Dove	√*			
Agapornis roseicollis	Rosy-faced Lovebird	√*	End	N-end	
Corythaixoides concolor	Grey Go-away-bird				
Tyto alba	Barn Owl	√*			
Otus leucotis	Southern White-faced Scops-Owl				
Glaucidium perlatum	Pearl-spotted Owlet				
Bubo africanus	Spotted Eagle Owl	√*			
Bubo lacteus	Giant Eagle Owl				
Caprimulgus tristigma	Freckled Nightjar				
Apus bradfieldi	Bradfield's Swift			N-end	
Colius colius	White-backed Mousebird	√*		End	
Urocolius indicus	Red-faced Mousebird	√*			
Ceryle rudis	Pied Kingfisher				
Merops hirundineus	Swallow-tailed Bee-eater				
Upupa epops	Hoopoe				
Phoeniculus cyanomelas	Scimitar-billed Woodhoopoe				
Tockus monteiri	Monteiro's Hornbill		End		
Tockus nasutus	African Grey Hornbill				
Lybius leucomelas	Pied Barbet				
Dendropicos fuscescens	Cardinal Woodpecker				
Mirafra sabota	Sabota Lark	√*			
Mirafra curvirostris	Long-billed Lark	√*			
Calendulauda erythrochlamys	Dune Lark	√*	End	End	
Chersomanes albofasciata	Spike-heeled Lark	√*		N-end	
Calandrella cinerea	Red-capped Lark	√*			
Alauda starki	Stark's Lark	√*		End	
Ammomanopsis grayi	Gray's Lark	√*	End	N-end	
Certhilauda subcoronata	Karoo Long-billed Lark			End	
Eremopterix verticalis	Grey-backed Sparrowlark			N-end	
Hirundo fuligula	Rock Martin	√*			
Riparia	Brown-throated Martin				

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
paludicola					
Dicrurus adsimilis	Fork-tailed Drongo	√*			
Corvus capensis	Cape Crow	√*			
Corvus albus	Pied Crow	√			
Parus cinerascens	Ashy Tit			N-end	
Anthoscopus minutes	Cape Penduline Tit			N-end	
Turdoides bicolour	Pied Babbler				
Pycnonotus nigricans	African Red-eyed Bulbul	√*		N-end	
Monticola brevipes	Short-toed Rock Thrush				
Namibornis herero	Herero Chat		End	N-end	
Oenanthe monticola	Mountain Wheatear	√*		N-end	
Cercomela familiaris	Familiar Chat	√*			
Cercomela tractrac	Tractrac Chat	√*		N-end	
Cercomela schlegelii	Karoo Chat			N-end	
Myrmecocichla formicivora	Ant-eating Chat			End	
Erythropygia paena	Kalahari Robin				
Parisoma subcaeruleum	Chestnut-vented Tit-Babbler	√*		N-end	
Parisoma layardi	Layard's Tit-Babbler			End	
Zosterops pallidus	Orange River White-eye			End	
Sylvietta rufescens	Long-biled Crombec				
Eremomela icteropygialis	Yellow-bellied Eremomela				
Eremomela gregalis	Karoo Eremomela				
Acrocephalus baeticatus	African Reed-Warbler	√*			
Acrocephalus gracilirostris	Lesser Swamp-Warbler				
Cisticola aridulus	Desert Cisticola				
Cisticola subruficapilla	Grey-backed Cisticola			N-end	
Cisticola juncidis	Zitting Cisticola				
Prinia flavicans	Black-chested Prinia	√*			
Melaenornis mariquensis	Marico Flycatcher			N-end	
Bradornis infuscatus	Chat Flycatcher			N-end	
Muscicapa striata	Spotted Flycatcher				
Batis pririt	Pririt Batis			N-end	
Motacilla capensis	Cape Wagtail	√*			
Anthus	Richard's Pipit				

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
navaeseelandiae					
Anthus similes	Long-billed Pipit				
Anthus vaalensis	Buffy Pipit				
Tchagra australis	Brown-crowned Tchagra				
Lanius collaris	Common Fiscal	√*			
Laniarius atrococcineus	Crimson-breasted Shrike			N-end	
Nilaus afer	Brubru				
Telophorus zeylonus	Bokmakierie	√*		N-end	
Creatophora cinerea	Wattled Starling	√*			
Lamprotornis nitens	Cape Glossy Starling	√*			
Onychognathus nabouroup	Pale-winged Starling	√*		N-end	
Chalcomitra senegalensis	Scarlet-chested Sunbird				
Nectarinia mariquensis	Marico Sunbird				
Nectarinia fusca	Dusky Sunbird	√*		N-end	
Passer domesticus	House Sparrow	√*			
Passer motitensis	Great Sparrow	√*		N-end	
Passer melanurus	Cape Sparrow	√*		N-end	
Passer griseus	Southern Grey-headed Sparrow	√*			
Sporopipes squamifrons	Scaly-feathered Finch	√*		N-end	
Plocepasser mahali	White-browed Sparrow-Weaver				
Philetairus socius	Sociable Weaver			End	
Ploceus velatus	Southern Masked Weaver	√*			
Quelea quelea	Red-billed Quelea				
Euplectes orix	Southern Red Bishop				
Estrilda erythronotos	Black-faced Waxbill				
Estrilda astrild	Common Waxbill	√*			
Amadina erythrocephala	Red-headed Finch	√*		N-end	
Vidua regia	Shaft-tailed Whydah				
Serinus alario	Black-headed Canary				
Serinus flaviventris	Yellow Canary			N-end	
Crithagra atrogulariis	Black-throated Canary	√*			
Serinus albogularis	White-throated Canary	√*		N-end	
Emberiza capensis	Cape Bunting	√*		N-end	
Emberiza tahapisi	Cinnamon-breasted Bunting				
Emberiza impetuani	Lark-like Bunting	√*		N-end	

International status: E – endangered, V – vulnerable, NT – near threatened [All other species classified as least concern or not yet been assessed by the IUCN red list] (IUCN 2014)
Namibian status: CE – critically endangered; E – endangered; NT – near threatened; V – vulnerable; SP – specially protected (Simmons and Brown In press)
Southern African status: E – Endemic, NE – near endemic (Hockey *et al.* 2006)
Source for literature review: Brown *et al.* (1998), Hockey *et al.* (2006), Komen (n.d.), Maclean (1985) and Tarboton (2001)

4.1.5 BIRDS ENCOUNTERED DURING THE FIELDWORK AT THE PROPOSED DESERT ROSE DEVELOPMENT AREA

At least 78 species of birds were confirmed from the general area, either through direct observations (i.e. 16 species – 12 species included in Table 4.6 and another 4 Palaearctic migrant species) or as confirmed sightings using the author's previous records from the general area (i.e. 62 species – See Cunningham 2011a; Cunningham 2010a and Cunningham 2010b). Of these species, 5 species are classified as endemic; 1 species as critically endangered, 3 species as endangered, 4 species as vulnerable and 2 species as specially protected by Namibian legislation (Simmons and Brown In press). Furthermore, the IUCN (2014) classifies 3 species as endangered, 5 species as near threatened and 2 species as vulnerable.

The 16 species actually encountered during the fieldwork are included in Table 4.7.

Table 4.5 Bird diversity confirmed at the proposed Desert Rose development area during the fieldwork conducted between 29 June and 2 July. Palaearctic migrants observed on site are also included.

Species: Scientific name	Species: Common name	Species Confirmed	Namibian conservation and legal status	International status	
				Southern Africa	IUCN
Pelecanus onocrotalus	Great White Pelican	√	E		
Phalacrocorax lucidus	White-breasted Cormorant	√			
Phalacrocorax capensis	Cape Cormorant	√		Breeding End	E
Egretta intermedia	Yellow-billed Egret	√			
Phoenicopterus ruber	Greater Flamingo	√	V		
Falco rupicolus	Rock Kestrel	√			
Charadrius marginatus	White-fronted Plover	√			
Numenius phaeopus	Common Whimbrel	√			
Pluvialis squatarola	Grey Plover	√			
Sterna sandvicensis	Sandwich Tern	√			
Arenaria interpres	Rudy Turnstone	√			
Larus dominicanus	Kelp Gull	√			
Larus hartlaubii	Hartlaub's Gull	√		End	
Sterna bergii	Swift Tern	√			
Columba livea	Rock Dove	√			
Corvus albus	Pied Crow	√			

Table 4.6 Tree and shrub diversity (larger species) known and/or expected to occur in the general area – i.e. Swakopmund/Walvis Bay area – and/or author's previous records ($\surd^{1,2,3,4}$) including this current study (√*).

Species: Scientific name	Expected: Curtis and Mannheimer (2005)	Expected: Mannheimer and Curtis (2009)	Expected: Burke (2003)	Expected: Craven and Marais (1986)	Species Confirmed	Namibian conservation and legal status
Acacia erioloba	√	√	√	√	$\surd^{1,3}$	Protected (F)
Acacia reficiens	√	√		√	$\surd^{3}$	
Acacia tortilis	√	√				
Acanthosicyos horridus	√	√	√	√	$\surd^{1,3}$	Protected (F)

Species: Scientific name	**Expected:** Curtis and Mannheimer (2005)	**Expected:** Mannheimer and Curtis (2009)	**Expected:** Burke (2003)	**Expected:** Craven and Marais (1986)	**Species Confirmed**	**Namibian conservation and legal status**
Adenia pechuelii	√					Endemic
Adenolobus garipensis	√	√	√		√[3]	
Adenolobus pechuelii			√	√		
Aloe asperifolia				√		
Aloe dichotoma	√					NC, C2
Aptosimum spinescens			√			
Arthraerua leubnitziae			√	√	√*,√[1,2,4]	Endemic
Asclepias buchenaviana				√		
Barleria lancifolia			√			
Boscia foetida	√		√		√[3]	
Cadaba aphylla	√					
Calicorema capitata			√			
Combretum imberbe	√	√				Protected (F)
Commiphora dinteri	√					Endemic
Commiphora glaucescens	√		√			
Commiphora oblanceolata	√					
Commiphora saxicola	√		√	√	√[3]	Endemic
Commiphora tenuipetiolata	√					
Commiphora virgata	√					Endemic
Commiphora wildii	√	√				
Cordia sinensis		√				
Cyphostemma currorii			√			
Dyerophytum africanum			√			
Euclea pseudebenus	√	√	√	√	√[3]	Protected (F)
Euphorbia damarana	√				√[3]	Endemic; C2
Euphorbia guerichiana	√					C2
Euphorbia virosa	√		√			C2
Faidherbia albida	√	√		√	√[1]	Protected (F)
Ficus cordata		√				Protected (F)
Ficus sycomorus	√	√				Protected (F)
Grewia tenax	√	√				
Gymnosporia senegalensis	√					
Hoodia currorii			√	√		
Hyphaene petersiana	√					
Ipomoea adenioides				√		
Lycium bosciifolium	√	√				
Lycium cinereum	√	√		√	√[3]	
Lycium hirsutum	√	√				
Lycium pumilum		√				
Lycium tetrandrum		√			√[1,4]	
Maerua juncea	√					
Maerua schinzii	√		√			Protected (F)
Monechma cleomoides			√			
Moringa ovalifolia			√			
Parkinsonia africana	√	√		√	√[3]	Protected (F)
Pechuel-Loeschea leubnitziae		√		√	√[1,3]	
Petalidium setosum			√	√		
Rhus marlothii	√					
Salsola sp. *S. arborea*, *S. aphylla*, *S. nollothensis*	√	√	√	√	√*,√[1,2,3,4]	
Salvadora persica	√	√	√	√		

Species: Scientific name	Expected: Curtis and Mannheimer (2005)	Expected: Mannheimer and Curtis (2009)	Expected: Burke (2003)	Expected: Craven and Marais (1986)	Species Confirmed	Namibian conservation and legal status
Sarcocaulon marlothii				√		
Searsia marlothii		√				
Tamarix usneoides	√	√	√	√	√[1,3,4]	Protected (F)
Tetragonia reduplicata				√		
Welwitschia mirabilis	√	√	√	√	√[3]	NC, C2
Zygophyllum stapffii		√		√	√*,√[1,2,3,4]	

Endemic (Craven 1999)
F – Preservation of Trees and Forests Ordinance No. 37 of 1952 and/or Forest Act No. 72 of 1968 (Curtis and Mannheimer 2005, Mannheimer and Curtis 2009)
NC – Nature Conservation Ordinance No. 4 of 1975
C2 – CITES Appendix 2
√[1] – Cunningham (2011a); √[2] – Cunningham (2010a); √[3] – Cunningham (2010b); √[4] – Cunningham (2014); √* - This study

Table 4.7 Flora (excluding grass) observed at the proposed Desert Rose development area during this study (√*). All species included are the author's records from the general area although not necessarily the coastal section between Swakopmund and Walvis Bay during previous studies. Lichens are excluded here as the windblown sandy coastal area is not viewed as favoured habitat.

Species: Scientific name	Gravel Plains: North	Namibian conservation and legal status
Acacia erioloba		Protected (F)
Acanthosicyos horridus		Protected (F)
Arthraerua leubnitziae	√*	Endemic[1]
Brownanthus arenosus	√*	Near Endemic
Caparis hereoensis		
Citrullus lanatus		
Cyperus marginatus		
Faidherbia albida		Protected (F)
Felicia smaragdina		
Galenia africana		
Geigeria sp.		
Gossypium anomalum		
Heliotropium sp.		
Lycium tetrandrum		
Mesembryanthemum cryptanthum		
Mesembryanthemum guerichianum		
Myxopappus hereroensis		
Ornithogalum sp.		
Pechuel-Loeschea leubnitziae		
Salsola sp. *S. arborea*, *S. aphylla*, *S. nollothensis*	√*	
Sarcocornia perennis	√*	
Saueda sp.		
Senecio engleranus		
Sesuvium sesuvioides		
Tamarix usneoides		Protected (F)
Trianthema hereroensis		
Xanthodactylon turbinatum		
Zygophyllum clavatum	√*	
Zygophyllum simplex		
Zygophyllum stapffii	√*	

Endemic ([1]Craven 1999)
Near Endemic (Mannheimer *et al.* 2008)
F – Preservation of Trees and Forests Ordinance No. 37 of 1952 and/or Forest Act No. 72 of 1968 (Curtis and Mannheimer 2005, Mannheimer and Curtis 2009)

Table 4.8 Grass diversity known and/or expected to occur in the general area – i.e. Swakopmund/Walvis Bay area – and/or author's previous records (√[1,2,3]) including this study (√*).

Species: Scientific name	Species Confirmed	Namibian conservation and legal status	Ecological Status	Grazing Value
[2,5]*Anthephora pubescens*			Decreaser	High
[2]*Aristida adscensionis*			Increaser 2	Low
[2]*Aristida congesta*			Increaser 2	Low
[2,5]*Bachiaria deflexa*			Increaser 2	Average
[2,3]*Cenchrus ciliaris*			Decreaser	High
[1,2,3]*Centropodia glauca*			Decreaser	High
[1,2]*Chloris virgata*			Increaser 2	Average
[2,4]*Cladoraphis spinosa*	√[1]		Increaser 1	Average
[1,2,5]*Cynodon dactylon*	√[1]		Increaser 2	High
[1,2]*Dactyloctenium aegyptium*			Increaser 2	Average
[1,2]*Enneapogon cenchroides*			Increaser 2	Low
[1,2,3]*Enneapogon desvauxii*			Intermediate	Average
[1,2]*Enneapogon scaber*			?	Low
[2]*Enneapogon scoparius*			Increaser 2	Low
[1,5]*Entoplocamia aristulata*			Intermediate	Low
[1,5]*Eragrostis annulata*			Increaser 2	Low
[2]*Eragrostis cilianensis*			Increaser 2	Low
[1,2,5]*Eragrostis echinochloidea*			Increaser 2	Average
[2]*Eragrostis lehmanniana*			Increaser 2	Average
[2,3,5]*Eragrostis nindensis*			Increaser 2	Average
[1]*Eragrostis omahekensis*		Endemic	?	Low
[1,5]*Eragrostis porosa*			Intermediate	Low
[2]*Eragrostis rotifer*			Intermediate	Low
[2,5]*Eragrostis superba*			Increaser 2	Average
[2,5]*Fingerhuthia africana*			Decreaser	Average
[2]*Melinis repens*			Increaser 2	Low
[1,4,5]*Odyssea paucinervis*	√[1]		?	Low
[2,5]*Panicum repens*			Decreaser	High
[2,4]*Phragmites australis*	√[1,3]		Decreaser	Low
[1,5]*Pogonarthria fleckii*			Increaser 2	Low
[2]*Polypogon monspeliensis*			?	Average
[2]*Schmidtia kalahariensis*			Increaser 2	Low
[1,2]*Schmidtia pappophoroides*			Decreaser	High
[1]*Setaria appendiculata*			Decreaser	High
[2]*Setaria megaphylla*			Decreaser	High
[1,2]*Setaria verticillata*			Increaser 2	Average
[4]*Sporobolus consimilis*			?	Low
[2]*Sporobolus festivus*			Increaser 2	Low
[4]*Sporobolus nebulosus*			Increaser 2	Low
[1,2,3,5]*Stipagrostis ciliata*	√[2]		Decreaser	High
Stipagrostis hermanii	√*		?	?
[1,2,5]*Stipagrostis hirtigluma*	√[1]		Increaser 2	Low
[1,5]*Stipagrostis hochstetteriana*			Decreaser	Average
[1,2,5]*Stipagrostis namaquensis*			?	Average
[3]*Stipagrostis sabulicolia*	√[1]	Endemic*	?	?
[1,2,5]*Stipagrostis obtusa*	√[2]		Decreaser	High
[1,2,5]*Stipagrostis uniplumis*	√[1,2]		Increaser 2	Average
[1,2,5]*Tricholaena monachne*			Increaser 2	Average
[2,5]*Tragus berteronianus*			Increaser 2	Low

Endemic - Müller (1984); Endemic* - Burke (2003)
? – Undetermined in literature
√[1] – Cunningham (2011a); √[2] – Cunningham (2010b); √[3] – Cunningham (2014)

4.1.6 VEGETATION OF THE PROJECT SITE

Species composition, Distribution, Conservation Status

Vegetation is generally very sparse except for 3 areas along the coast; the Swakop River mouth, Caution Reef and the northern arm of the Kuiseb River delta. The vegetation zone in which these communities fall is generally regarded as the central Namib. The Swakop River mouth has rich stands of *Phragmites australis* reeds mainly concentrated on the north bank, with *Mesembryanthemum species* and *Juncus rigidus* growing around the water body, and *Tamarix usneoides* on both banks of the river.

Other commonly found plants are the following:

The coastal hummocks, namely vegetated mounds of sand that act as sand and detritus traps, are common near within the project site. A cable barrier excluding off-road traffic from the Damara tern breeding colony protects the area. The plant communities common here are *Arthraerua leubnitziae, Zygophyllum species* and *Salsola species.*

The root systems are shallow to make use of the fog that drips onto the soil beneath the plants, and they can withstand very saline soil conditions. Naturally occurring flora provides an indication of the present state of the environment; the slow growing perennials and short lived annuals are extremely fragile. Most of the plants along the coast but specifically the *Arthraerua leubnitziae* are able to absorb the fog moisture through the modified leaves.

4.1.7 FAUNA

Birds and other vertebrates

The 30 km section of coastline from Swakopmund to Walvis Bay is designated as an Important Bird Area IBA. This IBA is also part of a network of Important Bird Areas throughout southern Africa (Barnes 1998) and throughout Africa (Fishpool & Evans 2001). The area has up to 450 birds per kilometre of shore which is the highest linear count of birds anywhere in Southern Africa. The importance of this coastline for birds is largely due to the high productivity especially on the rocky shores and the sheltering effect of Pelican Point. The sea shore in front of the project area consists of both sandy and rocky shores.

Stranded kelp washes up on some of the shoreline beaches of the project area which provides a microhabitat for kelp flies and associated shorebirds. Along this beach is the only bulge along an otherwise straight shore, known as Caution Reef.

Birds are more abundant in the summer months when thousands of Palaearctic shorebirds (waders) and seabirds are present. During this time and the rest of the year, resident and intra-African migratory birds are also common. The broad groups of birds are Terns, Gulls, Cormorants, Pelicans, Sandpipers, Plovers, Grebes, Flamingos and other species.

There are 30 species of lizards and 15 species of snakes in the Walvis Bay district. They have largely adapted to the desert environment and some have become famous for their behaviours of fog-licking off themselves, sand diving, foot-lifting, and sidewinding. The animals responsible for the above mentioned adaptations are the following: the Palmatogecko (*Palmatogecko rangei*), the Southern Slipface Lizard (*Meroles anchietae*), and the Southern Namib Sand Adder (*Bitis peringueyi*). The Namaqua Chameleon (*Chamaeleo namaquensis*), the Namib Sand Snake (*Psammophis leightoni subs.namibensis*), the Wedge-snouted Skink (*Mabuya acutilabris*), the Slender Blind Legless Skink (*Typhlosaurus braini*), the Wedge Snouted Desert Lizard (*Meroles cuneirostris*), the Small-scaled Desert Lizard (*Meroles microphilodotus*) and the Small-legged Burrowing Skink (*Typhlosaurus brevipes*) found here, also occur on other parts of the coastal desert areas. Almost all the reptile species on the coast are endemic to Namibia.

4.1.8 INVERTEBRATES

The area supports a high diversity of darkling beetles (Tenebrionidae), there are well over 200 species in the Namib, many of these may be found in the project area. Tenebrionids are abundant, conspicuous and flightless, they serve as indicators of environmental conditions because their populations integrate several

factors, namely, detritus on which they feed, vegetation cover under which they shelter, the moisture and stability of the soil, and the availability of water from fog, and occasional rain, and runoff.

Several insects, such as flies and beetles are found associated with Kelp wrack washed up along the beaches. Kelp represents an important part of the food web as through this insect pool, lizards, spiders and birds are attracted. An important coastal predator is the medium sized solifugid, or sun-spider, *Cerome inerme*. There are 28 species of solifugids endemic to the Namib and about 25 scorpions. Of the 90 spiders that occur in the Namib 13 are endemic. Most are wandering spiders as the desert is not suitable for web spiders. The White lady or *Leucorchestris species* is well known in the area and many trap doors in the dunes under which these spiders live are destroyed by recreational activities. The Spoor spider *Seothyra species* kills its prey by heat shock during the day, it lives in unconsolidated burrows that are easily damaged, often causing its demise, and these spiders could therefore be used as an indicator of environmental disturbance. There is no list of endangered species for the Namib, however many of the endemic organisms have a localized range since they are restricted to the foggy coastal areas. Invertebrates are active throughout the year.

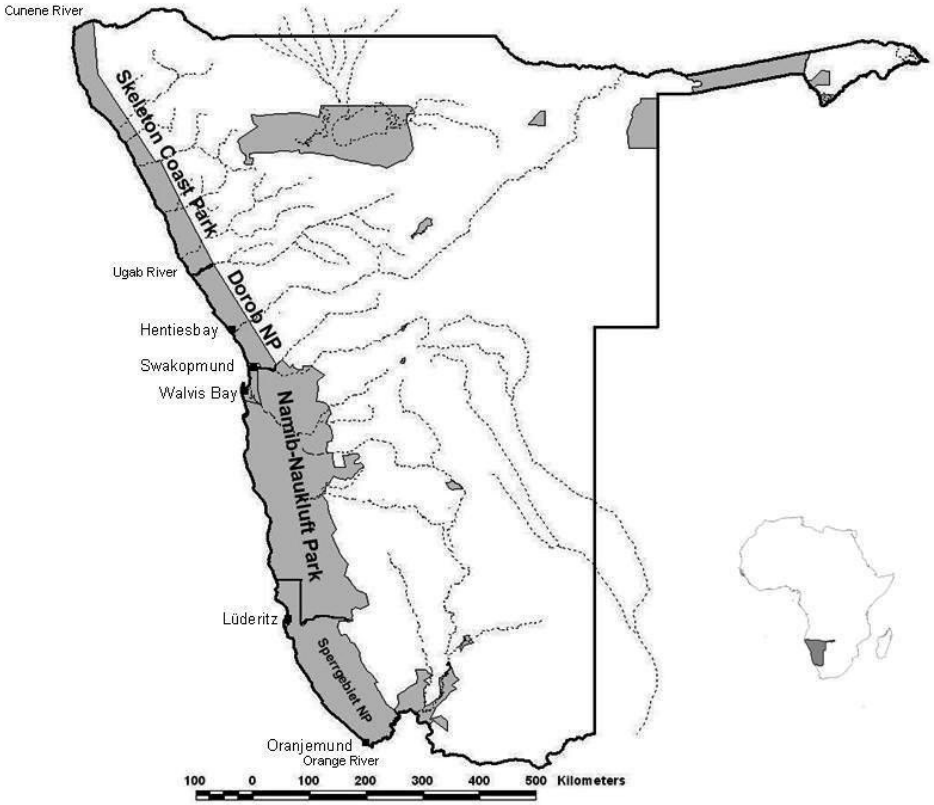

Figure 4.1 Bird breeding areas.

4.1.9 SEASONAL INFORMATION - TYPES OF SPECIES

Damara terns (*Sterna balaenarum*), (near-threatened, near-endemic seabird) arrive in the study area in September and normally start their breeding activity by laying a single egg on a gravel plain by the end of September. They continue their breeding activity until April. The project area has been fenced and currently serves as an important Damara tern breeding area. The birds breed in loose colonies in 3 discrete areas that are divided by the B2 road between Swakopmund and Walvis Bay. Some Damara Terns remain throughout the year while the rest migrate to other parts of the Arfican coastline.

The African Black Oystercatchers (*Haematopus moquini*) (endangered, range-restricted shorebird) found between Walvis Bay and Swakopmund are juveniles arriving in June and by September the numbers are at their highest. This nursery area accommodates birds for 2 to 3 years after which they return to their natal sites in South Africa in early summer in time for breeding. If conservation measures implemented in the South African breeding range boosts oystercatcher productivity, more juveniles may migrate here in future. The rocky stretches of coast between Swakopmund and Walvis Bay are underutilized and provide an important foraging area.

The migratory Palaearctic birds breed in the northern hemisphere and are present along the coast from September to April. Some one year old and non-breeding birds remain throughout the year. The most abundant shorebird species are: the Ruddy Turnstone (*Arenaria interpres*), Curlew Sandpiper (*Calidris ferruginea*), Sanderling (*Calidris alba*), Grey Plover (*Pluvialis squatarola*) and Whimbrel (*Numenius phaeopus*). Other less abundant shorebirds are: the Knot (*Calidris canutus*), Bar-tailed Godwit (*Limosa lapponica*), Greenshank (*Tringa nebularia*) and Curlew (*Numenius arquata*). Other palaearctic seabirds are the Common Tern (*Sterna hirundu*), Sandwich Tern (*Sterna sandvicensis*), Black Tern (*Chlidonias niger*) and the Arctic Tern (*Sterna paradisaea*).

The resident birds either breed in the vicinity or nearby, or use the shoreline throughout the year. The most important bird from a conservation perspective is the shorebird, the White-fronted Plover (*Charadrius marginatus*). It breeds near the coast laying 2 eggs that are partially buried in sand. These birds are territorial and breed throughout the year but peak in summer. The birds that breed on Bird Island use the coastline as a feeding area and occasional roost are the Crowned Cormorant (*Phalacrocorax coranatus*), Whitebreasted Cormorant (*Phalacrocorax carbo*), Cape Cormorant (*Phalacrocorax capensis*), Kelp Gull (*Larus dominicanus*) and the White Pelican (*Pelecanus onocrotalus*). The Crowned Cormorant and White Pelican are of conservation concern and listed rare and endangered.

4.1.10 FEEDING AND BREEDING SITES

The rocky shores and kelp beds that result in washed up kelp on the beaches are the most productive onshore areas for feeding shorebirds. Offshore, the rich mix of nutrients attracts large numbers of fish that in turn attracts the seabirds. The sheltered rock pools close inshore attract Damara Terns, Bank Cormorants and White-breasted Cormorants. Just offshore the other birds feed on shoaling fish. After intense feeding the birds need to roost and these roosts need to be relatively free of disturbance.

In terms of bird numbers at the project area (8-10 km south of Swakopmund) and the area between the Long Beach developments are the richest feeding, breeding and roosting areas. Due to the increased development and associated disturbance around Long Beach birds have moved south of here. No roosting or breeding of sea or shorebirds occurs near the building activity or residential areas.

By far the most important aspect of the area is the importance in terms of the breeding Damara Terns, specially protected under the draft Parks and Wildlife Management Bill of 2003 and the Nature Conservation Ordinance 4 of 1975.

The highest recorded breeding densities of Damara Tern found in Namibia occur during the summer breeding season along the Central Coast. The pattern mirrors that of the high shorebird densities on the central Namibian coast (Simmons *et al.*2000). Damara Tern breeding data obtained from the MET indicated that there are larger breeding colonies located towards the north east of the project area, at the “Horses Graveyard site”. The introduction of open spaces at strategic location within the development to create flight paths to the “Horses Graveyard site” has been incorporated into the design.

This chapter provides an overview of the affected environment and local planning context for the proposed Project in Erongo Region Namibia. The term ‘environment’, includes the biophysical and socio-economic dimensions. This chapter therefore assists the reader in identifying potential impacts on the environment (positive or negative); and opportunities or constraints which the affected environment may present for the proposed development.

The environmental baseline description is based on information extracted sources listed in the bibliography in Chapter 6.

4.2 Location of proposed project

The Desert Rose urban node is to be developed on approximately 418ha of virgin land located between Walvis Bay and Swakopmund, approximately 24 km to the north of Walvis Bay and some 7 km to the south of Swakopmund as travelling along the B2 road connecting these two coastal towns.

As the urban nodes of Afrodite Beach, Namib Eco-Village, Dolphin Beach and Long Beach the Desert Rose development is to be located between the B2 and the area generally 100 metres inland of the high water mark of the Atlantic Ocean.

Although being located some distance away from the existing urban areas Desert Rose is conveniently located in terms of connectivity to the Rooikop International Airport, the Walvis Bay harbour or the rail stations of either Walvis Bay or Swakopmund. Motorists having desert Rose as their destination can easily reach the development by either making use of a number of good and scenic roads, some of which include the B2 leading to the site from Namibia's capital City, Windhoek, the coastal road connecting the development via Henties Bay with Namibia's north-western regions or the road leading through the Namib Naukluft nature reserve to Namibia's popular tourist destinations located within the countries south-western area. The Desert Rose urban area, which is to be strategically located between Walvis Bay and Swakopmund, is not to mirror image existing urban forms found within the country but is to be based on contemporary planning approaches where environmental, engineering, architectural, urban design and land ownership inputs are integrated into the urban planning process.

4.3 Biophysical environment

4.3.1 Climate

The coastal zone lies within a "cool desert" region of Namibia, a unique biophysical environment caused by the specific climatic conditions in the area that are influenced by the South Atlantic anticyclone, the northward-flowing Benguela Current (with its associated upwelling) and the divergence of the south-east trade winds along the coast. The nutrient-rich water from the upwelling is flushed into the Lagoon, and provides food for its phyto- and zooplankton.

Climatic conditions in the region vary from cool, foggy, windy and hyper-arid conditions along the coast, to dry and hot weather towards the inland areas from which it is separated by the Great Escarpment.

4.3.2 Temperature

Namibia is considered to be hot; however, temperatures are highly variable daily and seasonally. Therefore, animals and plants have evolved to tolerate a broad range of temperatures. In the coastal area, temperatures are relatively constant, only exhibiting a slight decrease from north to south. The average temperature maximum varies between 24 °C and d 19.3 °C, and the average minimum between 9.1 °C and 16.5 °C. Highest temperatures ar e recorded during Berg Wind episodes when cold air from the interior flows towards the coast and is heated by compression (catabatic wind).

4.3.3 Rainfall and evaporation

The Bay has a mean annual rainfall of 13.5 mm. Most rain falls in summer between January and April, with the wettest month being March when about 50% of annual rainfall is recorded. Fog is a distinctive feature, and the Bay gets some moisture from 900 hours of coastal sea fogs per year. Monthly average humidity varies between 65% in December and 81% in January/March. Namibia, as a country, loses more water through evaporation than it receives in rain. Lower rates of evaporation at the coast are mainly due to cooler and more humid coastal conditions.

4.3.4 Surface Wind

The presence of the subtropical South Atlantic Anticylcone (SAA) off the coast of Namibia strongly influences the wind pattern, generating gale force winds along the coast in all seasons, but being most frequent during mid-summer and spring. Although their strength decreases inland, their effect is noticeable for distances of up to 200 km from the coast. These strong coastal south-westerly winds carry sand inshore from the coast to the Namib Sand Sea and create upwelling cells which allow nutrient-rich water to be brought to the surface, therefore increasing fish resources.

At the coast, the prevailing wind is southerly to south south-westerly[3] with speeds reaching 10m/s, while the predominant wind inland is north-easterly to easterly with speeds reaching approximately 3 m/s. The coastal south-westerly winds bring cool, moist air into the coastal region.

Occasional hot, dry and powerful easterly wind during winter (or *Berg wind*) causes large quantities of dust and sand to be blown offshore, affecting sediment input into the coastal marine environment. These powerful offshore winds can exceed 50 km/h, producing sandstorms that considerably reduce visibility at

[3] Direction from which wind blows

sea and on land. Although they occur intermittently for about a week at a time, they have a strong effect on the coastal temperatures, which often exceed 30°C during 'berg' wind periods.

4.3.5 Landscape

While the central part of the site is characterised by a moderate east to west downward slope the southern and northern areas are relatively flat. The natural slope of the site offers the opportunity to grant non-seafront propertied a view onto the Atlantic Ocean.

The study area is located on the Namib Central-western plains that stretch from the coast inland for about 450 km in places. The plains were largely formed by erosion cutting back into higher ground and carving out the catchment areas of several major rivers. The pene-plain is dissected by numerous dry riverbeds, draining towards the coast.

The coastline of central Namibia is dominated by sandy beaches, with rocky habitats being represented only by occasional small rocky outcrops. The largest dune seas occur in the central Namib south of Walvis Bay, but for approximately 250 km north of Swakopmund, the coastal area is relatively free of dunes. The coastal strip around Swakopmund is covered by a 2-3 m thick layer of very loose, medium to fine grained sea sand, which stretches for approximately 200 m inland. Only in the vicinity of Henties Bay is the shore backed by low sandy cliffs.

Namibia is a hyper-arid country, with only 4 km^3 of surface water produced internally, and a groundwater recharge of 2 km^3. The central portion of Namibia is drained by a number of westward flowing ephemeral rivers that occasionally reach the sea when they flood after heavy rains in the interior. These include the Omaruru, Swakop and the Kuiseb rivers that are very important ecologically, as they support a diverse biota that depends on the groundwater associated with the river course.

4.3.6 Geology

The site chosen for the Desert Rose development is characterised by the sandy soil conditions generally occurring between Walvis Bay and Swakopmund.

Groundwater reserves are limited to the Kuiseb and Omaruru alluvial bed aquifers, which supply Henties Bay, Swakopmund and Walvis Bay as well as Arandis, Rössing and Langer Heinrich Mines.
These aquifers are situated within the alluvial beds of the Kuiseb and Omaruru rivers.

4.3.7 Socio-economics

Walvis Bay is situated in the Erongo region. Social and economic trends in the Erongo region are presented first in this section, followed by a brief overview of Walvis Bay.

Demography in Erongo

The Erongo Region is one of the most affluent regions in Namibia, with the second highest per capita income in Namibia of N$ 16 819 per annum. Only 0.4% of households in the Erongo Region spend more than 80% of their income on food while 5.3% of households spend 60 – 79% of their income on food. In comparison to this, 0.6% of households in the Khomas Region spend more than 80% of their income on food while 3% of households spend between 60 and 79% of their income on food, and in the Kunene Region, 11.2% of households spend more than 80% of income on food while 25.7% spend between 60 and 79% on food.

Excluding the figures for Walvis Bay, the regional population grew from 55 470 to 79 722, at an annual rate of some 3.7%. If this is compared to the national growth rate of 2.6%, and a fertility rate that is lower than the national average, the high rate of population growth in the region should clearly be contributed to in-migration to the main coastal towns. The mining development in the Region resulted in an increased in-migration to the coastal towns.

Its sex ratio is 115 males for every 100 females, and the average number of children per woman declined from 5.1 in 1991 to 3.2 in 2001. Average household size is 3.8, and the mortality index declined from 51 per 1000 live births in 1991 to 42 in 2001. Males head 65% of all households in the Erongo region. The literacy rate for 15 years and older is 92%, 7% more than the 85% recorded in 1991 and higher than the national average of 81%.

Walvis Bay town is the most populous with 26% of the total regional population. About 20% of the population in the Erongo region were born in other regions; 65% of these are male, indicating the migration of mainly male workers from the other regions to the coast in search of employment.

Employment in Erongo

The economy of the region is mainly based on natural resources and is slowly becoming more diversified due to expansion in the mining industry. The largest industry in the region is the fishing industry, mostly based at Walvis Bay, followed by the mining and exploration industry. The third biggest income generating activity of the Erongo Region is tourism. In 1998 three times as many foreign tourists visited the Erongo region than Namibians. Corresponding figures for 2008 are not yet available.

Over a ten-year period to 2001, there was an increase in the proportion of the population inside the labour force who were unemployed, which suggests that not all migrants to the region succeed in finding gainful employment. The proportion of employed females is 58 % compared to 72% for males. Over this same period, though wages and salaries decreased by 6 %, business activities increased by 5 %. This indicates that more people in the region are establishing their own businesses, with the economy slowly diversifying.

Access to Services in Erongo

Access to safe water and proper sanitation are two indicators for development and poverty. From 1991 to 2001 there was no increase or decrease of access to safe drinking water. However, the Regional Poverty profile of the Erongo region for 2005 indicates that 3% of the population has to cover 1 km or more to get water.

One out of 5 households in the rural areas relies on unsafe water for drinking and cooking. From 1991 to 2001, the proportion of the population that did not have access to toilet facilities increased by 11%, showing that access to proper sanitation in the Erongo region is decreasing instead of improving.

The medical services in the Erongo region is provided by three state hospitals, two private hospitals and 6 health centres. In urban areas, 90% of households have their garbage regularly collected, while 1 out of 5 people in rural households dump their garbage at the roadside.

Vegetation
Where possible the natural vegetation should be respected in the layout design and during construction. The use of plants requiring excessive watering needs to be limited while the use of semi-purified water for gardening purposes is encouraged.

Prevailing winds
The south-westerly prevailing wind conditions as well as the strong east winds (berg winds) conditions are to be considered in layout planning and building design.

Damara tern breeding area
The area forms part of the larger area identified as a Damara tern breeding site. The intended urban development needs to be mindful of the seasonal breeding habits and flying patterns of these birds (see Specialist Report)

Dune belt
The scenic dune belt located to the east of the B2 not only offers the opportunity in terms of urban design but needs to be respected as the area is forms part of the gateway and setting of the Desert Rose development while also serving as a breeding area for Damara tern. The area also is of touristic value.

Shoreline
The area shoreline along the development area forms a high value feeding area for seabirds. A distance of 100metres from the high water mark and the urban edge should maintained, this only to be relaxed at the area where the boat launching area or the marina is to be developed.

Disturbed areas
The old quarry site may have the potential to be developed into an inland marina or yacht basin. The old railway line embankment needs to be properly cleaned up.

Land Ownership and Administration
It should be noted that the necessary statutory approvals for the need and desirability for township stablishment and layout approval by Townships Board for the Desert Rose development are still outstanding. These can only be obtained once clarity on land ownership, responsibility and the functioning of the administrative authority responsible for the day to day administration of the Desert Rose development has been agreed upon by the various role players.

The layout design prepared for the Desert Rose Development indicates the development holds the potential to formalize approximately 582 erven. In line with the Namibian planning policies these erven are to be formalized by creating two new township extensions.

Layout Design
The layout design strongly hinges on the acceptance that the Desert Rose international convention centre is top form the heart of the development. This iconic building complex is to send a strong signal out to visitors to the area that Namibia has the will and capacity to become a leading nation in terms of hosting international conventions and events. As such the Desert Rose Convention Centre is to dominantly present itself standing taller and raising out above the remaining buildings to be erected within the Desert Rose urban node. The buildings of the convention centre should form a prominent skyline and viewing corridors onto the centre form a major feature in the layout design.

The general planning approach adopted is highlighted in the following section. More detailed design information are highlighted in the sections referring to the various precinct plans developed in support of the layout plan prepared for the desert Rode development.

Socio-economic overview of the proposed project
The proposed Desert Rose development would be one of the largest private funded single developments in Namibia in recent times. It would, in essence be a small town. As a result it would require all the support services that would be found in a small town including retail, entertainment, health and education services and business. The intention is to develop an iconic mixed-use development that would showcase the region to the world. It would, in consequence, also make a major economic contribution to the Namibian economy.
Limitations and High Level Results

The analysis faced two limitations.

- Some of the business and people choosing to move to Desert Rose are likely to come from elsewhere in Namibia. This would be the case particularly in the early years. This is called a displacement effect. These displacement effects are clearly not a net economic gain to Namibia and need to be taken into account in the analysis.
- Some of the business that would be established at Desert Rose would be support firms to other business. An example would be the establishment of a stationary supplier that services other firms in the development. In macroeconomic analysis these support firms are part of the second round effects. Including them in the first round effects would be double counting.

As a consequence a range of assumptions had to be made about the magnitude of these two effects. This section reports the subsequent range of high level macroeconomic results. The results reported here are for the direct jobs at Desert Rose and the overall contribution to GDP. The results are reported for the range of assumptions. The results for year 1 are the same for all assumptions because this is a pure construction phase where neither effect is relevant.

- In year 2 there would be 811 new direct jobs as a low estimate and 877 as a high estimate. By year 20 the range lies between 3 459 and 5 859. This is approximately a 30% difference from the mid-range estimate in year 20.
    - In year 2 the low estimated contribution to GDP is N$2 042m and the high estimate is N$2 083m. By year 20 the estimate lies between N$8 635m and N$13 037m. This is approximately a 23% difference from the mid-range estimate in year 20.

It was found that the proposed Desert Rose development would have a major economic impact. Based on the low estimate assumptions Desert Rose can be expected to add between 0.9% and to 1.6% to GDP. The variation depends on the year. The mid-range estimate adds between 1.0% and 1.7% while the high range estimate lies between 1.0% and 1.9%.

According to the 2011 Census there were 46 879 employed persons in the Erongo region and 10 297 unemployed persons. The development has the potential to significantly address unemployment in the region.

The development and operation of the Desert Rose would result in changes to two types of jobs. The first are the direct jobs that would be created over the project period. These are jobs as a result of the:

- construction of the facilities;
- operational expenditure at Desert Rose and NICC;
- expenditure of delegates attending events;
- expenditure of delegates returning as tourists; and business orders generated from trade fairs.

The second are the so-called indirect jobs that are due to multiplier effects of the direct expenditure. The direct and indirect job numbers that are reported below are annual full time equivalents.

- The total number of direct jobs is set to increase from 546 in year 1 to 4 539 in year 20. The number of jobs is expected to remain constant once operational maturity is reached. However, the number of jobs directly created because of induced tourism as a result of the NICC would increase slightly each year as an increasing number of tourists become regular visitors to the country.
- Indirect jobs at Desert Rose and country-wide would also be created. The indirect jobs at Desert Rose would be in the support industries. Total indirect jobs are set to increase from 1 432 in year 1 to 4 314 in year 20.
- Total jobs are the sum of the direct and indirect jobs. The total number of direct and indirect jobs, due to both capital and operating expenditure, are set to increase from 1 979 in year 1 to 8 853 in year 20.

Apart from the key macroeconomic effects discussed above, there are many other macroeconomic effects that would flow from Desert Rose. These include the generation of tax and contribution to indirect household income.

- The combined generation of direct and indirect taxes is set to increase from N$147m to N$1 077m by year 20. The cumulative contribution to taxes is set to exceed N$12bn by year 20.
- Total household income is set to increase from N$266m in year 1 to N$2 384m in year 20. Cumulatively over the twenty year period it is estimated that household income would benefit by nearly N$27bn.

5 SUMMARY OF THE ISSUES FOR THE EIA

5.1 Identification of key issues

An important element of the Scoping process was to evaluate the issues raised through the Scoping interactions with authorities, interested and affected parties (I&AP's), the specialists on the EIA team and the project proponent, and then to focus the EIA on the key issues.

To assist in the identification of key issues, a decision-making process is applied to the issues and concerns raised, based on the following criteria (Figure 5.1):

- Whether or not the issue falls within the scope and responsibility of the EIA process for the proposed project; and
- Whether or not sufficient information is available to respond to the issue or concern raised without further specialist investigation.

Section 5.2 below provides a summary of the issues identified by all stakeholders and the EIA team, at the time of the release of the Draft Scoping Report. Appendix G contains the complete issues trail, with all comments received to date from I&AP's as part of this Scoping process; Appendix D contains written correspondence received from I&AP's; and Appendix F contains meeting notes. Comments received in response to the Draft Scoping Report are in Appendix J

The issues in Section 5.2 are grouped according the following categories:

- ***ISSUE*** AND ***DESCRIPTION***

A synthesis of issues to be addressed in the Specialist Studies is provided in the Plan of Study for EIA (Chapter 6). The results of the Specialist Studies will be made available to I&AP's for comment as part of the Draft EIA Report.

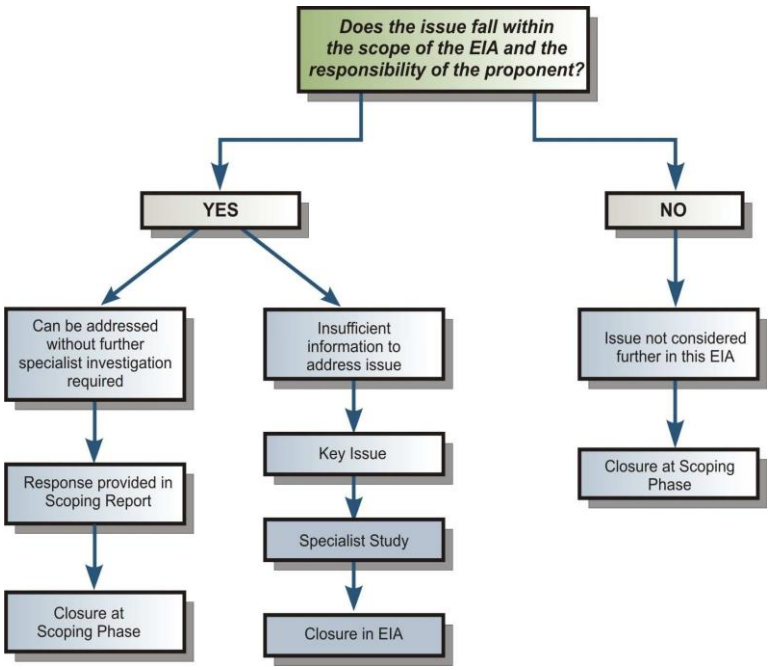

Figure 5.1 Decision making framework for identification of key issues for the EIA

5.2 Summary of Issues

Table 5.1 The summary of key issues to be considered during the EIA process – based, amongst others, on stakeholder interaction as documented in the Issues Trail in Appendix G, is provided below. Those not addressed in the Comments and Response Report will be addressed in the EIA Report.

ISSUE	DESCRIPTION
2) Ecology and birdlife	*Will migration and breeding patterns of birds, particularly Red Listed species, be disturbed or disrupted as a consequence of these impacts?* *Will there be significant changes to ecological systems?* *What will the impact of changed noise levels?*
3) Socio-Economic ***(including tourism, planning and land use)***	*What will be the visual impact of new buildings and structures?* *What will the impact on tourism be?* *How will the increased population influx increase pressure on resources and services, and exacerbate growth in unemployment, informal settlements and communicable diseases?* *What temporary (construction phase) and permanent (operations phase) employment will be created. What further employment would result from downstream developments?* *Health and safety aspects be taken care of rever to EMP in more detail*
4) Traffic and roads	*Will traffic densities increase during construction and operations, and how will this affect road and pedestrian safety?* *Will the quality of the roads be reduced as a consequence of increased trucking, or will the roads be upgraded?*
5) Noise	*What is the current noise profile by day and night?* *What will be the social impact of changes in noise levels during construction and operation of the proposed development on neighbouring areas?* *In other words, noise caused by road traffic.*

6) Issues related to the EIA Process	*How does the EIA link up with the SEA for the Erongo coast?* *An alternative location should be considered* *Will the project be stopped if the EIA uncovers highly significant impacts that will result in irreversible negative changes economically and environmentally?* *Who will take responsibility for errors in impact prediction, and how can this risk be reduced or avoided?* *How will maximum participation of the general public be ensured?*
7) Issues Related to Project Planning, Design and Operation	*The reasoning and justification for only one location alternative must be properly communicated.*
8) Fauna Issues related to the EIA Process	*Damara Tern breeding data obtained from the MET indicated that there are larger breeding colonies located towards the north east of the project area, at the "Horses Graveyard site". The introduction of open spaces at strategic location within the development to create flight paths to the "Horses Graveyard site" has been incorporated into the design.*

6 PLAN OF STUDY FOR THE EIA / EMP (REFER TO SCOPING REPORT DATED OCTOBER 2014)

The Guide to the Environmental Management Act 7 of 2007, states that the competent authority will make a decision on the scope and procedure of assessment before the EIA phase may commence.
The purpose of the EIA phase is to:

- Address issues that have been raised through the Scoping Process;
- Assess any alternatives to the proposed activity in a comparative manner;
- Assess all identified impacts and determine the significance of each impact; and
- Formulate mitigation measures.

The Plan of Study for EIA (PSEIA) sets out the process to be followed in the EIA phase and is shaped by the findings of the Scoping process.

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