NAMIBIAN COAST CONSERVATION AND MANAGEMENT PROJECT
NACOMA

Vol. 3 of 3 - Draft Environmental Management Plan (EMP) Report for the Kuiseb Delta and Dune Belt Areas, ERONGO REGION, NAMIBIA

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Sam Nujoma Avenue
Standard Bank Building
First Floor, Room 8,
P.O. Box 7018,
SWAKOPMUND, NAMIBIA
Tel: (00264) 064-403-905
Fax: (00264) 064-403-906

ENVIRONMENTAL MANAGEMENT PLAN (EMP) REPORT Vol. 3 of 3 FOR KUISEB DELTA AND DUNE BELT AREAS	
Date of 1st Issued	APRIL 2012
Author	Risk-Based Solutions (RBS) CC / Foresight Group Namibia (PTY) LTD
Checked By	Ms. Vita Stankevica and Ms. Christine K. Links
Authorised By	Dr. Sindila Mwiya – Environmental Assessment Practitioner (EAP)
Accepted and Approved By	
REVISIONS	

ENVIRONMENTAL CONSULTANTS

Risk-Based Solutions cc

the Consulting Arm of Foresight Group Namibia (PTY) LTD

8th Floor Capital Centre Building,
Levinson Arcade, Independence Avenue
P.O. Box 1839
WINDHOEK NAMIBIA
Cell: +264 - (0)81277-2546; **Tel:** +264-61- 306058
Fax: +264-61-306059 / 61-256830
Email: smwiya@rbs.com.na; URLs: www.rbs.com.na or www.foresight.com.na

Foresight Group Namibia (FGN) (PTY) LTD – *Perfecting the Future*
Risk-Based Solutions (RBS) – *Delivering the Solutions*

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Statement of Qualification of the Environmental Assessment Practitioner (EAP) Dr. Sindila Mwiya

Dr. Sindila Mwiya has been the Environmental Assessment Practitioner (EAP) for this project in accordance with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 under the Environmental Management Act (EMA), 2007, Act No. 7 of 2007. Dr. Sindila Mwiya is highly qualified, with more than ten years of professional experience in mining, petroleum, property development, applied environmental management, cleaner production, environmental management, geoenvironmental engineering and geotechnical engineering fields.

He gained his experience from public and private employments and contracts in Namibia, and the SADC region. He has worked as a Project Manager, Lecturer (University of Namibia), External Examiner/ Moderator (Polytechnic of Namibia), Technical Consultant, National Technical Advisor and reviewer on international, national and regional (SADC) plans, programmes and projects with the objective to ensure substantial and sustainable natural resources development, management, and for development policies, plans, programmes and projects financed by governments, private investors and donor organisations. Among his academic achievements, he is a holder of a Ph.D., MPhil, PG Cert and BEng (Hons) qualifications from the University of Portsmouth in the United Kingdom. During the 2004 Namibia National Science Awards, organised by the Ministry of Education, and held in Windhoek, Namibia, Dr. Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category.

Furthermore, as part of his professional career recognition, Dr. Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia. He possesses excellent computing, analytical, communicative, interpersonal and organisational skills. Dr Sindila Mwiya has experience, skills and technical knowledge in petroleum industry, mining industry, environment, local, regional and national land use planning, production and management of various planning thematic information, maps and related documentations, gained in local, national and regional developmental policies, plan, programmes and projects he undertook.

Specialist Input

- **Ms Margaret Angula** Team Leader (UNAM)
- **Dr Martin Hipondoka** GIS/RS & Geomorphology expertise (UNAM)
- **Ms Ngula Niipele** Assistant Team leader/ GIS expertise (UNAM)
- **Dr John Kinahan** Archaeology Expertise (QRS Namibia)
- **Mr Peter Cunningham** Vertebrate Fauna and Flora Expertise (Environment & (Wildlife Consulting Namibia)

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LIST OF ACRONYMS

CBNRM	Community-Based Natural Resource Management
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
DST	Decision Support Tool
DNP	Dorob National Park
FGN	Foresight Group Namibia
GIS	Geographical Information System
GPS	Geographical Positioning System
ICZM	Integrated Coastal Zone Management
KDDP	Kuiseb Delta Development Project
LA	Local Authorities
LM	Line Ministries
MDP	Management and Development Plan
MET	Ministry of Environment and Tourism
NACOMA PCO	Namibia Coast Conservation and Management Project Coordinating Office
NSCNP	Namib-Skeleton Coast National Park
QRS	Quaternary Research Services
REB	Responsible Environment Behaviour
RBS	Risk-Based Solutions
RC	Regional Councils
RS	Remote Sensing
SEA	Strategic Environmental Assessment
TCB&SAP	Training & Capacity Building and Strategy Action Plan
TOR	Terms of Reference
T/A	Trading As
UCCB	University Central Consultancy Bureau
UNAM	University of Namibia

EXECUTIVE SUMMARY

1. Introduction

The Kuiseb Delta Community and investors from Walvis Bay and Swakopmund were awarded small MGs to invest in projects that support sustainable development. The following is the summary of the proposed development activities covered in this EIA report:

(i) The Kuiseb Delta Development Trust applied for a concession from the Ministry of Environment and Tourism (MET) and engages in Community Based Tourism activities. The Kuiseb Delta Development Trust is the proponent for this project in line with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007);

(ii) The Walvis Bay Bird Paradise proposes to establish a bird watching tourism activity. The Walvis Bay Bird Paradise is the proponent for this project in line with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

The project activities proposed for the Kuiseb Delta and Dune Belt areas falls within the listed activities that requires environmental assessments to be undertaken in line with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007). In accordance with the provisions of the Environmental Management Act, 2007, (Act No. 7 of 2007), Part I - Definitions and Object of Act, the term “environment” means the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life.

It is against this background that NACOMA commissioned this study on behalf of the applicants (Proponents) to conduct an Environmental Assessment (EA) covering Scoping (Vol. 1 of 3), this Environmental Impact Assessment (EIA) Vol. 2 of 3 report and develop an Environmental Management Plan (EMP) Vol. 3 of 3 report. The overall aim of the study is to reconfirm the carrying capacity of the Kuiseb Delta to community based tourism and Dune Belt Area to various conflicting resource use activities. There are also other activities in the area, such as quad-biking, cultural, sightseeing and eco-tours operating in the proposed projects and the surrounding areas. The nature and coverage of the existing and proposed activities and their likely negative impacts on the sensitive coastal environment resulted in the proposed EA study area being extended beyond the proposed projects areas to include the Dune Belt, lower Kuiseb River and Delta Area.

2. The EMP

This Environmental Management Plan (EMP) Vol. 3 of 3 Report provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The EMP also provides the management actions with roles and responsibilities requirements for implementation by the proponent through the contractor who will be undertaking the activities from preconstruction to through the operational and closure stages. The EMP gives commitments including financial and human resources provisions for effective implementation of the EMP and management of the likely environmental liabilities during and after the proposed projects

activities. Regular assessments and evaluation of the environmental liabilities during the operational stage will need to be undertaken and will ensure adequate provision of the necessary resources towards good environmental management at various stages of the project development. Overall, the EMP forms the basis for the Environmental Contract to be signed between the proponents and the Government of the Republic of Namibia, hereby represented by the Environmental Commissioner, Department of Environmental Affairs in the Ministry of Environmental and Tourism.

The Environmental Management Plan, described in this report, is based on the findings as outlined in the Scoping Report Vol. 1 of 3, and the Environmental Impact Assessment (EIA) (Vol. 2 of 3). The Proponents must incorporate the EMP in the Environmental Management System (EMS) for each of the two (2) proposed projects. Namibian environmental regulatory framework as provided in the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 under the Environmental Management Act, 2007 (Act No. 7 of 2007) and in line with the Environmental Assessment Policy for Sustainable Development and Environmental Conservation of 1995 form part of the EMP provisions. National and international environmental best requirements and practices to which Namibia is party are also important.

Fig. 1, Summaries the process that has undertaken starting with the preparation of the Scoping report (Vol. 1 of 3), the EIA (Vol. 2 of 3) and this EMP (Vol. 3 of 3) as well as the recommendations on the resources requirements for the implementation, monitoring and awareness training materials to be developed. It is hereby recommended that the proponent take all the necessary steps to implement all the recommendations of the EMP for the successful execution of the preconstruction, construction and operational stages of the proposed activities.

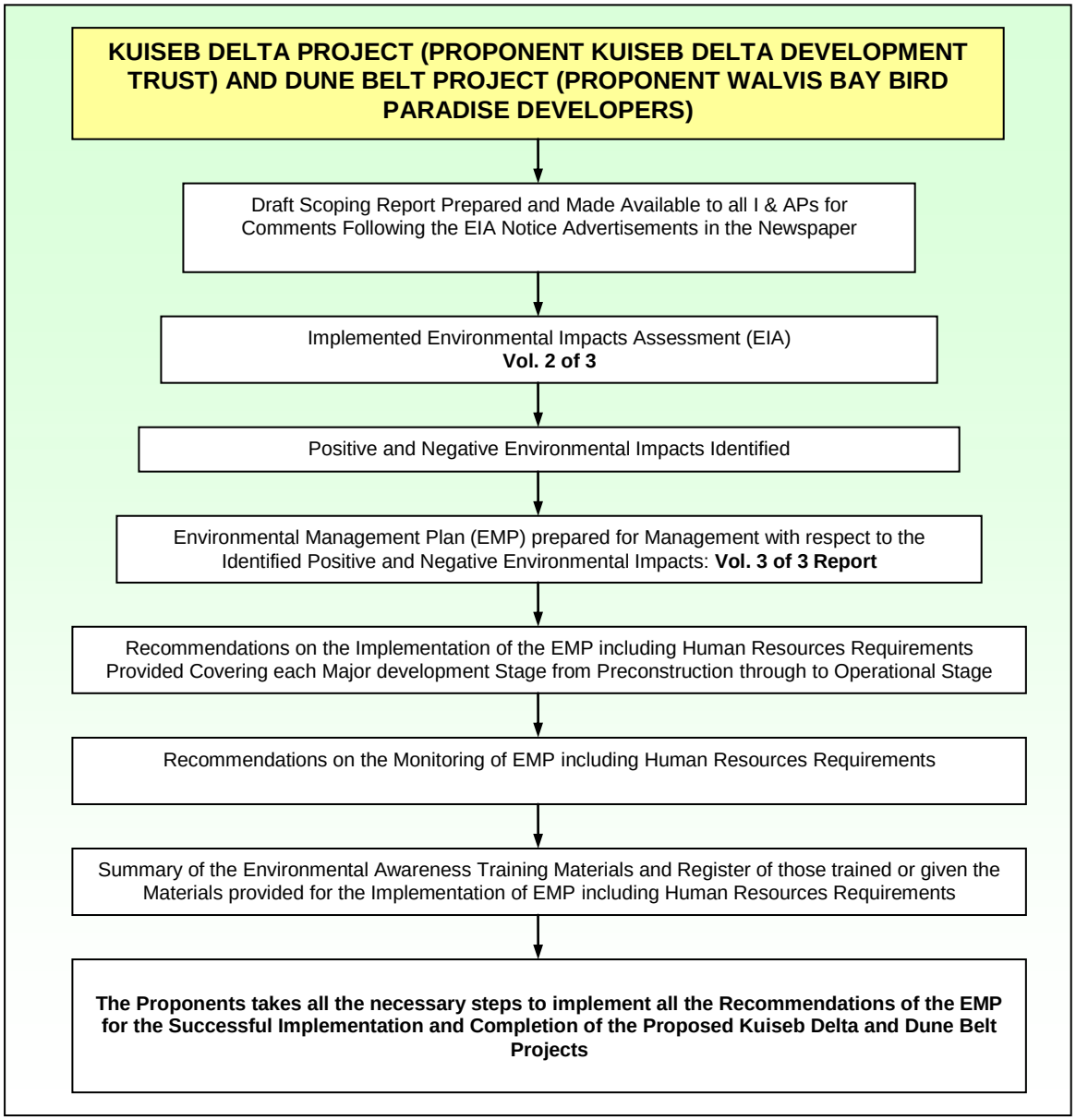

Figure 1: Summary outline of the procedures for the development of the Scoping report (Vol. 1 of 3), the EIA Report (Vol. 2 of 3) and the EMP Report (Vol. 3 of 3) as well as the recommendations on the implementation, monitoring and awareness training materials.

3. Summary of the EIA

The Environmental Impact Assessment (Vol. 2 of 3) study discovered that there are severe to moderate impacts on the natural environment as well as the cultural heritage of the area. The ongoing tourism activities and proposed community-based tourism activities in the Kuiseb Delta and Dune Belt Area might have negative direct and indirect impacts on the environment. The degree of confidence in predictions of these impacts is very high as specialists studies indicated. The potential threats identified in this study could be mitigated if conservation and preservation measures are adopted first before the implementation of the proposed development. The ongoing tourism activities continue to improve the socioeconomic status of entrepreneurs around Walvis Bay and Swakopmund area. Tourism ventures from other parts of the countries also benefit from this area. The Kuiseb Delta Concession and Project as well as the proposed bird watching paradise will significantly alleviate poverty and unemployment among Topnaars community along the Kuiseb Delta.

On the other hand, the Kuiseb Delta project proposal is uninformed as to the archaeological value of the area and has used archaeological survey data merely as an aid to identifying the most commercially advantageous position for the project. The project is a community-based enterprise, but its formulation is no different from that of commercial tourism projects that fail to consider the potential impact of their activities. In this way, the Kuiseb Delta Development Project proposal represents a "worst case" scenario for the management and conservation of this archaeological landscape. The fact that it is supported by organizations such as NACOMA and evidently the Ministry of Environment, without the National Heritage Council demanding better controls, merely illustrates the institutional threats that are posed to the archaeological record in Namibia.

4. Actions and Responsibilities of the Regulators

This EMP has identified the National Heritage Council and the Ministry of Environment and Tourism through the NACOMA Projects as the key regulators for the implementation of this EMP. The following is the summary of the key responsibilities and roles of the regulators:

(i) The National Heritage Council and all interested and affected parties to have the !Khuiseb Delta proclaimed as a Conservation Area under Part VI, Section 54 of the National Heritage Act (27 of 2004) falling within the Dorob National Park as an important archaeological resources zone;

(ii) The Ministry of Environment and Tourism through the Dorob National Park Regulations to create appropriate buffers to separate current and future projects activities areas from key environmental sources such as the Kuiseb Delta archaeological sites, key avian breading zones of the Dune Belt Areas as well as other important habitats and conservation zones / corridors that has been delineated in the EIA Report (Vol. 2 of 3).

It's only after the above two regulatory actions have been completed that the proposed project can be given a go ahead. The Environmental Commissioner shall only grant the Environmental Clearance for the proposed projects to go-ahead once the maps and supporting documentations with respect to the above regulatory actions are submitted and verified to the satisfaction of the commissioner.

5. Actions and Responsibilities of the Proponents

The following are the recommended actions to be implemented by the proponents as a part of the management of the impacts through implementations of this EMP once all the regulatory actions have been implemented:

(i) Any access to archaeological sites should be strictly monitored and subject to specific guidelines as to routes, group numbers and other factors;

(ii) No settlements, camping or other overnight facilities should be permitted in any area designated as archaeologically sensitive;

(iii) Avoid all development in the areas viewed as sensitive habitats – i.e. Sandwich Harbour, lichen fields, Kuiseb and Tumas Rivers, rocky outcrops, Caution Reef, Horses Graves and Paaltjies Salsola dune hummocks;

(iv) Implement and maintain track discipline limited to existing tracks and/or certain tracks with maximum speed limits (e.g. 30km/h) as this would result in fewer faunal road mortalities and associated dust pollution problems;

(v) Avoid off road driving in areas prone to scarring and especially the lichen fields. Nocturnal driving should also be avoided as this result in the destruction of slow moving fauna – e.g. various reptiles and other nocturnal species;

(vi) Avoid the removal and damage of bigger trees (especially protected species – i.e. Acacia erioloba, Faidherbia albida and Tamarix usneoides [Forestry Ordinance No. 37 of 1952) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna. This is relevant to developments in the Kuiseb River area;

(vii) The environmental management and monitoring of the dune belt area, the free off-road vehicle zone and the Kuiseb delta should form part of the Dorob National Park management;

(viii) Contract an Environmental Control Officer / External Consultant / suitable in-house resources person to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed projects;

(ix) Provide with other support, human and financial resources, for the implementation of the proposed mitigations and effective environmental management during the proposed projects life cycle;

(x) Develop a simplified environmental induction and awareness programmes for all the workforce, contractors and sub-contractors;

(xi) Where contracted service providers are likely to cause environmental impacts, these will need to identified and contract agreements need to be developed with costing provisions for environmental liabilities;

(xii) Implement internal and external monitoring of the actions and management strategies developed during the project duration and a final Environmental Monitoring report to be prepared by the Environmental Control Officer / External Consultant / suitable in-house resource persons and to be submitted to the regulators and to end the proposed projects;

(xiii) Develop and implement a monitoring programme that will fit into the overall Environmental Management Systems (EMS) for each project as well as for any future EIA related to the expansion of the current proposed development.

6. Recommendation

All the responsibilities to ensure that the recommendations are executed accordingly, rest with the **Kuiseb Delta Development Trust** with respect to the Kuiseb Delta project and the **Investors / Operators** of the Walvis Bay Bird Paradise with respect to the proposed bird watching facilities**.** The proponents for each of the two (2) projects must provide all

appropriate resource requirements for the implementation of this EMP. It is the responsibilities of proponents to make sure that all members of the workforce including subcontractors are aware of the EMP and its objectives.

This EMP shall be updated regularly, particularly after the proclamation of the key archaeological sites as proposed in the EIA Report (Vol. 2 of 3) as well as appropriate buffers requirements to be developed within the framework of the Dorob National Park Regulations and land use zonation currently being finalised by the NACOMA Project. This EMP assumes that various land use zonation (DSTs) for the Dorob National Park are being prepared by MET through the support of the NACOMA Project and that appropriate buffers will be provided in the regulations for the Dorob National Park. The various thematic maps (DSTs) developed by the specialist studies in the EIA Vol. 2 of 3 reports will assists in finalising the various zones (DSTs) with respect to various land uses of the Dorob National Park which will be inclusive of the study areas covered in this environmental assessment.

1. INTRODUCTION

1.1 Project Overview

The Kuiseb Delta Community and investors from Walvis Bay and Swakopmund were awarded small MGs to invest in projects that support sustainable development. The proposed projects are located in the Kuiseb Delta and Dune Belt areas in Erongo Region. It is against this background that NACOMA commissioned this study on behalf of the applicants (Proponents) to conduct an Environmental Assessment (EA) covering Scoping (Vol. 1 of 3), this Environmental Impact Assessment (EIA) Vol. 2 of 3 report and develop an Environmental Management Plan (EMP) Vol. 3 of 3 report. The overall aim of the study is to reconfirm the carrying capacity of the Kuiseb Delta to community based tourism and Dune Belt Area to various conflicting resource use activities. There are also other activities in the area, such as quad-biking, cultural, sightseeing and eco-tours operating in the proposed projects and the surrounding areas. The nature and coverage of the existing and proposed activities and their likely negative impacts on the sensitive coastal environment resulted in the proposed EA study area being extended beyond the proposed projects areas to include the Dune Belt, lower Kuiseb River and Delta Area.

The project activities proposed for the Kuiseb Delta and Dune Belt areas falls within the listed activities that requires environmental assessments to be undertaken in line with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007).

In fulfilment of the regulatory requirements and good environmental management practices within the MGs management requirements under the NACOMA Projects funding the proposed projects, a comprehensive environmental assessment process covering the Scoping study (Vol. 1 of 3), the Environmental Impact Assessment (EIA) (Vol. 2 of 3) and this Environmental Management Plan (EMP), (Vol. 3 of 3) were commissioned. Interested and affected parties were invited to comment on the proposed project development activities which were first presented in the Scoping Report (Vol. 1 of 3) as part of the environmental assessment process. Following the preparation of the EIA (Vol. 2 of 3) report, a number of likely positive and negative impacts were identified to be associated with the proposed project development. In minimising the likely negative impacts and maximising the positive impacts, this Environmental Management Plan (EMP) Vol. 3 of 3 has been prepared for implementation by the developers / operator (Proponents) for both the Kuiseb Delta and Dune Belt Areas.

1.2 The EMP

An Environmental Management Plan (EMP) is one of the most important outputs of the environmental assessment process and is the synthesis of all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. The aim of the EMP is to assist the regulators, proponents and their Contractors to ensure that the day-to-day operations are carried out in an environmentally responsible manner, thereby preventing or minimising the negative effects and maximising the positive effects of the project-related activities.

The EMPs are presented as comprehensive matrices: for each **Activity/Process** and related **Aspects** (defined by the International Organization for Standardization ISO 14001:2004 as *element of an organization's activities or products or services that can interact with the*

environment; environment is defined as *surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation*) and **Impacts** (*any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects*), **Management Actions** required to address the impacts arising directly and indirectly from the various aspects of the proposed projects, with **Responsible Persons** and **Timing** for each, are listed inclusive of the roles and responsibilities of the regulators.

1.3 Project Developmental Stages

The proposed Kuiseb Delta and Dune Belt projects implementations process could be divided into the following development stages:

- Project Identification: Covering the actual project definition, alternative location assessments, investment levels for the small Matching Grants (MGs) for targeted investments in specific project intervention sites in ecosystems of biodiversity importance already undertaken by the NACOMA Project on behalf of the applicants (proponents);

- Feasibility study (covering all the technical studies such as assessment products, infrastructure needs, design and layout already undertaken by the NACOMA Project on behalf of the applicants (proponents);

- Environmental Assessments covering Scoping (Vol. 1 of 3), EIA Vol. 2 of 3 and EMP Vol. 3 of 3 ongoing and implemented by the NACOMA Project on behalf of the applicants (proponents);

- Preconstruction and environmental monitoring (covering site preparation, material and equipment mobilisation for the development of the supporting infrastructure and facilities for the proposed project activities and environmental performance monitoring to be implemented on receipt of the Environmental Clearance Certificates to be issued by the Environmental Commissioner;

- Construction and environmental monitoring (covering the construction of the supporting infrastructure such as access roads / tracks, walk ways, bird view decks, lodge, administration and all other supporting facilities and environmental performance monitoring to be implemented on receipt of the Environmental Clearance Certificates to be issued by the Environmental Commissioner;

- Operation, maintenance and environmental monitoring (covering the actual running of the proposed Kuiseb Delta and Dune Belt activities, maintenance of the supporting infrastructure and environmental performance monitoring following the completion of the construction phase).

1.4 Environmental Requirements

The proposed Matching Grants (MGs) for targeted investments projects covering the community- based eco-tourism and bird watching activities falls within the Dorob National Park (DNP), an area with ecosystems of biodiversity importance to Namibia. In line with the Draft regulations of the DNP, the proposed projects will require the implementation of Environmental Impact Assessment (EIA) and the development of Environmental Management Plan (EMP). In addition to the biodiversity significance of the proposed project

areas within the framework of the DNP Draft Regulations, recommendations of the previous studies undertaken and covering the Kuiseb Delta and Dune Belt Areas such the Strategic Environmental Assessment (SEA) for the coastal zone of the Erongo Region recommended undertaking EIAs and development of EMPs for new projects that are likely to have significant negative impacts on the environment.

The project activities proposed for the Kuiseb Delta and Dune Belt areas falls within the listed activities that requires environmental assessments to be undertaken in line with the provisions of the Environmental Impact Assessment (EIA) Regulations No. 30 of 2012 and the Environmental Management Act, (EMA), 2007, (Act No. 7 of 2007). In accordance with the provisions of the Environmental Management Act, 2007, (Act No. 7 of 2007), Part I - Definitions and Object of Act, the term "environment" means the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life.

1.5 Regulatory Compliance

Constitution of the Republic of Namibia, 1990 has a clear relevance to environmental management associated with the proposed project activities in Kuiseb and Dune Belt Areas as outlined in Article 95: *Promotion of the Welfare of the People. This affirms that the State shall actively promote and maintain the welfare of the people by adopting policies aimed at the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future*.

Important legislative instruments that affect the prefeasibility, feasibility, development, operation of the proposed project activities in the Kuiseb and Dune Belt Areas include the following:

- Environmental Management Act No. 7 of 2007- Implemented in February 2012 through the gazetting of the Environmental Impact Assessment Regulations No. 30 of 2012 published by the Ministry of Environment and Tourism;
- National Heritage Act 27 of 2004 - Ministry of Youth, National Service, Sport and Culture;
- Nature Conservation Ordinance, No. 4 of 1975 - Ministry of Environment and Tourism (MET);
- Water Act 54 of 1956 - Minister of Agriculture, Water and Forestry;
- The Labour Act, 2007 (Act No. 11 of 2007) - Ministry of Labour;
- Atmospheric Pollution Prevention Ordinance 11 of 1976 - Ministry of Health and Social Services;
- Forest Act 12 of 2001 - Minister of Agriculture, Water and Forestry;
- Hazardous Substances Ordinance 14 of 1974 - Ministry of Health and Social Services;
- Public Health Act 36 of 1919 - Ministry of Health and Social Services;
- Regional Councils Act, 1992, (Act 22 of 1992);

- Local Authorities Act, 1992, (Act 23 of 1992);
- Regional Agreements:
    - ✓ Southern African Development Community: Protocol on Mining; and
    - ✓ Southern African Development Community: Protocol on Energy
- Other legal instruments to be identified during the full EIA study.

1.6 Likely Impacts Findings of the EIA

The impacts of tourism activities on the environment were evaluated in terms of nature of impact (identification), magnitude, extent, duration and significance as outlined in the Table 1.1. The impacts identified could be positive or negative. The overall likely impacts of the proposed construction, operation and development of tourism activities in the study area are outlined in Table 1.2. The assessment table also applies to identified and existing tourism operations in the study area.

Table 1.1: Criteria used to evaluate impacts.

Criteria	Categories
Nature of Impact	Description of the effect of a proposed/existing activity on the environment. - Positive - Negative - Direct - Indirect - Cumulative - Synergistic
Magnitude	- Severe - Moderate - Low
Extent	- International - National - Regional - Local
Duration	- Short term - Long term - Project Life Span - Permanent
Significance	- High - Medium - Low

Table 1.2: Synthesis table of all potential impacts.

Nature of Impact	Magnitude	Extent	Duration	Significance	Mitigation
Uncontrolled tourism and Unrestricted access NEGATIVE, DIRECT	Severe	Region & Local	The duration of the impact is expected to be short to medium term if mitigated	Before mitigation: **High** After mitigation: **Medium** to **Low**	All use of the area, particularly for tourism and other recreational purposes, should be subordinate to the preservation of the sites. All areas and routes should be subject to detailed field assessment with the option to have permission withheld. Promote ex-situ appreciation of the significance of archaeological sites. Especially most sensitive sites.
Commercial activities and Urban development NEGATIVE, SYNERGISTIC	Severe	Local	Permanent if no mitigation	Before mitigation: **Medium** After mitigation: **Low**	Urban expansion, construction of roads and drainage should be guided by an EIA to reduce effects on archaeology material in the area Design routes to direct traffic from the Salt Works away from most sensitive archaeological sites.
National Park and Concession area's activities NEGATIVE, DIRECT AND SYNERGISTIC	Severe	Region & Local	Permanent to Long-term if not mitigated	Before mitigation: **High** After mitigation: **Medium** to **Low**	Restrict access to archaeological sites and strictly monitor with a set of specific guidelines as to routes, group numbers and other factors. Discourage camping or other overnight facilities in areas designated as archaeologically sensitive.
Placing of settlements, structures and facilities in highly sensitive archaeological areas NEGATIVE, DIRECT	Severe	Local	Permanent	Before mitigation: **High** After mitigation: **Medium** to **Low**	Discourage settlements, camping or other overnight facilities in areas designated as archaeologically sensitive.

Table 1.2: *Cont.*

Nature of Impact	Magnitude	Extent	Duration	Significance	Mitigation
Faunal loss and disturbance NEGATIVE, CUMULATIVE	Severe to Moderate	Local	The duration of the impact is expected to be permanent over most of the proposed development sites once established. Most species (e.g. various birds and smaller mammals) are expected to re-colonise the area after completion of the development(s) – i.e. duration viewed as short to medium term – while other species are not expected to return (e.g. various secretive carnivores) – i.e. duration viewed as long term. This however, would be a relatively small area with localised implications.	Before mitigation: **High** After mitigation: **Medium** to **Low**	**1.** Avoid development and associated infrastructure in sensitive areas – e.g. Sandwich Harbour, Kuiseb and Tumas Rivers, lichen plains and rocky outcrops, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species. **2.** Implement and maintain track discipline limited to existing tracks and/or certain tracks with maximum speed limits (e.g. 30km/h) as this would result in fewer faunal road mortalities and associated dust pollution problems. **3.** Avoid off road driving in areas prone to scarring and especially the lichen fields. Nocturnal driving should also be avoided as this result in the destruction of slow moving fauna – e.g. various reptiles and other nocturnal species. **4.** Avoid and/or limit the use of lights during nocturnal activities as this influence and/or affects various nocturnal species – e.g. bats and owls, etc. and contribute to "light pollution". Use focused lighting for least effect. **5.** Prevent overnight activities in sensitive areas, especially the Sandwich Harbour area. **6.** Initiate a suitable and appropriate refuse removal policy at any future developments as littering could result in certain animals becoming accustomed to humans and associated activity and result in typical problem animal scenarios – e.g. Black-backed Jackal, etc. A "carry-in-carry-out" system should be mandatory in sensitive areas, especially the Sandwich Harbour area. **7.** Avoid the removal and damage of bigger trees (especially protected species – i.e. *Acacia erioloba*, *Faidherbia albida* and *Tamarix usneoides* [Forestry Ordinance No. 37 of 1952) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna. This is relevant to developments in the Kuiseb River area.

Table 1.2: *Cont.*

Nature of Impact	Magnitude	Extent	Duration	Significance	Mitigation
					8. Maintain and link "green" corridors throughout the area to ensure the natural movement of fauna and prevent "island" scenarios which are detrimental to biodiversity. **9.** Rehabilitation of the disturbed areas – i.e. initial development access route "scars" and associated tracks, as well as temporary accommodation sites. Preferably workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g. wood collection, poaching, etc.). Such rehabilitation would not only confirm the various development companies' environmental integrity, but also show true local commitment to the environment. **10.** Avoid development in the Kuiseb and Tumas Rivers or within 100m of these drainage line(s) to preserve the associated riparian fauna. **11.** Prevent (do not allow) domestic pets – e.g. cats – becoming established at the various development sites as pets can cause considerable damage to the local fauna. Cats also interbreed and transmit diseases to the indigenous African Wildcat found in the area. The indiscriminate and wanton killing of the local fauna by such pets should be avoided at all cost.
Floral loss and disturbance NEGATIVE, CUMULATIVE	Severe to Moderate	Local	The duration of the impact is expected to be permanent over most of the proposed development sites once established. Most species, especially annuals, are expected to re-colonise the area after completion of the development(s) – i.e. duration viewed as short to medium term – while the destruction	Before mitigation: **High** After mitigation: **Medium** to **Low**	**1.** Avoid development and associated infrastructure in sensitive areas – e.g. Sandwich Harbour, Kuiseb and Tumas Rivers, lichen plains and rocky outcrops, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species. **2.** Identify protected and unique species (e.g. *Acacia erioloba*, etc. [Forestry Ordinance No. 37 of 1952 species] before the commencement of development activities in areas where these occur and avoid. **3.** Prevent and discourage the collecting of firewood as dead wood has an important ecological role. Such collecting of firewood, especially for economic reasons, often leads to abuses – e.g. chopping down of live and/or protected tree species such as *Acacia erioloba* which is a good quality wood. This would only be relevant to the Kuiseb River riparian vegetation.

Table 1.2: *Cont.*

Nature of Impact	Magnitude	Extent	Duration	Significance	Mitigation
Floral loss and disturbance NEGATIVE, CUMULATIVE	Severe to Moderate	Local	of mature trees are not expected to rebound soon – i.e. duration viewed as long term. This however, would be a relatively small area with localised implications.		**4.** Avoid the removal and damage of bigger trees (especially protected species – i.e. *Acacia erioloba*, *Faidherbia albida* and *Tamarix usneoides* [Forestry Ordinance No. 37 of 1952) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna. This is relevant to developments in the Kuiseb River area. **5.** Avoid the removal of interesting and unique flora (especially restricted range species – e.g. *Acanthosicyos horridus* and *Arthraerua leubnitziae*). **6.** Avoid development in the Kuiseb and Tumas Rivers or within 100m of these drainage line(s) to preserve the associated riparian fauna. **7.** Prevent the planting of potentially alien invasive plant species (e.g. *Pennisetum setaceum*, etc.) for ornamental purposes as part of the landscaping at the various developments. Alien species often "escape" and become invasive causing further ecological damage. **8.** Implement a policy of "no tolerance" towards the existing invasive alien plant species (i.e. *Argemone ochroleuca*, *Datura* spp., *Eucalyptus* sp., *Nicotiana glauca*, *Prosopis* sp. and *Ricinus communis*) in the area. This should include the removal and destruction of these species throughout the proposed development areas. Such activity would be beneficial to the overall ecology of the area, especially the Kuiseb River area where most of these aliens currently occur. **9.** Rehabilitation of the disturbed areas – i.e. initial development access route "scars" and associated tracks, as well as temporary accommodation sites. Preferably workers should be transported in/out to the construction sites on a daily basis to avoid excess damage to the local environment (e.g. wood collection, poaching, etc.). Such rehabilitation would not only confirm the various development companies' environmental integrity, but also show true local commitment to the environment.

Table 1.2: *Cont.*

Nature of Impact	Magnitude	Extent	Duration	Significance	Mitigation
Sensitive areas in the Kuiseb and Dune Belt area NEGATIVE, CUMULATIVE	Biodiversity sensitive areas: **Severe** -Coastal area immediately north of Walvis Bay -Walvis Bay Lagoon -Kuiseb Delta -Sandwich Harbour **MODERATE to LOW** Inland Gravel Plains	International, Regional, National & Local	Permanent to long-term if not mitigated	Before mitigation: **High** After mitigation: **Medium** to **Low**	Avoid all development in the areas viewed as sensitive habitats – i.e. Sandwich Harbour, lichen fields, Kuiseb and Tumas Rivers, rocky outcrops, Caution Reef, Horses Graves and Paaltjies *Salsola* dune hummocks. Maintain linkages between the various habitats and do not parcel up the area into virtual islands – i.e. maintain a system of "green spaces" which are linked and can serve as corridors for the movement of fauna. Protect the larger tree specimens, especially protected species (i.e. *Acacia erioloba*, *Faidherbia albida* and *Tamarix usneoides* [Forestry Ordinance No. 37 of 1952) as larger tree specimens as these often have cavities, dead branches, loose bark, etc. which serve as habitat to a variety of cavity and bark dwelling fauna – e.g. bats and birds – as well as unique and restricted range species (i.e. *Acanthosicyos horridus* and *Arthraerua leubnitziae*) – as these have economic and/or habitat related importance. Avoid off road driving in sensitive areas especially viewed as susceptible to such activities – i.e. the gravel areas with lichens – as this results in the permanent and/or long term destruction of associated fauna (e.g. Damara Terns) and flora. Development along the Kuiseb River should ensure the natural flow of the river and not impact on the indigenous vegetation
Socio-economic POSITIVE, DIRECT AND INDIRECT	Severe	Local	Permanent to long-term	Before mitigation: **Medium to Low** After mitigation: **High**	Employment opportunities, Tourism entrepreneurship opportunities, Improved local institutional governance

Table 1.2: *Cont.*

Nature of Impact	Magnitude	Extent	Duration	Significance	Mitigation
Visual impacts NEGATIVE	Low	Local	Permanent	Before mitigation: **Medium** After mitigation: **Low**	Keep as much natural vegetation on site as possible. Only use designated routes demarcated for traffic to minimise visual disturbance to surrounding areas
Water use and quality NEGATIVE (unmitigated), POSITIVE (sustainable utilisation and management) DIRECT	Moderate	Local	The duration of this impact could last the entire project life span	Before mitigation: **Medium** After mitigation: **Low**	Camping sites and facilities in the Kuiseb and dune belt area should employ sustainable water management aimed at minimising water consumption. These measures could also ensure water quality standards as per legislation - Water Act. Keep facilities as clean as possible
Waste and Sewage management at project sites POSITIVE (mitigation)	Moderate	Local	The duration of this impact could last the entire project life span	Before mitigation: **Medium** After mitigation: **Low**	Develop and maintain sustainable waste management facilities at project sites.
Dune morphology and Wind situation NEGATIVE, INDIRECT	Moderate to low	Local	Short term and seasonal	Before mitigation: **High** After mitigation: **Medium to Low**	Quad biking and Off-road Vehicle Driving areas should be identified taking into consideration sensitive terrain units. Conduct of tourism business should consider severe wind conditions. This particularly important for the bird watch paradise and tour guided walks.
Cumulative Impacts NEGATIVE, CUMULATIVE	Severe to Moderate	National, Regional & Local	The cumulative impacts could last the entire project life span	Before mitigation: **Medium to high** After mitigation: **Low**	All of the above mitigation measures will minimise the total cumulative impact of the proposed development

1.7 Proposed Development Opportunities

Based on all the data collected and analysed at different stages of the EIA study process, including all the findings and recommendations of the specialist studies, all the results and recommendations have been evaluated and interpreted. Although the proposed projects will 7have very high positive socioeconomic impacts, based on the extent, duration and intensity of both likely negative and positive impacts of the proposed projects development for both the Kuiseb Delta and the Dune Belt areas will have high negative impacts on the local environment. Environmental Management Plan (EMP) Report Vol. 3 of 3 incorporating all the constraints, relevant mitigation measures with respect to likely impacts and recommendations has been prepared for implementation by the developer / operator. The EMP implementation and monitoring activities covers all the stages of the proposed projects life cycle and is inclusive of the preconstruction, development, construction, operational stages.

2. THE EMP FRAMEWORK

2.1 Overview the EMP Requirements

The Environmental Management Plan (EMP) is the tool that can provide the assurance that the proponent has made suitable provisions for mitigation. The EMP describes the methods and procedures for mitigation and monitoring the impacts identified in the EIA report. The aim of the framework EMP is twofold and these are to:

(i) Ensure that the project complies with the goals of the Namibian Environmental Management Act 2007, (No. 7 of 2007), and;

(ii) Provide a framework for implementing the management actions from the EIA during the planning, construction and operational phases of planned and proposed activities in the Kuiseb Delta and Dune Belt area.

This EMP is to be submitted to the Environmental Commissioner in the Ministry of Environment and Tourism as part of the application to receive an environmental clearance certificate for the proposed community-based tourism projects in the Kuiseb and Dune Belt areas as well as the application of the concession area. The EMP covers the same project scope as included in the EIA. The Detailed description of the proposed Kuiseb Delta Development Trust (KDDT) and Bird Watching Paradise as well as a list of existing tourism activities in the area are contained in the EIA (Vol. 2 of 3) report. The detailed description of the affected environment is also included in the EIA report.

2.2 Objectives of the EMP

The objectives of this EMP report are to:

(i) Provide a detailed summary and identification of all significant environmental impacts that are anticipated;

(ii) (ii) Provide a description and technical details for each mitigation measure, including the type of impact to which it relates and the conditions under which it relates and is required including design and operation procedures;

(iii) Stipulate institutional arrangements with respect to the assignment of various responsibilities for carrying out the mitigation measures;

(iv) Present the monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures, and provide information on the progress and result of mitigation.

2.3 The EMP Framework

The EMP framework as outlined in this EMP Report Vol. 3 of 3 is based on the findings of the EIA report (Vol. 2 of 3). It is assume that the proponent will ensure that EMP is applied within the legal setting of Namibia. The EMP is prepared with an intention to serve as a broad-brush environmental management framework. Furthermore, the EMP is a living document and should be updated with additional information or actions during the

preconstruction, construction and operations phases. Therefore this plan must address all the important phases of the activity:

- Management framework for the planning phase;
- Management framework for the construction phase;
- Management framework for the operation phase.

For each of these phases, the following approach is adopted:

- Objectives are identified – broadly describing the environmental quality to be maintained;
- Risk sources are identified – as determined in the EIA report;
- Management actions are proposed – actions required to mitigate the significant negative impacts identified during the EIA process;
- Monitoring is proposed – to check whether the actions have been undertaken, and if so, whether they have been effective in achieving the overall objectives and desires levels of environmental quality.

2.4 Implementation of the EMP

All tourism activities in the Kuiseb Delta and Dune Belt areas are to be treated as developmental projects. These activities (planned and on-going) go under several phases during their life cycle. In each of these phases, environmental management for each individual project must be developed and implemented to maintain sustainable development and to protect the environment.

3. THE EMP

3.1 Introduction

This section contains the Environmental Management Plan (EMP) for the preconstruction constructions and operational activities. Due to the desert landscape of Kuiseb Delta and Dune Belt area, there will be no need for major site preparations in terms of bush clearing etc. The main activities of the preconstruction stage will be for the regulators to make sure that appropriate protection and buffers are provided and incorporated in the land use zonation of the Dorob National Park in line with the Park Regulations and the EIA Vol. 2 of 3 recommendations for the proposed Kuiseb Delta and Dune Belt Projects. Table 3.1 – 3.3 outlines the EMP framework for the preconstruction, construction and operational stages respectively.

3.2 Roles and Responsibilities

3.2.1 Regulators

This EMP has identified the National Heritage Council and the Ministry of Environment and Tourism through the NACOMA Projects as the key regulators for the implementation of this EMP. The following is the summary of the key responsibilities and roles of the regulators:

(iii) The National Heritage Council and all interested and affected parties to have the !Khuiseb Delta proclaimed as a Conservation Area under Part VI, Section 54 of the National Heritage Act (27 of 2004) falling within the Dorob National Park as an important archaeological resources zone;

(iv) The Ministry of Environment and Tourism through the Dorob National Park Regulations to create appropriate buffers to separate current and future projects activities areas from key environmental sources such as the Kuiseb Delta archaeological sites, key avian breading zones of the Dune Belt Areas as well as other important habitats and conservation zones / corridors that has been delineated in the EIA Report (Vol. 2 of 3);

(v) The Environmental Commissioner shall only grant the Environmental Clearance for the proposed projects to go-ahead once the maps and supporting documentations with respect to the regulatory actions are submitted and verified to the satisfaction of the commissioner.

3.2.2 Proponents / Project Manager

The proponents shall appoint a **Project manager** with the following responsibilities:

- Act as the proponents on-site project manager and implementing agent in term of environmental requirements;
- Ensure that the responsibilities of the proponents are executed in compliance with the relevant legislation and the EMP for the upgrade/construction of access road(s);
- Ensure that all the necessary environmental authorisations and permits have been obtained;

- Assist the Contractor in finding environmentally responsible solutions to challenges that may arise;

- Should the Project manager in consultations with the Environmental Control Officer (ECO) be of the opinion that a serious threat to, or impact on the environment may be caused by the construction operations, he/she may stop work; the proponent must be informed of the reasons for the stoppage as soon as possible;

- The project manager in consultation with the Environmental Control Officer (ECO) has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP;

- Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the EMP, the Project manager in consultation with the Environmental Control Officer (ECO) can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied;

- Report to the proponent on the implementation of this EMP on site (with input from the independent environmental auditor);

- Maintain open and direct lines of communication between the proponent, Contractor and Interested and Affected Parties (I&APs) with regards to environmental matters; and

- Attend regular site meetings and inspections where required.

3.2.2 Environmental Control Officer (ECO)

The **Environmental Control Officer (ECO)** has the following responsibilities:

- Assist the Project Manager in ensuring that the necessary environmental authorisations and permits have been obtained;

- Assist the Project Manager and Contractor in finding environmentally responsible solutions to challenges that may arise;

- Conduct environmental monitoring as per EMP requirements;

- Recommend on the issuing of fines for transgressions of basic conduct rules and/or contraventions of the EMP to the ER;

- Advise the Project Manager on the removal of person(s) and/or equipment not complying with the specifications of the EMP;

- Carry out regular site inspections (on average once per week) of all construction areas with regards to compliance with the EMP; report any non-compliance(s) to the Project Manager as soon as possible;

- Organise for an independent internal audit on the implementation of and compliance to the EMP to be carried out half way through the construction period; audit reports to be submitted to the Project Manager;

- Organise for an independent post-construction environmental audit to be carried out;

- Continuously review the EMP performances and recommend additions and/or changes to the EMP document;
- Monitor the Contractor's environmental awareness training for all new personnel coming onto site;
- Keep records of all activities related to environmental control and monitoring; the latter to include a photographic record of the construction and environmental control and rehabilitation process, and a register of all major incidents; and
- Attend regular site meetings.

3.2.3 Contractor

The responsibilities of the **Contractor** include:

- Comply with the relevant legislation and the EMP for the upgrade/construction of access road(s) and all the supporting infrastructures;
- Preparation and submission to the proponent thorough Project Manager the following Management Plans:
    - Environmental Awareness Training and Inductions;
    - Emergency Preparedness and Response;
    - Waste Management; and
    - Health and Safety.
- Ensure adequate environmental awareness training for senior site personnel;
- Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement; the ECO is to provide the course content and the following topics, at least but not limited to, should be covered:
    - The importance of complying with the relevant Namibian, International and Best Practice Legislation;
    - Roles and Responsibilities, including emergency preparedness;
    - Basic Rules of Conduct (Do's and Don'ts);
    - EMP: aspects, impacts and mitigation;
    - Fines for Failure to Adhere to the EMP;
    - Health and Safety Requirements.
- Record keeping of all environmental awareness training and induction presentations; and
- Attend regular site meetings and environmental inspections.

Table 3.1: EMP Framework for the planning phase.

OBJECTIVES	RISK SOURCES	MANAGEMENT ACTIONS	MONITRING
Ensure that environmental Requirements recommended in the EIA report are incorporated into the project plan for the KDDT and Bird Watch Paradise. This requirement should also apply to other planned tourism activities in the Kuiseb Delta and Dune Belt area	**Uncontrolled tourism and Unrestricted access** Uncontrolled tourism recreational activities are destructive to the archaeology of the Kuiseb Delta	The National Heritage Council and all interested and affected parties to have the !Khuiseb Delta proclaimed as a Conservation Area under Part VI, Section 54 of the National Heritage Act (27 of 2004) falling within the Dorob National Park as an important archaeological resources zone	Formulate an effective management plan for the archaeology of the Kuiseb Delta.
Ensure that environmental Requirements recommended in the EIA report are incorporated into the project plan for the KDDT and Bird Watch Paradise. This requirement should also apply to other planned tourism activities in the Kuiseb Delta and Dune Belt area	**Uncontrolled tourism and Unrestricted access** Uncontrolled tourism recreational activities are destructive to the flora and fauna of the Kuiseb Delta and Dune Belt Area	The Ministry of Environment and Tourism through the Dorob National Park Regulations to create appropriate buffers to separate current and future projects activities areas from key environmental sources such as the Kuiseb Delta archaeological sites, key avian breading zones of the Dune Belt Areas as well as other important habitats and conservation zones / corridors that has been delineated in the EIA Report (Vol. 2 of 3). It's only after the above two regulatory actions have been completed that the proposed project can be given a go ahead. The Environmental Commissioner shall only grant the Environmental Clearance for the proposed projects to go-ahead once the maps and supporting documentations with respect to the above regulatory actions are submitted and verified to the satisfaction of the commissioner	Avoid development and associated infrastructure in sensitive areas – e.g. Sandwich Harbour, Kuiseb and Tumas Rivers, lichen plains and rocky outcrops, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species

Table 3.2: EMP Framework for the Construction phase.

OBJECTIVES	RISK SOURCES	MANAGEMENT ACTIONS	MONITRING
Minimise negative impacts resulting from commercial and urban development activities. Commercial and urban activities related to construction of roads, heavy volume of traffic in and out of the area, dune control measures, urban expansion and construction of drainage channels.	Commercial activities and Urban development	Direct construction, road and drainage works away from archaeology sites and damara tern breeding sites.	Maintain archaeology sensitive and breeding sites areas.
Minimise negative impacts on the environment resulting recreational activities and construction of facilities in the Dorob National Park and KDDT concession area. These activities are: maintenance of the park and its roads, waste management in the park, erection of signage in the park and recreational sites (such as picnics)	National Park and Concession area's activities	Direct construction and road works away from archaeology sites and damara tern breeding sites. Erect camping sites away from archaeology sites and damara tern breeding sites.	Maintain archaeology sensitive and breeding sites areas.
Avoid erection of recreational facilities, construction of roads and camping sites on sensitive archaeological areas.	Placing of settlements, structures and facilities in highly sensitive archaeological areas	Discourage settlements, camping sites and other overnight facilities in areas designated as archaeology sensitive, breeding sites and sensitive habitats.	Maintain archaeology sensitive and breeding sites areas.
Minimise loss of fauna resulting from operational activities in the Kuiseb Delta and Dune Belt area.	Faunal loss and disturbance	Avoid development and associated infrastructure in sensitive areas – e.g. Sandwich Harbour, Kuiseb and Tumas Rivers, lichen plains and rocky outcrops, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species.	Maintain sensitive habitats and breeding sites areas.

Table 3.2: *Cont.*

OBJECTIVES	RISK SOURCES	MANAGEMENT ACTIONS	MONITRING
Minimise loss of vegetation cover resulting from operational activities in the Kuiseb Delta and Dune Belt area.	Floral loss and disturbance	Avoid development and associated infrastructure in sensitive areas – e.g. Sandwich Harbour, Kuiseb and Tumas Rivers, lichen plains and rocky outcrops, etc. This would minimise the negative effect on the local environment especially unique features serving as habitat to various species.	Maintain identified breeding sites and sensitive habitats.
Ensure that water is utilised in a sustainable and environmental friendly manner	Water use and quality	Water Act makes provision for water quality standards and conservation measures. Implement water saving devices for the camping sites, information and kiosk offices as well as settlements in the study area.	Ensure that toilets and contractors' taps are fitted with automatic shut-off technique. Monitor visually to ensure that water conservation techniques are applied on sites. Ensure there are water signs to inform contractors are aware and sensitised of water saving conservation measures. Encourage shower facilities that minimise water consumption.
Ensure that waste is managed in an environmental friendly manner	Waste management at project sites	Develop a waste management plan for each project operation site in the Kuiseb Delta and Dune Belt area.	Allocate waste bins at each construction site Place signage at each project site so that contractors are informed on waste management issue in the desert area.

Table 3.3: EMP Framework for the Operation phase.

OBJECTIVES	RISK SOURCES	MANAGEMENT ACTIONS	MONITRING
Minimise negative impacts resulting from commercial and urban development activities. Commercial and urban activities related to heavy volume of traffic in and out of the area, dune control measures and construction of drainage	National Park and Concession area's activities	Direct traffic routes away from archaeology sites and damara tern breeding sites. Avoid off-road driving in prohibited areas	Maintain archaeology sensitive and breeding sites areas. Monitor daily to ensure visitors and tour operators adhere to off-road driving rules
Minimise negative impacts on the environment resulting from recreational activities and high volume of tourists visiting the area. Set up regulations to control activities that are detrimental to the environment, unsustainable and are contravening the environmental regulations listed in the EIA report. Determine the carrying tourism capacity in the Kuiseb Delta and Dune Belt area.	Uncontrolled tourism and Unrestricted access	Avoid off road driving in areas prone to scarring and especially the lichen fields. Nocturnal driving should also be avoided as this result in the destruction of slow moving fauna – e.g. various reptiles and other nocturnal species	Set the speed limits to maxim 40Km/hour. Identify areas as indicated in the archaeology sensitive maps, flora and fauna maps as well as DST to set them aside and prohibit any tourism activities on sensitive areas.
Avoid tourism development and associated infrastructure in sensitive areas. These areas are identified in the EIA report.	Fauna and floral loss	Discourage settlements, camping or other overnight facilities in areas designated as archaeologically sensitive	The NACOMA EIA officer should advice, ensure and monitor regularly to ensure that no settlements, camping sites or overnight facilities are placed on sensitive areas. Designs for tour routes (vehicles and hiking) should be guided by sensitive maps and DST to avoid damage to breeding sites and important habitats
Avoid tourism development and associated infrastructure in sensitive areas. These areas are identified in the EIA report.	Sensitive areas in the Kuiseb and Dune Belt area	Discourage settlements, camping or other overnight facilities in areas designated as archaeologically sensitive	The NACOMA EIA officer should advice, ensure and monitor regularly to ensure that no settlements, camping sites or overnight facilities are placed on sensitive areas.

Table 3.3: *Cont.*

OBJECTIVES	RISK SOURCES	MANAGEMENT ACTIONS	MONITRING
Maximise the socio-economic impact from tourism and related activities	Socio-economic impact	Community-based tourism initiatives have a potential to create employment in the area.	Ensure that at least 50% of employment created is given to local people residing in the Kuiseb Delta. Ensure that the majority of people employed and tourism entrepreneurs are from Erongo Region (Walvis Bay and Swakopmund coastal areas)
Ensure water is utilised and managed in a sustainable and environmental friendlier manner.	Water use and quality	The National Water Resource Act, Act No. 24 of 2004 makes provision for a number of functions pertaining to control and use of water resources, water supply and protection of water resources. In addition the Act specify procedures for water abstraction permitting that are much more adapted to Namibia's climate and geohydrology.	Ensure that toilets and taps are fitted with automatic shut-off technique. Ensure there are water signs to inform tourists about water saving conservation measures. Encourage shower facilities that minimise water consumption. Apply for water abstraction permit and apply its conditions.
Ensure that solid waste and sewerage is managed in an environmental friendlier manner.	Waste and Sewage management at project sites	National Waste Management Policy, 2010 set regulations to prevent and reduce health risks and to promote sound environmental waste management practices.	Develop and maintain sustainable waste management facilities at project sites. Allocate waste bins at each camping site, kiosks and along tour routes.
Avoid unregulated quad-bike driving, 4x4 vehicles and construction vehicles driving into the dune belt area	Dune Morphology and wind situation	The traffic department of the Namibian Police to ether with Parks and Wildlife Management (MET) have set-up driving regulations for the Off-Road Vehicle and prohibited areas.	Ensure the regulations and fines set for quad-bike offenders are implemented. MET official should patrol sensitive areas to ensure that off-road vehicles do not drive into prohibited areas. Signage with park regulations should be erected at all sensitive areas identified in the EIA report.

4. ENVIRONMENTAL MONITORING PLAN

4.1 Overview

The monitoring process of the EMP performances for the proposed Kuiseb Delta and Dune Belt Projects is divided into two parts and these are:

(i) Monitoring activities and effects to be undertaken by the Environmental Control Officer (ECO);

(ii) Preparation of an Environmental Monitoring Report covering all activities related to the Environmental Management Plan throughout the life cycle of the proposed projects to be undertaken by the Environmental Control Officer (ECO).

As part of the condition of the Environmental Contract that will be signed between the Environmental Commissioner in the Ministry of Environment and Tourism and the Proponents for both the Kuiseb and Dune Belt Projects to be issued on final clearance of the EIA (Vol. 2 of 3) and this EMP (Vol. 3 of 3), the Proponents will be required to report to the Environmental Commissioner the environmental performances as may be stipulated in the Environmental Clearance Certificate to be issued by the Environmental Commissioner. The reporting process will part of the ongoing environmental monitoring programme and will play a major role in the subsequent renewals of the Environmental Clearance Certificate, thereof. In accordance with the provisions of the Environmental Management Act (EMA), 2007, Act No. 7 of 2007) the insurance of Environmental Clearance Certificate shall be valid for a period not exceeding three (3) years.

4.2 Monitoring Reporting

Environmental monitoring programme is part of the EMP performances assessments and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of undertaking appropriate monitoring as per specific topic and tracking performances against the objectives and documenting all environmental activities is part of internal and external auditing to be coordinated by the Environmental Control Officer (ECO) / External Consultant / Suitable qualified in-house resource person. Tables 4.1 – 4.9 outline the type of information that shall need to be recorded on a regular by the Environmental Control Officer (ECO) as part of the monitoring process of the activities and the effects.

The second part of the monitoring of the EMP performance will require a report outlining all the activities related to effectiveness of the EMP to be undertaken by the Environmental Control Officer (ECO). The types of the data sets to be used in the preparation of such a report are outlined in Tables 4.1 - 4.9. The objective will be to ensure that corrective actions taken through reviews and steps are taken to ensure compliance for future EIA and EMP implementation. The report shall outline the status of the environment and any likely environmental liability after completion of the proposed project activities.

Table 4.1: Monitoring of environmental performance implementation / environmental awareness training.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Is there an Environmental awareness training programme?					
How many people have been given environmental awareness training?					
Is a copy of the EMP on site?					
How effective is the awareness training? Do people understand the contents of the EMP? Where are the weaknesses? Ask 3 people at random various questions about the EMP.					

Table 4.2: Monitoring of environmental performance for the temporal and permanent structures.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are the temporal and permanent structures positioned to avoid sensitive zones, ephemeral river channels and potential sensitive sites?					
Has new infrastructure been created? If so, what, and how well planned / built with respect to environment?					
Have pit latrines been provided? Where are they situated?					
Do receptacles for waste have scavenging animal proof lids?					
What litter is there – who is littering?					
Are there facilities for the disposal of oils / etc and how often is it removed to an approved disposal site?					
Is there evidence of oil / diesel spills? Bunding or not?					
What fuel source is being provided for cooking?					
Housekeeping					

Table 4.3: Environmental data collection.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are records being kept?					
Are there any changes with respect to the fauna diversity? What is the likely cause?					
Are there any changes with respect to the flora diversity? What is the likely cause?					
Noise level?					
Air Quality?					
Have archaeological sites been found / disturbed / described?					
Other key environmental data sets?					

Table 4.4: Health and safety.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Is there First Aid Kit containing anti-histamines etc?					
Are dangerous areas clearly marked off?					
Do vehicles appear to maintain the recommended speed limits?					
Do vehicles drive with headlights on along the gravel roads at all times?					

Table 4.5: Recruitment of labour.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
What labour source is used?					
How has the recruitment practice been done?					

Table 4.6: Management of the natural habitat and surficial materials management.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Has there been any development done on or very close sensitive areas in terms of provided buffers?					
Has anyone been caught with plants or animals in their possession?					
Has there been wilful or malicious damage to the environment?					
Has topsoil / seed bank layer been removed from demarcated development areas and appropriately stored?					

Table 4.7: Tracks and off-road driving.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are existing tracks used and maintained?					
What new tracks have been developed and are they planned?					
What evidence is there of off-road driving? Who appears to be responsible?					
Are corners being cut, what type of turning circle are there? Three point turns vs. U turns?					
Have unnecessary tracks been rehabilitated and how well?					
Comments					

Table 4.8: Management of surface and groundwater.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
How is potable water supplied and how often? Position of tanks?					
Is water being wasted?					
Is there any leakage from pipes or taps?					
Has casing been left when boreholes hit water and have any records of water strikes been kept? Were water samples taken and water levels measured?					

Table 4.9: Public relations.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Have any complaints been made about the project activities by the different I&APs? If so, what, and how was the issue resolved?					

4.3 Monitoring Reporting Implementation

4.3.1 Proponents / Project Manager/ Environmental Control Officer

The proponents through the project manager are wholly responsible for environmental monitoring reports. The monitoring reporting requirements shall be implemented or achieved during construction and operation phases. The EMP outlines a large number of management actions to be implemented by the proponents and the environmental performances must be reported. The Environmental Control Officer will maintain a written record of the implementation of these actions. If for any reason these actions and monitoring requirements are not implemented or achieved, the Environmental Control Officer must inform the proponents. During construction, if the community has an environmentally related complaint against proposed tourism activities or ongoing tourism activities, they shall have the opportunity to inform the Environmental Control Officer, who will maintain a record of such complaints.

5. ENVIRONMENTAL AWARENESS

5.1 Proponents Environmental Policy

Table 5.1 summarises the environmental statements with respect to environmental commitment that proponents shall define and implement as part of the environmental policies for each of the proposed projects.

Table 5.1: Environmental statement.

Proponent Environmental Statement
Proponents Shall Develop Environmental Statements that Commits to the Following Principles: • Exercising appropriate environmental care in accordance with the provisions of the EMP. • Fully comply with all applicable environmental regulations in force in Namibia and appropriate buffers as may be defined in the Dorob National Park Regulations. • Delivery of significant socioeconomic benefits for the surrounding Walvis Bay community through broad based equity participation in the Project Development and Operation. • The promotion of the development of open and constructive partnerships with the all the relevant stakeholders to address environmental concerns and advance necessary protection measures. • The advancement of scientific knowledge to be applied to the identification and effective resolution of real environmental challenges associated with each of the proposed projects developments. • Continuously encouraging Pollution Prevention (P2), Cleaner Production (CP), Waste Minimisation, Reuse and Recycling efforts. • Conducting regular internal and external audits of all our operations to ensure adherence to the project policy and compliance to all relevant regulations throughout the life cycle of the proposed Kuiseb Delta and Dune Belt Projects.

5.2 Environmental Awareness Guidance

(i) The Environmental Rules apply to EVERYBODY. This includes all permanent, contract, or temporary workers as well as any other person who visits the project area. Any person who visits the project area will be required to adhere to the Environmental Code of Conduct;

(ii) The project manager will issue warnings and will discipline ANY PERSON who breaks anyone of the Environmental Rules and Procedures. Repeated and continued breaking of the Rules and Procedures will result in a disciplinary hearing and which may result in that person being asked to leave the project site permanently;

(iii) The ENVIRONMENT means the whole surroundings around us. The environment is made-up of the soil, water, air, plants and animals; and those characteristics of the soil, water, air, plant and animal life that influence human health and wellbeing;

(iv) If any member of the WORK FORCE does not understand, or does not know how to keep any of Environmental Rule or Procedure, that PERSON must seek advice from the ENVIRONMENTAL CONTROL OFFICER (ECO), PROJECT MANAGER or CONTRACTOR. The PERSON that does not understand must keep asking until she/he is able to keep to the all the Environmental Rules and Procedures.

5.3 Environmental Awareness Training Materials

5.3.1 Natural Environmental Management Guidance

- Never feed, tease or play with, hunt, kill, destroy or set devices to trap any wild animal (including birds, reptiles and mammals), livestock or pets. Do not bring any wild animal or pet to the PROJECT area;
- Do not pick any plant or take any animal out of the project area EVER. You will be prosecuted and asked to leave the project area;
- Never leave rubbish and food scraps or bones where it will attract animals, birds or insects. Rubbish must be thrown into the correct rubbish bins or bags provided;
- Protect the surface material by not driving over it unnecessarily;
- Do not drive over, build upon, or camp on any sensitive habitats for plants and animals not designated for such use;
- Do not cut down any part of living trees / bushes for firewood;
- Do not destroy bird nest, dens, burrow pits, termite hills etc or any other natural objects in the area.

5.3.2 Vehicle Use and Access Guidance

- Never drive any vehicle without a valid licence for that particular vehicle and do not drive any vehicle that appears not to be road-worthy;
- Never drive any vehicle when under the influence of alcohol or drugs;
- DO NOT make any new roads without permission. Stay within demarcated areas;

- Avoid U-Turns and large turning circles. 3-point turns are encouraged. Do not ever drive on rocky slopes or vegetated dune areas / river channel;
- Stay on the road, do not make a second set of tracks and do not cut corners;
- DO NOT SPEED - keep to less than 60 km per hour on the tracks and site roads;
- No off-road driving is allowed;
- Vehicles may only drive on demarcated roads;
- Adhere to speed limits and drive with headlights switched on along any gravel road.

5.3.3 Control of Dust Guidance

- Do not make new roads or clear any vegetation unless instructed to do so by your Contractor or the Environmental Control Officer / Project Manager;
- Try to disturb the surface of the natural landscape as little as possible.

5.3.4 Health and Safety Guidance

- Drink lots of water every day, but only from the fresh water supplies;
- Take the necessary precautions to avoid contracting the HIV/AIDS virus;
- Only enter or exit the project area at the demarcated gates / or road;
- Always keep the access area as you found them;
- Any damage to any existing infrastructure in the area must be report to the Environmental Control Officer / Project Manager who will then inform the proponent of any damage with all the repairs done to the satisfaction of the proponent or Environmental Control Officer;
- Never enter any area that is out of bounds, or demarcated as dangerous or wander off without informing or permission of team leader;
- Report to your Contractor or the Project Manager if you see a stranger or unauthorised person in the project area;
- Do not remove any vehicle, machinery, equipment or any other object from the project area /site without permission of your Contractor or the Project Manager;
- Wear protective clothing and equipment required and according to instructions from your Contractor or the Project Manager;
- Never enter or work in the project area when under the influence of alcohol or drugs.

5.3.5 Preventing Pollution and Dangerous Working Conditions Guidance

- Never throw any hazardous substance such as fuel, oil, solvents, etc. into streams or onto the ground;
- Never allow any hazardous substance to soak into the soil;
- Immediately tell your Contractor or Environmental Control Officer / Project Manager when you spill, or notice any hazardous substance being spilled anywhere in the project area;
- Report to your Contractor or Environmental Control Officer / Project Manager when you notice any container, which may hold a hazardous substance, overflow, leak or drip;
- Immediately report to your Contractor or Environmental Control Officer / Project Manager when you notice overflowing problems or unhygienic conditions at the ablution facilities;
- Vehicles, equipment and machinery, containers and other surfaces shall be washed at areas designated by the Contractor or Environmental Control Officer/ Project Manager;
- If you are not sure how to transport, use, store or dispose any hazardous substance - ASK your Contractor or Environmental Control Officer / Project Manager for advice.

5.3.6 Saving Water Guidance

- Always use as little water as possible. Reduce, reuse and re-cycle water where possible;
- Report any dripping or leaking taps and pipes to your Contractor or Environmental Control Officer or Project Manager;
- Never leave taps running. Close taps after you have finished using them.

5.3.7 Disposal of Waste Guidance

- Learn to know the difference between the two main types of waste, namely:
    - ✓ General Waste; and
    - ✓ Hazardous Waste.
- Learn how to identify the containers, bins, drums or bags for the different types of wastes. Never dispose of hazardous waste in the bins or skips intended for general waste or construction rubble;
- Never burn or bury any waste on the project area;
- Never overfill any waste container, drum, bin or bag. Inform your Contractor or the

Environmental Control Officer / Project Manager if the containers, drums, bins or skips are nearly full;

- Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping;

- Littering is prohibited.

5.3.8 Religious, Cultural, Historical and Archaeological Objects Guidance

- If you find any suspected religious, cultural, historical or archeologically object or site around the project area, you must immediately notify your Contractor or Environmental Control Officer **/** Project Manager;

- Never remove, destroy, interfere with or disturb any religious, cultural, historical or archaeological object or site around the project area.

5.3.9 Dealing with Environmental Complaints Guidance

- If you have any complaint about dangerous working conditions or potential pollution to the environment, immediately report this to your Contractor or the Environmental Control Officer **/** Project Manager;

- If any person complains to you about noise, lights, littering, pollution, or any other harmful or dangerous condition, immediately report this to your Contractor or the Environmental Control Officer / the Project Manager.

5.4 Environmental Personnel Register

Table 52 shows the Environmental Personnel Register to be signed by every person who receives or attends the Environmental Awareness Training or who has the training material explained to him or her or in possession of the training material.

Table 5.2: Environmental personnel register.

Date	Name	Company	Signature

6 CONCLUSION AND RECOMMENDATIONS

6.1 Summary of Conclusions

Mitigation measures for both positive and negative impacts have been proposed and management strategies are provided in this Environmental Management Plan (EMP Vol. 3 of 3) for the following development stages:

(i) Preconstruction;

(ii) Construction, and;

(iii) Operational.

Based on the extent, duration, intensity and likely negative and positive impacts of the proposed development in the identified area / zones (Figs. 2.1 – 2.5), this Environmental Management Plan (EMP) Report Vol. 3 of 3 incorporating all the constraints, relevant mitigation measures with respect to likely impacts and recommendations has been prepared for implementation by the developer / operator. This EMP implementation and monitoring activities covers all the stages of the proposed projects life cycles and is inclusive of the development, construction and operation stages. This EMP has identified the National Heritage Council and the Ministry of Environment and Tourism through the NACOMA Projects as the key regulators for the implementation of this EMP. The following is the summary of the key responsibilities and roles of the regulators:

(vi) The National Heritage Council and all interested and affected parties to have the !Khuiseb Delta proclaimed as a Conservation Area under Part VI, Section 54 of the National Heritage Act (27 of 2004) falling within the Dorob National Park as an important archaeological resources zone;

(vii) The Ministry of Environment and Tourism through the Dorob National Park Regulations to create appropriate buffers to separate current and future projects activities areas from key environmental sources such as the Kuiseb Delta archaeological sites, key avian breading zones of the Dune Belt Areas as well as other important habitats and conservation zones / corridors that has been delineated in the EIA Report (Vol. 2 of 3).

It's only after the above two regulatory actions have been completed that the proposed project can be given a go ahead. The Environmental Commissioner shall only grant the Environmental Clearance for the proposed projects to go-ahead once the maps and supporting documentations with respect to the above regulatory actions are submitted and verified to the satisfaction of the commissioner. The following are the recommended actions to be implemented by the proponents as a part of the management of the impacts through implementations of this EMP once all the regulatory actions have been implemented:

(i) Any access to archaeological sites should be strictly monitored and subject to specific guidelines as to routes, group numbers and other factors;

(ii) No settlements, camping or other overnight facilities should be permitted in any area designated as archaeologically sensitive;

(iii) Avoid all development in the areas viewed as sensitive habitats – i.e. Sandwich Harbour, lichen fields, Kuiseb and Tumas Rivers, rocky outcrops, Caution Reef, Horses Graves and Paaltjies Salsola dune hummocks;

(iv) Implement and maintain track discipline limited to existing tracks and/or certain tracks with maximum speed limits (e.g. 30km/h) as this would result in fewer faunal road mortalities and associated dust pollution problems;

(v) Avoid off road driving in areas prone to scarring and especially the lichen fields. Nocturnal driving should also be avoided as this result in the destruction of slow moving fauna – e.g. various reptiles and other nocturnal species;

(vi) Avoid the removal and damage of bigger trees (especially protected species – i.e. Acacia erioloba, Faidherbia albida and Tamarix usneoides [Forestry Ordinance No. 37 of 1952) – during developments – including the development of access routes – as these serve as habitat for a myriad of fauna. This is relevant to developments in the Kuiseb River area;

(vii) The environmental management and monitoring of the dune belt area, the free off-road vehicle zone and the Kuiseb delta should form part of the Dorob National Park management;

(viii) Contract an Environmental Control Officer / External Consultant / suitable in-house resources person to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed projects;

(ix) Provide with other support, human and financial resources, for the implementation of the proposed mitigations and effective environmental management during the proposed projects life cycle;

(x) Develop a simplified environmental induction and awareness programmes for all the workforce, contractors and sub-contractors;

(xi) Where contracted service providers are likely to cause environmental impacts, these will need to identified and contract agreements need to be developed with costing provisions for environmental liabilities;

(xii) Implement internal and external monitoring of the actions and management strategies developed during the project duration and a final Environmental Monitoring report to be prepared by the Environmental Control Officer / External Consultant / suitable in-house resource persons and to be submitted to the regulators and to end the proposed projects;

(xiii) Develop and implement a monitoring programme that will fit into the overall Environmental Management Systems (EMS) for each project as well as for any future EIA related to the expansion of the current proposed development.

6.2 Recommendations

All the responsibilities to ensure that the recommendations are executed accordingly, rest with the **Kuiseb Delta Development Trust** with respect to the Kuiseb Delta project and the

Investors / Operators of the Walvis Bay Bird Paradise with respect to the proposed bird watching facilities**.** The proponents for each of the two (2) projects must provide all appropriate resource requirements for the implementation of this EMP. It is the responsibilities of proponents to make sure that all members of the workforce including subcontractors are aware of the EMP and its objectives.

This EMP shall be updated regularly, particularly after the proclamation of the key archaeological sites as proposed in the EIA Report (Vol. 2 of 3) as well as appropriate buffers requirements to be developed within the framework of the Dorob National Park Regulations and land use zonation currently being finalised by the NACOMA Project. This EMP assumes that various land use zonation (DSTs) for the Dorob National Park are being prepared by MET through the support of the NACOMA Project and that appropriate buffers will be provided in the regulations for the Dorob National Park. The various thematic maps (DSTs) developed by the specialist studies in the EIA Vol. 2 of 3 reports will assists in finalising the various zones (DSTs) with respect to various land uses of the Dorob National Park which will be inclusive of the study areas covered in this environmental assessment.