Millennium Challenge Account
Namibia Compact:
Volume 3: Thematic Analysis
Report – Livestock

NAMIBIA STRATEGIC ENVIRONMENTAL ASSESSMENT

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This report is part of a 6-volume set:

- Volume 1: Phase II Strategic Environmental Assessment
- Volume 2: Background Documents
- Volume 3: Thematic Analysis Report – Livestock
- Volume 4: Thematic Analysis Report – Indigenous Natural Products
- Volume 5: Thematic Analysis Report – Tourism
- Volume 6: Thematic Analysis Report – Education
This report is part of a six-volume set (see below). The main report (Volume 1) is a synthesis of the environmental and social analyses and the report recommendations. Background documents, applicable to all reports, are provided in Volume 2. Given that implementation will be led by sector institutions, the more detailed thematic (sector-specific) analyses are provided in separate volumes. Each thematic analysis report (TAR) includes the main tools that will be useful during the implementation phase.
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KEY IMPLEMENTATION TOOLS

1. Discussion Document on the Principles of Good Rangeland Management
2. Social-Environmental Assessment Tool: Public Participation
3. Description of the Event Book Monitoring System for Natural Resource Monitoring
4. Social and Environmental Criteria for CBRLM Pilot Site Selection
5. Environmental Screening Questionnaire for Projects
6. Generic EMP for Building Design, Construction, and Operation of Non-Sensitive Sites
7. Generic EMP for Building Design, Construction, and Operation of Sensitive Sites
8. Generic EMP for Game or Quarantine Camp Design, Construction, and Operation on
    Sensitive Sites
9. Integrated Land Use Planning and Management
**ACRONYMS AND ABBREVIATIONS**

<table>
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<th>Full Form</th>
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<td>CBNRM</td>
<td>Community Based Natural Resource Management</td>
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<td>CBRLM</td>
<td>Community-Based Rangeland and Livestock Management</td>
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<td>CLB</td>
<td>Communal Land Board</td>
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<td>DEES</td>
<td>Directorate of Extension and Engineering Services</td>
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<td>DRFN</td>
<td>Desert Research Foundation of Namibia</td>
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<td>DVS</td>
<td>Department of Veterinary Services</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EU</td>
<td>European Union</td>
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<td>FAN</td>
<td>Farm Assured Namibian</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GRN</td>
<td>Government of the Republic of Namibia</td>
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<td>ha</td>
<td>Hectare</td>
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<td>INP</td>
<td>Indigenous Natural Product</td>
</tr>
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<td>IRDNC</td>
<td>Integrated Rural Development and Nature Conservation</td>
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<td>MAWF</td>
<td>Ministry of Agriculture, Water and Forestry</td>
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<td>Millennium Challenge Account</td>
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<td>MET</td>
<td>Ministry of Environment and Tourism</td>
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<td>MLR</td>
<td>Ministry of Lands and Resettlement</td>
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<td>NCA</td>
<td>Northern Communal Area</td>
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<td>NOLIDEP</td>
<td>Northern Regions Livestock Development Project</td>
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<td>PPO</td>
<td>Primary Producer Organization</td>
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<td>RDCC</td>
<td>Regional Development Coordinating Committee</td>
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<td>SARDEP</td>
<td>Sustainable Animal and Range Development Program</td>
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<td>SEA</td>
<td>Strategic Environmental Assessment</td>
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<td>TA</td>
<td>Traditional Authority</td>
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<td>VCF</td>
<td>Veterinary Cordon Fence</td>
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<tr>
<td>VSC</td>
<td>Veterinary Service Center</td>
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<td>WPC</td>
<td>Water Point Committee</td>
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PREFACE

1. Millennium Challenge Account Namibia Compact

The Millennium Challenge Corporation (MCC) Namibia Program aims to reduce poverty by increasing the competence of the Namibian workforce, and by increasing the productivity of agricultural and non-agricultural enterprises in rural areas. The MCC investment will fund projects in education, tourism, and agriculture. The following are the objectives of these projects:

- The Education Project will improve the quality of the workforce in Namibia by enhancing the equity and effectiveness of basic, vocational, and tertiary education and of technical skills.
- The Tourism Project will grow the Namibian tourism industry with explicit targeting of income streams to conservancy households.
- The Agriculture Project will increase the total value added from livestock in the Northern Communal Areas (NCAs) and will increase income from INPs to the poor nationwide.

The Millennium Challenge Account (MCA) Compact was developed using an extensive consultative process. As stated in the MCA Namibia Compact, the Government of the Republic of Namibia (GRN) held consultations in all 13 regions of the country and began national level consultations in mid-2006. The process that the Strategic Environmental Assessment (SEA) team used was inspired by these thorough consultations, and is described below.

2. Strategic Environmental Assessment Phase II

The SEA of the MCA Namibia Compact followed the approach captured by the Organization for Economic Cooperation and Development (OECD) guidance (text box). The SEA team (1) gathered baseline information (Phase I and early stage of Phase II); (2) conducted theme-specific analyses (Phase II, see below); and (3) conducted a detailed cumulative impact analysis and identified linkages (SEA Phase II Report). Using this methodology, each successive step is supported by and builds on information previously gathered.

Phase I of the Social and Environmental Assessments to Inform Project Design provided much of the baseline information needed to assess MCA interventions in the tourism and livestock and rangeland sectors. Subsequent SEA analyses drew extensively on Phase I of the SEA. During Phase II, the SEA team gathered additional baseline information to fill in gaps in all sectors.

Phase II of the SEA was conducted in two parts:

1. Thematic analyses cover the main MCA Namibia Compact themes of livestock, indigenous natural products (INPs), tourism, and education. This volume is one of four Thematic Analysis Reports (TARs, Volumes 3–6 of the six volumes produced for Phase II of the SEA). Although INP and livestock activities are part of the MCA Agriculture Project, the SEA team treated them separately,
given the differences in stakeholders, beneficiaries, and issues. The Livestock TAR includes activities related to land access and management.

(2) Building from the TARs, the second part of Phase II involved producing a full SEA, the core of which is an assessment of cumulative impacts (within themes, between themes, and between the Compact and other activities being implemented in Namibia) and linkages, and across MCA projects. The thematic analyses served as the basis for identifying, analyzing, and providing mitigation measures for cumulative impacts, and for identifying linkages among MCA projects that could strengthen the sustainability and success of each project.

2.1 Thematic Analysis Report Approach

To produce the reports, theme-specific teams were formed (which included inter-disciplinary as well as sector expertise). Thematic teams used a report format developed in the final SEA Phase 1 workshop. While all teams used the same format, it served as a guide and was not meant to restrict the teams’ analyses.

Each TAR includes a description of the theme’s current situation, policy and institutional framework, and stakeholder concerns specific to proposed Compact activities; potential environmental and social impacts of Compact interventions in the theme; and an initial assessment of cumulative effects, synergies, and linkages. Each TAR also includes theme-specific Key Implementation Tools—guidance and templates—for users in the field.

General Methodology

Thematic teams gathered information through interviews with key informants by reviewing existing documents and conducting fieldwork. The Livestock, Tourism, and INP thematic teams traveled to the NCAs (see below) to gather data for the impact assessment, and to supplement information gathered by the Stakeholder Consultation Team. In addition, a field team traveled to Angola to fill in information gaps, particularly in the livestock-rangeland sector.

The heart of the TAR is the environmental and social impact assessment discussion. The SEA team used a standard impact assessment matrix (see Volume 2, Background Documents), revised for the Compact and for the Namibia-specific situation. As the impact assessment process moved forward, lessons were shared among teams. The impact assessment process and the matrix were adapted based on this cross-fertilization. Volume 2 also includes a glossary of impact assessment terminology.

As illustrated by the matrix, Compact activities are assessed against a number of sustainability criteria, which are defined in Volume 2, Section 3. Each theme started the impact assessment process using the same criteria to assess environmental and social impacts. These criteria were revised slightly as each team saw fit. To provide various point of views, theme teams requested key informants to fill out the matrix on their own. This was factored into each team’s impact assessment process.

The matrix serves to highlight key impacts. But the core of the impact assessment process is the discussion that emanates from the matrix. Based on it, teams identified key negative impacts and determined their magnitude, spatial extent, duration of impact, probability of occurrence, and significance before mitigation or enhancement is applied.

Thematic teams then provided recommendations based on the impact assessment discussion. Recommendations include mitigation measures, enhancements, and guidance for implementation. These should be incorporated into Project designs, and into activity-level environmental impact assessments and
environmental management plans. Mitigation measures are required to minimize the negative impacts identified by theme teams. Recommended enhancements, while not required in terms of the Compact agreement/deliverables, can help improve project sustainability and success. Additionally, theme teams provided recommendations based on their expertise in specific sectors.

The Ministry of Environment and Tourism’s (MET) Screening Questionnaire for Projects, with which all MCA projects are required to comply, is included in the Key Implementation Tools section of the TARs.

**Theme-Specific Fieldwork**

- The **Livestock Theme Team** conducted a qualitative rangeland condition assessment in the NCAs. The methodology and findings are described in the Livestock Thematic Analysis Report and in Volume 2, Section 7. The assessment confirmed that most rangeland in the NCAs is highly degraded.

- The **INP Theme Team** conducted site visits to the NCAs and to Katutura Artisans Project. In the NCAs, the team visited Ootanga Oil Producers, the Eudafano factory, and the Eco-regional Satellite Centre in Eenhana. The team used standardized questionnaires (see INP Implementation Tool 1) to gather information in the field. The INP team also held a roundtable in Windhoek, where leaders from Namibia’s INP sector discussed environmental and social effects of the MCA Namibia INP Activity and provided recommendations for strengthening it.

- The **Tourism Theme Team** conducted a field trip to the main proposed investment areas in Etosha National Park (ENP). The main purpose of the trip was to inspect the sites for the proposed Ombika and Otjovasandu staff villages, visit the proposed tourism concession areas in northern and western Etosha, and facilitate meetings with MET staff. At these meetings, MET provided input into the impact assessment process and ideas about how best the Compact could be enhanced. The trip also enabled the SEA team to examine the various management and development plans, zonation, and other maps that have been developed by ENP staff over the past few years. No Compact-specific field trips were undertaken to conservancies because the recipient conservancies for MCA support have not yet been identified. However, a number of conservancies were visited by the team opportunistically (while on other missions), and the authors of the tourism report have intimate and recent knowledge of virtually all the conservancies in Namibia. They have previously visited the likely sites for the lodges and concessions in the northeast parks.

- The **Education Theme Team** reviewed and adapted best practices in school building construction and operation and incorporated recommendations into the Education TAR. No fieldwork was conducted.

**Stakeholder Consultation**

The full Stakeholder Consultation Report is included in Volume 2, Background Documents. Two stakeholder consultation teams held focus group meetings and interviewed key informants in the NCAs. The stakeholder teams used standardized questionnaires incorporating issues provided by each theme team. The Stakeholder Consultation Report contains the locations visited by the stakeholder consultation teams, the questionnaire, and an in-depth discussion of findings. Thematic Analysis Reports incorporate specific stakeholder concerns and use this information in the impact assessment of the theme.
1.0 INTRODUCTION

1.1 Rationale

In Namibia, the agricultural sector supports some 70% of the population directly or indirectly through income and employment. The livestock industry (large and small ruminants) is of fundamental economic importance; the industry contributes about 11% of the country’s gross domestic product (GDP) and 25% of the foreign exchange.

The livestock sector accounts for 90% of all agricultural production in Namibia. Approximately 60% of households own cattle, including nearly 40% of poor households. Namibia produces a combined total of 85,000 tons of beef, lamb, and goat meat annually. Approximately 80% of this production is exported to neighboring southern African countries and to the European Union (EU, MCA Namibia Compact, 2008).

About 57% of Namibia’s population lives in the Northern Communal Areas (NCAs). Approximately 1.04 million cattle, 25,895 sheep, and 774,000 goats are found in the area (Table 2.4).

Population pressure in the NCAs has increased stress on land and other natural resources, with poor rangeland and water resource management resulting in severe rangeland degradation (overall depletion of perennial grasses and an increase in bush encroachment in some areas). In conjunction with this, poorly functioning institutional and land tenure systems, and insecurity of individual rights to communal land have added to the severe degradation of communal grazing land and, hence, its ability to support livelihoods. Further, the quality of rangelands affects the quality of livestock. The Strategic Environmental Assessment (SEA) team found that rangeland conditions in the NCAs are poor (Volume 2, Section 10). Livestock of poor quality seldom fetch acceptable market prices, giving livestock farmers in the NCAs little incentive to sell livestock commercially. Given this situation, the Millennium Challenge Corporation (MCC) and Government of the Republic of Namibia (GRN) partners believe that improvements in rangeland quality and livestock husbandry and management can significantly increase economic opportunities from livestock activities in the NCAs.

The objective of the Millennium Challenge Account (MCA) Namibia Agriculture Project livestock theme is to increase the total value added from livestock in the NCAs. Included in this theme are activities that strengthen the land tenure system in the region, introduce improved rangeland management practices, and strengthen animal health services, regulatory capacity, and livestock marketing efficiencies, all of which are expected to increase productivity and profitability of livestock production and sale.

1.2 Proposed Theme Activities

The Agriculture Project livestock theme will involve interventions that will improve human resource capacity and rural enterprise productivity through the following activity areas:

- Land access and management
- Livestock support

Improved Land Access and Management (Activity 2.1):¹

To address the barriers to effective and sustainable management and use of rangeland in the NCAs, this activity includes two sub-activities: (1) Communal Land Support; and (2) Community-Based Rangeland and Livestock Management (CBRLM) Training. These activities are aimed at addressing constraints

¹ The activities are numbered as they appear in the MCA Compact.
imposed by the poorly functioning communal land tenure regime and the lack of effective rangeland management practices, both of which contribute to poor performance of the livestock sector in the NCAs.

**Communal Land Support (Activity 2.1.1).** This sub-activity will empower individuals, communities, and institutions in the NCAs to more rationally, equitably, and transparently administer their communal land resources in accordance with the requirements of the Communal Land Reform Act. This sub-activity consists of two parts:

- **Activity 2.1.1.1:** The provision of support to village headmen, chiefs, traditional authorities (TAs), and the communal land boards (CLBs) in the NCAs in order to augment their capacity to adjudicate, allocate, and administer formal land rights and to resolve land conflicts.
- **Activity 2.1.1.2:** The implementation of a systematic process designed to identify de facto land holdings and fences that, under the terms of the Communal Land Reform Act, require applications for their verification and registration.

**Community-Based Rangeland and Livestock Management (Activity 2.1.2).** The goal of this activity is to enhance the productivity and sustainability of land-based resources in the NCAs through the introduction and support of CBRLM practices. The activity rises out of the concern over significant deterioration of rangeland and a lack of community participation in land use and natural resource management decisions. The activity builds upon and extends to communal rangeland resources a successful community-based natural resource management (CBNRM) movement in Namibia. The MCA Namibia Compact will fund a technical assistance and training program to approximately 50 community-based livestock groups in the NCAs, comprising the following three elements:

- **Activity 2.1.2.1:** Rangeland management training will assist farmers in developing two key areas: (i) skills of community groups to apply innovative approaches to land use planning, “ownership,” and sustainability of natural resources; and (ii) technical skills applied by producers and community groups to accelerate the regeneration of grasses and improve the production of biomass per hectare (ha) in the NCAs.
- **Activity 2.1.2.2:** Livestock improvement training will assist household members to improve animal husbandry best practices through capacity building in productivity (herd management issues such as health, nutrition, and reproduction), with a special focus on reaching women with skills to improve productivity in cattle and small ruminants.
- **Activity 2.1.2.3:** Business and marketing skills development training will contribute to developing viable business plans and basic financial recordkeeping on type and quantity of livestock, costs, revenues, and customer accounts.

**Improved Livestock Health and Marketing (Activity 2.2)**

This activity will complement Activity 2.1, with the overall aim of improving livestock productivity and incomes.

**Veterinary Infrastructure Support (Activity 2.2.1).** The Compact will fund the construction of five new veterinary service centers (VSCs) and the development of two new community-based quarantine camps in the Caprivi.

**Livestock Identification System (Activity 2.2.2).** A livestock traceability system does not exist in the NCAs and, for food safety purposes, it is often required by buyers and consumers of meat products and to meet government and trade regulations.

**Livestock Marketing Efficiency Improvement (Activity 2.2.3).** The objective of this sub-activity is to improve livestock incomes in the NCAs by: (i) reducing costs and losses associated with marketing
livestock under the current quarantine system; (ii) alleviating other distortions created by the lack of disease freedom in the supply chain beyond the farm gate; and (iii) identifying and eliminating barriers to increasing volumes of livestock and livestock products sold into existing markets and accessing additional markets.

1.3 Spatial Extent of the Component Activities

Livestock theme activities are geographically focused on the NCAs (Figure 1.1), with the exception of two quarantine camps outside of the NCAs in Caprivi and two VSCs (at Epuikro in Omaheke, and at Okakarara in Otjozondjupa).

Figure 1.1 Map of the NCAs

Livestock theme activities will support many aspects of the livestock and rangeland management sectors across wide areas of northern Namibia, with interventions at the level of CLBs and the extensive communities they are meant to serve, local groups of stock owners aiming to manage their rangelands, and livestock farmers over wide areas who will benefit from enhanced veterinary facilities.

1.4 Expected Outcomes of Livestock Theme Activities

The expected outcome of the Land Access and Management Activity is to significantly enhance economic growth in the livestock industry, especially benefiting poor households with small herds in the target areas who depend on livestock as their source of livelihood. The CBRLM activity is a trial for the implementation of sound rangeland management principles within various settings in the NCAs. Lessons learned from these and other trials in Namibia will inform a national response.

The expected outcome of the Livestock Support Activity is to increase the quality and quantity of livestock marketed, and to improve communal land management. By doing so, this activity seeks to increase income from increased livestock sales and, hence, significantly contribute toward household food security. It further seeks to integrate Namibia’s livestock marketing into a single production and marketing pool, so that all stock farmers can benefit from the increasing worldwide demand for quality meat products.
As a whole, with improved livestock quality and appropriate livestock management practices, the quality and the market value of livestock are expected to increase. The rangeland will have greater value, which will in turn encourage better stewardship of the land. In addition, higher grade cattle will earn more and be more acceptable to Namibia’s abattoirs, resulting in higher revenues and greater operating efficiencies. Abattoirs will have reduced operating costs, and the need for subsidized prices in the NCAs will be eliminated. The resulting increased profitability along the value chain will increase demand for goods and services and thus, the wealth and spending power of individuals in the region. (MCA Namibia Compact, 2008).
2.0 Current Situation

2.1 State of the Livestock Sector

The dramatic increase in the consumption of animal products in the developing world from the 1970s to the mid-1990s ushered in the “livestock revolution.” These consumption increases, especially of meat and milk, have corresponded with growing urbanization and income growth (ICRISAT/ILRI, 2005). Although many countries are hoping to capitalize on the growing demand for livestock products through targeted exports, Namibia may be especially well-placed to benefit from foreign markets.

Climatic and geographical conditions are important in livestock farming. Namibia’s low average annual rainfall together with high rainfall variability limits agriculture in much of the country to livestock farming. Only 8% of the country receives >500 mm of rain per year, the minimum required for dry land cropping (Brown, 1993). (Figure 2.1)

Figure 2.1 Average annual rainfall in the NCAs

Namibian natural grass-fed beef is widely recognized as being of high quality. Namibia’s Meat Board introduced the Farm Assured Namibian (FAN) Meat Scheme in 2002. FAN is based on the principles of complying with consumer demands and ensuring traceability of meat and livestock to farms of origin by means of a comprehensive data management system. The scheme is intended to create confidence by satisfying consumer requirements and ensuring compliance with internationally accepted standards for livestock production and trade and meat quality.

In 2005, agriculture and forestry contributed approximately 6.2% to the GDP of Namibia (Table 2.1). Of this, the commercial agricultural sector contributed 4.5%, and the subsistence agriculture sector 1.8% (MAWF, 2007).
### Table 2.1 Contribution of different agricultural sectors to GDP of Namibia in 2005

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<th>Sector</th>
<th>N$ (000,000)</th>
<th>% contribution towards gross domestic product</th>
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<tbody>
<tr>
<td>GDP at market prices</td>
<td>38,559.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>2,404.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Commercial agriculture</td>
<td>1,718.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Subsistence agriculture</td>
<td>686.0</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Source: MAWF, 2007

The commercial agriculture sector contributed 79.1% to the total agriculture output in 2005, while the communal sector contributed 18.1% (Table 2.2). Livestock production (commercial and subsistence) contributed over 70% to the total agriculture output while commercial cattle production contributed 38.2% to the total agriculture output. Commercial cattle production also contributed over 55% to the total commercial livestock output for 2005, while the livestock sector (cattle, goats, and sheep) in the NCAs contributed only 0.9%.

### Table 2.2 Contribution of different livestock sectors to total agricultural output in Namibia in 2005

<table>
<thead>
<tr>
<th>Sector</th>
<th>N$ (000,000)</th>
<th>% contribution towards total agriculture output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total agriculture output</td>
<td>2,197.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Privately owned farms</td>
<td>1,738.2</td>
<td>79.1</td>
</tr>
<tr>
<td>Livestock</td>
<td>1,521.6</td>
<td>69.3</td>
</tr>
<tr>
<td>Cattle</td>
<td>838.6</td>
<td>38.2</td>
</tr>
<tr>
<td>Goats/sheep</td>
<td>428.3</td>
<td>19.5</td>
</tr>
<tr>
<td>Communal sector</td>
<td>397.0</td>
<td>18.1</td>
</tr>
<tr>
<td>Livestock (cattle/goat/sheep)</td>
<td>18.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: MAWF, 2007

Apart from direct contributions to GDP, agriculture in general (and the livestock sector in particular) plays a very important socio-economic role, providing an estimated 70% of the country’s population with some kind of subsistence (Paskin, n.d.).

The commercial farming sector, which is almost exclusively based on livestock farming, is the largest employer in Namibia, providing employment to between 25,000 and 30,000 agricultural laborers and their dependants. In the NCAs, livestock provide a variety of benefits, ranging from the consumption of animal products, such as milk, dung, and draft power for cultivation.

### 2.2 Livestock Production in the NCAs

The NCAs are broadly classified into high density small-scale cereal and livestock production areas and extensive cattle ranching areas (Figure 2.2).² Most of the extensive cattle ranching areas also have small-scale cereal plots near the homesteads. Both the high density and extensive ranching areas encompass a variety of livestock ownership, including cattle, goats, horses, and donkeys. Domestic livestock are kept for varying reasons (e.g., cattle for wealth generation and important occasions, small stock for home use

² Figure 2.2 classifies most of these farming areas under subsistence farming, and illustrates them in gray shading.
and regular sale, donkeys and horses for transport, and oxen for plowing). Different types of livestock are
managed separately and often cared for by different age sets or employees. Typically, goats are kept close
to the homestead, donkeys and horses are often tethered and graze close, and cattle and untethered
equines roam far from water points particularly in the rainy season.

Figure 2.2 Land use in the NCAs

Constraints to the livestock industry in the NCAs include distance from markets (or marketing services),
inadequate marketing schemes and incentives, distances from banking services and, in some areas,
societal norms (livestock are kept as non-cash banks and for status, with limited focus on production and
offtake). The lack of access to EU markets due to non-disease-free status is an additional constraint.
Farmers south of the veterinary cordon fence (VCF) view livestock rearing as an enterprise and are more
market-driven than those to the north. They apply livestock, range, and business management practices to
maximize the value of their cattle. Farmers north of the VCF and in the NCAs place a higher priority on
more traditional aspects of their livestock and slaughter only on an as-needed basis (see Section 4 and
Volume 2, Stakeholder Consultation Report). In the NCAs, livestock numbers are more important than
economic value—non-productive, older animals that would otherwise be culled are retained, resulting in
very low offtake rates. This attitude has contributed to the serious degradation of rangelands in the NCAs
(See Volume 2, Section 4).

Official offtake (Meatco statistics) of livestock in the NCAs through the Eloolo abattoir in Oshakati is
currently very low at less than 2% (Verlinden and Kruger, 2007). It is not clear what the total offtake of
livestock is through other means like auctions and informal “bush” markets. By increasing offtake to 7–
10% over the short-term and to 20–25% over the longer-term, livestock farmers can generate considerable
income. Offtake figures in communal areas south of the veterinary cordon fence are reported to be around
14% while offtake among established commercial farmers is between 20–30%. To achieve this, more
animals will have to be marketed, and the quality of animals must also improve. Interventions, such as
improved animal husbandry practices, nutrition (including better rangeland management), breeding, and
animal health care are prerequisites to achieving higher offtake of better quality animals on a consistent basis and to securing more income.

2.3 Livestock Ownership in the NCAs

The SEA’s findings are that both men and women in the NCAs own livestock, although cattle are predominantly owned by men. Livestock include cattle, goats, sheep, pigs, chickens, and donkeys. Horses are also found in some areas in Kunene, such as Kaoko-Otavi. Donkeys and horses are used to transport water, implements, and humans. When no cattle are available for plowing, donkeys are used, which is currently much more common than it was in the past. Use of donkeys for plowing was described by the Otjamaungu focus group participants (see Section 4 of Volume 2) as the norm, since there are not enough oxen in the community.

The Stakeholder Consultation Report (Volume 2, Section 4) determined that the number of cattle needed to sustain livelihoods in the NCAs ranges from 10–80/household, as shown on Table 2.3. These numbers are from stakeholder perceptions of their needs, and were derived from focus groups and individual interviews. Stakeholders considered the minimum number of cattle required for draft power, manure, milk, meat, sustaining herd numbers, weddings, funerals, and occasional sales. Table 2.3 shows significant variation in perceived need, considering varied social and environmental conditions, as well as varied dependence on cattle for livelihoods. A discussion with the Ministry of Agriculture, Water and Forestry (MAWF) produced a perceived need of 20 cattle per household.

Table 2.3 Minimum number of cattle required for livelihoods

<table>
<thead>
<tr>
<th>Village</th>
<th>Number of cattle required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kavango</td>
<td></td>
</tr>
<tr>
<td>Kandjara</td>
<td>28</td>
</tr>
<tr>
<td>Ncaute</td>
<td>18</td>
</tr>
<tr>
<td>Nzinze</td>
<td>18</td>
</tr>
<tr>
<td>Nepara</td>
<td>22–37</td>
</tr>
<tr>
<td>Uswi</td>
<td>30–32</td>
</tr>
<tr>
<td>Ohangwena</td>
<td></td>
</tr>
<tr>
<td>Okongo</td>
<td>21</td>
</tr>
<tr>
<td>Oshindobe</td>
<td>10</td>
</tr>
<tr>
<td>Oshikoto</td>
<td></td>
</tr>
<tr>
<td>Onyuulae</td>
<td>10–15</td>
</tr>
<tr>
<td>Oshana</td>
<td></td>
</tr>
<tr>
<td>Omapali</td>
<td>15</td>
</tr>
<tr>
<td>Ilungayeepe</td>
<td>12</td>
</tr>
<tr>
<td>Oshipumbu</td>
<td>20</td>
</tr>
<tr>
<td>Omusati</td>
<td></td>
</tr>
<tr>
<td>Onkani</td>
<td>13–15</td>
</tr>
<tr>
<td>Okatsheiahdhi</td>
<td>20</td>
</tr>
<tr>
<td>Kunene</td>
<td></td>
</tr>
<tr>
<td>Etoto</td>
<td>35</td>
</tr>
<tr>
<td>Otjamaungu</td>
<td>30</td>
</tr>
<tr>
<td>Swartbooisdrift</td>
<td>35</td>
</tr>
<tr>
<td>Okangwati</td>
<td>30–50</td>
</tr>
<tr>
<td>Kaoko-Otavi</td>
<td>80</td>
</tr>
</tbody>
</table>
The number of livestock owned by households varies significantly between regions. In Oshindobe for example, the majority of households have no or few cattle (an average of five cattle per household), whereas in Kaoko-Otavi, the majority of households have an average of 45 head of cattle per household (Volume 2, Section 4). Fewer women own cattle than men, although they are involved in some management activities. It is more common for women to own small stock (see Section 5 for implications with regard to beneficiaries).

Women in female-headed households own cattle, although female-headed households generally have only chickens, goats, and donkeys. In recent years, the removal of all cattle from the household of a widowed woman has been less common. In Okangwati, female focus group participants reported that more and more relatives will allow the widow to keep the cattle “on loan,” or as custodian, meaning that she (or her sons) care for the cattle, and may in turn use the by-products. However, she may not sell or slaughter the animals.

**The Veterinary Cordon Fence**

The VCF (or “red line”) runs from east to west, with northern Kunene region, the four north-central regions, Kavango, Otjozondjupa, and Caprivi lying to its north. While livestock originating south of the fence can be exported directly to overseas markets, livestock north of the VCF must be quarantined for 21 days prior to slaughter, after which the meat has to undergo an additional 21 days of maturation at controlled temperatures prior to export to South Africa. The meat has to be boneless, and no offal can be distributed south of the VCF. Approximately 45% of the national cattle herd is north of the VCF and within the six regions of focus of the MCA Compact livestock theme (Caprivi excluded) (PWC, 2005).

While the current VCF benefits farmers south of the fence, allowing them to export directly to the lucrative EU market, northern livestock farmers do not receive these benefits. Phase I of the SEA considered the impacts of moving the VCF to the border with Angola, thereby giving livestock owners in the NCAs access to the EU market. The SEA team, however, found this would have high social risks if executed in the timeframe of the MCA Namibia Compact.

### 2.4 Livestock and Rangelands in the NCAs

As shown in Table 2.4, 44% of all cattle in the country are found in the NCAs, while more than 60% are found in the communal areas (south included). This is on only 48% of the available agricultural land, while just 40% of all cattle are found in the commercial area (52% of the available agricultural land). Although only 10% of all sheep in the country occur in the communal areas, just over 65% of all goats are found there.

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Cattle (%)</th>
<th>Sheep</th>
<th>Sheep (%)</th>
<th>Goats</th>
<th>Goats (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern communal areas</td>
<td>1,039,309</td>
<td>44</td>
<td>25,895</td>
<td>1</td>
<td>774,195</td>
<td>38</td>
</tr>
<tr>
<td>Southern communal areas</td>
<td>394,475</td>
<td>17</td>
<td>226,963</td>
<td>9</td>
<td>566,734</td>
<td>27</td>
</tr>
<tr>
<td>Total communal areas</td>
<td>1,433,784</td>
<td>61</td>
<td>252,858</td>
<td>10</td>
<td>1,340,929</td>
<td>65</td>
</tr>
<tr>
<td>Commercial areas</td>
<td>950,176</td>
<td>39</td>
<td>2,407,394</td>
<td>90</td>
<td>720,474</td>
<td>35</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2,383,960</td>
<td><strong>2,660,252</strong></td>
<td>2,061,403</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: DVS, 2006

There are limited options for spatial expansion of livestock in the NCAs, as livestock densities are already very high (Figure 2.3). The resource base on which livestock depends is poor and declining (Volume 2, Section 10). Currently in the NCAs, livestock are largely dependent on annual rather than perennial...
At a broad level, current livestock management practices in the NCAs result in both overutilization and underutilization of plants, leading to increased desertification of already arid landscapes. The introduction of planned grazing, combined with herding, can be complementary to wildlife populations and habitat (Section 8), thus allowing greater diversification of livelihood options. Under planned grazing systems, livestock are herded and moved over the landscape in line with a land use and rangeland plan. This ensures that livestock are kept away from tourist areas during certain peak times, but can also ensure that livestock can be used during “off-seasons” to improve soil condition in traditional wildlife areas. Farmers will know at any point in time where the livestock herds are and can keep tourists away, or even take tourists there should they request it.

During the early 1980s, Namibia experienced a severe drought and the livestock industry suffered significant losses. Since then, livestock numbers have increased in the communal and commercial areas. Figure 2.4 shows cattle numbers from 1990 to 2006 at a national level compared to the NCAs. On privately owned farms, fluctuations are largely a result of increased or decreased marketing in response to rainfall and market conditions. In the NCAs, however, cattle numbers continued to increase until 2006. Figure 2.4 indicates that the proportion of the cattle herd in the NCAs grew gradually from independence to 2006. In 2006, more than 45% of the total cattle herd in the country was held in the six regions of the NCAs. Cattle numbers are currently extremely high there. If another devastating drought occurs, effective markets would have to be in place to avoid the large scale livestock losses and associated social impacts. Although the current inclination to market animals during droughts might still be low, it is the direct goal of the MCA Compact to change the perceptions and attitudes of farmers to realize the commercial value of livestock and to pro-actively market excess livestock when animal condition is still good and prices are high.

Interestingly, some stakeholders interviewed had the perception that livestock numbers were higher in the 1980s than they are presently.
2.5 Livestock Movements within the NCAs

Movement patterns of livestock in the NCAs have changed considerably over time. Since the establishment of boreholes and pipelines in grazing areas, livestock may remain in one area year round. In the past, livestock could only remain as long as rain-fed pans had water. Strict rules of use were set in grazing areas, and in many cases, these are now ignored.

Cattle are kept in different cattle-posts to minimize risk of drought and disease. Herders at cattle-posts look after cattle and receive every third calf as compensation from the cattle owner (Verlinden and Kruger, 2007). The majority of cattle now stay in the cattle-post areas, with some milk cows being brought back to the homesteads at the start of the rainy season and as grazing is available. No herding takes place at the cattle-post areas; animals are regularly traced after a few days and left where they are observed. With an increase in population density and the subsequent increased demand for crop fields, less grazing area is available around homesteads, and animals stay for shorter periods of time.

In most cases, only limited management of livestock takes place. Herding is no longer done throughout the year, and in most cases, animals are free to seek the best grazing possible.
Figure 2.5 illustrates considerable movement of livestock in all directions from the more densely populated Cuvelai area in north-central Namibia. Some livestock move to cattle post areas in the southwest, south, and east, and much livestock moves northwards into Angola. In Kavango region, similar movements take place, with most livestock moving south, while some move northwards into Angola. Localized movement takes place from permanent water points along the main tar road between Murarani and Rundu, and along the omurambas to the west. In Kunene, although some cattle cross the river into Angola, most livestock movement is north-south within the region and eastwards into Omusati region.

In the NCAs, livestock movements take place in two main waves during the year. With the start of the rainy season (December/January), oxen are brought from cattle-posts to crop field areas for plowing. During this time, livestock around crop fields (oxen, dairy cows, small stock, and equines) are herded to prevent them from straying into the fields. Although the numbers of these animals are not high, this practice results in continuous overgrazing with no time for grasses to recover. The rainy season is typically when denuded rangeland should be resting to allow for recovery of vigor, botanical composition, and density of perennial grasses.

At the end of harvest season (April–June), larger numbers of livestock are brought from the cattle posts to graze in the crop fields (ekoves). These animals not only graze the stover on the crop fields and adjacent natural rangeland areas, but also provide much needed manure and urine for fertilization. These ekoves differ considerably in size, and one livestock owner may have access to multiple ekoves. Most of the ekoves are grazed at relatively low livestock densities, with grazing periods varying between weeks and even months. If ekoves can be utilized more intensely over shorter periods of time with higher densities of livestock, capped soil surfaces could be better broken up, more manure and urine can be deposited, and overgrazing and footpath formation can be reduced.

After ekoves have been grazed, cattle move in all directions from the densely populated crop field areas to find grazing elsewhere. Poorer households with fewer animals may be unable to afford to move their livestock away, and many animals stay between the crop fields in the commonage all year. The result is overgrazing and rangeland degradation in the commonage areas (Volume 2, Section 10).
In Kavango region, rangeland conditions are significantly better than in the other regions of the NCAs, mainly due to lower stocking densities. Volume 2, Section 10 describes rangeland condition in the Kavango.

### 2.6 Rangeland Management and the NCA Environment

The current, unplanned livestock management approach in the NCAs results in continual re-grazing of perennial grass plants in the growing season before they have had a chance to recover. The root reserves become depleted, they are more easily pulled out by livestock, and they then fail to regenerate. The result is bare soils, often with mature capping, and over-rested perennial grass plants far from existing water points; and near water points, over-trampling of commonly used paths, resulting in erosion and gully formation.

Effects on ecosystem processes from current livestock management practices include: (1) negative impacts on the water cycle with bare and/or capped soils resulting in poor infiltration of water into the soil, high evaporation rates, high run-off, and erosion; (2) negative impacts on the mineral cycle where the soil surface is repeatedly grazed bare, resulting in little or no conversion of soil surface litter into organic matter in the soil; and (3) loss of biodiversity due to these hostile conditions in which many perennial plants are lost, leaving behind a largely annual grass community dominated by a few species. The weakened grass sward also promotes bush encroachment, often resulting in poor tree and understory biodiversity. Most importantly, microbial activity in the soil is drastically reduced, and conditions for movement to a perennial grass sward succession become very limited.

The overall result of these factors is a shorter growing season of poorer quality grasses and reduced productivity per ha. There is no green flush of perennial grasses in the spring and no perennial grass growth from small rainfall events.

The SEA team’s rangeland quality assessment (Volume 2, Section 10) indicates that rangeland conditions in Omusati, Oshana, Oshikoto, and Ohangwena are poor to very poor in the central, densely populated, mainly crop-producing areas. Condition of the rangeland improves however in a proportional manner in all directions as population and livestock density decreases and water distribution grows sparse (Volume 2, Section 10). The statement that “where there is water, there is no grazing, and where there is grazing, there is no water” is applicable.

As seen in Figure 2.3, a large proportion of the NCAs are overstocked. However, the manner in which livestock are moved through the year has a more significant impact on rangeland condition than does livestock density. Even a relatively small number of livestock can result in overgrazing and cause considerable degradation of rangeland, if not managed correctly (Savory, 1999).

Water point distribution also has a major impact on grazing, and therefore, on rangeland condition in the NCAs. Figure 2.6 shows the distribution of water points in the NCAs. Areas with high concentration of water points are likely to have over-trampled paths, soil capping, and underutilization far from the water point. Over time, this results in the weakening or loss of the perennial grass component both close to and far from water points. Water point provision, in conjunction with planned herding, is one key to creating productive and sustainable rangelands.

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4 Definition of rangeland condition terms (e.g., poor or very poor) are provided in Section 10 of Volume 2.
2.7 Importance of Angolan Grazing

The SEA team held extensive stakeholder consultations in the NCAs that confirmed frequent grazing in Angola of Namibian livestock. In Kavango, seven crossing points over the river were identified (Volume 2, Section 4). In Ohangwena, cattle are taken up to 10 km into Angola on a daily basis. During extended dry periods, cattle are taken as far as Ondjiva (more than 60 km from the border), and left for up to three months. Kunene livestock are grazed in Angola only in exceptionally poor rainfall years.

Figure 2.7 Cattle crossing the Kavango River
The SEA team visit to southern Angola confirmed this practice, and all stakeholders interviewed stated that Angolan cattle are not grazed in Namibia.\(^5\) Those interviewed also stated that Angolan cattle are not vaccinated in Namibia.

The team found that many more Namibian cattle graze seasonally in the eastern Uukwanyama area (directly north of Ohangwena) up to Oshimolo (north of Kavango) than in the western Mbandja area (north of Kunene). From a survey conducted last year by veterinary officials, a total of 14,703 Namibian cattle were reported to have moved into Angola east of Santa Clara for seasonal grazing, whereas only 233 head were reported west of Santa Clara. These figures were obtained from records kept by headmen, local animal health inspectors, and police officers.

However, the extent of cross-border movement by both people and livestock may be declining because of two factors. The first is the gradual tightening of controls by both Angolan and Namibian police. Secondly, ties between families living north and south of the border are weakening, which makes it harder for people to circulate freely, conduct business, and obtain rights and help for grazing from relatives.

### 2.8 Policy and Legal Framework

Land governance systems are shaped by several sectoral policies and laws that are not always in harmony, and by customary tenure arrangements that typically favor men’s rights over those of women. Unless these policies are harmonized around a number of fundamental rights and principles related to equitable land access and sustainable management, the ambiguities and uncertainties are likely to further weaken the land and resource rights of poor people and women of all social classes, as more powerful and well-connected male elites exploit these ambiguities for their benefit.

Access to communal grazing areas remains open to all livestock owners. It is unlikely at present that government will change the legislation to provide group rights, despite a Cabinet decision in April 2006 to give decision making and management authority to resource users at the local level. Perceptions of the advantages and desirability of introducing group rights to communal land differ from region to region in the NCAs.


The Namibia National Land Policy provides that “tenure rights allocated according to this policy and consequent legislation will include all renewable natural resources on the land, subject to sustainable utilization and the details of sectoral policy and legislation. These natural resources include wildlife, tourist attractions, fish, water, forest resources, and vegetation for grazing” (GRN, 1998: 11). Provision is made for various forms of land rights: customary grants; leasehold; freehold; licenses, certificates, or permits; and state ownership. Tenure rights will be exclusive, enforcement of which will be supported by law. Among the categories of land rights provided for are “legally constituted bodies and institutions to exercise joint ownership rights [and] duly constituted cooperatives” (GRN, 1998: 3). Read with the provisions regarding leases in the Communal Land Reform Act, the policy could be interpreted to support the possibility of conservancies or community forests as “legally constituted bodies” to obtain leases over their land.

#### 2.8.2 National Rangeland Management Policy and Strategy

To reverse the current rangeland degradation in Namibia, the MAWF requested the development of a National Rangeland Management Policy and Strategy, which includes a set of rangeland management

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\(^5\) This statement must exclude the grazing of animals belonging to households located immediately next to the border, since the cattle and goats would graze daily within a few kilometers of the households both south and north of the border.
principles that apply to all land types in the country. These rangeland principles allow for the testing of current management practices against benchmarks set in the strategy. The principles (Livestock Implementation Tool 1) are:

- Know your resource base
- Manage for effective rest
- Manage for effective utilization of plants
- Enhance soil condition
- Reduce bush encroachment
- Plan for drought
- Monitor the resource base
- Plan land-use infrastructure

2.8.3 National Agriculture Policy (1995)

The overall objectives of the National Agricultural Policy (GRN, 1995) are to achieve growth in agricultural production and profitability, ensure food security, improve living standards for farmers and farm workers, and promote sustainable use of the land and natural resources. The policy recognizes that one of the important conditions for sustainable agriculture is the development of an enabling political and macro-economic policy environment that includes appropriate land tenure. The policy aims to promote diversification of rural livelihoods and recognizes that “it is possible in some areas that the economics of wildlife production could be superior to domesticated livestock production” (GRN, 1995). The policy states that in order to promote sustainable natural resource management, government will devolve decision-making power and resource management initiatives to the lowest possible local level, where possible. The policy relied on the Communal Land Reform Act to address tenure and decision-making issues in more detail. This remains one of the most significant policy gaps in rangeland management, where the ability of communities to exert control over grazing land remains weak. In addition, women fare less well with traditional land decision making bodies and authorities.

The livestock component of the MCA Namibia Compact will support the implementation and test local level decision-making methodologies that will enable farmers to take timely decisions on fodder availability and adjust livestock numbers accordingly. This will largely reduce risk and vulnerability of farmers to seasonal rainfall variation.

2.8.4 Environmental Assessment Policy and Environmental Management Act

The Namibian Cabinet approved the Environmental Assessment (EA) Policy in August 1994 and, in 1996, work began on drafting the Environmental Management Bill (MET, 1995). This policy recognizes that EAs seek to ensure environmental consequences of development projects and policies are considered, understood, and incorporated into the planning process, and that the term “environment” is broadly defined. The policy lists activities that require an EA (whether strategic or project-level) and elaborates on a number of policy issues, such as:

- The inherent need to incorporate adequate provisions to achieve “reduction at source” in the areas of pollution control and waste management;
- The need to consider alternatives and to avoid or minimize negative impacts wherever possible;
- The costs of EAs borne by the proponent who is also responsible for ensuring an acceptable standard of EA and the EA report quality;
• The need for a binding agreement between the proponent and the GRN, based on the recommendations contained in the EA report, that specifies how the environmental issues will be dealt with in project implementation; and

• The need for public participation and involvement by all sectors of the Namibian community in the EA process, and the rights of the public to publicly held information.

The policy defines the required steps for an environmental impact assessment (EIA), the required contents of an EIA report, the need for post-implementation monitoring, and the system of appeals. All these aspects have since been taken up in the subsequent Environmental Management Act (2007).

The purpose of Namibia’s Environmental Management Act, is to:

“…give effect to Article 95(l) and 91(c) of the Namibian Constitution by establishing general principles for the management of the environment and natural resources; to promote the coordinated and integrated management of the environment; to give statutory effect to Namibia’s Environmental Assessment Policy; to enable the Minister of Environment and Tourism to give effect to Namibia’s obligations under international environmental conventions; and to establish certain institutions in particular to provide for a Sustainable Development Commission and Environmental Commissioner.”

Part 2 of the act presents the 13 “Principles of Environmental Management” that apply to government institutions and private persons. They are as follows:

1. Renewable resources shall be utilized on a sustainable basis for the benefit of current and future generations of Namibians.

2. Community involvement in natural resource management and sharing in the benefits arising therefrom shall be promoted and facilitated.

3. Public participation in decision making affecting the environment shall be promoted.

4. Fair and equitable access to natural resources shall be promoted.

5. Equitable access to sufficient water of acceptable quality and adequate sanitation shall be promoted, and the water needs of ecological systems shall be fulfilled to ensure the sustainability of such systems.

6. The precautionary principle and the principle of preventative action shall be applied.

7. There shall be prior environmental assessment of projects and proposals that may significantly affect the environment or use of natural resources.

8. Sustainable development shall be promoted in land-use planning.

9. Namibia’s movable and immovable cultural and natural heritage, including its biodiversity, shall be protected and respected for the benefit of current and future generations.

10. Generators of waste and polluting substances shall adopt the best practicable environmental option to reduce such generation at source.

11. The polluter pays principle shall be applied.

12. Reduction, reuse, and recycling of waste shall be promoted.

13. There shall be no importation of waste into Namibia.
The act defines environmental impact assessment as:

“A process of identifying, predicting, and evaluating the actual and potential biophysical, social, and other relevant effects on the environment of projects prior to their authorization, or in the case of proposals prior to their implementation, as well as the risks and consequences of projects and proposals and their alternatives and options for mitigation with a view to minimizing negative impacts on the environment, maximizing benefits and promoting compliance with the principles of environmental management.”

This definition differentiates between projects and proposals (the latter being policies, plans, programs, and new or revised legislation). The most important difference is the level of assessment afforded to project EIA, compared with the system applied to strategic environmental assessment. Furthermore, the act stresses the integrated nature of an EIA, and defines environment as:

“The complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life.”

Thus, the legislation does not foresee separate assessments for ecological, social, or cultural components.

2.8.5 Cooperatives Policy and Legislation

The National Cooperatives Policy and the Cooperatives Act, 1996 (GRN, 1996) provide for the establishment and registration of cooperatives in Namibia. Institutionally, cooperatives are similar to conservancies except that cooperatives have a similar status to limited companies. This means that individual office bearers are not personally held responsible for any debts the company might have. Another difference is that the legislation requires an annual audit, which is considered a crucial to prevent corruption. Although little attention has been given to them, cooperatives could be considered a potentially more appropriate legal and institutional arrangement for conservancies to carry out business activities on behalf of their members. Cooperatives have typically included very few women members and leaders in comparison to the more equitable conservancies.

2.8.6 Communal Land Reform Act (2002)

According to the Constitution, ownership of all non-freehold land in Namibia vests in the state. This principle is acknowledged in the Communal Land Reform Act. However, day-to-day administration of communal land continues to be carried out by TAs. The role of chiefs and TAs in the allocation and cancellation of customary land rights is formalized in the act. At the same time, the act provides for improved transparency in the form of communal land boards.

The act fails to recognize and give legal expression to the fact that the system of traditional authority is tiered. At the apex of this system is a chief or king who has ultimate jurisdiction over a particular area. At the next tier are senior headmen or traditional councilors who are in control of specific districts or subdivisions of an area of jurisdiction. Each senior headman is in charge of a number of village headmen. Each tier has specific responsibilities.

Village headmen are responsible for the day-to-day administration of communal land. Rights to arable and residential land are obtained from village headmen, who also deal with land and other disputes. Only if a dispute can not be solved at the local level is it referred to a senior headman. Women are more likely to obtain land rights from their husbands, if married, or from their fathers or other male relatives.
Despite their central role in communal land administration, the Communal Land Reform Act does not provide headmen with any legal powers. The prohibition on village headmen receiving any payment for services provided supports the view that the act deliberately excluded them from its provisions. Evidence suggests that in some instances, headmen have ceased to perform customary land administration functions as a result of the prohibition on payments. (The SEA team could not establish how widespread this is.) Where this happens, the Communal Land Reform Act is gradually undermining local land administration institutions. This is likely to impact negatively on customary land rights holders.

The Communal Land Reform Act provides TAs with powers to manage commonages and impose conditions on the use of communal grazing areas. These include the kinds and numbers of livestock that may be grazed and the section of the area under their jurisdiction—i.e., they may introduce planned grazing. Should land holders not observe these conditions, a chief or TA may cancel their rights.

Customary land rights may also be cancelled if “the land is being used predominantly for a purpose not recognized under customary law” (Section 27(1) (b)). In addition, the regulations of the Communal Land Reform Act require that land be managed in accordance with accepted farming practices in the area concerned, but have to comply with provisions of the Soil Conservation Act of 1969 and any requirements of the MAWF. But the Regulations do not specify any sanctions for transgressing these general provisions and do not place any authority on either CLBs or TAs to enforce them (Jones and Kakuja-Matundu, 2006).

Powers and responsibilities of chiefs and TAs are not limited to the control of land, but also include certain powers to protect access to water.

The abilities of land boards to solve disputes promptly are hampered by resource constraints. On average, land boards sit only twice a year (at most), and much time is needed to attend to disputes. Because of the length of time required for resolution, many complainants drop their cases.

Despite these constraints, the numbers of disputes taken to CLBs appear to be increasing gradually. One reason for this increase is a growing perception that people can take disputes to land boards without fear of retribution.

Until the early 1990s, widows in many north-central and northeastern communal areas were evicted from their land after the deaths of their husbands. A 1993 review of customary laws in the north-central regions indicated that eviction of widows was prohibited. The Communal Land Reform Act of 2002 similarly outlaws eviction of widows. The Stakeholder Consultation team found that these changes have had a positive impact. During stakeholder consultations, informants in the NCAs stated that evictions were no longer a major issue, although they still occurred sporadically. However, of greater concern is the fact that widows in matrilineal decent systems lose other moveable assets after the deaths of their husbands. The result is that many widows remain on their land, but do not have sufficient means to sustain themselves. This form of property grabbing is the result of relatives of a deceased husband laying claim to assets. Such actions are legitimized by reference to custom. Consequently, TAs find it difficult to provide protection to widows; no law exists that provides protection to women against this practice. Because women typically have much less access and security of tenure than men, their access to credit is limited and they are less willing to invest in land.
2.8.7 Traditional Authorities Act

The Traditional Authorities Act states that TAs “shall ensure that the members of their traditional community use the natural resources at their disposal on a sustainable basis and in a manner that conserves the environment and maintains the ecosystems, for the benefit of all persons in Namibia.”

2.8.8 Water Policy and Legislation

The National Water Policy provides for the full transfer of ownership of water points to communities of users. To facilitate management of water points, the Water Resources Management Act of 2004 provides for the establishment of water point user associations and local water user associations. These consist of community members who permanently use a particular water point or rural water supply scheme (pipeline) for their supply needs. Any rural household that regularly uses a particular water point qualifies for membership. Water point committees (WPCs) are elected for the day-to-day management of water points. Since women are often not well represented on these committees, they have little input into decision making on uses of water.

Water (point) user associations have the power “to plan and control the use of communal land in the immediate vicinity of a water point in cooperation with the communal land board and the traditional authority concerned” (Section 19 of the Water Resources Management Act). It is unclear how the immediate vicinity of a water point is defined.

The provisions of the Water Act are likely to lead to changes in land tenure if they are implemented properly. Power to control access to water points implies that water (point) user associations can effectively control access to their grazing land. Current land policy and legislation does not provide for such rights. The proposals in the draft Land Tenure Policy to register villages as legal entities will have to be revised since most villages have more than one water point and thus more than one water point user association.

Water user associations should be considered as entry points for CBRLM-related activities. Livestock owners who will be involved in CBRLM within a given area should have a strong institutional linkage to the WPC.

2.9 Land Use Planning in the NCAs of Namibia

Land use planning is an important means toward achieving integrated land and water management. At present, national development plans are the main planning tool for socio-economic development. However, these do “not necessarily take into account spatial development in terms of present and future land use options to meet the objectives of sustainable development” (IDC, 2002: 3). The explanation for this may be that the status of land use plans is not clear in policy and legislation.

By force of its mandate “to be the custodian of Namibian land” (MLR, 2007: 6), the Ministry of Lands and Resettlement (MLR) is responsible for producing national land use plans. The Agricultural (Commercial) Land Reform Act of 1995 clarifies the land use planning functions in terms of freehold land acquired for redistribution. There are no similar provisions in law applying to communal areas. In addition, there is not as yet an approved policy on land use planning. In 2002, a Draft National Land Use Planning Policy was prepared and submitted to the MLR, but it does not appear to have been approved. The policy proposed to establish a Land Use and Environmental Board to ensure that all land use planning, land administration, land development, and environmental protection are coordinated on a national and regional basis (MLRR, 1998: 16). There is no evidence at this time that such a board has been established.
At the sub-national level, regional councils are the only institutions with a clear legal mandate to produce development plans for their regions, including communal areas. The Regional Councils Act of 1992 states that regional development plans must take into account the physical, social, and economic characteristics; urbanization patterns; natural resources; economic development potential; infrastructure; land utilization patterns; and sensitivity of the natural environment (MLRR, 1998: Annexure A: 1–2).

Despite the absence of a national policy and legal provisions governing land use planning, the Division of Land Use Planning in the MLR has produced integrated land use plans for eight of the 13 regions. Included are land use plans for Oshikoto, Ohangwena, Omusati, and Oshana (MLR, 2007: 4). However, “none of these plans can be legally enforced in terms of existing legislation and were/are merely guidelines for spatial development, proposed land use options, or budgetary purposes” (IDC, 2002: 4). For reasons that could not be established, existing land use plans are not easily accessible and thus not well known outside the ministry.

Most of the existing land use plans appear to have been developed by one private consulting firm, including the Draft National Land Use Planning Policy. The extent of participation in integrated land use plan development is not clear. In Caprivi, integrated land use plan meetings were held with the regional council, regional councilors, traditional authorities, and interested parties (IDC, 2000b). There is no evidence that ordinary farmers were made part of the process. The resulting land use plan is presented as a description of several different sectors, with little evidence of efforts to create an integrated picture.

Local level participation in land use planning and real decision making powers have been identified as keys to successful implementation of development projects (MET, 1994: 2). Appropriate institutions need to be established with jurisdiction over a geographically defined area (MET, 1994: 5). To date, the only local level institutions with legal status are water point user association and local water user associations, conservancies, and forest management committees. Only the water sector institutions and forest management committees have legal powers to develop land use plans (in the case of the former, powers are limited to the immediate vicinity of their water points). However, as a result of the absence of a clear policy and legal framework that provides for local level, participatory land use planning, there is a risk that local level land use plans will not be recognized by government institutions. This may make enforcement of land use plans difficult.

The importance of putting in place a policy and legal framework for integrated land use planning is underlined by competing land uses and interests and the disputes that result. There have been reports of local communities that developed land use plans for conservancies subsequently ignored by the MLR, who then put forth proposals to donor organizations to convert some areas into small-scale commercial farming units.

MCC’s planned land access activities could support local level, participatory land use planning activities. However, it is important that the planning directorates of regional councils and planners in the MLR’s Division of Land Use Planning be integrated into this process and appropriate capacities developed, particularly at the regional level. The MLR should also be supported to review its draft land use planning policy in order to harmonize it with other legislation, particularly the Environmental Management Act of 2007.

In the NCAs, the MET has published regional profiles on Kavango region and north-central Namibia in collaboration with a number of environmental NGOs. These profiles are richly illustrated with maps, photographs, and figures on climate, natural resources, and socio-economic and demographic aspects.

The Livestock Implementation Tool 9 contains more information on integrated land use planning and management.
3.0 Institutional Frameworks

3.1 National Government

3.1.1 Ministry of Lands and Resettlement

The MLR is responsible for administering land issues, including resettlement under land reform policies, and for CLBs. A recent report suggests there are major capacity problems within the MLR. It found that the MLR does not have the legal capacity to carry out land reform. Instead of a legal culture, “officials do not follow rules and do not cooperate with the public, decisions are veiled in secrecy, and poor decisions, often based on poor evidence, are made and then concealed” (Harring and Odendaal, 2008: 23). There is consensus that the MLR requires considerable capacity building in order to properly carry out its tasks (Harring and Odendaal, 2008; PTT, 2005).

The MLR is responsible for the administration of CLBs that administer land and allocate leases for commercial use of communal land.

3.1.2 Communal Land Boards

CLBs have been established in all regions with communal areas. The roles and functions of CLBs are to:

- Exercise control over the allocation and cancellation of customary land rights;
- Consider and decide on applications for a right of leasehold;
- Establish and maintain a land register for customary land rights and leasehold rights; and
- Advise the MLR.

CLBs have no powers to allocate customary land rights, but they may allocate leaseholds of up to 20 ha, subject to the approval of the TAs. As described above, this function remains in the hands of TAs. The central role of CLBs is to oversee customary land allocations. The Regulations to the Communal Land Reform Act provide criteria that need to be considered when ratifying allocations. These include limitations on the size of land applied for and the numbers of livestock that any lawful resident may graze on communal land. With regard to the former, the regulations stipulate that a livestock owner may not graze more than 300 large stock or 1,800 small stock on the commonage of a communal area. Customary land rights may also not exceed 20 ha without the approval of the Minister. Leasehold duration cannot exceed 10 years, unless approved by the Minister.

The powers of CLBs are equally limited with regard to the development of unutilized communal land for agricultural purposes. Although the Communal Land Reform Act provides that CLBs can administer decisions taken about land use at higher political level, they do not have any powers to make such decisions. Their jurisdiction is further curtailed by provisions in the regulations that they may grant leaseholds only to areas not exceeding 50 ha. Applications for larger areas must be approved by the Minister (Regulation 13). It would therefore appear that CLBs have no jurisdiction with regard to the development of communal land for large-scale agricultural purposes.

In general, women are significantly under-represented on these boards. This absence suggests that women’s land use and ownership interests are much less likely to be addressed and protected by the CLBs. While there are supposed to be at least four women on each CLB, their influence and actual ability to ensure equitable practice is diminished by the influence that customary law plays in communal areas.
3.1.3 Ministry of Agriculture, Water, and Forestry

Three main directorates have direct linkages to the livestock theme of the Compact: the Directorate of Veterinary Services (DVS), which is primarily responsible for enforcing disease control to protect Namibia’s export meat markets and local consumers; the Directorate of Agricultural Research and Training, with several Livestock Development Centers in the NCAs responsible for livestock research and training; and the Directorate of Extension and Engineering Services (DEES), with a mandate to support farmers in improving food security through outreach to and training of farmers in improved farming practices.

Past initiatives, e.g., Sustainable Animal and Range Development Program (SARDEP), Northern Regions Livestock Development Project (NOLIDEP), National Programme to Combat Desertification, and Oshikoto Livestock Development Project, strengthened the capacity of MAWF extension staff in livestock related topics. However, due to DEES budget constraints, it is becoming more difficult for extension staff to perform their duties. A radical paradigm shift is needed to raise interest and competency among extension staff in the NCAs regarding livestock production, backed up with adequate resources to properly perform their duties.

3.2 Regional Government

Namibia has instituted a system of regional government based on regional councils. The councils are responsible for regional planning and development coordination but have small implementation budgets from central government and no means of raising their own funds. The aim is to ultimately transfer many central government functions to regional governments, including agriculture, water, forestry, and wildlife conservation. The Regional Development Coordinating Committees (RDCCs) of the regional councils potentially provide a platform for integrated development planning but tend to meet irregularly and have no enforcement powers. Generally, the councils’ ability to ensure environmental protection and planning within the framework of regional development is constrained by limited funding, the absence of an empowering legislation, and limited involvement by the Ministry of Environment and Tourism (MET).

Although human resources and budgets are limited at the regional level, it is important to include RDCCs and CDCs in the project from the beginning. This can be done by holding regular briefing meetings at RDCC and CDC meetings on the project status and progress. Once decentralization is more advanced and agricultural functions are transferred to regional councils, RDCCs will already be familiar with the activities, and it will be easier for the regions to take full responsibility. CDCs should also play a role in introducing the project in the regions and assist with the selection of beneficiary communities.

3.3 Local Government

Local authorities have been established to administer urban areas. The municipalities of Windhoek and Walvis Bay are the only local authorities that have established and maintained an environment section. In most other municipalities, the environment is managed through the health divisions of the municipalities. The main challenge for the municipalities in monitoring environmental impact and carrying out enforcement is the lack of relevant empowering legislation.

Traditional Authorities. TAs are an influential level of local government in the NCAs. They are recognized by local communities as being the custodians of the land on behalf of the community, although ownership of the land is vested in the state. TAs are given a broad, yet undefined, mandate for environmental protection on land for which they are responsible. SEA team stakeholder consultations (Section 4 of this report and Volume 2, Background Documents, Section 4) clearly indicate the importance of TAs in decision making regarding land in the NCAs. TAs are empowered to ensure that communities under their jurisdiction use natural resources at their disposal in a sustainable manner.
Several TAs have zoned areas limiting or excluding cropping of any sort. These areas are exclusive grazing areas, and control is exercised through the traditional authorities. The size of exclusive grazing areas varies from large tracts of land in Omusati and Oshikoto regions to locally defined areas.

3.4 Community-based Organizations

3.4.1 Village Development Committees
Village development committees have been established in all villages. The main functions of these committees are to identify problems and development needs in their villages and channel them to the regional councilor.

3.4.2 Water Point Committees/Water User Associations
WPCs are found in all inland villages. These committees form around government-owned water points, and elected committees administer the points. The Ministry of Rural Water Supply has trained all water committees.

3.4.3 Land and Farming Committees
Kavango is the only region in Namibia where TAs have land and farming committees, established shortly after independence by the Ministry of Lands, Resettlement and Rehabilitation. These committees act on behalf of TAs and are mainly concerned with the allocation of land away from the river.

3.4.4 Cooperatives
Institutionally, cooperatives are similar to conservancies except that cooperatives have a similar status to limited companies (see Section 2.8.5). Cooperatives could be considered an appropriate legal body for the development of grazing management areas.

3.5 Nongovernmental Organizations and Donors
Nongovernmental organizations active in the livestock and rangeland sectors include:

1. The Desert Research Foundation of Namibia Desert Margins Programme in the eastern communal areas of Namibia ended in 2007, but lessons learned can be applied to CBRLM in the NCAs.

2. The Integrated Rural Development and Nature Conservation (IRDNC) Holistic Range Management Program in Kunene, Omusati, and Caprivi regions was designed primarily to improve rangeland condition through the implementation of sound rangeland management principles in a culturally and socially acceptable manner. The main principles identified in the Namibia Rangeland Management Policy and Strategy are being applied through herding of livestock according to a grazing plan. A land plan identifying where major infrastructure will be established has been done and alternative water points have been drilled. Contracts have been signed by conservancy committees, TAs, farmers, and the IRDNC to ensure that the use of the boreholes is in accordance with sound grazing principles. Many farmers are now requesting assistance and conservancies are being investigated as links with grazing areas. Two of these trial sites are in marginalized Himba communities.

3. The Dimbangombe ranch at the Africa Centre for Holistic Management in Zimbabwe is a learning site that addresses the use of livestock to restore deteriorating landscapes and community-based conservation.
4. The Council of Churches of Namibia works in partnership with the Dutch Reformed Church of Namibia in the area of small stock in the Tsumkwe area.

5. As part of the Country Pilot Partnership of the United Nations Development Programme, a project has recently started to strengthen farmers’ ability to cope with climate change and its impact on rangeland and livestock; and to provide local level monitoring and integrated resource management. This project will be implemented in north-central Namibia north of the VCF.

6. WWF-UK supports improved rangeland initiatives in Kunene, Caprivi, and Omusati regions. These initiatives were designed primarily to introduce improved rangeland management through the implementation of sound rangeland management principles in a culturally and socially acceptable manner.

7. The GTZ supports capacity strengthening of CLBs through programs that raise awareness of and support implementation of the Communal Land Act, and that strengthen the leasehold application process by supporting the incorporation of environment and other sustainability factors.

3.6 Private Sector

Meatco and Agra are the only private sector entities involved in commercial livestock marketing in Namibia. Meatco owns and manages abattoirs and cattle handling facilities in the NCAs. The Meatco abattoir in Oshakati was established to process beef for Namibian and international markets. As presented in the Stakeholder Consultation Report (Volume 2, Section 4), the formal market route of most livestock owners involves Meatco, except for Onyuulae, in Oshikoto, that reached an agreement with Agra in 2001 and sells to the company four times a year.

3.7 Overlapping Institutional Mandates and Authority

The current legal framework for natural resource management and rural development gives rise to overlapping institutional mandates and responsibilities. In some crucial areas such as rangeland, no single institution has a mandate to manage the resource. TAs, water point user associations/committees, and community forest management authorities share a variety of responsibilities and functions involving rangeland management.

There are other instances where institutional roles are unclear, policies conflict, and enforcement of regulations is limited. An example of overlapping institutional mandates exists in regard to land use planning. The MLR has overall responsibility to carry out integrated land use planning, and regional councils have a mandate to carry out regional development planning, which should include a land use plan. The responsible line ministry of Regional and Local Government and Housing and Rural Development is tasked with spatial planning. Community forest management authorities oversee forest management planning. Conservancies also develop land use plans, similar to community forest plans.
4.0 Stakeholder Issues and Concerns

The full Stakeholder Consultation Report is included in Volume 2, Section 4. Below are key stakeholder issues and concerns related to land access and livestock. These have been extracted from the Stakeholder Consultation Report.

4.1 Stakeholder Issues and Concerns related to Livestock and Access to Land

Stakeholders interviewed highlighted that socioeconomic issues and cultural practices vary among and within regions. There is no “one size fits all” CBRLM intervention. A highly localized approach is needed. To build ownership and help ensure sustainability of interventions, local communities should fully participate in identifying problems and developing appropriate solutions within the broad objectives of the project.

General perceptions and issues raised by stakeholders in focus groups and in individual interviews are categorized below:

- **Grazing**
  - No formal rangeland management institutions or systems are present in Kavango. Cattle rather than people decide where to graze.
  - Year-round grazing is inadequate and most livestock owners seek grazing elsewhere during the dry season.
  - Opinions on the benefit of using fencing to manage grazing were varied. Much of the negativity about fencing centers on illegally fenced areas, particularly in the south of Ohangwena and northeastern Oshikoto. Illegal fencing is said to have reduced available communal grazing significantly, a major factor cited by those needing to find grazing for cattle in Kavango and Angola. Proponents of fencing understood the value of fences for effective rangeland management.
  - Conflict between livestock owners from Ohangwena and Oshikoto, with those in Kavango, is largely blamed on the lack of grazing in the former areas and is caused by illegal fencing.
  - Quality of grazing has deteriorated over the past 20 years, even though households generally kept more cattle then than now.
  - Bribery of headmen to allocate land has added to the animosity felt toward illegal fencing.
  - Increases in homesteads and cultivated fields have reduced available grazing significantly.
  - Grazing in Kunene is generally seen to be adequate.

- **Water**
  - Inadequate water, in addition to the shortage of grazing for livestock, was given as a reason for moving cattle.
  - Access to water is a major factor for utilizing available grazing (particularly in Kunene). Large areas of available grazing are unused as a result of their distance from water.
  - NOLIDEP training on rotational grazing was interesting, but not useful in many areas, as it cannot be practically applied due to a shortage of water points.
  - Water was seen to be a limiting factor in the number of livestock kept per household.

- **Livestock**
  - Cattle lending (Kashikita) for dung, milk, and draft power is practiced widely.
Cattle are valued greatly not only for their economic value, but for status and identity. One focus group stakeholder was quoted as saying “…cattle are more than money, it is who we are” (Volume 2, Section 4).

Livestock are seen as an effective “savings bank.” Goats rather than cattle are largely sold when the need for disposable cash arises (except in Kavango). Cattle are only sold if substantial cash is needed, or if the animal is old or ill. A major aim of the Compact is to change this attitude—to encourage farmers to see cattle owning as a commercial venture that could bring in substantial amounts of cash.

Livestock are sold either to Meatco, or informally within communities.

Meatco is not the preferred sale agent, as prices are regarded as being poor. However, Meatco’s marketing ability to sell large numbers of livestock is viewed as a positive factor. The price received by livestock producers is a reflection of the quality of the animal sold at the market. The majority of livestock taken to the abattoirs in the NCAs are older animals (six years and up) and of poor quality. Meatco has a national pricing system where farmers receive the same price based on specific grades nationwide. However, livestock producers in the NCAs are currently receiving higher subsidized prices for their lower grade animals to encourage offtake rates.

Other

Disposable cash for purchase of livestock is generally less since independence, as individuals now pay for schooling and municipal services, whereas this was not always the case.

The existing VCF is seen to be a major obstacle to the livestock trade in the NCAs. People feel largely cheated by its presence and want it removed.

Wildlife was often seen to be in competition with livestock for grazing and is unwanted in most areas. The value of wildlife was noticed, however, and many communities expressed an interest in having wildlife for tourism and consumption. This is probably a result of the communal conservancy program in Namibia, which has demonstrated the value of wildlife as part of the sustainable management of resources within communal areas. It has demonstrated that through zonation within communal conservancies, wildlife and livestock can co-exist, and income generated from ecotourism and hunting can supplement or even out-compete income from traditional agriculture. Elephant and lion were seen to be causing much damage to cultivated lands and livestock, respectively.
5.0 Impact Assessment

Overall, the livestock and land access components of the Compact are expected to have highly positive social and environmental effects. They will promote sustainable development, enhance rural livelihoods, improve conservation efforts, and help reduce the vulnerability of poor and marginalized people. Very few direct negative impacts are expected. The table below provides a detailed impact assessment of the livestock and land access components of the Compact.

5.1 Improved Land Access and Management

Training and capacity building will have similar environmental impacts, and therefore, they are evaluated together.

5.1.1 Communal Land Support

This sub-activity will empower individuals, communities, and institutions in the NCAs to more rationally, equitably, and transparently administer their communal land resources in accordance with the requirements of the Communal Land Reform Act. This sub-activity consists of two parts:

Activity 2.1.1.1: Providing support to village headmen, chiefs, TAs, and the CLBs in the NCAs in order to augment their capacity to adjudicate, allocate, and administer formal land rights and to resolve land conflicts.

Activity 2.1.2.1: Rangeland management training will assist farmers in developing two key skill areas: i) skills of community groups to apply innovative approaches to land use planning, “ownership,” and sustainability of natural resources; and ii) technical skills applied by producers and community groups to accelerate the regeneration of grasses and improve the production of biomass per hectare in the NCAs.

Activity 2.1.2.2: Livestock improvement training will assist household members to improve animal husbandry best practices through capacity building in productivity (herd management issues such as health, nutrition, and reproduction) with a special focus on reaching women with skills to improve productivity in cattle and small ruminants.

Activity 2.1.2.3: Business and marketing skills development training is necessary for developing viable business plans and basic financial recordkeeping on type and quantity of livestock, costs, revenues, and customer accounts.
Table 5.1 Impact Assessment of Training Activities (Activities 2.1.1.1, 2.1.2.1, 2.1.2.2, 2.1.2.3)

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impacts on livelihoods:</strong></td>
<td></td>
</tr>
<tr>
<td>The provision of various types of training is not expected to have negative impacts on livelihoods. The training is geared towards increasing the productivity of livestock, improving business skills, and providing farmers with other skills that should improve livelihoods, if training is put into effect.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Direction: Positive</td>
</tr>
<tr>
<td></td>
<td>• Spatial: Local and regional</td>
</tr>
<tr>
<td></td>
<td>• Duration: Long-term</td>
</tr>
<tr>
<td></td>
<td>• Cumulative impacts: Positive</td>
</tr>
<tr>
<td></td>
<td>• Probability: Likely with enhancement</td>
</tr>
<tr>
<td></td>
<td>• Significance without enhancement: Neutral</td>
</tr>
<tr>
<td></td>
<td>• Significance with enhancement: High positive</td>
</tr>
<tr>
<td><strong>Recommended mitigation of negatives</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Recommended enhancement</strong></td>
<td>• Each training activity should have specific expected outputs.</td>
</tr>
<tr>
<td></td>
<td>• To ensure lessons learned from training are implemented and that training will have a lasting impact, ongoing support and facilitation (including mentors) should be included.</td>
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<td></td>
<td>• The focus should be on experiential learning rather than courses.</td>
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<td></td>
<td>• Sensitive topics (e.g., decision making mandates) will need to be introduced with care before being included in training activities.</td>
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<tr>
<td></td>
<td>• Additional training topics should be considered, such as low stress livestock handling, which will improve livestock quality for marketing purposes.</td>
</tr>
</tbody>
</table>

| **Biophysical impacts:**                  |                |
| No direct impacts, though improved knowledge of rangeland management could result in improved natural resources management (indirect positive effect), which is positive for biodiversity |                |
|                                            | • Direction: Positive |
|                                            | • Spatial: Local and regional |
|                                            | • Duration: Long-term |
|                                            | • Cumulative impacts: Positive |
|                                            | • Probability: Likely |
|                                            | • Significance without enhancement: Low |
|                                            | • Significance with enhancement: High positive |
| **Recommended mitigation of negatives**   | None           |
| **Recommended enhancement**               | As above       |
### Impact description

**Other impacts:**
Training is expected to indirectly impact perceptions, current rangeland strategies, and attitudes about rangeland and livestock management. This will build the enabling environment for successful implementation of CBRLM.

**Impact ranking**
- **Direction:** Positive
- **Spatial:** Local and regional
- **Duration:** Long-term
- **Cumulative impacts:** Positive
- **Probability:** High
- **Significance without enhancement:** Low
- **Significance with enhancement:** High positive

**Recommended mitigation of negatives**
None

**Recommended enhancement**
As above

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**Activity 2.1.1.2:** The implementation of a systematic process designed to identify de facto land holdings and fences which, under the terms of the Communal Land Reform Act, require applications for their verification and registration.

This activity involves identifying and mapping land holdings and fencings, and no livelihood, biophysical, or other environmental or social impacts are expected. No mitigation measures or enhancements are needed.

### 5.1.2 Community-Based Rangeland and Livestock Management

CBRLM includes the development and implementation of sound rangeland management plans. It should facilitate the implementation of rangeland management principles as reflected in the National Rangeland Management Policy and Strategy (Implementation Tool 1).

The goal of this activity is to enhance the productivity and sustainability of land-based resources in the NCAs through the introduction and support of CBRLM practices. The activity addresses the concern over significant deterioration of rangeland and inadequate community participation in land use and natural resource management decisions. It builds on and extends a successful CBNRM movement in Namibia to communal rangeland resources. The MCA Namibia Compact will fund a technical assistance and training program to approximately 50 community-based livestock groups in the NCAs, focusing on the following activities:

**Activity 1.2.4 Develop and implement rangeland management plans with CBRLM**

**Activity 1.2.5 Drill and/or equip new water-points with associated handling infrastructure**
### Table 5.2 Impact Assessment of Activity 1.2.4 and 1.2.5

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impacts on livelihoods:</strong> As part of implementing CBRLM, grazing areas must be identified and demarcated by a specific community. This may result in the loss of access to grazing by people who formerly used that area and relied on it for their livelihoods.</td>
<td>• Direction: Negative&lt;br&gt;• Spatial: Selected sites&lt;br&gt;• Duration: Long-term&lt;br&gt;• Cumulative impacts: High&lt;br&gt;• Probability: Probable&lt;br&gt;• Significance without mitigation: High&lt;br&gt;• Significance with mitigation: Neutral</td>
<td>• CBRLM must allow for flexibility of livestock movements through consultation and cooperation with other grazing areas, while ensuring the application of sound rangeland management principles.&lt;br&gt;• Identify CBRLM pilot sites based on the environmental and social criteria in Livestock Implementation Tool 4.</td>
<td>None</td>
</tr>
<tr>
<td>The development/implementation of rangeland management plans should improve rangeland condition and improve productivity of livestock, and this can indirectly enhance livelihoods.</td>
<td>• Direction: Positive&lt;br&gt;• Spatial: Local, selected sites&lt;br&gt;• Duration: Long-term&lt;br&gt;• Cumulative impacts: High positive&lt;br&gt;• Probability: Probable&lt;br&gt;• Significance without enhancement: Medium&lt;br&gt;• Significance with enhancement: Very high</td>
<td>None</td>
<td>The following incentives should be tested during the pilot phase to facilitate adoption in the long-term:&lt;br&gt;• Strengthen links between producers and markets&lt;br&gt;• Support bonus prices at key times of the year to encourage marketing early in the dry season.&lt;br&gt;• Provide drought relief boreholes only with commitment to CBRLM&lt;br&gt;• Drill new boreholes only with commitment to CBRLM&lt;br&gt;• Directorate of Rural Water Supply (MAWF) should provide preferential support to areas practicing CBRLM&lt;br&gt;• Include CBRLM in WPC constitutions</td>
</tr>
<tr>
<td>Impact description</td>
<td>Impact ranking</td>
<td>Recommended mitigation of negatives</td>
<td>Recommended enhancement of positives</td>
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<tr>
<td><strong>Biophysical impacts:</strong> Water point provision could have negative and positive impacts, i.e., result in further land degradation with subsequent loss of biodiversity, or (if done well) spread livestock over wider area and improve herding options.</td>
<td></td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>
| • Direction: Negative  
• Spatial: Selected sites  
• Duration: Medium to Long-term  
• Cumulative impacts: Significant  
• Probability: Probable  
• Significance without mitigation: High  
• Significance with mitigation: Neutral | • The drilling of boreholes should be part of the rangeland management plan, and should be undertaken in consultation with members of the specific grazing area.  
• Users of the new borehole should be contractually bound to implement CBRLM; if this fails, access to the water must be stopped.  
• Avoid new boreholes in areas where they will likely cause human-wildlife conflict.  
• An effective institutional and biophysical monitoring system is required.  
• Carefully select areas that will receive new boreholes to ensure water is only provided where grazing is adequate.  
• By attaching strict conditions to borehole use, livestock owners will learn about rotation and herding. |  |  |
| • Direction: Positive  
• Spatial: Selected sites  
• Duration: Medium- to long-term  
• Cumulative impacts: Significant  
• Probability: Likely  
• Significance without mitigation: Low  
• Significance with mitigation: High | • Provide drought relief boreholes only with commitment to CBRLM  
• Drill new boreholes only with commitment to CBRLM  
• Directorate of Rural Water Supply (MAWF) should provide preferential support to areas practicing CBRLM  
• Include CBRLM in WPC constitutions | None |  |
<table>
<thead>
<tr>
<th>Impact description</th>
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<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biophysical impacts:</strong>&lt;br&gt;Significant positive biophysical impacts are possible through implementation of CBRLM.</td>
<td>• Direction: Positive  &lt;br&gt;• Spatial: Selected sites  &lt;br&gt;• Duration: Long-term  &lt;br&gt;• Cumulative impacts: Significant  &lt;br&gt;• Probability: Probable  &lt;br&gt;• Significance without enhancement: High  &lt;br&gt;• Significance with enhancement: Very high</td>
<td>None</td>
<td>Training alone will not result in the expected high positive impacts, but should be complemented by the development, implementation, and monitoring of sound rangeland management plans.</td>
</tr>
<tr>
<td><strong>Other impacts:</strong>&lt;br&gt;Additional water points could increase conflict between water users.</td>
<td>• Direction: Negative  &lt;br&gt;• Spatial: Selected sites  &lt;br&gt;• Duration: Long-term  &lt;br&gt;• Cumulative impacts: Medium to high  &lt;br&gt;• Probability: Possible  &lt;br&gt;• Significance without mitigation: High  &lt;br&gt;• Significance with mitigation: Neutral</td>
<td>• Farmers should contribute to establishment costs of boreholes, and pay full running costs to enhance the sense of ownership.  &lt;br&gt;Where CBRLM interventions are implemented, support should be provided to strengthen collaboration between grazing area committees and WPCs. In some cases WPCs will have to be further strengthened.  &lt;br&gt;Communication among relevant stakeholders and transparency in decision masking is essential.</td>
<td>None</td>
</tr>
</tbody>
</table>
5.2 Improved Livestock Health and Marketing

5.2.1 Improved availability of public veterinary services
Activity 2.2.1 Veterinary infrastructure support
Activity 2.1.1 Construct five new VSCs in high livestock density areas (Outapi, Omuthia, Eenhana, Epukiro, and Okakarara)

Table 5.3 Impact Assessment of Activity 2.2.1 and 2.1.1

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impacts on livelihoods:</strong> VSCs could result in the indiscriminate disposal of hazardous, medical, and sanitary waste. Since the proposed locations are on government land, people will not be displaced (Section 7).</td>
<td>Direction: Negative  Spatial: Local at various sites  Duration: Long-term  Cumulative impacts: None  Probability: High  Significance without mitigation: High  Significance with mitigation: Low</td>
<td>• Provision must be made for appropriate disposal of waste. An option may be to link to existing clinics and hospitals with waste treatment expertise, plans, and facilities.  • Detailed mitigation measures are contained in VSC due diligence reports, and recommendations should be incorporated, as applicable, into implementation contracts.</td>
<td>None</td>
</tr>
<tr>
<td><strong>Impacts on livelihoods:</strong> This activity will result in greater access to clinical services, drugs, and information.</td>
<td>Direction: Positive  Spatial: Regional  Duration: Long-term  Cumulative impacts: Medium  Probability: Probable  Significance without enhancement: Medium  Significance with enhancement: High</td>
<td>None</td>
<td>• Outreach to remote livestock farmers should be part of the VSCs’ mandate, and could be undertaken using Community Animal Health Agents and by stocking veterinary pharmaceutical in local shops.  • Use lessons learned from previous activities, e.g., SARDEP activities in Onkani.</td>
</tr>
<tr>
<td><strong>Biophysical impacts:</strong> Constructing a VSC on undisturbed land may degrade the environment.</td>
<td>Direction: Negative  Spatial: Local  Duration: Short-term (construction phase) or long-term (operations phase)</td>
<td>The team was unable to inspect specific sites for the VSCs. Therefore, the nature of the sites should be confirmed and the requirements of the EMA (2007) must be complied with. See Education Thematic Analysis Report (TAR) for environmental</td>
<td>None</td>
</tr>
<tr>
<td>Impact description</td>
<td>Impact ranking</td>
<td>Recommended mitigation of negatives</td>
<td>Recommended enhancement of positives</td>
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</tr>
<tr>
<td>• Cumulative impacts: None&lt;br&gt;• Probability: Likely&lt;br&gt;• Significance without mitigation: Medium&lt;br&gt;• Significance with mitigation: Low</td>
<td>guidelines for school construction—these can be applied to the construction of VSCs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Other impacts:** Improved access to information and communication

| • Direction: Positive<br>• Spatial: Regional<br>• Duration: Long-term<br>• Cumulative impacts: Low<br>• Probability: Probable<br>• Significance without enhancement: Medium<br>• Significance with enhancement: High | None | VSCs could be used as information hubs, where farmers get regular information on livestock health-related issues. Building on this, VSCs could be multi-purpose centers, consolidating forestry, extension, veterinary, and rural water supply in one location. |
Activity 2.1.2 Construct two new community based quarantine camps in Caprivi

Table 5.4 Impact Assessment of Activity 2.1.2

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
</table>
| **Impacts on livelihoods:** Quarantine camps require large tracts of land (> 5000 ha). Without consent of stakeholders, this can deprive individuals or communities of access to livelihood resources (water, veld products, grazing, etc.) and to CBNRM initiatives. | • Direction: Negative  
• Spatial: Localized  
• Duration: Long-term  
• Cumulative impacts: None  
• Probability: Probable  
• Significance without mitigation: High  
• Significance with mitigation: Neutral | Land selection for these camps must be based on proper consultation with all stakeholders. A resettlement action plan may be necessary to compensate losses (see Section 7). | None |
| **Impacts on livelihoods:** Increased access to quarantine services will result in less weight loss from trekking cattle long distances to quarantine camps, and will improve overall health because of improved management of the camps. | • Direction: Positive  
• Spatial: Localized  
• Duration: Long-term  
• Cumulative impacts: None  
• Probability: Probable  
• Significance without enhancement: Medium  
• Significance with enhancement: High | None | • Camps should be constructed to take into account the number of animals that are expected to be marketed over the next 5–10 years.  
• Water distribution should be done in such a way as to allow for planned rangeland management practices.  
• Community members should be empowered to play a role in camp management since they have an incentive to maintain rangeland integrity and livestock nutrition during quarantine.  
• A key criterion for site selection should be access that allows for ease of transport of livestock to and from the camp.  
• Specifically in sandy patches, proper road surface should be provided at loading ramps to enable big trucks to operate. |
<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biophysical impacts:</strong> If poorly managed, land degradation could result in the camps. If located in important wildlife areas, camps could lead to declines in wildlife populations, lead to increased human wildlife conflict, and impact negatively on transboundary conservation and tourism initiatives.</td>
<td></td>
<td>- DVS’s role should be confined to a control and certification function.</td>
<td>Aggregate sound rangeland management plan must be developed for the quarantine camp. Camps must not be in important wildlife or tourism areas.</td>
</tr>
</tbody>
</table>
### Other impacts:

Low capacity in the community can result in poor management of the rangeland and infrastructure of the camp.

- **Direction:** Negative
- **Spatial:** Localized
- **Duration:** Long-term
- **Cumulative impacts:** None
- **Probability:** Probable
- **Significance without mitigation:** High
- **Significance with mitigation:** Positive

**Recommended mitigation of negatives:**
- Communities should have representatives trained to manage the quarantine facility effectively.
- Public-private partnerships should be considered.

**Recommended enhancement of positives:**

None

### Other impacts:

Increased access to information and communication

- **Direction:** Positive
- **Spatial:** Regional
- **Duration:** Long-term
- **Cumulative impacts:** Medium
- **Probability:** Probable
- **Significance without enhancement:** Low
- **Significance with enhancement:** High

**Recommended mitigation of negatives:**

None

**Recommended enhancement of positives:**

Quarantine camps could be used by service providers, such as Meatco, DVS, DEES, and others to train farmers in better marketing practices.

### Activity 2.1.3 Improve facilities at two existing government quarantine camps in Caprivi

**Table 5.5 Impact Assessment of Activity 2.1.3**

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
</table>
| Impacts on livelihoods: Improved livestock health due to improved facilities and management of rangelands within the camps can result in improved livelihoods for cattle owners. | Direction: Positive  
Spatial: Regional  
Duration: Long-term  
Cumulative impacts: Medium  
Probability: Probable  
Significance without enhancement: Medium  
Significance with enhancement: High | None | Water distribution should be done in such a way as to allow for planned rangeland management practices.  
Community members should be empowered to play a role in camp management since they have an incentive to maintain rangeland integrity and livestock nutrition during quarantine.  
Specifically in sandy patches, proper road surface should be provided at... |
### Impact description

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading ramps to enable big trucks to operate.</td>
<td></td>
<td></td>
<td>Quarantine camps could be used by service providers such as Meatco, DVS, DEES, and others to train farmers and expose them to better marketing practices.</td>
</tr>
<tr>
<td>Assembly kraals should be constructed immediately outside the quarantine camps to accommodate cattle while they wait to be registered in the camps.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The purchase of mobile trucks (6x6) and trailers with mobile kraals and loading ramps, should be considered. These mobile units will be able to take cattle from farmers, and then move them quickly to the quarantine camps.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing incentives and marketing infrastructure should extend to sheep and goats, and not focus solely on cattle to have broader impact.</td>
<td></td>
<td></td>
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</tbody>
</table>

### Other impacts:

- Increased access to information and communication
  - Direction: Positive
  - Spatial: Regional
  - Duration: Long-term
  - Cumulative impacts: None
  - Probability: Probable
  - Significance without enhancement: Medium
  - Significance with enhancement: High

- Probability: Probable
- Significance without enhancement: Medium
- Significance with enhancement: High

- Other impacts:
  - Probability: Probable
  - Significance without enhancement: Medium
  - Significance with enhancement: High
Activity 2.2.2 Procure tags and tag 1.2 million cattle

Table 5.6 Impact Assessment of Activity 2.2.2

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
</table>
| **Impacts on livelihoods**  
Maintenance of the tagging system will result in an additional expenses to livestock owners (especially poor owners). | • Direction: Negative  
• Spatial: Regional  
• Duration: Long-term  
• Cumulative impacts: None  
• Probability: Probable  
• Significance without mitigation: Medium  
• Significance with mitigation: Low | Subsidize poor livestock owners, provided clear criteria exist to identify poor farmers. | None |
| **Other impacts:**  
Increased access to information and communication | • Direction: Positive  
• Spatial: Regional and national  
• Duration: Long-term  
• Cumulative impacts: High  
• Probability: Probable  
• Significance without enhancement: Medium  
• Significance with enhancement: High | None |  
• Training is necessary to educate farmers on the need for the system and for compliance with its requirements.  
• DVS should have sufficient financial and personnel capacity to properly and continually supervise the effective implementation of the system.  
• To minimize resistance to the system, farmers should be enabled to use the information generated to improve farm-level decision making.  
• Effective penalties for non-compliance with the traceability system should be in place and enforced. |

5.2.3 Improved Livestock Marketing Efficiency

The objective of this sub-activity is to improve livestock incomes in the NCAs by: (i) reducing costs and losses associated with marketing livestock under the current quarantine system; (ii) alleviating other distortions created by the lack of disease freedom in the supply chain beyond the farm gate; and (iii) identifying and eliminating barriers to increasing volume of livestock and livestock products sold into existing markets and accessing additional market destinations.

Phase I of this activity will conduct simultaneous assessments of the livestock, quarantine, and marketing system inefficiencies within the NCAs. Phase II will entail implementation of the recommendations once approved by MCA and MCC.
### Table 5.7 Impact Assessment of Activity 2.2.3

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
</table>
| Impacts on livelihoods: Increasing marketing incentives and streamlining processes for livestock marketing will encourage livestock owners to produce better quality livestock, and sell more livestock. | - Direction: Positive  
- Spatial: Regional and national  
- Duration: Long-term  
- Cumulative impacts: High  
- Probability: Definite  
- Significance without enhancement: Medium  
- Significance with enhancement: High | None                                                | - Target the 95% of farmers that currently don’t participate in the official marketing system, without losing the current 5% that do take part.  
- Formal marketing should be proactively “taken to the farmers.”  
- Marketing events, such as auctions, assembly days, and quarantine days, should be used as part of training and sensitization on quality of animals required by the market.  
- Marketing incentives should include the promotion of “off-season” marketing. |
### Activity 2.3.4 Support Management of Existing Quarantine Facilities

**Table 5.8 Impact Assessment of Activity 2.3.4**

<table>
<thead>
<tr>
<th>Impact description</th>
<th>Impact ranking</th>
<th>Recommended mitigation of negatives</th>
<th>Recommended enhancement of positives</th>
</tr>
</thead>
</table>
| **Impacts on livelihoods:** Livestock farmers will gain increased access to improved marketing services | • Direction: Positive  
• Spatial: Regional  
• Duration: Long-term  
• Cumulative impacts: Medium  
• Probability: Likely  
• Significance without enhancement: Low  
• Significance with enhancement: Medium | None | • Water distribution should be done in such a way as to allow for planned rangeland management practices.  
• Community members should be empowered to play a role in camp management since they have an incentive to maintain rangeland integrity and livestock nutrition during quarantine.  
• Specifically in sandy patches, proper road surface should be provided at loading ramps to enable big trucks to operate.  
• Assembly kraals should be constructed immediately outside the quarantine camps to accommodate cattle while they wait to be registered in the camps.  
• The purchase of mobile trucks (6x6) and trailers with mobile kraals and loading ramps should be considered. These units will be able to take cattle from farmers, and then move them quickly to the quarantine camps. |
6.0 **Beneficiary Analysis**

According to the MCC Beneficiary Analysis, 135,000 people are expected to benefit from the Communal Land Support sub-activity, over 24,000 households from improved veterinary services, and 1,800 households across the 50 communities from the Rangeland Management program.

Communal Land Support beneficiaries include headmen, chiefs, TAs, CLBs, and the general public, including the poor, vulnerable groups, and women. The activity will put in place more transparent procedures for land rights allocations, and could help put a stop to illegal capture of common areas on which the poor depend for grazing. Whether the systematic regularization of rights to parcels over 20 ha in the NCAs could result in the re-capture of common land that has been inappropriately fenced off and whether the removal of fences that prevent access to common areas will take place, is highly unlikely.

CBRLM program beneficiaries are current livestock owners, including large farmers with bigger herds and poorer households with only a few animals. Livestock owners will directly benefit mainly in two ways, through training and through participation in CBRLM implementation via grazing associations or similar institutions.

Current offtake of cattle in the NCAs remains low. Formal offtake through the Oshakati abattoir is below 2%. If the Compact can increase offtake to 5%, 10%, 15%, 20%, and eventually 25%, substantial financial benefits can be accrued by livestock farmers, especially considering that this money will be earned from outside the NCAs. Figure 6.1 provides an overview of this estimated potential income at different projected offtake rates.

**Figure 6.1 Estimated potential income at projected offtake rates**

These projections were made with the following assumptions:

- Current livestock numbers in the NCAs (Caprivi excluded) were taken as basis.
- Average carcass mass is 170 kg and far below the average of 230 kg south of the VCF.
- The price of NS22 per kg of C2 grade cattle as paid by Meatco on 18 August 2008.
By increasing offtake in the NCAs, a 1,250% increase (gross) in income over current figures is possible. With the improvement of livestock quality through rangeland management and marketing of heavier animals of better grades, these figures can improve even further.

Improved veterinary services will benefit livestock farmers, rich and poor, male and female. Long distances to current veterinary services make it physically very difficult and expensive to access these services. The use of community-based animal health agents will further enhance the availability of veterinary services.

Improved livestock husbandry practices, including better breeding strategies and improved animal health practices, will increase reproductive success and decrease livestock mortality. Calving percentage are very low in the NCAs. If this rate can be increased from the current 40% to 60%, two more calves will be born for every ten cows owned by a poorer household. If, because of improved husbandry practices, they both survive and are marketed, a minimum of N$6,000 can be earned, a significant increase in income for poorer households.

Livestock mortality is also extremely high in the NCAs, mainly due to poor animal health management, poor feeding, and in-breeding. By addressing these constraints and increasing offtake, substantial financial benefits can be achieved, even for poorer households with smaller livestock herds.

Benefits could even be more successfully extended to poorer households, and especially to women, by supporting small stock marketing. Transport, quarantine facilities, links to markets, and training that incorporates small stock are more in line with the way livestock are typically managed. Many farmers who own cattle also own small stock.

Meatco (and to a lesser extent, Agra) will benefit from the livestock component since the company is currently the main private sector entity involved in formal livestock marketing in the NCAs. Currently, Meatco’s processing capacity is only partially utilized, resulting in large financial losses that are covered by producers south of the VCF.

The promotion of auctions will generate large amounts of cash, which may strengthen local village economies and have broader economic impact, beyond the livestock sector. For example, the Oshikoto Livestock Development Project organized an auction in 2005 in Onuuluaye that resulted in N$800,000.

6.1 Increasing Benefits to Women and Vulnerable Groups

If restricted to cattle, the livestock component could exclude up to 50% of the population who do not currently own cattle. Indirect benefits may accrue to non-cattle owners, both male and female, if improved livestock herding techniques are adopted and cattle are herded on to post-harvest fields for manure fertilization for one-week periods. While cattle may be the best “rural bank” available, including small stock in any efforts to improve cattle and range management will extend benefits to women and some vulnerable groups. If activities are too narrowly focused on cattle and beef sales, women are likely to be excluded and the economic benefits are less likely to extend to them and their children. It is generally thought that men’s income is less likely to benefit household welfare than women’s.

Female trainers should be used to serve as role models for stakeholders. This can help fill the gap in women extension agents in the remote northern regions. Overall, greater numbers of extension agents are needed to improve the agent to client ratio, currently at one extension worker per 3,000 families. Gender balance should be a goal when hiring extension agents to help implement the activity.
The San rarely own livestock, particularly cattle, but are hired by others for livestock herding and care. Previous cattle projects that were meant to benefit the San were unsuccessful. However, there have been successful efforts with goats, sheep, chickens, and individual garden projects. In general, development efforts that target the San will require involvement for more than five years, since poverty is so entrenched and the communities highly marginalized. There is a need for greater consultation with the San for project planning, particularly if the situation at the resettlement farms is to be remedied.

6.2 Adequacy of Proposed Livestock Training to Remove Barriers and Increase Broad-Based Black Economic Empowerment

Barriers to increased broad-based black economic empowerment include:

- Constraints on animal productivity, namely:
  - sub-optimal range management;
  - shrinking pasture areas;
  - inadequate access to water; and
  - poor animal health;
- Poor producer familiarity with commercial marketing channels and systems; and
- Veterinary controls that restrict access to markets in southern Namibia and other countries.

Training supported by the livestock sector may reduce some of the constraints on animal productivity identified above.

- If other factors in the required enabling environment are favorable, CBRLM training may enhance range management and, thus, pasture and animal productivity.
- Training for CLBs may help to slow—or reverse—the extra-legal enclosure of communal rangelands by private individuals, again easing constraints on livestock productivity on the commons.
- The proposed livestock improvement training should also improve animal productivity by helping livestock owners to improve animal health, nutrition, and reproduction—provided that the techniques transferred are financially and environmentally sustainable in local conditions.

Combined with other interventions and incentives, training on business and marketing skills may increase market activity in some instances, by improving producer familiarity with commercial marketing channels and systems.

Some barriers to black economic empowerment will remain, regardless of the training provided. For example, some of the constraints to market access for NCA producers will not be remedied by the training.

To some extent, the training will contribute to greater prosperity among NCA stock owners through higher market participation and higher revenues. This may be considered black economic empowerment, although the extent of this empowerment would be limited to the households who own livestock.
7.0 Resettlement Needs

Sites for the five regional VSCs have been identified. They are:

- Plot 370 in Epukiro
- Plot 1132 in Okakarara
- Plot 9 in Omuthiya
- Plot 1277 in Outapi
- Plot 113 in Eenhana, and Plot 224, 229, 609 and 615 for staff housing.

The SEA team confirmed that each plot lies within town boundaries, and that each of the settlements is declared Townlands. Registration of these sites under the MAWF needs to be approached through correspondence at an inter-ministerial level with the Ministry of Regional and Local Government, Housing and Rural Development.

The livestock activity is not expected to result in any direct resettlement impacts, as shown in Table 7.1.

**Table 7.1 Livestock Component: Resettlement needs**

<table>
<thead>
<tr>
<th>Sub-Activity</th>
<th>Description</th>
<th>Resettlement impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1.</td>
<td>Construct five new VSCs</td>
<td>The SEA team confirmed that the sites where the VSCs are to be built are on government-owned land and will not result in loss of grazing, housing, or other livelihood activities for any individuals. No involuntary settlement will be required.</td>
</tr>
<tr>
<td>2.1.2.</td>
<td>Construct two new community-based quarantine camps in Caprivi</td>
<td>Depending on where these will be constructed, involuntary resettlement may be required. However, if sites will be constructed on government property, no involuntary settlement is expected.</td>
</tr>
<tr>
<td>2.1.3.</td>
<td>Improve facilities at two existing government quarantine camps in Caprivi</td>
<td>As these facilities already exist, no resettlement actions will be required.</td>
</tr>
</tbody>
</table>

**Potential resettlement actions required**

None currently envisaged. No land acquisition issues have been identified.
8.0 Linkages, Synergies, and Cumulative Impacts

After identifying impacts for each activity within the livestock theme, the team conducted an assessment of the synergies and cumulative impacts of the activities within the component, between the livestock component and other Compact components, and between the Compact and initiatives taken by other parties (e.g., the GRN). The following discussion addresses the Terms of Reference for SEA tasks, specifically IV.2.5.2 Cumulative Impacts, which requires comment on the following issues:

The discussion on linkages, synergies, and cumulative effects is based on the outputs from a cumulative effects workshop held in Windhoek on 28–29 August 2008.

8.1 Key Cumulative Negative Impacts and Antagonistic Effects Within the Livestock Theme

No potential negative cumulative impacts within the Livestock Component could be identified, however there are two potential antagonistic effects:

1. Identification of illegally fenced areas (Activity 2.1.1.2) may conflict with the CBRLM Activity (Activity 2.1.2). Occupiers of illegally fenced areas could use political influence to derail the implementation of CBRLM in the NCAs to protect their interests. Thorough stakeholder consultation could mitigate this, resulting in a win-win situation and thus, could avoid advantaging one group over another.

2. Activity 2.2.1 (Veterinary Infrastructure Support) will include the construction of two new quarantine camps in Caprivi region. These camps could reduce the available land for CBRLM and conservancies in the identified areas, as quarantine camps require large (>5000 ha) tracts of land.

8.2 Linkages and Secondary Effects of Livestock Activities

Figure 8.1 demonstrates the linkages and potential negative spin-offs of the Livestock Project. As can be seen, there are several interlinked “virtuous circles,” but also some negative spirals that will have to be carefully managed to ensure that they do not become unintended consequences of the Livestock Project.
Figure 8.1 Positive and negative linkages resulting from improving value of livestock in NCAs
The goal of the livestock component—increased value from livestock production—will lead to increased cash flow for livestock farmers, which in turn will stimulate growth in the rural economy of the NCAs. This is expected to result in a greater investment of livestock owners in the education of their children, supported by the improved education infrastructure as proposed by the Education Project. Improved education, especially in NRM, as recommended in the Education TAR, will enable more informed decision making over economic and ecological farming aspects, leading to long-term improved resource management (Figure 8.1).

A positive effect of the CBRLM Activity (Activity 2.1.2) is the improvement of plant and animal diversity at a micro- and macro-level. This is advantageous to the tourism component, as rich biodiversity adds to the aesthetics of natural areas, which is in turn attractive to tourists. CBRLM also provides a tool for improved management of grazing within conservancies. Improved biodiversity may further enhance the natural production of indigenous natural products (INPs) within rangelands, and enable INP primary producer organizations (PPOs) to secure the protection of populations of INPs against over-utilization by livestock (Figure 8.1).

A potential negative linkage is that as livestock owners earn more money from cattle, they may invest in larger herds, which will place increased pressure on natural resources and cause accelerated erosion and land degradation. This could lead to a downward spiral of rural poverty. Increased herd size could also result in more human-wildlife conflicts, creating tensions between conservancies, tourism, and stock owners (Figure 8.1). In areas where there are no conservancies, such as in large parts of north central Namibia, this will be less of a concern. However, if the strategic interventions that are currently part of the program (i.e., CBRLM) are put in place, this negative linkage is unlikely to occur.

The interventions required to ensure that the benefits are realized and the unintended negative consequences are minimized are listed in Table 8.1.

### Table 8.1 Interventions required for successful implementation of the livestock component

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommended interventions</th>
<th>Indicators</th>
<th>Responsibility</th>
<th>Frequency of monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in livestock numbers</td>
<td>Incentives for increased offtake of livestock</td>
<td>Increased no. of livestock units marketed</td>
<td>Meatco and other private sector entities</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Implement CBRLM program</td>
<td>• Increased no. of CBRLM sites</td>
<td></td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improved rangeland condition</td>
<td></td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improved production per ha</td>
<td></td>
<td>Annually</td>
</tr>
<tr>
<td>GRN interventions in conflict with CBRLM</td>
<td>Implement existing drought policy and strategy</td>
<td>• No. and nature of subsidies is changed and reduced</td>
<td>MAWF</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduction in frequency of subsidy applications</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>Issue</td>
<td>Recommended interventions</td>
<td>Indicators</td>
<td>Responsibility</td>
<td>Frequency of monitoring</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>Conflict between land reform and tourism activities</td>
<td>Promote consultation and cooperation between MLR and MCC Program</td>
<td>• Number of land use conflicts is reduced</td>
<td>MCA, MLR, MAWF, MET</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Use existing land use plans as a basis for actions</td>
<td>• Sufficient evidence of consultations between MCA and MLR</td>
<td>MCA, MLR, MAWF, MET</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

### 8.3 Opportunities for Optimizing Synergies within the Livestock Theme and with Other Program Components

The potential synergetic effects and opportunities for optimizing synergy between the various livestock activities are enumerated below.  

1. There are synergies between training and capacity building activities in livestock health and rangeland management and the construction and improvement of veterinary and quarantine facilities in the NCAs. Once VSCs are operational and adequately staffed, they could act as information hubs, and mentoring initiatives in livestock and rangeland management could be driven from them. Furthermore, CLBs and TAs should be targeted for training, as they will play a pivotal role in the promotion of CBRLM activities in communal areas.

2. The CBRLM Activity (Activity 2.1.2) may result in reduced theft of livestock and reduced conflict within communities. Effective management of rangelands through grazing management plans will be built on consensus among users of those rangelands. This will regulate land use, reducing the potential for conflict and illegal activity.

3. Traditional grazing lands that have been fragmented through uncontrolled and indiscriminate cultivation could be reclaimed, and effective multi-use zonation will be possible.

4. The tagging of cattle through the Livestock Identification System Activity (Activity 2.2.2) to improve traceability of ownership improves the marketability of cattle. Through the FAN Meat Scheme, traceability of meat to its source is essential to ensuring acceptable management of meat from farm to consumer. This activity would assist Activity 2.2.3, Livestock Marketing Efficiency Improvement.

5. The Communal Land Support Activity (Activity 2.1.1) will strengthen the CBRLM Activity. An empowered CLB will provide institutional leadership to ensure effective roll-out of CBRLM. The Communal Land Support Activity will further provide communities applying CBRLM with information on land rights. This will assist them in clearly identifying land resources that are subject to leaseholds and those that are retained as communal grazing.

6. The CBRLM Activity will not only improve the quality of rangelands, but will improve the quality of livestock being produced. This will in turn improve marketability of livestock, providing substantial advantages to Activity 2.2.3. CBRLM will also increase the need for and interest in excess cattle to be marketed. This will maintain good quality grazing and rangelands.

7. Veterinary Infrastructure Support (Activity 2.2.1) will strengthen capacity to assist in marketing cattle (Activity 2.2.2). It will also provide an opportunity for mentorship to farmers for maintenance of the traceability system and for monitoring the system.

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6 Defined as the combined positive impacts on the social and natural environment.
The potential synergies between the livestock theme and other program components are listed below:

1. Communal Land Support (Activity 2.1.1) and CBLRM (Activity 2.1.2) activities are expected to improve the institutional framework for stewardship of communal land, particularly rangeland. Both activities will empower local leadership through training and mentoring to take better care of natural resources. This may improve the enabling environment for the development of PPOs in the INP component, and for more effective management of conservancies within the Tourism Project. TA and CLB support for sustainable land use options and environmentally sound development will create an enabling environment for the implementation of CBRLM, but also for support of INP PPOs and the further development of conservancies and related tourism initiatives.

2. Through the Veterinary Infrastructure Support Activity (Activity 2.2.1), an opportunity exists to create information hubs at the newly established quarantine and veterinary centers. As discussed in Section 5, Impact Assessment, these hubs can disseminate information on marketing and CBRLM, can be used to disseminate information on INP production, and can act as communication points for PPOs provided that veterinary services have sufficient capacity to do this.

3. The CBRLM Activity is expected to improve the condition of rangelands in the NCAs. This will improve ecological functioning within rangelands, attract wildlife, and improve the aesthetic sense of place of these areas. This could add to the marketability of the NCAs as a tourism destination.

4. The establishment of game camps as part of the tourism component needs to be supplemented by effective management of grazing to prevent degradation of these camps. The CBRLM Activity can provide the management tools for effective grazing management within these camps.

5. A more educated populace, a goal of the Education Project, can provide the foundation for a general understanding of the principles of sustainable development and responsible use of natural resources, key concepts that can significantly contribute towards the success of the CBRLM Activity.

### 8.4 Cumulative Negative and Antagonistic Effects between the Livestock Activities and other Program Components

This analysis considers possible cumulative social and environmental impacts of the livestock component with other Compact projects (Tourism, INPs, and Education).

**8.4.1 Potential Cumulative Impacts**

The main cumulative negative effect of the Livestock Project activities with other program components is the potential impact on construction materials and skills. Many construction projects are proposed in the overall Program:

- Five new VSCs;
- Two community-based quarantine camps;
- Construction or renovation of 20 administrative facilities in ENP;
- Construction of 115 new staff houses in ENP;
- Two new lodges in northeastern community parks;
- Construction or renovation of 47 schools;
- Renovation of five and construction of four new community skills development centers;
- Construction of three new regional study and resource centers; and
- Construction of an unknown number of teachers’ houses.
Although these are separated geographically, and it is therefore unlikely that there will be a cumulative impact spatially, there may well be a coincidence in the timing of construction. Namibia, South Africa, and other countries in the region are currently experiencing a construction boom linked to high mineral prices (e.g., uranium, platinum, copper, gold, and coal), the 2010 Soccer World Cup, and other large infrastructure projects (e.g., power generation plants, ports, and housing). The cumulative effect of these projects has resulted in shortages (and thus higher prices) of building materials, equipment (e.g., drilling rigs), and skills—especially of artisans. Local construction companies are also at full capacity, and many tenders are being awarded to foreign companies. Although MCA Program construction projects are relatively small in comparison to many others in the region, the demand for construction materials and expertise may be overwhelming, and MCA projects may suffer.

8.4.2 Potential Antagonistic Effects

Interactions between wildlife and livestock, in and beyond conservancies, are a concern. In the longer term, anthropogenically enhanced climate change will likely make conditions difficult for wildlife, yet they will probably become more difficult for livestock. Strengthening the economic potential of wildlife should therefore have environmental benefits if doing so encourages herd owners to reduce their dependence on livestock. Lack of alternatives and continued dependence on livestock at current levels—or increased dependence, if greater market efficiency expands the financial incentives—could cause rising environmental costs. From an environmental perspective, it is therefore important to link the livestock and conservancy activities. Conflict between conservancy development and livestock production is not inevitable. Conservancy experience clearly shows that wildlife production, tourism, and livestock can coexist if management and monitoring systems take them all into account. It is not and should not be an either/or choice (Table 8.1).

The construction of two new quarantine camps in Caprivi region as part of Activity 2.2.1 (Veterinary Infrastructure Support) may reduce the availability of land for the establishment of game camps under the Tourism Project, if these camps are in the same area. It could further reduce the available area for the collection of INPs, as access for INP harvesting in quarantine camps will not be permitted by the veterinary protocols.

All activities within the livestock component that require the use of land have the potential to be in competition with other initiatives that require land in the NCAs. Improved rangelands may attract wildlife and increase the potential for human-wildlife conflict. Tourism and INP initiatives may also compete with livestock interventions. Consensus building is key to ensuring harmony and maximizing synergistic effects of the individual components of the Compact. Proper zoning of areas for different uses through consensus among all land users will further form a basis for more effective and productive land use, and should be included in management planning for such uses (Table 8.1).
9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Sustainability Analysis

Market incentives are the driving force for livestock owners in the NCAs to produce better quality livestock and increase offtake. The key to sustainability of MCA Compact interventions in the livestock sector are:

- Increased offtake;
- Better links between producers and the market; and
- Improved understanding of the value of rangelands, which will lead to improved rangeland management.

As noted earlier, training and capacity building must include effective mentoring, followed by targeted monitoring of outcome-based indicators.

The SEA team recommends that monitoring be community-based and driven—perhaps using a modified version of the CBNRM Event Book monitoring system (Livestock Implementation Tool 4). This system is already well-established in conservancies and has shown success. The DRFN has also gained considerable experience in modifying the Event Book system to suit rangeland and livestock related indicators. The use and further adaptation of this local level monitoring system should receive high priority.

Environmental safeguards

- The recommendations below should be integrated into Project designs and into activity-level EIAs and Environmental Management Plans (EMP, see Implementation Tools 6, 7, and 8. Requirements of the EIA/EMP should be attached to all tender documents;
- The evaluation of tenders should include an adjudication of the tenderers’ ability to implement the EMP;
- The implementation of EMPs should be monitored and compliance enforced. Monitoring should be undertaken by a dedicated person appointed specifically to carry out this task. Without monitoring, it is unlikely that the mitigation measures recommended in this report will be implemented.

The following mitigation measures are required to minimize environmental and social impacts identified in the impact assessment process (Section 5). While not required in terms of the Compact agreement/deliverables, to help ensure sustainability and project success, the SEA team highly recommends that the enhancements are implemented as part of project design and/or required through the EIA/EMP process.

Communal Land Support: Activities 2.1.1.1, 2.1.2.1, 2.1.2.2, 2.1.2.3

Recommended enhancements to maximize livelihood, biophysical, and other social and environmental benefits:

(1) Each training activity should have specific expected outputs. To ensure lessons learned from training are implemented and that training will have a lasting impact, ongoing support and facilitation (including mentors) should be included.
(2) The training method should be experiential learning rather than formal courses.
(3) Sensitive topics (e.g., decision making mandates) should be introduced with care before being included in training activities.
(4) Additional training topics should be considered such as low-stress livestock handling and transport, since stress has been shown to affect animal performance and meat quality.

**CBRLM: Activities 1.2.4 and 1.2.5**

**Mitigation measures required to minimize impacts:**

1. CBRLM should allow for flexibility of livestock movements through consultation and cooperation with other grazing areas, while ensuring the application of sound rangeland management principles.
2. CBRLM sites should be chosen based on the criteria in Livestock Implementation Tool 4.
3. Training alone will not result in the expected high positive impacts, but should be complemented by the development, implementation, and monitoring of sound rangeland management plans.
4. Additional training topics should be considered such as low-stress livestock handling and transport, since stress has been shown to affect animal performance and meat quality.
5. Areas that will receive new boreholes should be carefully selected to ensure water is only provided where grazing is adequate.
6. Strict conditions should be attached to borehole use to facilitate livestock owners learning about planned grazing and herding.
7. Effective institutional and biophysical monitoring systems should be put in place, in order to track progress towards achieving the goals of CBRLM.
8. The drilling of boreholes should be part of the rangeland management plan in a specific grazing area. Drilling should be done in consultation with members of that specific grazing area. Users of the new borehole should be contractually bound to implement CBRLM. If this fails, access to the water should be stopped; otherwise land degradation will be inevitable.
9. New boreholes should be avoided in areas where they will likely cause wildlife-human conflicts.
10. Farmers should contribute to establishment costs of boreholes and pay full running costs to enhance the sense of ownership.
11. Where CBRLM interventions are implemented, support should be provided to strengthen collaboration between grazing area committees and water point committees.
12. Communication among relevant stakeholders and transparency in decision masking is essential.

**Recommended enhancements to maximize benefits:**

1. Provide drought relief boreholes only with commitment to CBRLM
2. Drill new boreholes only with commitment to CBRLM
3. Directorate of Rural Water Supply (MAWF) should provide preferential support to areas practicing CBRLM
4. Include CBRLM in water point committee constitutions
Construct five VSCs: Activity 2.1.1

Mitigation measures required to minimize impacts:

1. Provision should be made for appropriate disposal of waste. An option may be to link to existing clinics and hospitals with waste treatment expertise, plans, and facilities.
2. Detailed mitigation measures are contained in MCC’s VSC due diligence report, and recommendations should be incorporated, as applicable, into implementation contracts.
3. The team was unable to inspect specific sites for the VSCs. Therefore, the nature of the sites should be confirmed and the requirements of the EMA (2007) must be complied with. Volume 2, Section 11, contains environmental guidelines for school construction; these can be applied to the construction of VSCs.
4. Construction of new VSCs should be preceded by an environmental screening, as required by Namibia law. These centers will be located in already built-up areas—on brownfield sites. Thus, a generic EMP may suffice, with particular focus on correct disposal of hazardous and medical waste. However, should they be located in sensitive areas (see the Tourism TAR), an EIA will be required.

Recommended enhancements to maximize benefits:

1. Outreach to remote livestock farmers should be part of the VSCs’ mandate, and could be undertaken using community animal health agents and by stocking veterinary pharmaceuticals in local shops.
2. Lessons learned from previous activities, e.g., SARDEP activities in Onkani, should be used.
3. VSCs could be used as information hubs for farmers to obtain regular information on livestock health related issues. Building on this, VSCs could be multi-purpose centers that consolidate forestry, extension, veterinary, and rural water supply in one location.

Construct two new community-based quarantine camps in Caprivi: Activity 2.1.2

Mitigation measures required to minimize impacts:

1. Land selection for these camps should be based on proper consultation with all stakeholders. A resettlement action plan may be necessary to compensate losses.
2. A sound rangeland management plan should be developed for the quarantine camp.
3. Camps should not be located in important wildlife or tourism areas.
4. Communities should have representatives that are trained and empowered to manage the quarantine facility effectively.
5. Public-private partnerships should be considered.

Recommended enhancements to maximize benefits:

1. Camps should be constructed to take into account the number of animals that are expected to be marketed over the next five to ten years.
2. Water distribution should be done in such a way as to allow for planned rangeland management practices.
(3) Community members should be empowered to play a role in camp management since they have an incentive to maintain rangeland integrity and livestock nutrition during quarantine.

(4) A key criterion for site selection should be access that allows for ease of transport of livestock to and from the camp.

(5) Proper road surface should be provided at loading ramps to enable big trucks to operate, specifically in sandy patches.

(6) The role of DVS should be confined to a control and certification.

(7) Assembly kraals should be constructed immediately outside the quarantine camps to accommodate cattle while they wait to be registered in the camps.

(8) The purchase of mobile trucks (6x6) and trailers with mobile kraals and loading ramps should be considered. These mobile units will be able to take cattle from farmers, and then move them quickly to the quarantine camps.

(9) Marketing incentives and marketing infrastructure should extend to sheep and goats, and not focus solely on cattle.

(10) Quarantine camps could be used by service providers, such as Meatco, DVS, DEES, and others to train farmers in better marketing practices.

**Improve facilities at two existing government quarantine camps: Activity 2.1.3**

**Recommended enhancements to maximize benefits:**

(1) Water distribution should be done in such a way as to allow for planned rangeland management practices.

(2) The role of veterinary services should be restricted to control and certification, while the management of the facility should be vested in another mechanism that has an interest in securing proper nutrition of livestock and maintaining the integrity of the rangelands.

(3) Proper road surface should be provided at loading ramps to enable big trucks to operate, specifically in sandy patches.

(4) Assembly kraals should be constructed immediately outside the quarantine camps to accommodate cattle while they wait to be registered in the camps.

(5) The purchase of mobile trucks (6x6) and trailers with mobile kraals and loading ramps should be considered. These mobile units will be able to take cattle from farmers, and then move them quickly to the quarantine camps.

(6) Marketing incentives and marketing infrastructure should extend to sheep and goats, and not focus solely on cattle to have broader impact.

(7) Quarantine camps could be used by service providers such as Meatco, DVS, DEES, and others to train farmers and expose them to better marketing practices.

**Procure tags and tag 1.2 million cattle: Activity 2.2.2**

**Mitigation measures required to minimize impacts:**

(1) Poor livestock owners should be subsidized, provided that clear criteria exist to identify poor farmers. This should be a “once-off” subsidy and it should be made clear that it will only happen at start-up (it will not be continued after the end of the MCA Compact).
Recommended enhancements to maximize benefits:

(1) Training should be offered to enable farmers to understand the need for the system and to comply with its requirements.
(2) DVS should have sufficient financial and staff capacity to properly and continually supervise the effective implementation of the system.
(3) To minimize resistance to the system, farmers should be enabled to use the information generated to improve their decision making at farm level.
(4) Effective penalties for non-compliance should be in place and enforced.

Livestock marketing efficiency improvement: Activity 2.2.3
Recommended enhancements to maximize benefits:

(1) The 95% of farmers who currently do not participate in the official marketing system should be targeted, without losing the 5% who are currently participating.
(2) Formal marketing should be proactively “taken to the farmers,” instead of expecting them to approach the market on their own.
(3) Marketing events such as auctions, assembly days, and quarantine days should be used as part of training and sensitization on animal market quality.
(4) Marketing incentives should include the promotion of selling in the “off-season.”

Management of existing quarantine facilities: Activity 2.3.4
Recommended enhancements to maximize benefits:

(1) Water distribution should be done in such a way as to allow for planned rangeland management practices.
(2) The role of veterinary services should be restricted to control and certification, while the management of the facility should be vested in another mechanism that has an interest in securing proper nutrition of livestock and maintaining the integrity of the rangelands.
(3) Proper road surface should be provided at loading ramps to enable big trucks to operate, specifically in sandy patches.
(4) Assembly kraals should be constructed immediately outside the quarantine camps to accommodate cattle while they wait to be registered in the camps.
(5) The purchase of trucks (6x6) and trailers with mobile kraals and loading ramps should be considered. These mobile units will be able to take cattle from farmers, and then move them quickly to the quarantine camps.

9.2 Additional Recommendations to Help Ensure Sustainability and Success of Land Access and Livestock Activities

Based on the analysis conducted for this report, and on the team’s experience in livestock, rangeland, and land tenure, the team developed the following guiding principles and recommendations:

- No specific grazing systems should be promoted by the project. Each grazing area needs to be exposed to the grazing principles outlined in the National Rangeland Strategy and the target grazing area livestock owners need to develop solutions that will work in their area.
• One solution that fits all social and environmental situations should not be developed. Each grazing area will need to come up with solutions that enable the principles of sound rangeland management to be applied under their social and environmental conditions. This applies to communal land and private farms.

• Pilot communities for CBRLM must be able to identify a grazing area within which the grazing principles can be applied. The grazing area in the CBRLM context is defined as a group of livestock owners within a given geographic area who have agreed to come together and implement the principles of sound rangeland management as outlined in the National Rangeland Strategy. Training needs to target as broad a group within a grazing area as possible with a special focus on the inclusion of vulnerable groups.

• Learning and adoption should be conducted, as much as possible, through exposure and practical experience rather than course work. Key decision makers must not be alienated by literacy requirements. The use of competent mentors from the commercial farming sector should be considered.

• Review and reform of any legal measures should include recommendations from the local level to the national level. The implementation of CBRLM will generate new knowledge and insights that should continuously be channeled into the policy and legislation development process.

• Land rights are not a prerequisite for successful implementation of the National Rangeland Strategy grazing principles, but resource rights and the ability to enforce management rules are necessary over the longer term.

• Training in land planning should be supported by highly skilled local level facilitation to ensure that grazing area representatives are not overwhelmed with new responsibilities.

• The use of practical and experienced mentors in conjunction with extension officers from the government should be considered.

• The introduction of grazing fees needs to be investigated carefully, and the timing of these discussions must be appropriate. Based on the SEA team’s analysis, grazing fees may be possible to introduce, although success is highly dependent on the specific situation, including the location where fee-based grazing will be implemented, the lead institution, and the support of TAs. Introducing too many new concepts and controls at once may cause communities to rebel. Once farmers see benefits accruing from improved grazing practices, and as markets are more accessible, grazing fees would be more acceptable.

• As outlined above, the complexity of applying the National Rangeland Strategy principles varies from place to place. In less complex areas, exposure and training may be followed relatively quickly by implementation. In other areas, CBRLM activities may need to spend significant amounts of time establishing a common way forward. CBRLM activities should factor in this need for flexibility.

• The CBRLM Sub-Activity has the potential to support vulnerable groups, i.e., women-headed households and people living with HIV/AIDS. Separate training for women is not recommended. The training and involvement of women in decision making needs to be mainstreamed into the project implementation (see Section 6, Beneficiary Analysis).

• The lack of women extension agents in the remote northern regions should be addressed through mentorships of women extension agents within MAWF.

• Changing stocking rates to suit available feed and to avoid overgrazing and over-resting involves both destocking and restocking. Changing animal numbers must become a part of the social network and not conflict with it. De-stocking is a key issue for the long-term success of CBRLM and needs to be promoted by adequate consultation and demonstration. People must see that
changing stocking rates for improved rangeland management decreases social risks and vulnerability of farmers to droughts.

- Small stock is important from a social perspective (as it includes the poor) and for ecological reasons. All types of livestock need to form part of the planned grazing systems.

- The Zimbabwe experience from Dimbangombe (Africa Centre for Holistic Management) has influenced current Namibian rangeland practices, strategies, and emerging policies. Key lessons from Zimbabwe include the need to improve production from small-scale farming, herding, and village banking using goats. Lessons from Namibia and Zimbabwe should continue to enrich implementation of the CBRLM Sub-Activity.

- Adoption of CBRLM needs to be driven by social, economic, and environmental incentives. These include water provision, technical support, and facilitation, as well as strengthening the market links to enhance offtake that will “suck” rangeland management and other technologies into the system.

- As noted in the Compact, the management of government quarantine farms needs to be improved. Apparently, some cattle stay up to 40 days in the facility instead of the required 21 days. Infrastructure (especially water provision) needs to be better maintained. Management options to provide better grazing to animals and to prevent weight losses are currently extremely limited in some of these facilities. A private entity should be involved in maintenance and management of the facilities. DVS should only play a control and certification role. Construction of more community-based quarantine facilities in the NCAs should be encouraged.

### 9.3 Key Indicators of Success

Below are indicators for successful implementation of the livestock component. These indicators were developed as part of the assessment of the component’s environmental impacts.

- *Increased numbers of livestock units marketed within the formal market (Meatco abattoirs):* Production of more—or better quality—livestock will have positive economic benefit for the NCAs if marketing and sale of livestock increases.

- *Increased number of CBRLM sites:* Following the implementation of CBRLM at the 50 pilot sites, adoption of CBRLM beyond these pilot areas by communities will be a measure of success.

- *Reduced applications for drought subsidies, and reduced numbers of subsidies granted:* Drought subsidies granted that are not in accordance with the Drought Policy and Strategy create incentives for poor livestock management. They counteract incentives of the livestock component that rely on improved land and livestock management. By urging government to apply the policy and strategy effectively, counterproductive actions can be avoided.

- *Reduced numbers of disputes about land use:* As described in Section 8.4, potential land use competition and disputes can be mitigated through effective communication and collaborative planning.

### 9.4 Project-Level Environmental Guidelines

Based on this assessment of the likely environmental and social impacts, the SEA team recommends incorporating the following environmental guidelines into livestock activities:

- CBRLM site selection (Livestock Implementation Tool 4);
- CBRLM monitoring (Livestock Implementation Tool 3); and
- Public Participation (Livestock Implementation Tool 2).
10.0 List of References


# 11.0 List of Contacts

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Contact</th>
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</thead>
<tbody>
<tr>
<td>Vickey Naudili</td>
<td>DEES</td>
<td>0812952449</td>
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<tr>
<td>Nestor Haufiko</td>
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<td>Martin Embundle</td>
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Implementation Tool 1

Discussion Document on the Principles of Good Rangeland Management
1 THE PRINCIPLES OF GOOD RANGELAND MANAGEMENT

Namibia is an arid country and is characterized by relatively low and highly variable rainfall. Rangeland productivity per hectare is in decline in the commercial lands, communal lands, and National Parks in Namibia. Perennial grass cover has reduced significantly in all land uses in Namibia and bush encroachment covers nearly 30,000,000 hectares. Soil erosion occurs over approximately 90% of the country. These factors are having major livelihood impacts, national economic impacts, and resulting in losses in biodiversity.

The development of sound rangeland management principles intend to improve rangeland productivity, and thereby to reverse the current degradation. These principles will however need to be supported by an effective implementation strategy and an enabling policy environment.

This section aims to provide the main tools available to land users/managers, to describe their impact on the resource base, and recommends sound rangeland management principles that will improve the resource base over time.

Rangeland management principles must address the root cause of degradation and must result in:

- An improved water cycle
- An improved mineral cycle
- Improved productivity per hectare
- Reduced vulnerability of rangeland users to seasonal environmental variation.

By improving the water and mineral cycle, productivity per hectare is increased through an extended and more effective growing season. Growing more fodder means producing more meat.

The information provided below, excerpted from the Draft National Rangeland Strategy, encourages the application of practices that can improve productivity in an economically viable manner.

1.1 Know your resource base

Many Namibian farmers have a bias towards the animals that they are farming with. However, it is just as important that the veld, grasses, soil surface, bushes, and the environment from which you are making your living are understood just as well. You cannot produce more kg meat/ha over time on veld that is deteriorating. In order to be successful you need to understand what encourages the growth of the plants that produces your meat. The land user must be knowledgeable since the following must be understood in order to manage the land effectively and to grow more fodder.

- The difference between annual and perennial grass plants
- Annual grasses: An annual grass plant grows from seed and dies after that growing season. Annuals have small root systems, require significant rainfall events to germinate and generally put more energy into producing seed than they put into growing leaves. Their small root systems do not hold the soil well.
- Perennial (broadleaved) grasses: A perennial grass if well managed will develop a strong tuft that keeps growing year after year. Broad leaved grass species are generally more beneficial for animal production than narrow leaved plants. Perennial grass plant growth points are at the soil surface and unlike trees these plants cannot shed their leaves – they rely on their leaves being removed by animals or fire. Perennial grass plants grow well after small rainfall events and can produce large amounts of fodder. If managed correctly their extensive root systems that hold the soil well and prevent erosion. Unfortunately perennial grasses have been lost from large parts of...
our rangelands where they once occurred and productivity of these areas has reduced as a result. The reduced vigour of grass plants is one main reason that has allowed bushes to establish resulting in the bush encroachment problem of Namibia.

- It is important to know the botanical composition, which species (grass and shrub) are “key” to production and at what times of the year. It is important to monitor the reaction of these plants to the management applied, their ability to withstand drought and their nutritive quantities.
- The user/manager must be aware of the state of the soil surface. The soil surface is a very good indicator of how effective your management is. If the soil surface is bare and hard and there is no organic matter on or in the soil, the soil tends to form a hard sealed surface layer (capped). Rainwater runs off these soils and evaporation is high (poor water cycle) and conditions are very hostile for germination and growth. Productivity from bare ground is low. In an arid country users/managers need to make the most effective use of the rainfall they receive. Loosening the surface layer and improving soil cover and organic matter increases infiltration and decreasing evaporation.

Having an understanding of these factors will enable the user/manager to develop an attunement to the rangeland environment. When trialing new management approaches it will be important to monitor factors such as soil cover and perennial grasses that will indicate whether your action is having the desired effect.

### 1.2 Manage for Effective Rest

Resting perennial grass plants refers to the practice of removing all livestock and preventing fire from burning an area for an entire growing season or more. Perennial grass plants are rested to enhance the production and vitality of the grass plant. This rest allows the perennial grass plant to build up reserves and build up standing organic matter that can be utilized or used to increase soil cover in the following season. Every year areas can be selected where rest can be applied.

Rest: Rest is applied to make provision for:

- Grass roots to re-establish after utilization and restore the reserves of the plant
- Organic matter to build up in this camp so that it can be utilized to increase soil cover in the following season, as a drought reserve or for strategic marketing.
- Unhindered seed production.
- The establishment of seedlings.

Resting areas results in a number of factors that increases the productivity and vigour of perennial grass plants. It also acts as a drought reserve making provision for fodder reserves that can be utilized if rains are late or during periods of drought. Resting for longer than one season is not recommended.

### 1.3 Manage for Effective Utilization of Plants (Grasses And Shrubs)

Managing both grasses and shrubs are important. Perennial grass plants and favourable browse species are managed with the intention of increasing their vigour and productivity. Unfavourable browse species are often managed to decrease their vigour and over-browsing may be a deliberate management application to decrease vigour.

#### 1.3.1 Grazing to stimulate production:

Utilization of perennial grass plants is the grazing of grass plants in such a way as to maintain or increase plant vigour and production over time. This is achieved by allowing grass plants enough time between grazing episodes to recover and restore their root reserves. The higher the intensity of defoliation, the longer time is needed for the grazing plant to recover. Active and healthy root systems are vital for aeration and nutrient cycling of the lower soil layers.
1.3.2 Overgrazing:
Perennial grasses will be overgrazed if they are regrazed before the plant’s root reserves have been replenished. A sure sign of an overgrazed grass plant is leaves and flowers growing along the soil surface (often forming a rosette). Continued overgrazing over time results in the plant dying. Perennial grasses are being overgrazed if teethed animals (horses and donkeys) are able to pull a perennial grass out by the roots.

1.3.3 Underutilization:
A perennial grass plant is underutilized if the tuft has old grey standing material within the tuft. Both over-utilisation and underutilization result in decreased vigour and productivity of your grasses. Parts of the rangeland may be underutilized if there are plants with large amounts of grey oxidizing plant material in the tuft. It is also possible to have an overgrazed plant next to an under utilized plant.

Effective utilization of plants is achieved through the management of:
- The number of animals on a specific area of rangeland (stocking density)
- The length of time animals are kept in an area (length of the grazing period)
- How long it is before animals are allowed to return to this area (length of the resting period)

All of these aspects require careful planning by the land user/manager

1.4 Growing season:
If the stocking density is too high for the available feed, feed will be consumed too fast and animals will return to the area grazed before the plants have recovered from the last grazing event. This depletes reserves, weakens the plant and eventually kills it. If animals are left too long in the same area during the growing season, animals may regraze a plant they grazed when they entered the area to start with. The amount of time that plants need to recover is determined by the growth rate of the plant, which in turn is dependent upon factors such as, amongst others, rainfall distribution and temperature. When a plant has seeded it has generally recovered, but recovery often occurs well before this as well.

1.5 Non-growing season:
It is imperative that the amount of fodder on the farm should be assessed each year at the end of the growing season (end of the rain season), which is around April/May. In doing this, provision is made to ensure that there is enough fodder for the animals until the rains can be expected (with a drought reserve built in). It also suits perennial grass plants in that they should be utilized during this period to enable their growth points to be exposed to the sunlight to enable effective grow in the next season. Too severe utilization in the dry season can result in the physical removal or damaging of active growth points and should be avoided at all costs. Available fodder changes from year to year simply because of the variability of rainfall and other growth factors from year to year. Making use of a fixed grazing capacity should therefore be avoided.

The timely adjustment of animal numbers to available grazing has the following main benefits:
- The sooner destocking is done (various ways exist) the fewer stock will need to be removed later on.
- Rangeland users will be less vulnerable to fodder shortages for their animals.

1.4 Enhancing soil condition
In any grazing ecosystem there is a strong interaction between soil and vegetation. If the soil is in a good condition then it can support the vegetation needed to protect itself, provide fodder for the grazing animals and provide the organic material which influences the physical and chemical fertility of the soil.
If it is in a degraded condition, then nutrient cycling, water infiltration, seed germination, seedling development and a number of other ecological processes are disrupted.

1.5 Soil Surface:
It is therefore imperative that the land user should strive towards maximum protection of the soil by managing for maximum basal cover of the ground by perennial grasses and increased organic matter on and in the soil. Apart from the soil protective function it introduces, it ensures low run-off levels and so creates a situation where water can penetrate the soil. Having the maximum amount of vegetation on the land is probably the best mechanism against soil erosion. This holds especially true for grass plants as their fine root systems are far more effective in holding soil than the tap root systems of many woody plants.

Vegetation is the major source of organic material to the soil. In arid areas soil organic material comes to a large extent from the die-back of plant roots. The die back of roots also occurs after each grazing event. Organic material plays a significant role in the improvement of soil structure. Not only does a better soil structure create conditions for better water infiltration, but it also enhances soil aeration and thus microbe activity. These microbes, some of which have a decomposing function, are responsible for breaking down waste products and the recirculation of nutrients in the ecosystem. Others, such as aerobic nitrogen fixating organisms, fix organic nitrogen in an inorganic form that can be incorporated into biological processes. However, due to the fact that Namibia is such a dry country, conditions are not very conducive for microbe activity, and the soils have a notoriously low organic material content.

A good cover of the soil by plants and organic material (litter) also results in less extremes of soil temperatures, which is conducive for germination of grass seed and seedling establishment. Lower day time soil surface temperatures also restrict soil water losses as a result of evaporation. Furthermore, a good vegetative cover will go a long way towards preventing crust forming and compaction of soil, both of which creates favourable conditions for high run-off and poor seedbed conditions.

Apart from the effect animals have on the veld by eating, they also have a physical effect on the soil. This impact, like grazing can be managed by the farmer and can have positive or negative results. Animals that are allowed to roam freely in large areas generally walk in long lines to and from grazing. This results in over trampling of the paths into a fine dust, risking wind and water erosion. Areas that have no livestock on at all tend to have hard capped soils, with lichens binding the soil surface together. Grasses and soils have evolved with animals. Animals that are bunched together in a herd have a different effect on the soil than animals that are not in a herd. Herds of animals even under low stress conditions are able to break through the soil capping, loosening the soil, whilst laying grass and other plant matter flat on the soil surface. This has the potential if used correctly to improve germination and the water cycle. The direct effect of animals can be used to prevent crust forming and high water run-off levels, to add the maximum amount of organic material to the soil and to establish a good plant cover. The herding of animals is one of the best known ways of applying this important principle.

1.6 Bush Encroachment
It has been shown that in areas where bush is a problem, very little rainwater succeeds to infiltrate and reach the underground water table, and where bush densities are decreased, water tables start to rise again. Considering the fact that Namibia is essentially a country where about 55% of the land receives less than 300 mm of rain per year (classified as arid), and some 40% receives between 300 and 500 mm per year (classified as semi-arid), and the fact that bush encroachment is responsible for a tremendous decrease in carrying capacity, it is essential that this problem be addressed by all parties concerned as soon as possible. Various control measures and guidelines exist to address the problem.
1.6.1 Chemical control
A lot of work has been done on the chemical control of bush in Namibia, and a substantial amount of data is available on the effectiveness of the method, arboricides and cost aspects involved. The costs of this are well documented. The success over the long term is variable depending on follow up management. The implications over the long term of using chemicals on the environment and on the international beef markets are unknown, and must be investigated as soon as possible.

1.6.2 Mechanical control
Mechanical control involves the use bulldozers, axes, chainsaws and so forth. Bulldozing leads to severe soil surface disturbance, and often leads to an even denser woody component than before. It is for this reason that it is not recommended as a method to deal with bush encroachment. Using axes, chainsaws and other such tools is only recommended if bush is removed in such a way that the coppicing buds are destroyed, or, where coppicing do occur, the stumps are treated with an appropriate arboricide (de Klerk, 2004).

1.6.3 The use of fire
Veld burning has for long been a controversial aspect of range management, and remains so. Fire like animals has evolved with savannas. Fire does remove an accumulation of biomass, brings browse to available levels and it stimulates out of season growth. The effectiveness of fire in destroying parasites, to control the encroachment of undesirable plants in the veld and to alter vegetation composition is less conclusive. Injudicious burning can result in a degradation of the environment (deterioration of the botanical composition, reduction in plant biomass, reduction in crown and basal cover, higher run-off, destruction of grass seeds and erosion to name a few). The timing, frequency, plant physiological conditions, environmental conditions, fuel load and other factors will influence the effect the fire will have. It is however clear that fire reduces above ground biomass, reduces soil litter, destroys microbes in the top soil and negatively impacts the water cycle. Fire intensity can be controlled by early burning and it can also be enhanced by allowing fuel loads to accumulate and then burning during the growing season to kill shrubs in their growth stages.

1.6 Drought Planning
Droughts are not a result of poor range – and animal management. Droughts are extended periods of below average rainfall. In Namibia it is not a question of if drought will occur, but when it will occur. Planning for drought is therefore crucial.

Careful planning of a drought strategy is required: Key aspects of this need to be:

- The promotion of good market prices and a supportive marketing environment in May when it is clear whether animal numbers will exceed fodder availability and by how much (severity index). Farmers not adjusting their numbers early and selling late should not enjoy these incentives.

- Making provision for a “spare camp” or key resource area is another strategy that can be followed. As a guideline it is suggested that at least 10 % of the total surface area of the farm or grazing area should be set aside each year on a rotational basis to accumulate standing hay and so make provision for drought. This of course increases fire danger and therefore provision should be made in terms of fire breaks as well as keeping fire fighting equipment in good order.

- Those areas receiving more than 500 mm/year can possibly plant pastures and/or drought resistant fodder crops. Planted pastures can either be grazed or the practice of zero grazing can be applied, which entails the process of haymaking.

- Making hay from natural grass lands, as well as grass material growing in the road reserve, are also possibilities to build up a fodder bank.
During drought it is recommended that:

- redundant and unnecessary animals be marketed as quickly as possible
- Graze those areas in which the quality of the rangeland decreases the quickest, first.
- Energy supplementation receives the same attention as protein supplementation for livestock.

### 1.7 Monitoring of the resource base

#### 1.7.1 Records of veld:
This includes records of the veld condition. This enables the user to detect early changes in a number of important range condition over time, for example: changes in soil cover, soil organic matter on and in the soil, perennial grasses, changes in botanical composition, changes in the density of the plant population, vigour of the grazing plants, the occurrence of seedlings of both desirable and undesirable plants. The productivity of the land unit in kg/ha and N$/ha needs to be monitored.

#### 1.7.2 Records of veld management
Information that needs to be recorded here includes the numbers and type of animal in a camp, as well as the date in-date out (documenting the grazing plan applied). From this one can gain important information on data such as stocking rate, stocking density, stocking intensity and season of grazing.

#### 1.7.3 Records of water
Of primary importance here is the monitoring of water levels in boreholes (depth from surface at which water is found).

### 1.8 Planning land use infrastructure

It is vital that the user/manager plans the infrastructure developments on the farm in such a way as to be able to apply the rangeland principles outlined above. The most important of these is the provision of waters at strategic places. The decision to put in more camps is an expensive one and may not be required if herding in existing camps is utilized. This is important for both communal areas where fencing is illegal as well as parks and game farms where fencing is undesirable.

### 2 Putting the Principles Together

The principles listed above show that the user/farmer has a number of options available to improve management, including: rest, grazing interval, utilization, animals, fire and dealing with bush encroachment. The overarching principle is knowing the area you are managing, understanding the potential impacts your management may have and monitoring whether your management is producing less bare ground, more perennial grass plants and more kg per ha of meat at a lower cost ie are you making a profit. If the answer to any of these is no – your management is probably not sustainable.

Bringing all this together for a farmer is not an easy task, but we can summarize what the farmer should be doing:

- Timely adjustment of animal numbers to available grazing at the end and beginning of the growing season. Assessing at the end of the growing season enables the farmer to ensure fodder lasts until the rains come. The assessment at the start of the growing season allows the farmer to ensure that enough time for perennial grass plants to recover is planned to avoid overgrazing during the growing season. Both require monitoring throughout the season to assess how good your initial assessments were and whether corrective action is required. A well thought through
“grazing management plan” is required. This is flexible and adaptive to accommodate those seasons’ conditions.

- Make provision for drought. Considering our varying climate users/managers need to ensure that sufficient provision for drought is planned for in the grazing plan.
- Improving the soil surface. This occurs through managing perennial grasses for what they need and loosening the soil and improving soil cover. This can be done through mechanical means but the most cost effective is through the careful use of animals in herds and herding within camps or in open veld.
- Addressing bush encroachment. All the rangeland management principles outlined above are restorative and the user/rangeland needs to be applying all the principles to improve the vigour of the perennial grass sward. Mechanical methods of clearing as well as the use of arboricides can speed up the restorative process. Both require follow up with sound grazing management principles to ensure that encroachment is not encouraged once more.
- In order to assess the user/manager’s progress, simple monitoring processes are needed that can monitor changes as a result of the management applied.

Effective utilization can be achieved when:

- The farm or grazing area infrastructure is properly planned –mainly through the strategic supply of water which leads to a more efficient utilization of the rangeland. Water extraction should be adjusted to the reaction of ground water levels so as to relieve unnecessary stress on very vulnerable water resources.
- The correct grazing capacity is applied (kg animal biomass/ha) in relation to the amount of fodder available.
- The animal numbers are adjusted regularly to ensure that animals have sufficient fodder available for optimal production.
- Ensure that animals are at the right place at the right time for the right reason.
- Management must ensure that perennial grass plants must not be regrazed before they have recovered from the previous grazing event.
- Adapted animals assist in achieving this are used (which will ensure effective conversion of fodder to end product, be it meat, pelt etc)

The policy and implementation environment allows users/managers as individuals or groups to apply sound grazing management techniques.
Implementation Tool 2

Social-Environmental Assessment Tool: Public Participation
Public Participation to Minimize Conflict when Investigating the Opening Up of de facto Illegally Fenced Land Holdings:

Public participation/stakeholder engagement has been identified as a key step in achieving the success of many of Livestock Theme activities. Below are considered best practice guidelines in public participation. The Calabash Program, a leading player in environmental impact assessment (EIA) and public participation processes, has tested various public participation models. Information on the Calabash Program and detailed recommendations for public participation can be found at http://www.saiea.com.

Best Practice in Public Participation (Calabash Program):

- Early engagement of stakeholders
- Inclusivity
- Transparency and honesty
- Independent facilitation
- Special efforts for marginalized communities
- Accessibility
  - Information
  - Venues
  - People
  - Ample opportunity for involvement, comment and to exchange views
- Ongoing feedback and acknowledgement
- Respect and fairness
- Efficiency of process

The Public Participation Strategy being developed as part of the SEA, will elaborate on the process to be used for effective engagement of stakeholders.

Screening document as required by the EMA (2007) to be used to determine impacts of boreholes and new quarantine facilities (see Livestock Implementation Tool 5).
Implementation Tool 3

Description of the Event Book Monitoring System for Natural Resource Monitoring
ABSTRACT

Namibia’s CBNRM (Community Based Natural Resource Management) program is a joint venture between government, NGO’s and rural communities. The partnership aims to improve management and sustainable-use of natural resources in communal lands, whilst providing incentives for private sector investment (e.g., tourism) that will enhance livelihoods. Recent Namibian legislation provides for the establishment of Conservancies. Whilst the legislation provides rights over wildlife, it also requires that communities become active in resource management.

Adaptive management is used in Conservancies and an integral part of this is a comprehensive natural resource monitoring system. The monitoring systems that were started were conventional in that data sheets were handed in and subjected to expert analysis. Many communities never received feedback due to the experts moving on, data being lost, computer problems, etc. In cases where the experts did return results, there were often lengthy delays and community members did not intuitively understand the resulting graphs, tables and maps. The consequence was no ownership of the monitoring process or results and conservancies struggled to maintain these systems.

Over the past two and half years, a simpler yet more effective monitoring system has been developed. This system, known locally as the "Event Book System", is designed around meeting the information needs of the local community. It gets its name from the challenge of monitoring events that occur stochastically e.g. fire, poaching, problem animal incident, mortalities, etc.

The operational principles are that: (i) the community decides on what they want to monitor, (ii) the technicians only provide support upon request from the conservancy; and (iii) all data collection and analysis is undertaken locally.

To facilitate local customization, yet provide standardized and rigorous methodology the monitoring system has been modularized by topic or theme. Topics/themes could for example be: problem animals, poaching, vegetation, predators, fish, etc. The conservancy essentially selects what topics they want to monitor and the technical support team then provides a complete kit for each monitoring topic. Each kit contains 'tools' for: (i) data collection, (ii) monthly/quarterly reporting and (iii) reporting and analyzing long-term trends. Whilst the entire system is appropriately paper based (for remote area dwellers), it is nevertheless possible to analyze the data using digital technology thereby allowing for more sophisticated analysis.

The system has gained wide acceptance and is now functioning in 15 communal conservancies in Namibia. Whilst primarily designed and managed to meet local information needs, the system has already provided information that has been used by national and on one-occasion international (e.g. CITIES) decision makers.
The success of the system in communal conservancies has now stimulated the development of similar systems in adjacent national parks and in a private game reserve in Namibia. It is also being translated and adapted for protected areas of Mozambique, which include the management of marine reserves.

IMPLEMENTATION of the
'EVENT-BOOK' MONITORING SYSTEM

(Implementation Manual – WWF – Life Programme, working document)

Full implementation of the Event-book system takes a number of years. This is because it need to be implemented incrementally building on small successes and importantly, the conservancy needs to go through at least two years of reporting cycles in order to experience all aspects of the system. This presupposes that the participants have basic skills in map reading, filling in data forms and in general knowledge regarding the natural resources being monitored. An absolutely essential principle for implementation is that there needs to be a commitment to follow-up on a fairly regular basis over the first two years. Depending on the level of skills at a given conservancy, the average follow-up interventions are every quarter during the first 12 months and every six months thereafter. Each intervention is kept short (max one day) so as to maintain interest.

There are a number of phases of implementation as follows:

Pre-event book phase – identification of persons who will be responsible for the system (institutional arrangements), basic skill training in resource management, map reading and data collection.
Identification of key resources to monitor ('job description' phase)
Event Book training
Monthly reporting training
Annual Audit
Institutionalisation of the system
Interpretation and use of the information

These phases do not need to run sequentially - i.e. more than one phase can be running at the same time as will be evident in the example time line below.

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Key Milestones
Field workers in appointed
Basic maps produced

The timeline shows the phases of implementation for each year, with key milestones indicated for completion.
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<td>Field workers have basic skills</td>
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<td>Event book practice begins</td>
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<td>Job description poster delivered</td>
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<td>Event book cards refreshed</td>
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<td>Proper data collection begins</td>
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<td>Monthly reporting begins</td>
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<td>Mid year audit (year 1)</td>
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<tr>
<td>Committee training for the system</td>
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<td>First annual audit completed</td>
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<td>First years data cards archived</td>
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<td>Filing box implemented</td>
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<td>Mid year audit (year 2)</td>
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<td>Second annual audit completed</td>
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**The Event Book Training Modules**

**Workshop to identify key resources that need to be monitored**

Who: Committee, Community Rangers and Supervisor  
OBJECTIVES:  
Identify key natural resources that the committee requires information on (i.e. that should be monitored)  
Construct a draft 'job description' poster for the community rangers.

**Basic Event Book training**

Who: Community Rangers and Supervisor  
OBJECTIVES:  
To systematically introduce a number of event book cards  
To train rangers to fill in these cards  
To thoroughly explain the rules of the system  
To launch the practice period  
To demonstrate the reporting charts to the participants so that they know how the data will be used

**Basic Reporting Training**

Who: Community Rangers and Supervisor  
OBJECTIVES:  
To implement the monthly (blue book level) reporting charts  
To provide community rangers with an insight as to how their data will be used  
To motivate the community rangers  
To expose the value of the community rangers to the committee

**Follow-up Event-Book and Reporting Training**

Who: Community Rangers and Supervisor
OBJECTIVE: To follow up on basic event book and reporting training and ensure that the systems are being correctly applied.

**Institutionalization Training**

Who: Committee and Supervisor (Community Rangers can also attend)
OBJECTIVES:
To ensure that the committee knows what their rangers are doing
To introduce them to data flows that lead to decision making
To stimulate an information demand that will ensure that the rangers continue to perform their duties - this is essential for ensuring sustainability of the event book system.
To provide the committee (chairman) with the tools (red file & checklist) to control and manage the rangers

**Mid-Year Audit**

Who: Community Rangers and Supervisor
OBJECTIVES:
To provide impetus to the system during the initial phases whilst it is not fully institutionalized
To ensure that the data is being collected properly
To ensure that the reporting charts are being filled in monthly and correctly.

**Annual Archiving**

Who: Community Rangers, Supervisor, Conservancy manager & Chairman
OBJECTIVES:
To archive the last years data cards
To put in new data cards and reporting charts into the system for the new year
To implement any new improvements
To complete the long term tend charts – in the red book

**Annual Audit**

Who: Community Rangers, Supervisor and Key Committee Members
OBJECTIVES:
To review performance of the event book and plan improvements and stop-gap training
To review the monthly charts and reporting maps and discuss management implications
To compile and annual report and feed this into the M& E system
To provide training in interpreting and using the long term trend results

**Follow up Institutionalization training**

Who: Committee and Supervisor (Community Rangers can also attend)
OBJECTIVES:
To refresh the committee on the event book system
To deploy the conservancy filing box
To review the long term tend charts – in the red book
To review the annual report and discuss implications and necessary follow-up actions
To provide training in interpreting and using the long term trend results
To evaluate the performance of the system and review the natural resources that are being and not being monitored
Data Cards Available from WWF-Life used in the Event Book System are:

Yellow level:
- Rare and endangered species
- Rainfall
- Meetings
- Poaching
- Mortalities
- Problem animals
- Predators

Blue level:
- Mortalities
- All problem animals
- Problem animal species
- Problem animal damage
- Poaching
- Rainfall
- Predators
- Tourist sightings
- Rare and endangered species
- Game numbers
- Game introductions
- Game capture
- Trophy hunters

The abovementioned data cards can be modified to include Rangeland Monitoring Modules.

Also available are:

- Posters illustrating the Event Book data flow system
- List of equipment needed for implementation of the Event Book System
- Monitoring system “mind maps” for conservancies, describing monitoring modules, their frequency of monitoring, and responsible monitors.
Implementation Tool 4
Social and Environmental Criteria for CBRLM Pilot Site Selection
Approximately 50 sites will be selected to pilot CBRLM. CBRLM sites should be piloted in all regions of the NCAs. These sites should be carefully chosen, using the following environmental, social, and institutional criteria.

Since social and institutional factors are the main drivers of rangeland condition, pilot sites should be chosen to encompass as many rangeland utilization methods/grazing management strategies as possible. Environmental factors must also be considered so that the principles of sound rangeland management can be applied under various environmental conditions.

**Social-Institutional Criteria**

Choose sites that:

1) Are conducive for regular collaboration between Livestock TAs and livestock owners
   a) Complexity of obtaining and maintaining this collaboration increases with the number of livestock owners using a given area
   b) Accessibility should be relatively simple (roads, communication, etc.)
2) Have a majority of livestock farmers that are or are willing to be commercially oriented.
3) Have a well-organized structure with which to work (a community, conservancy, CBO).
   a) Test CBRLM in sites that offer a variety of decision making bodies and techniques (one water point/one main decision maker; several separate livestock owners at a settlement; multiple water points/multiple decision makers; open access to water)
   b) Political differences and other social factors that may adversely affect cooperative management should be minimal.
4) Have strong support from the Regional Councillor and Traditional Authorities
5) Have strong support from the local Agricultural Extension Technician/Officer, who has technical, management, and logistic capacity to assist CBRLM efforts.
6) Livestock support services, including technical support and business development services available (i.e., Mile 46 Livestock Development Centre).
7) Have varying livestock management systems (so that implementation under varying circumstances can be tested)

**Environmental Criteria**

Select pilot sites based on:

1) The possibilities of synergies between livestock production, conservancies, forestry and wildlife (e.g. The King Nehale Conservation Area, Oshikoto region).
2) State of degradation of the rangeland: Areas with high soil loss, poor soil cover, annual grasses dominant, mature capping and high bush densities will take longer to show successes.
3) Current stocking rate: avoid sites with very low livestock numbers/highly understocked; don’t avoid areas with high stocking rates.
4) Adequate water quality and distribution: There must be alternative water supply available so livestock movements can be well managed

**General Criteria**

1) Sites should be variety of distances from the Angolan border.
2) Livestock farmers at chosen sites should already have an understanding of the benefits of improved rangeland management. Previous SARDEP/other project sites would have an advantage.
Implementation Tool 5
Environmental Screening Questionnaire for Projects
SCREENING QUESTIONNAIRE FOR PROJECTS

By

MINISTRY OF ENVIRONMENT & TOURISM
DIRECTORATE OF ENVIRONMENTAL AFFAIRS

The completion of this questionnaire is a requirement under section 20 (1) of the Environmental Management Act.
PURPOSE OF THE QUESTIONNAIRE

The information you provide in this questionnaire will provide the Government to gain a clear understanding of your proposed project.

Projects that are likely to have a significant impact on the environment may not go ahead unless an Environmental Assessment (EA) has been done first, and only if EA can demonstrate that it is possible and feasible to keep impacts to acceptable levels.

Nearly all projects have some impact, but some projects are too small and impacts so low, that it may not be necessary to do a full EA. On the other hand, some projects could have serious environmental impacts, and it is essential that we identify these before the projects are implemented. If an EA is not done, we may only discover the impacts after the project implementation. By then, it is usually too late to avoid the impacts. If this happens the developer might have to spend a lot of money fixing the problem or even abandon the project altogether.

The information you provide in this questionnaire can help us to make the right decision of whether an EA should be done or not, the level of detail of the EA, the main issues which should be investigated, and so on. This guides all of us in our future planning and could save money and time in the long run.

The developer must complete this questionnaire accurately, honestly and comprehensively. The Environmental Commissioner and relevant ministry will jointly decide on whether the EA is necessary or not. Their decisions based on whether the project is likely to have significant effect on the environment by virtue of its nature, size or location.

Your co-operation is essential.
**GENERAL INFORMATION**

Name of proposed project:  

Location of proposed project:  

Name of Proponent / Developer:  

Contact Person:  

Address of Proponent / Developer:  

Tel:  

Fax:  

**NB**: As stated on page 2, the information to be provided in this questionnaire will assist the Ministry to determine whether an EA is required or not. Therefore such information must be as truthful and reliable as possible. It must be noted here that the proponent is accountable for any wrong and misleading information that may be provided in this questionnaire. From this perspective, any person who completes this questionnaire *must read and sign the declaratory statement provided on page 14 of this questionnaire.*
PROJECT SUMMARY

Briefly describe the nature and purpose of the project. Provide key information on the project main activities, industrial processes, raw materials, infrastructure, lifespan and closure. If available, attach a map, ground plan and a copy of pre-feasibility or feasibility reports.
### Project information

#### General

- Is a license/permit required for the activity?

- Is the project an extension of an existing activity?

- Will the project involve land disturbance, site clearance, earthmoving, or underground workings?

- Will the project involve re-zoning?

- Will the project involve the transport, storage, handling, production or use of toxic or hazardous substances?

- Will the project require the construction of facilities to bring power or water to the project?

- Will new roads be constructed?

- Will construction or operation of the project generate large volumes of traffic?

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### General Continued

- **Will explosives be used?**

- **Will the project have large water requirements? If yes, where will water be obtained?**

- **Will the project have significant energy requirements?**

### Atmospheric Environment

- **Will the project generate emissions to the air from fuel combustion, production processes or other sources?**

- **Will the project involve disposal of waste through burning in the open air (e.g. slash material and construction debris)?**

- **Will the project give smell/odour emission?**

### Aquatic & Marine Environment

- **Will the project require disposal of large volumes of sewage or industrial effluent?**

### Details / Comments

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<td>Will the project require channel dredging, straightening or crossing of streams?</td>
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<td>Will the project require the construction of piers or seawalls?</td>
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<td>Will the project require the construction of offshore structures?</td>
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<td>Waste Generation</td>
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<td>Will the project generate overburden or mine process wastes?</td>
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<td>Will the project generate domestic or industrial wastes?</td>
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<td>Could the project contaminate soil or groundwater?</td>
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<td>Noise</td>
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<td>Will the project cause noise, vibration, light, heat or other radiation into the environment?</td>
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☐ Yes  ☐ No  ☐ ?

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<td>Will the project involve regular use of substances for pest or weed</td>
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<td>control?</td>
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<td>Social</td>
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<td>Will project involve employment of large numbers of workers?</td>
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<td>Will the project provide housing and other facilities for the</td>
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<td>workforce?</td>
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<td>Any other project information</td>
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<td>Is the project located in or near a game reserve?</td>
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<td>Is the project located in an area with unique landscape or scenery?</td>
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<td>Is the project located in an area with unique wildlife?</td>
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<td>Is the project located in an area with unique plant life?</td>
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<td>Are there any archaeological features nearby?</td>
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<td>Are there any national monuments nearby?</td>
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<td>Is the area already experiencing pollution or other environmental damage?</td>
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<td>Will the project be located in or close to wetlands, rivers or any other waterbody (including groundwater)?</td>
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</table>
### Aquatic Features
Will the project adversely affect the quality, flow or volume or surface or groundwater?

### Visual Characteristics
Will the project be visible to the public?

### Erosion
Is the project likely to cause soil erosion?

### Ecology
Will the project result in loss or disturbance of valuable habitats or ecosystems?

Will the project disturb wildlife migration, feeding or breeding?

Will the project cause the introduction of alien (exotic) plants or animals (excluding livestock)?

Will the project significantly increase the risk of veldfires?

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<td>Land Use</td>
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<td>Will the project be located in a densely populated area or in the</td>
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<td>vicinity of residential property or other sensitive land uses (e.g.</td>
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<td>schools, hospitals, community facilities)?</td>
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<td>Will the project be located on land of high agricultural value?</td>
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<td>Will the project be located in an area of recreational/tourist</td>
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<td>Land &amp; Property</td>
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<td>Will the project require any people to be moved or resettled?</td>
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<td>Will the project attract a large number of people into the area?</td>
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<td>Will the project result in demolition of structures or occupation of</td>
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<td>homes, gardens, businesses?</td>
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<td>Will the existing population be physically divided as a result of the</td>
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### Wider Consultation

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<td>Has there been public concern about the project?</td>
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<td>Will the project have an impact on the neighbouring country?</td>
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<td>Has the public been consulted yet about the project?</td>
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### Other environmental information

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Declaration

I…………………………………………. (name in full) understand the information that I have provided in this questionnaire will be used by the Ministry of Environment and Tourism to decide whether my project requires an EA or not. I also understand that any wrong information provided in this questionnaire will mislead the decision of the Ministry on my project. Should this be the case, I am well aware that the Ministry will hold me accountable for my wrong and misleading information. Therefore, I honestly declare that the information that I have provided in this questionnaire is to the best of my ability true and reliable.

Signature:…………………………… Date:……………………………………….
Implementation Tool 6
Generic EMP for Building Design, Construction, and Operation on Non-Sensitive Sites
A INSTRUCTIONS FOR EMP COMPLETION

B PRELIMINARIES

Aims and scope of the EMP
Structure of the EMP
Applicable legislation
Project background description
Public participation
Organisational structure and responsibilities for EMP implementation
Monitoring and evaluation
Useful contacts
Glossary
Acronyms

C EMP FOR BUILDING PLANNING AND DESIGN
Objectives
Environmental Key Performance Indicators
Responsibilities
Management objectives

D EMP FOR BUILDING CONSTRUCTION
Objectives
Environmental Key Performance Indicators
Responsibilities
Management objectives

E EMP FOR BUILDING OPERATIONS
Objectives
Environmental Key Performance Indicators
Responsibilities
Management objectives
Part A. Instructions for EMP Completion

This Generic Environmental Management Plan (EMP) for Building Design, Construction, and Operation on Non-Sensitive Sites creates a framework for the implementing agent of the project. This is not a finalized EMP! The Project Manager or his/her environmental manager, needs to complete this EMP with specific management plans for the individual building or facility.

Part B of this document sets out the preliminaries of the EMP. Some aspects have been completed, e.g., the section on legal requirements, but other sections will require input as shown.

Parts C, D, and E contain the environmental management objectives for building design, construction, and operation, respectively. These are merely management objectives and therefore they need to be expanded into a site-specific management plan, where relevant.

The management plan should be arranged in a table format with headings as shown in the example below.

<table>
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<th>Management objective</th>
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It is very important that the management actions must be:

- Practical
- Measurable
- Auditable

The implementation of EMPs will be monitored and evaluated by MCA and therefore it is essential that the specified management actions are realistic and do-able, otherwise the contractor will be given a non-compliant audit. For example, rather than stating that “there will be no erosion from the site,” which is unrealistic and difficult to measure, rather state that “all storm water will be routed to a catchment dam via earth diversion berms prior to discharge from the site.” The indicator in this case will be that the suspended sediment levels in the receiving water course do not exceed legislated limits—an objective and measurable indicator.

The actions and/or targets must also be auditable. For example, rather than stating that “disturbance will be kept to a minimum,” say “there will be no disturbance outside the demarcated areas.” This is a more objective measure that can be readily monitored and audited.
Part B. Preliminaries

Aims and Scope of the EMP

This EMP contains the practical measures that must be taken to ensure that potentially negative impacts on the environment (ecological and social) are minimized or completely avoided and that there is compliance with legal standards of project targets.

The EMP covers all aspects of the project life cycle, including: planning and design (where many negative impacts can be screened out); construction activities relating to all aspects of the project (whether erecting a building or constructing access roads, drilling of boreholes, etc.); and (where relevant) operational aspects of the building.

This EMP for the design, construction, and operation of buildings in non-sensitive environments should be used for the following MCA project activities:

- Construction of veterinary service centers;
- Construction or renovation of school buildings;
- Construction of teacher houses;
- Construction of offices in Etosha National Park
- Construction and operation of Community Skills Development Centres;
- Construction and operation of Regional Study and Resource Centres.

Structure of the EMP

This EMP is structured as follows:

- Background information, roles and responsibilities, legal requirements, and other administrative requirements are contained below in Part B: Preliminaries.
- For management objectives for design and planning, see Part C.
- For management objectives for construction, see Part D.
- For management objectives for operational aspects of the building, see Part E.

Applicable Legislation

In Namibia, Environmental Impact Assessments (EIAs) are guided, reviewed, and administered by the Environmental Commissioner (EC) located in the Directorate of Environmental Affairs (DEA) in the Ministry of Environment and Tourism (MET). The MET is to be assisted by a Sustainable Development Advisory Council (SDAC) that will inter alia promote cooperation between government and other stakeholders on environmental issues relating to sustainable development.

Before a developer can commence with an activity listed in Part VII of the Environmental Management Act (EMA) of 2007, s/he must obtain an Environmental Clearance Certificate from MET. Usually, authorization is only granted after an EIA has been completed and the EC is satisfied that the activity is environmentally acceptable (negative impacts can be avoided or mitigated satisfactorily). In many cases, the activity is benign and may not require a full EIA, but in others, an EIA is required. The list of

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activities requiring an EIA in Part VII of the EMA is merely a guide as the Minister may amend this list and the EC may in any case decide that an activity requires an EIA based on the expected environmental impacts even if the activity is not listed (Part VIII section 32 (1) (b)). The EC will require the proponent to complete a Screening Checklist (Livestock Implementation Tool 5), which s/he will use to help determine whether an EIA is required or not.

However, the Environmental Clearance Certificate issued after completion of an approved EIA is not blanket permission to implement the project. The proponent may still be required to obtain a sectoral licence/permit, depending on the nature of the envisaged project. For example, in the context of MCA activities, the following may be relevant:

- Water abstraction permit and a water discharge permit from the Department of Water Affairs (the latter for releasing wastewater into any aspect of the environment).
- Quarrying permit for sand and stone extraction (Ministry of Mines and Energy)
- Building permission from local authorities
- Livestock transportation
- Lease (if buildings are to be erected on unproclaimed state land)
- Import permit (e.g., if game or livestock are to be imported)

In most cases, sector ministries first consult the EIA report before considering the proponent’s applications for permits.

EIA reports are officially reviewed by the EC before an Environmental Clearance Certificate is issued. Usually, the EC will confer with the line ministry under whose jurisdiction the project is proposed (e.g., the Ministry of Agriculture, Water and Forestry). In some cases, the EIA report is subject to a public hearing and it may also be sent to an independent expert or panel for an external review, especially if the project is controversial or if the EIA is very technical. Article 45 of the Act entitles the EC to recover the costs of external review from the proponent. After reviewing the EIA report, the EC may:

- Grant the application and, on payment of the prescribed fee, issue an environmental clearance certificate to the proponent; or
- Refuse the application and provide the proponent with reasons for the refusal.

The EMA does not explicitly require the proponent to develop an EMP, but it is assumed that this is implied by the fact that the EC can prescribe conditions as part of the Environmental Clearance Certificate. Given that the certificate is valid for a maximum of three years, it stands that an EMP would need to be revised at least every three years. It is the norm in Namibia for EIAs to lead to the development of an outcomes-based EMP, which becomes the “implementation manual” for projects.

Project Background Description

To be completed. Include at the very least the following information:

- Title of project
- Names of the proponent, architect, contractor(s), quantity surveyor, design engineer, building manager
- Project location (including a map)
- Brief motivation and description of the project
Public Participation

The relevant, affected stakeholders in the towns and villages where the planned MCA construction projects will take place must be identified so that they can contribute to the details of the EMP. Communications must be maintained with these stakeholders particularly during project planning and construction.

Organizational Structure and Responsibilities for EMP Implementation

The life cycle of a project involves a number of key players who are responsible for environmental management at different stages of project development. The aims and objectives of each of these people will be very different, as will their approach to environmental management. The overall Project Manager must ensure that the environmental management objectives of each stage of the project life cycle are adhered to by each person responsible for that phase of development.

The EMP is thus a set of rules to which each and every person involved in the building/facility must adhere. These rules should be attached to the contract for the architect, builder, road contractor, building operator, etc. so that they each do their job without causing unnecessary harm to the environment.

To enable this, the rules for each responsible person have been written under separate headings, so that they can be pulled out of this document and attached to the respective contracts as an appendix.

Like all rules and contracts, the EMP must be implemented and compliance enforced in order for it to be effective.

Implementation is the responsibility of the person in charge of each of the following phases:

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Project sub-phase</th>
<th>Responsible person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Project Management</td>
<td>Environmental control</td>
<td>Project Manager/QS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MCA Environmental Manager</td>
</tr>
<tr>
<td>Planning and Design</td>
<td>Building design</td>
<td>Architect</td>
</tr>
<tr>
<td></td>
<td>Engineering and service provision</td>
<td>Geotechnical Engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Civil Engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structural Engineer</td>
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<tr>
<td></td>
<td></td>
<td>Wet Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electrical Engineer</td>
</tr>
<tr>
<td>Construction</td>
<td>Building construction</td>
<td>Main building contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Architect</td>
</tr>
<tr>
<td></td>
<td>Road construction</td>
<td>As above or road contractor</td>
</tr>
<tr>
<td></td>
<td>Borehole drilling</td>
<td>Driller</td>
</tr>
<tr>
<td></td>
<td>Environmental management</td>
<td>Environmental Control Officer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MCA audit team</td>
</tr>
<tr>
<td>Operation</td>
<td>—</td>
<td>Building Manager</td>
</tr>
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</table>

The contractors might have subcontractors who help them with their work. In this case, the main contractor must make sure that subcontractors abide by the rules and requirements of the EMP. A system of incentives and penalties needs to be in place to ensure compliance.
Monitoring and Evaluation

As noted in the Strategic Environmental Management Plan (see Section 7 of the SEA Phase II Report), MCA Namibia is responsible for implementing the Compact’s monitoring and evaluation (M&E) plan. Actual monitoring will involve a variety of governmental, nongovernmental, and private sector institutions. This SEA recommends that the comprehensive M&E plan (which includes social and environmental monitoring) should be administered by an external entity. An external contract(s) for this work has the advantage of providing independent oversight and adding a measure of quality control and objective, third-party oversight both to spending and to implementation. Implementation of the M&E plan will require that the M&E team is adequately staffed, and that baseline data and information are collected that are adequate for future tracking and comparison. Indicators of success in this regard include a high rate of compliance with each EMP, application of appropriate social and environmental safeguards at every project site, and a high frequency of documented visits to the project sites.

Useful Contacts

To be completed. Provide contact details for the following persons:

- MCA Project Manager
- MCA Environmental manager
- Architect
- Quantity surveyor
- Main building contractor
- Site manager or foreman
- Civil engineer
- Electrical engineer
- Structural engineer
- Regional or municipal council: names of those responsible for building approvals, planning, sewerage, roads and stormwater, electricity, waste management etc.
- MCA M&E team
- Local emergency services (fire, ambulance, police)

Glossary

To be completed. Provide a glossary of terms used in the EMP so that all levels of contractors can understand what is required.

Acronyms

To be completed.
Part C. EMP for Building Planning and Design

INSTRUCTIONS FOR THE ARCHITECT AND DESIGN ENGINEERS

Location and Design

Objective: The building must fit into the natural environment, making full use of the advantages of the site and adding to the “sense of place.”

Environmental performance indicator: The buildings all conform to the principles of green building design to optimize energy, water use, and recycling.

Who is responsible?

✓ As a first step, the responsible ministry must include these “style” and “taste” issues into the brief for the architect, and ensure that the design and specifications are evaluated against these aesthetic and design values;
✓ The architect must appreciate the need for sensitivity with regards to sense of place, and s/he must design accordingly; and
✓ The plans must be approved (in writing) by the Project Manager and the responsible ministry before the building may be built.

Environmental management principles to be applied during planning and design

Planning principles
1. Locate new buildings in areas consistent with local zoning plans.
2. Locate new buildings away from flood plains and water courses.
3. Avoid the need for resettlement.
4. Acquire land on a willing buyer:willing seller basis.
5. Avoid areas currently used as public open space or for grazing or other communal activities.

Aesthetic issues
1. Buildings must be aesthetically pleasing.
2. Use colors that are sympathetic with the environment.
3. In cases where non-water flush toilets will be installed, use VIPs.

Water efficiency
4. Do not specify any lawns (they use too much water).
5. Landscape using indigenous plants, paving, and rock features.
6. Collect all rainwater from roofs in rainwater tanks and use in vegetable gardens.
7. Where flush toilets are to be installed, ensure that all toilets are of the dual flush type.
8. Where flush toilets are not connected to the municipal sewerage system, ensure that they drain into a properly designed, two-chamber septic tank that is located at least 20 metres from any building.
9. Gray water (from showers and basins) may drain into a soak away area, which could be developed as
Environmental management principles to be applied during planning and design

- a reed-bed or alternatively could be used to irrigate vegetable gardens.

10. Specify low-flow shower-heads for the showers, where applicable.

11. Provide only showers in houses, not baths.

12. Specify automatic turn-off taps in all public ablution facilities.

Energy efficiency

13. Design all buildings so that there is as much cross-ventilation as possible, making maximum use of cooling and breezes and ensure that west-facing windows are as small as possible and are in as much shade as possible (to minimize heat absorption in the afternoon).

14. Apply heat reflecting paint to all roofs.

15. Design a system where as much solar energy can be used as possible (e.g., water heating and lights), though it is accepted that gird power or a diesel generator will be necessary to power some of the equipment (e.g., refrigerators, computers, etc.). Ideally, grid electricity or the generator should be used as little as possible.

16. Liaise with the water driller to determine whether the borehole (if applicable) will require a diesel generator, or if a solar panel will be used.

Pest control

17. Specify fly-screens on openable windows, so that there is less need to use insect repellents.

18. Design scavenger-proof storage and disposable areas for food and waste.
Part D. EMP for Building Construction

INSTRUCTIONS FOR THE BUILDING CONTRACTOR

Objective: To construct the buildings and facilities with minimal disturbance to the surrounding natural environment.

Environmental performance indicator: The “environmental footprint” of the building or facility is limited to the construction site itself.

Who is responsible?

✓ The building contractor must be instructed in writing by the Project Manager to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.
✓ The Project Manager and the architect must inspect the site at least once per month to make sure that the measures are being implemented.
✓ The MCA M&E team will inspect the site at least every quarter to ensure that the EMP is being implemented.
✓ The Project Manager must do a final inspection once the lodge is built and issue the building contractor with a completion letter once s/he is satisfied that the job has been done in accordance with this EMP.
✓ The final payment (10%) will only be made after the completion letter has been issued.

<table>
<thead>
<tr>
<th>Environmental management objectives to be applied during construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site preparation</strong></td>
</tr>
<tr>
<td>1. The contractor must demarcate the construction area with metal droppers and hazard tape so that there is NO confusion about which areas may be disturbed by the development and which areas will be strictly off-limits.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sourcing of building materials</th>
</tr>
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<tbody>
<tr>
<td>1. All materials (e.g., bricks, sand, cement, poles, roofing, and thatch) must be brought into the site from outside.</td>
</tr>
<tr>
<td>2. In the case of items (e.g., poles) that are not bought from a registered shop, the contractor will ensure that the harvesting of these materials did not cause serious impacts at the place from which they came.</td>
</tr>
<tr>
<td>3. Building sand must be collected from an existing registered borrow pit if possible, or from an area that is approved for sand extraction.</td>
</tr>
<tr>
<td>4. Building stone must be obtained from an existing registered quarry or supplier.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Clearing of land</th>
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<tr>
<td>1. The only land that may be cleared is the access road, the area upon which buildings will be erected, parking bays, driveways, and pathways.</td>
</tr>
<tr>
<td>2. As much land clearing as possible (e.g., the removal of stones and rocks) will be done by hand.</td>
</tr>
<tr>
<td>3. Remove all woody vegetation and make provision for this to be used for firewood or other uses by...</td>
</tr>
</tbody>
</table>
### Environmental management objectives to be applied during construction

4. Demarcate trees which must not be damaged by construction activities.
5. Remove all topsoil and stockpile for future use in rehabilitation.
6. As far as possible, all “work areas,” such as the areas where bricks, sand, cement, poles, and stones are stockpiled, should be areas that will later be used for parking, building, or driveways. In other words, do not stockpile materials in the natural veldt. The same applies to the area where cement is mixed.

### Facilities for workers

1. All workers will be housed in on-site tents or caravans or in an area identified by the local authorities.
2. Wherever the workers are housed, they must be provided with water, proper toilets, and washing facilities.
3. Portable chemical toilets must be established on site.
4. Cooking must be done on gas or open fires. If open fires are used, these must be made in a designated spot so that there is no possibility for a veldt fire occurring.
5. No wood may be collected on site except that cleared during site clearance – additional firewood must be brought in from outside.

### Management of waste (and minimization of pollution)

1. For human waste, see above.
2. All combustible waste must be burned in a drum (e.g., empty cement bags), with the necessary care taken to avoid the possibility of starting a veldt fire.
3. All non-combustible waste must be removed from site at least once a week to a registered landfill.
4. Any waste that is stored temporarily at the site must be secured in refuse bags or sealable bins to avoid it being blown into the veldt.
5. Loose litter must be collected on a daily basis.
6. Measures must be taken to prevent waste attracting scavengers (e.g., jackals).
7. No paint, solvents, thinners, diesel, oil, or any other harmful substances may be poured onto the ground or into a water course. They must be collected in a container and removed from site for proper disposal.
8. Workers should be given regular talks on aspects such as waste management.
9. A system of incentives or penalties must be implemented to ensure compliance with all waste management requirements.

### Use of water during construction

1. Although water is needed for many aspects of construction, it must be used sparingly at all times.
2. All taps, pipes and tanks must be managed and maintained so that they do not leak.
3. Workers should be given regular talks on aspects such as water conservation and management.
4. A system of incentives or penalties must be implemented to ensure compliance with all water management requirements.
### Environmental management objectives to be applied during construction

#### Conservation requirements

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<td>1. No wild animals may be trapped or killed for any reason whatsoever.</td>
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<th>Transport and storage of fuel and other materials</th>
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<tr>
<td>o All vehicles that transport materials to and from the site must be roadworthy.</td>
</tr>
<tr>
<td>o Drivers that transport the above materials must have a valid drivers licence and must adhere to all traffic rules.</td>
</tr>
<tr>
<td>o Loads upon vehicles must be properly secured to completely avoid items falling off the vehicle at any time.</td>
</tr>
<tr>
<td>o All materials (e.g., cement, bricks, poles, stones, and pipes) must be stored at a central storage area on site so that the site is neat and orderly, and to avoid a situation where materials are lying about.</td>
</tr>
<tr>
<td>o All fuels, paints, solvents, and other chemicals must be stored in the legally-required manner, ensuring that they cannot react with each other or be spilt onto the ground.</td>
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<tbody>
<tr>
<td>1. If vehicles or other equipment are serviced or repaired on-site, any grease, oil, etc. must be collected in a container and removed for proper disposal (see waste management section for details).</td>
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<td>1. Only conduct construction work within normal working hours and not on weekends. Liaise closely with school principals to ensure that noisy work does not occur during sensitive times e.g., assemblies or exams.</td>
</tr>
<tr>
<td>2. Investigate the use of construction vehicles without reversing beepers, e.g., to minimize disturbance at schools. Rather, use flagmen and flashing lights in hazardous situations.</td>
</tr>
<tr>
<td>3. Conduct regular HIV/AIDS awareness and prevention training (as per MCA support program).</td>
</tr>
<tr>
<td>4. All workers are to use Personal Protective Equipment (PPE) at all times.</td>
</tr>
<tr>
<td>5. Adhere to speed limits on access roads at all times.</td>
</tr>
<tr>
<td>6. Maintain first aid kit at all construction sites, including snake bite anti-venom and bee sting antihistamines.</td>
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<th>Rehabilitation</th>
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<td>1. On completion of construction, all disturbed areas are to be cleaned of all building rubble, industrial waste, contaminated soil, etc. This waste is NOT to be buried but must be removed from site to a registered landfill.</td>
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<td>2. All compacted areas are to be ripped where revegetation is contemplated.</td>
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<td>3. All disturbed areas which are to be revegetated are to be contoured and covered with saved topsoil.</td>
</tr>
<tr>
<td>4. Plant only indigenous, water-wise plants and landscape with organic or rock “mulch.”</td>
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Implementation Tool 7

Generic EMP for Building Design, Construction, and Operation on Sensitive Sites
A INSTRUCTIONS FOR EMP COMPLETION

B PRELIMINARIES

- Aims and scope of the EMP
- Structure of the EMP
- Applicable legislation
- Project background description
- Public participation
- Organizational structure and responsibilities for EMP implementation
- Monitoring and evaluation
- Useful contacts
- Glossary
- Acronyms

C EMP FOR BUILDING PLANNING AND DESIGN

- Objectives
- Environmental Key Performance Indicators
- Responsibilities
- Management objectives

D EMP FOR BUILDING CONSTRUCTION

- Objectives
- Environmental Key Performance Indicators
- Responsibilities
- Management objectives

E EMP FOR LODGE OPERATIONS

- Objectives
- Environmental Key Performance Indicators
- Responsibilities
- Management objectives
**Part A. INSTRUCTIONS for EMP Completion**

This Generic Environmental Management Plan (EMP) for Building Design, Construction and Operation on Sensitive Sites creates a framework for the implementing agent of the project. This is not a finalized EMP! The Project Manager or his/her environmental manager needs to complete this EMP with specific management plans for the individual building or facility.

Part B of this document sets out the preliminaries of the EMP. Some aspects have been completed e.g., the section on legal requirements, but other sections will require input as shown.

Parts C, D, and E contain the environmental management objectives for building design, construction and operation respectively. It should be noted that these are merely management objectives and therefore they need to be expanded into a site-specific management plan, where relevant.

The management plan should be arranged in a table format with headings as shown in the example below.

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The implementation of these EMPs will be monitored and evaluated by MCA and therefore it is essential that the specified management actions are realistic and do-able, otherwise the contractor will be given a non-compliant audit. For example, rather than stating that “there will be no erosion from the site,” which is unrealistic and difficult to measure, state that “all storm water will be routed to a catchment dam via earth diversion berms prior to discharge from the site.” The indicator in this case will be that the suspended sediment levels in the receiving water course do not exceed legislated limits—an objective and measurable indicator.

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Aims and Scope of the EMP

This EMP contains the practical measures that must be taken to ensure that potentially negative impacts upon the environment (ecological and social) are minimized or completely avoided and that there is compliance with legal standards of project targets. It is likely that in the case of building in sensitive environments, an EIA will have been completed for the project prior to preparation of the EMP. The EIA will have identified the key issues to be addressed in the EMP and therefore this generic EMP serves as a guideline.

The EMP covers all aspects of the project life cycle, including: planning and design (where many negative impacts can be screened out); construction activities relating to all aspects of the project (whether erecting a building or constructing access roads, drilling of boreholes, etc.); and (where relevant) operational aspects of the building.

This EMP for the design, construction, and operation of buildings in sensitive environments should be used for the following MCA project activities:

- Construction and operation of 15 lodges in sensitive areas within conservancies; and
- Construction and operation of two new staff villages in Etosha National Park.

Structure of the EMP

This EMP is structured as follows:

- Background information, roles and responsibilities, legal requirements, and other administrative requirements are contained below in Part B: Preliminaries.
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- Grant the application and, on payment of the prescribed fee, issue an environmental clearance certificate to the proponent; or
- Refuse the application and provide the proponent with reasons for the refusal.

The EMA does not explicitly require the proponent to develop an EMP, but it is assumed that this is implied by the fact that the EC can prescribe conditions as part of the Environmental Clearance Certificate. Given that the certificate is valid for a maximum of three years, it stands that an EMP would need to be revised at least every three years. It is the norm in Namibia for EIAs to lead to the development of an outcomes-based EMP, which becomes the “implementation manual” for projects.

**Project Background Description**

To be completed. Include at the very least the following information:

- Title of project
- Names of the proponent, architect, quantity surveyor, design engineer, contractor(s), building manager
- Project location (including a map)
- Brief motivation and description of the project
- Description of the construction activities including camp location, workforce, labor hiring policies, input materials, waste and emissions (solid, gaseous and liquid, hazardous and non-hazardous)
Public Participation

A public participation program will have been conducted as part of the EIA for these construction projects in sensitive areas. Consultation should continue with the main affected stakeholders through the project implementation stages (planning, design, construction, and operation). This is to ensure that stakeholders have input to the details of the EMP and are kept aware of other aspects of the project.

Organizational Structure and Responsibilities for EMP Implementation

The life cycle of a project involves a number of key players who are responsible for environmental management at different stages of project development. The aims and objectives of each of these people will be very different, as will their approach to environmental management. The overall Project Manager must ensure that the environmental management objectives of each stage of the project life cycle are adhered to by each person responsible for that phase of development.

The EMP is thus a set of rules to which each and every person involved in the building/facility must adhere. These rules should be attached to the contract for the architect, builder, road contractor, building operator, etc. so that they each do their job without causing unnecessary harm to the environment.

To enable this, the rules for each responsible person have been written under separate headings, so that they can be pulled out of this document and attached to the respective contracts as an appendix.

Like all rules and contracts, the EMP must be implemented and compliance enforced in order for it to be effective.

Implementation is the responsibility of the person in charge of each of the following phases:

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Project sub-phase</th>
<th>Responsible person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Project Management</td>
<td>Environmental control</td>
<td>Project Manager/QS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MCA Environmental Manager</td>
</tr>
<tr>
<td>Planning and Design</td>
<td>Building design</td>
<td>Architect</td>
</tr>
<tr>
<td></td>
<td>Engineering and service provision</td>
<td>Geotechnical engineer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Civil Engineer</td>
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<tr>
<td></td>
<td></td>
<td>Structural Engineer</td>
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<td></td>
<td></td>
<td>Wet Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electrical Engineer</td>
</tr>
<tr>
<td>Construction</td>
<td>Building construction</td>
<td>Main building contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Architect</td>
</tr>
<tr>
<td></td>
<td>Road construction</td>
<td>As above or road contractor</td>
</tr>
<tr>
<td></td>
<td>Borehole drilling</td>
<td>Driller</td>
</tr>
<tr>
<td></td>
<td>Environmental management</td>
<td>Environmental Control Officer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MCA M&amp;E team</td>
</tr>
<tr>
<td>Operation</td>
<td>—</td>
<td>Building Manager</td>
</tr>
</tbody>
</table>

The contractors might have subcontractors who help them with their work. In this case, the main contractor must make sure that subcontractors abide by the rules and requirements of the EMP. A system of incentives and penalties needs to be in place to ensure compliance.
Monitoring and Evaluation

As noted in the Strategic Environmental Management Plan (see Section 7 of the SEA Phase II Report), MCA Namibia is responsible for implementing the Compact’s monitoring and evaluation (M&E) plan. Actual monitoring will involve a variety of governmental, nongovernmental, and private sector institutions. The SEA team recommends that the comprehensive M&E plan (which includes social and environmental monitoring) should be administered by an external entity. An external contract(s) for this work has the advantage of providing independent oversight and adding a measure of quality control and objective, third-party oversight both to spending and to implementation. Implementation of the M&E plan will require that the M&E team be adequately staffed, and that baseline data and information are collected that are adequate for future tracking and comparison. Indicators of success in this regard include a high rate of compliance with each EMP, application of appropriate social and environmental safeguards at every project site, and a high frequency of documented visits to the project sites.

Useful Contacts

*To be completed. Provide contact details for the following persons:*

- MCA Project manager
- MCA Environmental manager
- Architect
- Quantity surveyor
- Main building contractor
- Site manager or foreman
- Civil engineer
- Electrical engineer
- Structural engineer
- Regional or municipal council: names of those responsible for building approvals, planning, sewerage, roads and stormwater, electricity, waste management etc
- MCA M&E team
- Local emergency services (fire, ambulance, police)

Glossary

*To be completed. Provide a glossary of terms used in the EMP so that all levels of contractors can understand what is required.*

Acronyms

*To be completed.*
Part C. EMP for Building Planning and Design

INSTRUCTIONS FOR THE ARCHITECT AND DESIGN ENGINEERS

Objective: The building must fit into the natural environment, making full use of the advantages of the site and adding to the “sense of place.”

Environmental performance indicators:
- The buildings all conform to the principles of green building design to optimise energy, water use, and recycling.
- In the case of a lodge, guests visit the region repeatedly, and include the “attractiveness of the lodge/region” as one of their top 3 reasons for returning.

Who is responsible?
- As a first step, the responsible ministry must include these “style” and “taste” issues into the brief for the architect, and ensure that the design and specifications are evaluated against these aesthetic and design values.
- The architect must appreciate the need for sensitivity with regards to sense of place, and s/he must design accordingly.
- The plans must be approved (in writing) by the Project Manager and the responsible ministry before the building may be built.

Environmental management objectives for building planning and design in sensitive areas

Aesthetic issues
1. Lodges must be aesthetically pleasing, of a style that presents an “African” feel.
2. Use shapes that do not contrast too much with the surroundings and orientate roof pitches so that they are in parallel with rather than at 90% to the horizon.
3. Use colours that are sympathetic with the environment.
4. Use natural materials as much as possible, especially rocks from the area, and in the case of lodges, poles and thatch.
5. If corrugated iron is used for the roof, paint it an earthy colour.
6. Place aerials, solar panels, water tanks and other prominent features at a spot that makes them invisible from the access roads and other tourist viewing areas.
7. Where possible, hide installations such as water tanks amongst rocks or trees, or construct a rock or rough pole screen around tanks so that they are not too visible.
8. Specify finishes in the lodges (e.g., lights, sanitary fittings, towel railings, etc.) that are unobtrusive and as rustic as possible.
9. Avoid tiles on the floors – a treated concrete floor has a more “earthy” look and feel, and is cheaper and lower maintenance.
10. Specify signs that are not too intrusive, both at the entrance to the lodge, and even within the lodge. For example, a “parking” sign could be painted on stone and hung between poles, rather than made
Environmental management objectives for building planning and design in sensitive areas

out of metal. Even numbering for chalets can be done creatively and in sympathy with the environment.

11. Avoid neon signs and anything “flashy” – the more rustic, the better.
12. Lighting along the walkways to the chalets should be as modest as possible.
13. Walkways must be earth paths, demarcated simply by rocks along the edges.
14. Walkways must not be straight, but rather winding, taking care to go around major obstacles (e.g., trees).
15. Do not place lights so that they light up trees or rocks.
16. Apply a charcoal finish to the pool at lodges – avoid a blue or light finish and avoid excessive lighting in the pool.
17. Avoid too much clutter in the décor of lodges – a minimalist approach is more appropriate.
18. Avoid razor wire, security fences and burglar bars as much as possible.
19. Minimize the use of shade cloth – rather use reeds or poles (shade cloth becomes shabby after a short while).
20. Specify that all services (e.g., pipes and cables) are to be buried underground.
21. Place service areas (e.g., parking, storage, clothes drying) out of sight of tourists.
22. Locate chalets as far as possible from each other, so that there is maximum privacy (at least 15 metres apart).

Water efficiency

23. Do not specify any lawns or cultivated gardens (they use too much water). Rather replant indigenous trees and plants and landscape with rock and stones.
24. Ensure that all toilets are of the flush type, and that they all drain into a properly designed, two-chamber septic tank that is located at least 20 metres from any building.
25. Grey water (from showers and basins) may drain into a soak away area, which could be developed as a reed-bed.
26. Specify showers only in the chalets and staff houses (no baths) in order to save as much water as possible.
27. Specify low-flow shower-heads for the showers.
28. Specify appropriate flushing devices in the toilets, so that flushing stops as soon as pressure on the handle is released or adopt dual flush systems.

Energy efficiency

29. Design all buildings so that there is as much cross-ventilation as possible, making maximum use of cooling breezes (west and south west) and ensure that west facing windows are as small as possible and west facing walls are in as much shade as possible (to minimize heat absorption in the afternoon).
30. Design a system where as much solar can be used as possible (e.g., water heating and lights), though it is accepted that a diesel generator will be necessary to power some of the equipment (e.g., refrigerators, computers, etc.). Ideally, the generator should be used as little as possible.
Environmental management objectives for building planning and design in sensitive areas

31. Liaise with the water driller to determine whether the borehole will require a diesel generator, or if a solar panel will be used. If diesel will be used, then it might be possible to use the same generator for pumping water and for powering the lodge.

Pest control

32. Specify fly-screens on open-able windows in the chalets, lodge area, kitchen area etc., so that there is less need to use insect repellents.

33. Design scavenger-proof storage areas for food and waste.
Part D. EMP for Building Construction

INSTRUCTIONS FOR THE BUILDING CONTRACTOR

Objective: To construct the buildings and facilities with minimal disturbance to the surrounding natural environment.

Environmental performance indicator: The “environmental footprint” of the building or facility is limited to the construction site itself.

Who is responsible?

✓ The building contractor must be instructed in writing by the Project Manager to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.

✓ The Project Manager and the architect must inspect the site at least once per month to make sure that the measures are being implemented.

✓ The MCA M&E team will inspect the site at least every quarter to ensure that the EMP is being implemented.

✓ The Project Manager must do a final inspection once the lodge is built and issue the building contractor with a completion letter once s/he is satisfied that the job has been done in accordance with this EMP.

✓ The final payment (10%) will only be made after the completion letter has been issued.

<table>
<thead>
<tr>
<th>Environmental Management Objectives to be applied during construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site preparation</strong></td>
</tr>
<tr>
<td>2. The building contractor must lay-out the entire lodge before any workers, equipment or building materials are brought in. This means that the corners of every building, walkway, driveway, parking area, water installation, power generator, etc. must be clearly marked (with whitewash on the ground) on day 1.</td>
</tr>
<tr>
<td>3. The marked out area must be inspected and approved by the architect before anything more is done.</td>
</tr>
<tr>
<td>4. Thereafter, the contractor must further demarcate the area with metal droppers and hazard tape so that there is NO confusion about which areas may be disturbed by the development and which areas will be strictly off-limits.</td>
</tr>
<tr>
<td>5. In the case of the staff village, demarcate the construction area with hazard tape.</td>
</tr>
<tr>
<td><strong>Sourcing of building materials</strong></td>
</tr>
<tr>
<td>5. All materials (e.g., bricks, sand, cement, poles, roofing, thatch, etc.) must be brought into the site from outside.</td>
</tr>
<tr>
<td>6. In the case of items (e.g., poles) that are not bought from a registered shop the contractor will ensure that the harvesting of these materials did not cause serious impacts at the place from which they came.</td>
</tr>
<tr>
<td>7. Building sand must be collected from an existing registered borrow pit.</td>
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</tbody>
</table>
### Environmental Management Objectives to be applied during construction

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>8.</td>
<td>Building stone must be obtained from an existing registered quarry. If none are available within a reasonable distance, stone must be obtained only from the source identified in the EIA.</td>
</tr>
<tr>
<td>9.</td>
<td>Rocks that will be used for cladding may be collected from the lodge site.</td>
</tr>
</tbody>
</table>

#### Clearing of land

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>The only land that may be cleared is the access road, the area upon which buildings will be erected, parking bays, driveways and pathways.</td>
</tr>
<tr>
<td>8.</td>
<td>As much land clearing as possible (e.g., the removal of stones and rocks) will be done by hand.</td>
</tr>
<tr>
<td>9.</td>
<td>Trans-locate any species identified in the EIA to a temporary nursery for future use in rehabilitation.</td>
</tr>
<tr>
<td>10.</td>
<td>Demarcate trees which must not be damaged by construction activities.</td>
</tr>
<tr>
<td>11.</td>
<td>Remove all topsoil and stockpile for future use in rehabilitation.</td>
</tr>
<tr>
<td>12.</td>
<td>As far as possible, all “work areas”, such as the areas where bricks, sand, cement, poles, stones etc. are stockpiled, should be areas that will later be used for parking, building, or driveways. In other words, do not stockpile materials in the natural veldt. The same applies to the area where cement is mixed.</td>
</tr>
<tr>
<td>13.</td>
<td>The builder may only disturb an area of up to 2 metres around each building site or development area (e.g., the main lodge, chalets, staff quarters, driveway, parking area). This is enough space to move around with wheel barrows, scaffolding and other equipment. As noted earlier, this “footprint” area must be demarcated from day 1, with metal droppers and hazard tape so that everyone on site knows exactly which areas are off-limits.</td>
</tr>
</tbody>
</table>

#### Facilities for workers

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>All workers will be housed in tents or caravans. The first choice option is that the “workers village” be established on a nearby farm, but the village may be established on site.</td>
</tr>
<tr>
<td>7.</td>
<td>Wherever the workers are housed, they must be provided with water, proper toilets and washing facilities.</td>
</tr>
<tr>
<td>8.</td>
<td>Toilets must be established on site, preferably a flush toilet mounted over a septic tank, or a dry toilet system (similar to the units used during road construction projects).</td>
</tr>
<tr>
<td>9.</td>
<td>Cooking must be done on gas or open fires. If open fires are used, these must be made in a designated spot so that there is no possibility for a veldt fire occurring.</td>
</tr>
<tr>
<td>10.</td>
<td>No wood may be collected on site – wood must be brought in from outside.</td>
</tr>
</tbody>
</table>

#### Management of waste (and minimization of pollution)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>For human waste – see above.</td>
</tr>
</tbody>
</table>
| 11. | All combustible waste must be burnt in a drum (e.g., empty cement bags), with the
<table>
<thead>
<tr>
<th><strong>Environmental Management Objectives to be applied during construction</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>necessary care taken to avoid the possibility of starting a veldt fire.</td>
</tr>
<tr>
<td>12. All non-combustible waste must be removed from site at least once a week to a registered landfill.</td>
</tr>
<tr>
<td>13. Any waste that is stored temporarily at the site must be secured in refuse bags or sealable bins to avoid it being blown into the veldt.</td>
</tr>
<tr>
<td>14. Loose litter must be collected on a daily basis.</td>
</tr>
<tr>
<td>15. Measures must be taken to prevent waste attracting scavengers (e.g., jackals).</td>
</tr>
<tr>
<td>16. No paint, solvents, thinners, diesel, oil or any other harmful substances may be poured onto the ground or into a water course. They must be collected in a container and removed from site for proper disposal.</td>
</tr>
<tr>
<td>17. Workers should be given regular talks on aspects such as waste management.</td>
</tr>
<tr>
<td>18. A system of incentives or penalties must be implemented to ensure compliance with all waste management requirements.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Use of water during construction</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Although water is needed for many aspects of construction, it must be used sparingly at all times.</td>
</tr>
<tr>
<td>6. All taps, pipes and tanks must be managed and maintained so that they do not leak.</td>
</tr>
<tr>
<td>7. Workers should be given regular talks on aspects such as water conservation and management.</td>
</tr>
<tr>
<td>8. A system of incentives or penalties must be implemented to ensure compliance with all water conservation requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Protection of wildlife</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. No wild animals may be trapped or killed for any reason whatsoever.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Transport and storage of fuel and other materials</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>11. All vehicles that transport materials to and from the site must be roadworthy.</td>
</tr>
<tr>
<td>12. Drivers that transport the above materials must have a valid drivers licence and must adhere to all traffic rules.</td>
</tr>
<tr>
<td>13. Loads upon vehicles must be properly secured to completely avoid items falling off the vehicle at any time.</td>
</tr>
<tr>
<td>14. All materials (e.g., cement, bricks, poles, stones, pipes, etc.) must be stored at a central storage area on site so that the site is neat and orderly, and to avoid a situation where materials are lying about all over the place.</td>
</tr>
<tr>
<td>15. All fuels, paints, solvents and other chemicals must be stored in the legally-required manner, ensuring that they cannot react with each other or be spilt onto the ground.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Servicing of vehicles and other equipment</strong></th>
</tr>
</thead>
</table>
| 2. If vehicles or other equipment are serviced or repaired on-site, any grease, oil etc. must
### Environmental Management Objectives to be applied during construction

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>be collected in a container and removed from the site for proper disposal (see waste management section for details).</td>
</tr>
</tbody>
</table>

### Health and safety

7. Only conduct construction work within normal working hours and not on weekends.
8. Investigate the use of construction vehicles without reversing beepers. Rather use flagmen and flashing lights in hazardous situations.
9. Conduct regular HIV/AIDS awareness and prevention training (as per MCC/A support programme).
10. All workers to use Personal Protective Equipment (PPE) at all times.
11. Adhere to speed limits on access roads at all times.
12. Maintain First Aid kit at all construction sites, including snake bite anti-venom and bee sting antihistamines.

### Rehabilitation

5. On completion of construction, all disturbed areas are to be cleaned of all building rubble, industrial waste, contaminated soil etc. This waste is NOT to be buried but must be removed from site to a registered landfill.
6. All compacted areas are to be ripped where revegetation is contemplated.
7. All disturbed areas which are to be revegetated are to be contoured and covered with saved topsoil.
8. Plant only indigenous, ‘water-wise’ plants and landscape with organic or rock ‘mulch’.

Instructions for the Road Builder in Sensitive Areas

Objective:
The road must provide safe access to the lodge and/or staff village but must not be a scar on the landscape.

Environmental performance indicators:
✓ There are no complaints from visitors or passers-by that the access road has compromised “sense of place”.
✓ The access road does not cause erosion.

Who is responsible?
✓ The road building contractor must be instructed in writing by the developer to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.
✓ The Project Manager must inspect the site at least twice to make sure that the measures are being implemented.
✓ The Project Manager must do a final inspection once the road is built and issue the road contractor with a completion letter once s/he is satisfied that the job has been done in accordance with this EMP. A copy of the letter must be sent to DEA.
✓ The final payment (10%) will only be made after the completion letter has been issued.

<table>
<thead>
<tr>
<th>Environmental Management Objectives for road building in sensitive areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Road construction</strong></td>
</tr>
<tr>
<td>1. Place the access road on existing old tracks if available.</td>
</tr>
<tr>
<td>2. Demarcate the road construction area with hazard tape and prevent any work outside the demarcated areas. In particular, demarcate trees that are not to be damaged by construction activities.</td>
</tr>
<tr>
<td>3. Prior to grading, remove all topsoil (if present) and stockpile for later use in rehabilitation.</td>
</tr>
<tr>
<td>4. Road overburden that is dumped on the down-slope of the road should not only consist of rocks, but should also include enough soil to allow vegetation to become established. This is the best way to reduce the visual impact of the scar. The overburden should also not be stabilized with concrete, since this will make it impossible for vegetation to become established. The main aim is to hide the scar with natural vegetation.</td>
</tr>
<tr>
<td>5. Do not scrape any other areas other than the road itself (i.e. the earthmoving equipment should only work in the demarcated road area.</td>
</tr>
<tr>
<td>6. If the road is to be surfaced, use natural materials (rocks with concrete) so that the colour of the road is similar to the surrounding area.</td>
</tr>
<tr>
<td>7. Do not demarcate the road with any artificial or unnatural barriers that are visually prominent – e.g., sign posts, whitewashed stones, metal railings or lights of any kind.</td>
</tr>
<tr>
<td>8. Place stormwater runoff berms are regular intervals to channel water away from the road in a manner that will not cause erosion along the side of the road.</td>
</tr>
<tr>
<td>9. Use low water drifts at all stream crossings, reinforced with concrete and place gabions to stabilise river banks.</td>
</tr>
</tbody>
</table>
### Environmental Management Objectives for road building in sensitive areas

| 10. | For larger river crossings, ensure that the crossing structures have been properly designed by a civil engineer to ensure that culvert sizing is correct for anticipated river flows. |
| 11. | On completion, remove all industrial waste and contaminated soil to a registered landfill site. |
| 12. | Spread saved topsoil over road verges and spoil dumps to promote natural revegetation from the seedbank contained in the soil. Spread cleared brush over topsoiled areas to protect against wind and water erosion. |
| 13. | No field servicing of vehicles is to be allowed except in an emergency. |
| 14. | All vehicle servicing is to be carried out at the contractor’s camp. |
| 15. | All waste oil is to be collected for re-use or proper disposal. |

### Health and safety

| 16. | Only conduct construction work within normal working hours and not on weekends. |
| 17. | Investigate the use of construction vehicles without reversing beepers. Rather use flagmen and flashing lights in hazardous situations. |
| 18. | Conduct regular HIV/AIDS awareness and prevention training (as per MCC/A support programme). |
| 19. | All workers to use Personal Protective Equipment (PPE) at all times. |
| 20. | Adhere to speed limits on access roads at all times. |
| 21. | Maintain First Aid kit at all construction sites, including snake bite anti-venom and bee sting antihistamines. |

### Facilities for workers

| 1. | All workers will be housed in tents or caravans. The first choice option is that the “workers village” be established on a nearby farm, but the village may be established on site. |
| 2. | Wherever the workers are housed, they must be provided with water, proper toilets and washing facilities. |
| 3. | Toilets must be established on site, preferably a flush toilet mounted over a septic tank, or a dry toilet system (similar to the units used during road construction projects). |
| 4. | Cooking must be done on gas or open fires. If open fires are used, these must be made in a designated spot so that there is no possibility for a veldt fire occurring. |
| 5. | No wood may be collected on site – wood must be brought in from outside. |

### Management of waste (and minimization of pollution)

| 1. | For human waste – see above. |
| 2. | All combustible waste must be burnt in a drum (e.g., empty cement bags), with the necessary care taken to avoid the possibility of starting a veldt fire. |
| 3. | All non-combustible waste must be removed from site at least once a week to a |
Environmental Management Objectives for road building in sensitive areas

registered landfill.

4. Any waste that is stored temporarily at the site must be secured in refuse bags or sealable bins to avoid it being blown into the veldt.

5. Loose litter must be collected on a daily basis.

6. Measures must be taken to prevent waste attracting scavengers (e.g., jackals).

7. No paint, solvents, thinners, diesel, oil or any other harmful substances may be poured onto the ground or into a water course. They must be collected in a container and removed from site for proper disposal.

8. Workers should be given regular talks on aspects such as waste management.

9. A system of incentives or penalties must be implemented to ensure compliance with all waste management requirements.
Instructions for the Borehole Driller in Sensitive Areas

Objective: To provide water for the construction and operation of the lodge or staff village without (a) overexploiting the water source, (b) significantly damaging the environment or (c) creating unsightly infrastructure.

Environmental performance indicator: Water infrastructure is located in such a way that it is not distracting to visitors and the water level and/or yield of the borehole or those in the surrounding areas do not drop in the medium to long term.

Who is responsible?

- The water drilling contractor must be instructed in writing by the developer to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.
- The Project Manager must inspect the site at least twice to make sure that the measures are being implemented.
- The Project Manager must do a final inspection once the water infrastructure is built and issue the water drilling contractor with a completion letter once s/he is satisfied that the job has been done in accordance with this EMP. A copy of the letter must be sent to DEA.
- The final payment (10%) will only be made after the completion letter has been issued.

| Environmental Management Objectives for drilling boreholes in sensitive areas |
| Finding water (divining and drilling) |
| 1. Either use an existing borehole (e.g., on a neighbouring farm) or establish a borehole exclusively for the lodge or staff village (as determined in the EIA). |
| 2. The depth of the borehole, pump size, casing requirements etc will have been specified by a groundwater expert as part of the EIA. |
| 3. Cooking (by/for drilling staff) must be done on gas or open fires. If open fires are used, these must be made in a designated spot so that there is no possibility for a veldt fire occurring. |
| 4. No wood may be collected on site – wood must be brought in from outside. |
| 5. All combustible waste must be burnt in a drum (e.g., empty cement bags), with the necessary care taken to avoid the possibility of starting a veldt fire. |
| 6. All non-combustible waste must be removed from site at least once a week. |
| 7. Any waste that is stored temporarily at the site must be secured in refuse bags or sealable bins to avoid it being blown into the veldt. |
| 8. Measures must be taken to prevent waste attracting scavengers (e.g., jackals). |
| 9. The waste may only be dumped at a registered landfill. |
| 10. No paint, solvents, thinners, diesel, oil or any other harmful substances may be poured onto the ground. They must be collected in a container and removed from site for proper disposal. |
| 11. All fuels and other chemicals must be stored in a legally-required manner, ensuring that |
### Environmental Management Objectives for drilling boreholes in sensitive areas

- They cannot react with each other or be split into the ground.
- 12. If vehicles or other equipment are serviced or repaired on-site, any grease, oil etc. must be collected in a container and removed from the site for proper disposal.
- 13. A single track must be used to get to and from the drilling site.
- 14. The area around the drilling site must be demarcated with tape and all work must be contained within the demarcated area.
- 15. No wild animals may be trapped or killed for any reason whatsoever.

### Equipping the borehole (as prescribed by the groundwater expert in the EIA)

- 1. Water may be pumped by wind, solar or diesel pumps.
- 2. If possible, the pump should be hidden from view of tourists or general traffic.
- 3. If a diesel engine is used, it should be housed in a building (to reduce noise and for safekeeping) and the exhaust must be muffled.
- 4. If a diesel engine is used, the installation must include traps to avoid spillage of oil and diesel onto the ground.
- 5. The diesel engine must be serviced on a regular basis.
- 6. Whatever pump is used, it must be protected from elephants, either by a fence or by packing rocks around it.

### Laying the water pipeline (the route will be determined in the EIA)

- 1. The pipeline must be buried underground.
- 2. Clearly demarcate the working area along the trench and prevent any damage outside the demarcated area.
- 3. Do not damage any trees which are not in the immediate alignment of the pipeline.
- 4. Create a windrow along the side of the work area with the cut vegetation for later use in rehabilitation.
- 5. Remove and stockpile all topsoil for later rehabilitation of the trench.
- 6. Where possible, the pipeline shall be laid next to the road, whether this is the main road or the access road to the lodge.
- 7. Adhere to all aspects of waste management listed above.

### Health and safety

- Only conduct construction work within normal working hours and not on weekends.
- Investigate the use of construction vehicles without reversing beepers. Rather use flagmen and flashing lights in hazardous situations.
- Conduct regular HIV/AIDs awareness and prevention training (as per MCC/A support programme).
- All workers to use PPE at all times.
- Adhere to speed limits on access roads at all times.
### Environmental Management Objectives for drilling boreholes in sensitive areas

- Maintain First Aid kit at all construction sites, including snake bite anti-venom and bee sting antihistamines.

### Rehabilitation

- a. On completion of construction, all disturbed areas are to be cleaned of all building rubble, industrial waste, contaminated soil etc. This waste is NOT to be buried but must be removed from site to a registered landfill.
- b. The pipeline trench is to be backfilled with overburden material followed by the stockpiled topsoil.
- c. Cover with cut branches (from initial site clearing) to protect the area from erosion.
Part E. EMP for Lodge Operations

INSTRUCTIONS FOR THE LODGE OR VILLAGE MANAGER

Objective: To manage the lodge with minimal disturbance to the surrounding natural environment, and to ensure that guests to the lodge behave in a way that does not impact negatively on the environment, wildlife and local communities and that the lodge achieves a high rating in accordance with Namibia’s Eco-Award Criteria.

It should be noted that the term “environment” includes the natural and human environment, which is why this Environmental Management Plan deals with both. However, the EMP does NOT cover equally important aspects such as customer care, financial management, stock control, etc. These “business management” issues are outside the scope of an EMP, though of course they are critical in running a lodge properly.

Environmental performance indicators:

- The lodge attains an Eco-rating and shows continuous improvement.
- Visitors notice the efforts being made by the lodge to be “environmentally friendly” and they cite this as one of the 5 main reasons why they intend to return to stay at the lodge in the future.
- Annual inspections by MET show that all environmental guidelines, laws and regulations, as well as this EMP are being correctly implemented.

Who is responsible?

- The lodge manager is responsible for ensuring that the entire operation (on and off-site) of the lodge conforms to the standards usually ascribed to “eco-tourism”.
- The lodge owner or conservancy manager must write the job description for the manager, ensuring that the relevant sections of this EMP are included as his/her duties
- The MET must inspect the lodge at least once per year to make sure that the measures are being implemented.
- The manager must complete a monthly environmental report according to a prescribed format, and submit this to the Conservancy Committee as well as to the MET.

The lodge operator is strongly encouraged to consult the Eco-Award Best Practice Handbook and to apply for an Eco-Award rating. In addition the following environmental management issues require attention:

A. Waste management
B. Water management
C. Energy management
D. Tourist management
E. Pest management
F. Nature conservation
G. Maintaining sense of place
H. Community relations
A. Waste Management Objectives

Human waste
1. All toilets must be of the flush-type and all must drain into the septic tank.
2. Notices must be placed at each toilet to remind guests not to flush foreign objects down the toilet.
3. The overflow from the septic tank should be into a reed-bed soak-away.
4. Provide instructions on the use of dual-flush toilets.
5. Use bio-degradable toilet cleaners that do not kill the bacteria in the septic tank (various products are available on the market).

Solid waste (kitchen scraps, tins, bottles, paper, etc.)
6. The first priority is to reduce waste. In this regard, try to:
   • Buy supplies in large containers (e.g., cooking oil, tinned food, cleaning materials) so as to avoid too many empty bottles, tins, etc.
   • Try to avoid purchases (especially fresh vegetables) that are packaged in multiple-layers – e.g., rather buy 5 loose, unpackaged lettuces and put them in a cool box than buying 5 lettuces packaged individually in plastic and Styrofoam.
7. If possible, different types of waste should be placed in different receptacles – preferably of the “wheelie-bin” variety (e.g., vegetable cuttings into a compost drum, glass, tins, combustible, and plastics all in their own bin). “Wheelie-bins” are best because they have a proper lid, are easy to move around and are easy to clean.
8. At the end of each day (or at least twice per week), the waste must be taken to the dump site. This site MUST be properly managed, and could be located on a nearby farm. If this is the case, then the farmer (or community) can be hired as the waste-management contractor. However, it remains the responsibility of the lodge to ensure that the site is properly managed. At a minimum, the site must be fenced off to prevent access by scavengers, and as much waste as possible must be burnt to (a) reduce mass and (b) reduce flies (c) reduce scavengers (d) reduce wind-blown litter, and (e) reduce smell. The remaining waste must be covered with a layer of soil on a weekly basis for the same reasons. The dump must have a gate that must be kept locked when not in use.
9. When transporting the waste to the dump site, ensure that there is NO possibility of waste blowing or falling off the vehicle. The best solution is to load the “wheelie-bins” onto the vehicle so there is no need to transfer the waste from one drum to another. This means that at least 2 sets of bins will be required, because set number 2 will be in operation while set number 1 is being transported to and from the dump.
10. At the dump, the bins must be washed after having been emptied. They must be returned to the lodge clean and dry.
11. In the kitchen, a mesh “waste trap” must be placed in the drain where kitchen water flows into. The purpose of this trap is to trap kitchen off-cuts such as scraps of meat, vegetables etc. The trap must be cleaned at the end of each day, and the scraps must be thrown into the appropriate bin.

Hazardous waste (batteries, tyres, paints, solvents, thinners, used or expired medical equipment)
1. These types of waste must be kept separate from other waste, and may NOT be dumped in the general waste dump.
2. They must be taken to Windhoek periodically and placed in the hazardous waste dump there.

General
1. No waste of any kind may be burnt at the lodge site.
2. All chemicals used to clean surfaces (e.g., basins, floors, tables, kitchen worktops, etc.) must be of the biodegradable type.
B. Water Management Objectives

Keep water consumption to below 100 litres of water per day per person (divide total daily consumption by the number of people at the lodge – guests and staff), by adopting the following strategies:

1. Place a prominent notice in each chalet (and the staff quarters), informing guests about the importance of saving water. Specifically notify guests to:
   - Take short rather than long showers;
   - Turn taps off after washing;
   - Use towels more than once before asking for them to be washed;
   - Not wash their vehicles whilst at the lodge;
   - Only flush the toilet when necessary and use the dual flush system.
2. Do not have any lawns or gardens that need to be watered (a small vegetable garden is permitted, but it must be placed under a reed structure to reduce evaporation).
3. Install rain water tanks and use this water in the vegetable garden or for pool filling.
4. Ensure that the pool is covered when not in use to reduce water loss.
5. Wash vehicles with a bucket, not a hose.
6. Clean driveways and parking areas with a broom, not with water.
7. Wash laundry off-site.
8. Ensure that all pipes are well maintained and leaks are repaired immediately.
9. Ensure that all taps are turned off after use.
10. Floors must be cleaned with a mop, not hosed down.
11. Install a water metre, and check this daily if possible, or once a month as a minimum. Keep a register of water consumption so that trends can be monitored.
C. Energy Management Objectives

Use as much renewable energy as possible, and limit the use of fossil fuels in the generation of energy. This can be achieved by:

1. Combining both diesel generated power and solar power (see instructions for the architect – this is both a design and a management issue, requiring planning in the early stages and committed management for the life of the lodge);
2. Only run the generator for the times required (for example to keep the refrigerator at the right temperature);
3. If solar systems are in place, make sure that they are well maintained so that they remain efficient;
4. If the same generator is used for pumping water and for powering the lodge, try to combine both tasks at the same time, so that the generator runs at maximum load, and so that is does not run unnecessarily;
5. Where fires are used for creating ambiance in the lodge, or for warmth (during winter), try to burn alien-invasive wood that is readily available (e.g., Prosopis) or wood that comes from bush encroaching species (e.g., Acacia melifera). Avoid using mopane, leadwood (Combretum imberbe) or other species that might be harvested unsustainably. Whatever the case, ensure that there are no significant negative environmental impacts associated with the supply of wood.

D. Tourist Management (i.e., ensuring that tourists behave in an environmentally acceptable way)

At the lodge
1. Place information materials in each chalet, in which tourists are informed about:
   - The importance of conserving water;
   - How to be energy efficient;
   - The rules regarding feeding of animals;
   - Appropriate pest control (e.g., installation of owl and bat boxes, swot a fly rather than spray insecticide);
   - Not placing foreign objects down the toilet;
   - Respecting the rights of other guests (e.g., refraining from making a noise, playing radios, musical instruments, etc.).

On game drives with the lodge vehicle
2. Ensure that a qualified guide leads all game drives.
3. The guide must at all times drive slowly, and may not hoot or rev the vehicle unnecessarily.
4. The guide may not drive off the road.
5. The guide may only take guests to villages if arrangements have been made beforehand and if there is agreement on what the guests may see and do once in the village.
6. The guide must maintain an appropriate level of control during the drive – specifically:
   - No littering allowed (always have a refuse bag in the vehicle);
   - No noise;
   - No throwing of objects at wildlife;
   - No throwing of burning objects off the vehicle (e.g., cigarette butt).

On game drives with own vehicles
7. Whilst the lodge has no control over what people do when they are in their own vehicles, they can encourage good behavior by providing guidelines. These should be set of “dos and don’ts” that
people can take with them on their drive. The guideline should strongly discourage:

- Off-road driving;
- Littering;
- Wood collecting;
- Harassing of wildlife;
- Visiting villages without prior planning;
- Speeding;
- Excessive noise (e.g., hooting, revving the engine, etc.);
- Throwing of burning objects off the vehicle (e.g., cigarette butt);
- Going to the toilet in the veldt.

E. Pest Management Objectives

1. Since the lodge is to be located in a wildlife area, it is to be expected that various species of wildlife will be attracted to the lodge, and some may even live in the lodge! It is important that the right balance be maintained in ensuring the comfort and safety of staff and guests, while at the same time accepting that the presence of wildlife is inevitable and, in some cases, desirable. Specific management safeguards are:

- NEVER feed wildlife (except birds, and then place food in hanging bird feeders);
- NEVER leave food uncovered or in a place where it is accessible to wildlife;
- Manage waste properly, so that it does not attract scavengers;
- Try non-poisonous remedies or direct hitting for insect control, before using insecticides;
- Use traps for rodents, install owl boxes, but NEVER use poison;
- Capture and remove dangerous snakes, rather than killing them;
- NEVER kill useful animals, such as chameleons, lizards, bats, etc. which will help the lodge to control unwanted insects such as flies and mosquitoes;
- Maintain high levels of cleanliness, especially in the kitchen;
- Install fly gauze doors and fly screen over selected windows to reduce the numbers of flies and other insects entering buildings;
- Switch off lights when they are no longer needed (lights attract insects);
- Supply mosquito nets;
- Do not have lawns or beds of exotic plants, since these often require intensive pest control.
F. Nature Conservation

The lodge has a key responsibility in protecting wildlife. It can do this by:

- Adopting appropriate pest control management as noted earlier;
- Good waste management as noted earlier;
- Good water management as noted earlier;
- Adopting and encouraging responsible behavior during game drives;
- Not allowing any pets at the lodge (especially cats – 1 or 2 dogs could be allowed, but no more);
- Not planting alien plants;
- Helping the conservancy with wildlife monitoring and reporting illegal activities to MET;
- Creating environmental awareness amongst staff and guests.

G. Maintaining Sense of Place

1. Sense of place is a vague term, and can be interpreted differently by different people. It means a number of things, including “atmosphere”, “vibe”, “taste”, “style” and general ambiance. Whilst it is difficult to define exactly, it becomes very obvious when a lodge loses its sense of place. This usually happens if the lodge is badly designed in the first place (see instructions to architect), but it can also happen as a result of bad management.

Management must not cause the lodge to lose its sense of place, and in this regard they must specifically avoid:

- Inappropriate décor (bright or clashing colors, ugly murals or art, unnecessary statues, etc.);
- Inappropriate furniture (plastic tables and chairs, etc.);
- Shabbiness – dirty linen, dust, dirt, poorly-dressed or unclean staff, untidiness, un-emptied ash-trays, etc.;
- Disrepair - un-maintained infrastructure creates a very poor impression;
- Noise – no radios, TVs, hi-fis, noisy staff, revving vehicles, lawnmowers, air conditioners, low-flying aircraft, motorcycles, quad bikes, etc.;
- Smells – make sure that waste is properly managed so that people do not smell the rubbish bins. Also keep drains etc. clean so that these are not smelly. However, avoid the use of highly potent cleaners – guests do not want to smell detergents either!
- Over development – do not have too many signs, or any other objects that detract from the natural beauty of the area. Visitors to the lodge want a nature experience;
- Scrap – make sure there are no old vehicles or equipment lying around in various states of disrepair;
- Sterility – whilst it is extremely important to keep the lodge clean, do not sterilize it – this is a lodge NOT a hospital;
- Too many people – this will quickly destroy sense of place. Guests to the lodge want a certain degree of privacy, and this is why the number of beds must be kept low. Also, there should not be people loitering around at the lodge, whether visiting staff or looking for work.
H. Community Relations

1. It is becoming increasingly important for tourism operators to ensure that they have sound relations with the communities in the vicinity of the lodge. The lodge is in a conservancy, which means that the community has the rights over wildlife and tourism. Even though the lodge is “community owned”, it is still important for management to maintain a healthy relationship with the community. Good community relations can be achieved by:

- Respecting community rights – specifically inform guests that the lodge lies within a conservancy and that they are therefore guests of the community;
- Provide guests with accurate information on the history, culture, customs and values of the community;
- Include cultural activities as part of the tourism product, but make sure that the community is in agreement with the proposed activities;
- Do not damage any cultural or archaeological sites;
- Employ as many locals as possible for all levels of operation at the lodge;
- Consult the community to ensure that dispute resolution methods and labor practices adopted by the lodge are both within the law and cultural norms;
- Train lodge staff so that they have the knowledge to do their work properly;
- Provide opportunities for career advancement and skills development;
- Develop an outreach programme, where community representatives, including the youth are brought to the lodge from time to time, so that they have a better appreciation of tourism as an industry;
- Enter into a written agreement with the community that provides a clear understanding of the rights and responsibilities of the lodge and the community – this includes rental, areas to which access is permitted and not permitted, the responsibility of the community towards the lodge (e.g., livestock grazing areas), etc. The agreement must include dispute resolution mechanisms and penalties for non-compliance.
Implementation Tool 8
Generic EMP for Game or Quarantine Camp Design, Construction, and Operation on Sensitive Sites
A INSTRUCTIONS FOR EMP COMPLETION

B PRELIMINARIES

- Aims and scope of the EMP
- Structure of the EMP
- Applicable legislation
- Project background description
- Public participation
- Organizational structure and responsibilities for EMP implementation
- Monitoring and evaluation
- Useful contacts
- Glossary
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C EMP FOR GAME OR QUARANTINE CAMP PLANNING AND DESIGN

- Objectives
- Environmental Key Performance Indicators
- Responsibilities
- Management objectives

D EMP FOR GAME OR QUARANTINE CAMP CONSTRUCTION

- Instructions for the fencing contractor
- Instructions for the road builder
- Instructions for the borehole driller

E EMP FOR GAME CAMP OPERATIONS

- Objectives
- Environmental Key Performance Indicators
- Responsibilities
- Management objectives

F EMP FOR QUARANTINE CAMP OPERATIONS

- Objectives
- Environmental Key Performance Indicators
- Responsibilities
- Management objectives
Part A. Instructions for EMP Completion

This Generic Environmental Management Plan (EMP) for Game or Quarantine Camp Design, Construction, and Operation on Sensitive Sites creates a framework for completion by the implementing agent of the project. This is not a finalized EMP! The Project Manager or his/her environmental manager, needs to complete this EMP with specific management plans for the individual building or facility.

Part B of this document sets out the preliminaries of the EMP. Some aspects have been completed, e.g., the section on legal requirements, but other sections will require input as shown.

Since design and construction activities for both types of camps are similar, the environmental management objectives for both are contained in Parts C and D.

Parts E and F contain the environmental management objectives for game camp operations and quarantine camp operations, respectively. These generic EMPs merely contain management objectives and therefore they need to be expanded into a site-specific management plan, where relevant.

The management plan should be arranged in a table format with headings as shown in the example below.

<table>
<thead>
<tr>
<th>Management objective</th>
<th>Management action(s) to meet objective</th>
<th>Target or standard to be met</th>
<th>Indicator(s)</th>
<th>Responsibility</th>
<th>Frequency or due date for action</th>
</tr>
</thead>
</table>

It is very important that the management actions must be:

- Practical
- Measurable
- Auditable

The implementation of these EMPs will be monitored and evaluated by MCA and therefore it is essential that the specified management actions are realistic and do-able, otherwise the contractor will be given a non-compliant audit. For example, rather than stating that “there will be no erosion from the site,” which is unrealistic and difficult to measure, state that “all storm water will be routed to a catchment dam via earth diversion berms prior to discharge from the site.” The indicator in this case will be that the suspended sediment levels in the receiving water course do not exceed legislated limits—an objective and measurable indicator.

The actions and/or targets must be auditable. For example, rather than stating that “disturbance will be kept to a minimum,” say “there will be no disturbance outside the demarcated areas.” This is a more objective measure that can be readily monitored and audited.
Part B. Preliminaries

Aims and Scope of the EMP

This EMP contains the practical measures that must be taken to ensure that potentially negative impacts on the environment (ecological and social) are minimized or completely avoided and that there is compliance with legal standards of project targets.

The EMP covers all aspects of the project life cycle, including: planning and design (where many negative impacts can be screened out); construction activities relating to all aspects of the project (whether building a fence or constructing access roads, drilling of boreholes, etc.); and (where relevant), operational aspects of the game or quarantine camps following construction.

This EMP for the design, construction, and operation of game and quarantine camps in sensitive environments should be used for the following MCA project activities:

- Construction and operation of game camps in conservancies; and
- Construction and operation of quarantine camps in Caprivi.

Structure of the EMP

This EMP is structured as follows:

- Background information, roles and responsibilities, legal requirements, and other administrative requirements are contained below.
- For management objectives for design and planning, see Part C.
- For management objectives for construction, see Part D.
- For management objectives for operational aspects of the game camps, see Part E.
- For management objectives for operational aspects of the quarantine camps, see Part F.

Applicable Legislation

In Namibia, Environmental Impact Assessments (EIAs) are guided, reviewed and administered by the Environmental Commissioner (EC) located in the Directorate of Environmental Affairs (DEA) in the Ministry of Environment and Tourism (MET). The MET is to be assisted by a Sustainable Development Advisory Council (SDAC) that will inter alia promote cooperation between government and other stakeholders on environmental issues relating to sustainable development.

Before a developer can commence with an activity listed in Part VII of the Environmental Management Act (EMA) of 2007, s/he must obtain an Environmental Clearance Certificate from MET. Usually, authorization is only granted after an EIA has been completed and the EC is satisfied that the activity is environmentally acceptable (negative impacts can be avoided or mitigated satisfactorily). In many cases, the activity is benign and may not require a full EIA, but in others, an EIA is required. The list of activities requiring an EIA in Part VII of the EMA is merely a guide as the Minister may amend this list and the EC may in any case decide that an activity requires an EIA based on the expected environmental impacts even if the activity is not listed (Part VIII section 32 (1) (b)). The EC will require the proponent

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1 Neither the SDAC nor the EC had been established by the time this report was compiled. They are expected to be in place and operational by 2009.
2 Part VIII section 38
to complete a Screening Checklist (see Livestock Implementation Tool 5), which s/he will use to help determine whether an EIA is required or not.

However, the Environmental Clearance Certificate issued after completion of an approved EIA is not blanket permission to implement the project. The proponent may still be required to obtain a sectoral licence/permit, depending on the nature of the envisaged project. For example, in the context of MCC/A activities, the following may be relevant:

- Water abstraction permit and a water discharge permit from the Department of Water Affairs (the latter for releasing wastewater into any aspect of the environment).
- Quarrying permit for sand and stone extraction (Ministry of Mines and Energy)
- Building permission from local authorities (for fencing)
- Lease (if camps are to be developed on unproclaimed State land)
- Import permit (e.g., if game or livestock are to be imported)
- CITES permits for the movement of rare and endangered species of game
- Veterinary clearance for the transport of livestock and wildlife
- Veterinary clearance certificates for use of an area as a quarantine camp.

In most cases, sector ministries first consult the EIA report before considering the proponent’s applications for permits.

EIA reports are officially reviewed by the EC before an Environmental Clearance Certificate is issued. Usually, the EC will confer with the line ministry under whose jurisdiction the project is proposed (e.g., Agriculture, Water, and Forestry). In some cases, the EIA report is subject to a public hearing and it may also be sent to an independent expert or panel for an external review, especially if the project is controversial or if the EIA is very technical. Article 45 of the Act entitles the EC to recover the costs of external review from the proponent. After reviewing the EIA report, the EC may:

- Grant the application and, on payment of the prescribed fee, issue an environmental clearance certificate to the proponent; or
- Refuse the application and provide the proponent with reasons for the refusal.

The EMA does not explicitly require the proponent to develop an EMP, but it is assumed that this is implied by the fact that the EC can prescribe conditions as part of the Environmental Clearance Certificate. Given that the certificate is valid for a maximum of three years, it stands that an EMP would need to be revised at least every three years. It is the norm in Namibia for EIAs to lead to the development of an outcomes-based EMP, which becomes the “implementation manual” for projects.

**Project Background Description**

*To be completed. Include at the very least the following information:*

- **Title of project**
- **Names of the proponent, architect, contractor(s), quantity surveyor, design engineer, building manager**
Public Participation

If an EIA was conducted for game camp construction then a public participation program will have been conducted. If an EIA was not done, there is potential for conflict relating to the choice of the site for the camp and how the presence of the camp may affect livelihoods of affected parties, e.g., loss of access to communal gazing and loss of access to INP resources and veld materials.

The consultation process should continue (or commence) during final planning and design of these camps and continue through implementation stages (construction and operation). This will ensure that stakeholders have input to the details of the EMP and are kept advised of other project aspects throughout. Key stakeholders would include, but not be limited to:

- Ministry of Environment and Tourism (Parks and Wildlife Directorate)
- Ministry of Agriculture, Water, and Forestry (Directorate of Veterinary Services)
- Conservancy management committees
- Communal land board
- Traditional authorities
- Grazing management committees
- Water-point committees
- INP producer and processor organizations.

Organizational Structure and Responsibilities for EMP Implementation

The life cycle of a project involves a number of key players who are responsible for environmental management at different stages of project development. Each of these players will have varied aims and objectives, and their approaches to environmental management will be very different. The overall Project Manager must ensure that the environmental management objectives of each stage of the project life cycle are adhered to by each person responsible for that phase of development.

The EMP is thus a set of rules to which each and every person involved in the building/facility must adhere. These rules should be attached to the contract for the fence builder, road contractor, quarantine facility operator, etc. so that they each do their job without causing unnecessary harm to the environment.

To enable this, the rules for each responsible person have been written under separate headings, so that they can be pulled out of this document and attached to the respective contracts as an appendix.

Like all rules and contracts, the EMP must be implemented in order for it to be effective.

Implementation is the responsibility of the person in charge of each of the following phases:

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Project sub-phase</th>
<th>Responsible person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Project Management</td>
<td>Environmental control</td>
<td>Project Manager MCA Environmental Manager</td>
</tr>
<tr>
<td>Planning and Design</td>
<td>Camp planning and design</td>
<td>Conservancy Manager/Veterinary Officer</td>
</tr>
<tr>
<td>Project phase</td>
<td>Project sub-phase</td>
<td>Responsible person(s)</td>
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<tr>
<td></td>
<td>Technical planning</td>
<td>Wildlife Specialist/Veterinary Expert</td>
</tr>
<tr>
<td>Construction</td>
<td>Fence construction</td>
<td>Fencing contractor</td>
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<td>Road construction</td>
<td>Road contractor</td>
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<td>Borehole drilling</td>
<td>Driller</td>
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<td>Environmental management</td>
<td>Environmental Control Officer</td>
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<td>MCA Monitoring and Evaluation (M&amp;E) team</td>
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<tr>
<td>Operation</td>
<td>Wildlife management</td>
<td>Conservancy Manager/Veterinary Officer</td>
</tr>
<tr>
<td></td>
<td>Rangeland management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Livestock husbandry</td>
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</tr>
<tr>
<td></td>
<td>Veterinary quarantine</td>
<td></td>
</tr>
</tbody>
</table>

The contractors might have subcontractors who help them with their work. In this case, the main contractor must make sure that subcontractors abide by the rules and requirements of the EMP. A system of incentives and penalties needs to be in place to ensure compliance.

**Monitoring and Evaluation**

As noted in the Strategic Environmental Management Plan (see Section 7 of the SEA Phase II Report), MCA Namibia is responsible for implementing the Compact’s M&E plan. Actual monitoring will involve a variety of governmental, nongovernmental, and private sector institutions. The SEA recommends that the comprehensive M&E plan (which includes social and environmental monitoring) should be administered by an external entity. An external contract(s) for this work has the advantage of providing independent oversight and adding a measure of quality control and objective, third-party oversight both to spending and to implementation. Implementation of the M&E plan will require that the M&E team is adequately staffed, and that baseline data and information are collected that are adequate for future tracking and comparison. Indicators of success in this regard include a high rate of compliance with each EMP, application of appropriate social and environmental safeguards at every project site, and a high frequency of documented visits to the project sites.

**Useful Contacts**

*To be completed. Provide contact details for the following persons:*

- MCC/A Project Manager
- MCC/A Environmental Manager
- Building contractor
- Main fencing contractor
- Camp Manager
- Conservancy Manager
- Local agricultural extension officer
- Local veterinarian
- MCC/A M&E team
- Local emergency services (fire, ambulance, police)

**Glossary**

*To be completed. Provide a glossary of terms used in the EMP so that all levels of contractors can understand what is required.*
Acronyms

To be completed.
Part C. EMP for Game or Quarantine Camp Planning and Design

INSTRUCTIONS FOR CAMP DESIGN AND LOCATION

Objective: Game camps or quarantine camps must be designed in areas to ensure minimal disturbance to ecological processes, and where natural resource bases (grazing, water) are sufficient for animal (wildlife or livestock) populations to sustain themselves naturally with minimal supplementation.

Environmental performance indicators:
- Ecosystem processes are maintained;
- Fencing is maintained in accordance with MET requirements;
- Rangeland condition is acceptable (class: good to excellent);
- Game or livestock are able to sustain their feeding requirements through natural grazing (no supplementary feed needed); and
- Game or livestock condition is acceptable within any seasonal variations (Class 3 or higher).

Who is responsible?
✓ The responsible ministry must approve fencing effectiveness.
✓ The plans for buildings or fencing, as well as the situation of the camp, must be approved (in writing) by the Project Manager and the responsible ministry before the camp is constructed.
✓ Experts should conduct carrying capacity and habitat suitability studies to identify most suitable habitats for selected game species, as well as sustainability of grazing production.

Environmental management objectives for game or quarantine camp planning and design in sensitive areas

Aesthetic issues
1. Locate fencing, roads, and infrastructure so as not to affect the aesthetic sense of place of the area.
2. Use natural materials as much as possible for infrastructure (pump stations, etc.), especially rocks from the area, poles, and thatch.
3. Place aerials, solar panels, water tanks, and other prominent features at a spot that makes them invisible from the access roads and other tourist viewing areas.
4. Where possible, hide installations such as water tanks amongst rocks or trees, or construct a rock or rough pole screen around tanks so that they are not too visible.
5. Specify that all services (e.g., pipes and cables) be buried underground.

Water efficiency
6. Use water-point designs to minimise surface area for evaporation (consider crib designs as opposed to “water-hole” design).

7. Water-points must be fed directly from boreholes or closed water tanks, not open reservoirs.

8. Plan water-point distribution as part of the grazing management and monitoring plan in order to minimise degradation of grazing around water-points.

**Energy efficiency**

9. Use solar power to drive boreholes and electric fences as far as possible.

**Pest control**

10. Design scavenger-proof storage areas for food and waste.

**Rangelands and habitats**

13. Select most suitable habitats for selective game species.

14. Select game species historically indigenous to the area.

15. Develop a grazing management and monitoring plan for livestock and wildlife.

16. Identify areas of alien invasive species encroachment, and design eradication plans for these.

**Fencing**

17. Avoid sharp corners in fencing designs.

18. Avoid fencing of narrow corridors.

19. As much as is possible, avoid fencing across river beds, using release systems when it is necessary for water flow to cross river beds.
Part D. EMP for Game or Quarantine Camp Construction

**INSTRUCTIONS FOR THE FENCING CONTRACTOR**

**Objective:** To construct the fencing for game and quarantine camps with minimal disturbance to the surrounding natural environment.

**Environmental performance indicator:** The “disturbance footprint” of the fence is limited to the fence-line site itself.

**Who is responsible?**

- The fencing contractor must be instructed in writing by the Project Manager to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.
- The Project Manager must inspect the site at least once per month to make sure that the measures are being implemented.
- The MCA M&E team will inspect the site at least every quarter to ensure that the EMP is being implemented.
- The Project Manager must do a final inspection once the fence is completed and issue the building contractor with a completion letter once s/he is satisfied that the job has been done in accordance with this EMP.
- The final payment (10%) will only be made after the completion letter has been issued.

### Environmental management objectives to be applied during construction of the fence

<table>
<thead>
<tr>
<th>Site preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The fencing contractor must lay out the fence line before any equipment or building materials are brought in.</td>
</tr>
<tr>
<td>2. The Project Manager must inspect and approve the marked out area before work can continue.</td>
</tr>
<tr>
<td>3. Thereafter, the contractor must further demarcate the fence construction base camp area with metal droppers and hazard tape (where workers live and materials are stored).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sourcing of building materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Bring all materials (e.g., fencing, sand, cement, poles, etc.) from outside the site.</td>
</tr>
<tr>
<td>5. Collect building sand from an existing registered borrow pit.</td>
</tr>
<tr>
<td>6. Collect building stone from an existing registered quarry or supplier.</td>
</tr>
<tr>
<td>7. In the case of items (e.g., poles) that are not bought from a registered shop, the contractor must ensure that the harvesting of these materials did not cause serious impacts at their place of origin.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clearing of land</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The only land that may be cleared is the access road and the fence line, including a 2 m buffer on either side of the fence.</td>
</tr>
<tr>
<td>9. Clear as much land as possible (e.g., the removal of stones and rocks) by hand.</td>
</tr>
<tr>
<td>10. Translocate any species identified in the EIA to a temporary nursery for future use in rehabilitation.</td>
</tr>
<tr>
<td>11. Trees must not be damaged by construction activities.</td>
</tr>
</tbody>
</table>
12. As far as possible, all work areas (e.g., where fencing, sand, cement, poles, and stones are stockpiled) should be along the fence line. The same applies to the area where cement is mixed.

13. Do not use bulldozers to clear the vegetation along the fence line; vegetation should be cleared by hand (using local labour) with hand-held implements.

14. Systemic chemicals approved by the Ministry of Agriculture, Water, and Forestry may be used following mechanical clearing of tree-stumps to prevent regrowth.

### Facilities for workers

16. House all workers in tents or caravans. The first choice option is that the contractor camp be established on a nearby farm, but it may be established on-site. Only one camp is to be established, from which all fencing teams will operate.

17. Provide workers with water, chemical toilets, and washing facilities.

18. Provide portable toilets for field workers.

19. In the camp, cooking must be done on gas or open fires. If open fires are used, they must be in a designated spot to prevent a veldt fire. No open fires will be allowed in the field—only gas must be used.

20. No wood may be collected on site—it must be brought in from outside, or at the discretion of the Project Manager. Wood cleared from the fence line may be used.

### Management of waste (and minimization of pollution)

21. For human waste – see above.

22. Burn all combustible waste (e.g., empty cement bags) in a drum at the main construction camp (not in the field) with the necessary care taken to avoid the possibility of starting a veldt fire.

23. Remove all non-combustible waste from the site at least once a week to a registered landfill.

24. Secure any waste that is stored temporarily at the site in refuse bags or sealable bins to avoid it being blown into the veldt.

25. Collect loose litter on a daily basis.

26. Take measures to prevent waste attracting scavengers (e.g., jackals).

27. Do not pour any paint, solvents, thinners, diesel, oil, or any other harmful substances onto the ground or into a water course. Collect them in a container and remove them from site for proper disposal.

28. Provide workers with regular talks on aspects such as waste management.

29. Implement a system of incentives or penalties to ensure compliance with all waste management requirements.

### Use of water during construction

30. Although water is needed for many aspects of construction, use it sparingly at all times.

31. Manage and maintain all taps, pipes, and tanks so that they do not leak.

32. Provide workers with regular talks on aspects such as water conservation and management.

33. Implement a system of incentives or penalties to ensure compliance with all water conservation requirements.
<table>
<thead>
<tr>
<th>Protection of wildlife</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Do not kill or trap any wild animals for any reason whatsoever.</td>
</tr>
<tr>
<td>35. Do not leave fencing materials unpacked/unrolled overnight, as wildlife could get caught in them.</td>
</tr>
<tr>
<td>36. Erect fencing in sections with abundant “escape routes” to allow accidentally fenced-in wildlife to escape.</td>
</tr>
<tr>
<td>37. Before completing the fencing, make a final sweep of the camp (using vehicles or helicopters) to ensure no unwanted wildlife is trapped after fence completion.</td>
</tr>
<tr>
<td>38. Avoid sharp corners (&lt; 90°) in the construction of the fence.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport and storage of fuel and other materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>39. All vehicles that transport materials to and from the site must be roadworthy.</td>
</tr>
<tr>
<td>40. Drivers that transport the above materials must have valid drivers licences and must adhere to all traffic rules.</td>
</tr>
<tr>
<td>41. Properly secure loads upon vehicles to avoid items falling off at any time.</td>
</tr>
<tr>
<td>42. Store all materials (e.g., cement, bricks, poles, stones, and pipes) at a central storage area on-site so that the site is neat and orderly.</td>
</tr>
<tr>
<td>43. Store all fuels, paints, solvents, and other chemicals as required by law, ensuring that they cannot react with each other or be spilt onto the ground.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Servicing of vehicles and other equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>45. If vehicles or other equipment are serviced or repaired on-site, collect any grease, oil, etc. in a container and remove it from the site for proper disposal (see waste management section for details).</td>
</tr>
<tr>
<td>46. No field servicing of vehicles are allowed, except in an emergency.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health and safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>47. Only conduct construction work within normal working hours (and not on weekends).</td>
</tr>
<tr>
<td>48. Conduct regular HIV/AIDS awareness and prevention training (as per MCC/A support programme).</td>
</tr>
<tr>
<td>49. Ensure that all workers use Personal Protective Equipment (PPE) at all times.</td>
</tr>
<tr>
<td>50. Adhere to speed limits on access roads at all times.</td>
</tr>
<tr>
<td>51. Maintain first Aid kits at all construction sites that include snake bite anti-venom and bee sting antihistamines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>52. On completion of construction, clean disturbed areas of all building rubble, industrial waste, contaminated soil, etc. Do not bury this waste but remove it from the site to a registered landfill.</td>
</tr>
<tr>
<td>53. Leave fence line roads for use as fire-breaks and fence buffers.</td>
</tr>
<tr>
<td>54. Undertake a thorough inspection of the area for fencing off-cuts following completion of fencing, and remove all off-cuts from the site.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Driving</th>
</tr>
</thead>
<tbody>
<tr>
<td>55. Avoid off-road driving.</td>
</tr>
<tr>
<td>56. Follow the fence line when driving vehicles to transport machinery, people, or materials, or use existing tracks.</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>Use of angle grinders</strong></td>
</tr>
<tr>
<td>57. Limit the use of angle grinders to the construction site, as the use of these tools in the field is a major cause of bush fires.</td>
</tr>
</tbody>
</table>
INSTRUCTIONS FOR THE ROAD BUILDER IN SENSITIVE AREAS

Objective: The road must provide safe access to water-points and facilities within the camp, but must not allow for degradation of the environment (erosion, aesthetics, etc.).

Environmental performance indicators:
- There are no complaints from visitors or passers-by that the access road has compromised “sense of place.”
- The access road does not cause erosion.

Who is responsible?
- The road building contractor must be instructed in writing by the developer to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.
- The Project Manager must inspect the site at least twice to make sure that the measures are being implemented.
- The Project Manager must perform a final inspection once the road is built and issue the road contractor with a letter stating that the job has been completed in accordance with this EMP. A copy of the letter must be sent to DEA.
- The final payment (10%) will only be made after the completion letter has been issued.

Environmental management objectives for road building in sensitive areas

<table>
<thead>
<tr>
<th>Road construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Place the access road on existing tracks if available.</td>
</tr>
<tr>
<td>2. Demarcate the road construction area with hazard tape and prevent work outside the demarcated areas. In particular, demarcate trees that are not to be damaged by construction activities.</td>
</tr>
<tr>
<td>3. Prior to grading, remove and stockpile all topsoil (if present) for later use in rehabilitation.</td>
</tr>
<tr>
<td>4. Road overburden that is dumped on the down-slope of the road should not only consist of rocks, but also include enough soil to allow vegetation to become established. This is the best way to reduce the visual impact of the scar. The overburden should also not be stabilized with concrete, since this will make it impossible for vegetation to become established. The main aim is to hide the scar with natural vegetation.</td>
</tr>
<tr>
<td>5. Do not scrape any areas other than the road itself (i.e., the earthmoving equipment should only work in the demarcated road area).</td>
</tr>
<tr>
<td>6. If the road is to be surfaced, use natural materials (rocks with concrete) so that the colour of the road is similar to the surrounding area.</td>
</tr>
<tr>
<td>7. Do not demarcate the road with any artificial or unnatural barriers that are visually prominent (e.g., sign posts, whitewashed stones, metal railings, or lights of any kind).</td>
</tr>
<tr>
<td>8. Place stormwater runoff berms at regular intervals to channel water away from the road in a manner that will not cause erosion.</td>
</tr>
<tr>
<td>9. Use low water drifts at all stream crossings, reinforced with concrete and place gabions to stabilise river banks.</td>
</tr>
<tr>
<td>10. For larger river crossings, ensure that the crossing structures have been properly designed by a civil engineer to ensure that culvert sizing is correct for anticipated river flows.</td>
</tr>
<tr>
<td>11. On completion, remove all industrial waste and contaminated soil to a registered landfill site.</td>
</tr>
</tbody>
</table>
| 12. Spread saved topsoil over road verges and spoil dumps to promote natural revegetation from the seedbank contained in the soil. Spread cleared brush over topsoiled areas to protect against wind}
13. No field servicing of vehicles is to be allowed except in an emergency.
14. All vehicle servicing is to be carried out at the contractor’s camp.
15. All waste oil is to be collected for re-use or proper disposal.

**Health and safety**
16. Only conduct construction work within normal working hours and not on weekends.
17. Investigate the use of construction vehicles without reversing beepers. Rather use flagmen and flashing lights in hazardous situations.
18. Conduct regular HIV/AIDS awareness and prevention training (as per MCC/A support programme).
19. Ensure that all workers use Personal Protective Equipment (PPE) at all times.
20. Adhere to speed limits on access roads at all times.
21. Maintain first aid kits at all construction sites that include snake bite anti-venom and bee sting antihistamines.

**Facilities for workers**
22. House all workers in tents or caravans. The first choice option is that the construction camp be established on a nearby farm, but the camp may be established on-site.
23. Wherever they are housed, provide workers with water, portable chemical toilets, and washing facilities.
24. Provide portable chemical toilets for field workers.
25. In the camp, cooking must be done on gas or open fires. If open fires are used, these must be made in a designated spot so that there is no possibility for a veldt fire occurring. No open fires will be allowed in the field—only use gas.
26. Do not collect any wood on-site; it must be brought in from outside.

**Management of waste (and minimization of pollution)**
27. For human waste – see above.
28. Burn all combustible waste (e.g., empty cement bags) in a drum at the main construction camp and not in the field, with the necessary care taken to avoid the possibility of starting a veldt fire.
29. Remove all non-combustible waste from site at least once a week to a registered landfill.
30. Secure any waste that is stored temporarily at the site in refuse bags or sealable bins to avoid it being blown into the veldt.
31. Collect loose litter on a daily basis.
32. Take measures to prevent waste attracting scavengers (e.g., jackals).
33. Do not pour paint, solvents, thinners, diesel, oil, or any other harmful substances onto the ground or into a water course. Collect them in a container and remove them from the site for proper disposal.
34. Provide workers with regular talks on aspects such as waste management.
35. Implement a system of incentives or penalties to ensure compliance with all waste management requirements.
INSTRUCTIONS FOR THE BOREHOLE DRILLER IN SENSITIVE AREAS

Objective: To provide water for the construction and operation of the game or quarantine camp without (a) overexploiting the water source, (b) significantly damaging the environment, (c) disturbing grazing management, or (d) creating unsightly infrastructure.

Environmental performance indicator: Water infrastructure is located in such a way that it is not distracting to visitors (within game camps), does not cause overutilization of grazing in its vicinity, and the water level and/or yield of the borehole or in surrounding areas do not drop in the medium to long term.

Who is responsible?

✔ The water drilling contractor must be instructed in writing by the developer to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.

✔ The Project Manager must inspect the site at least twice to make sure that the measures are being implemented.

✔ The Project Manager must conduct a final inspection once the water infrastructure is built and issue the water drilling contractor with a letter that the job has been completed in accordance with this EMP. A copy of the letter must be sent to DEA.

✔ The final payment (10%) will only be made after the completion letter has been issued.

<table>
<thead>
<tr>
<th>Environmental management objectives for drilling boreholes in sensitive areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finding water (divining and drilling)</strong></td>
</tr>
<tr>
<td>1. Either use an existing borehole (e.g., on a neighbouring farm) or establish a borehole exclusively for the game or quarantine camp (as determined in the EIA or by ground water experts).</td>
</tr>
<tr>
<td>2. The depth of the borehole, pump size, casing requirements, etc. need to be specified by a groundwater expert.</td>
</tr>
<tr>
<td>3. In the camp, cooking (by/for drilling staff) must be done on gas or open fires. If open fires are used, these must be made in a designated spot so that there is no possibility for a veldt fire occurring. No open fires will be allowed in the field—only use gas.</td>
</tr>
<tr>
<td>4. Do not collect any wood on-site; it must be brought in from outside.</td>
</tr>
<tr>
<td>5. Burn all combustible waste (e.g., empty cement bags) in a drum at the main construction camp and not in the field, with the necessary care taken to avoid the possibility of starting a veldt fire.</td>
</tr>
<tr>
<td>6. Remove all non-combustible waste from site at least once a week.</td>
</tr>
<tr>
<td>7. Secure any waste that is stored temporarily at the site in refuse bags or sealable bins to avoid it being blown into the veldt.</td>
</tr>
<tr>
<td>8. Take measures to prevent waste attracting scavengers (e.g., jackals).</td>
</tr>
<tr>
<td>10. Do not pour paint, solvents, thinners, diesel, oil, or any other harmful substances onto the ground. They must be collected in a container and removed from site for proper disposal.</td>
</tr>
<tr>
<td>11. Store all fuels and other chemicals as required by law, ensuring that they cannot react with each other.</td>
</tr>
</tbody>
</table>
other or be spilt onto the ground.

12. If vehicles or other equipment are serviced or repaired on-site, collect any grease, oil, etc. in a container and remove it from the site for proper disposal.

13. Use a single track must to get to and from the drilling site. No other off-road driving will be allowed.

14. Demarcate the area around the drilling site with tape; all work must be contained within the demarcated area.

15. Do not trap or kill any wild animals for any reason whatsoever.

**Equipping the borehole (as prescribed by a groundwater expert)**

7. Water may be pumped by wind, solar, or diesel pumps.

8. If possible, the pump should be hidden from view of tourists or general traffic.

9. If a diesel engine is used, it should be housed in a building (to reduce noise and for safekeeping) and the exhaust must be muffled.

10. If a diesel engine is used, the installation must include traps to avoid spillage of oil and diesel onto the ground.

11. The diesel engine must be serviced on a regular basis.

12. Whatever pump is used must be protected from elephants, either by a fence or by packing rocks around it.

**Laying the water pipeline**

13. The pipeline must be buried underground.

14. Clearly demarcate the working area along the trench and prevent any damage outside the demarcated area.

15. Do not damage any trees that are not in the immediate alignment of the pipeline.

16. Create a windrow along the side of the work area with the cut vegetation for later use in rehabilitation.

17. Remove and stockpile all topsoil for later rehabilitation of the trench.

18. Where possible, the pipeline shall be laid next to the road, whether this is the main road or the access road to the camp.

19. Adhere to all aspects of waste management listed above.

**Health and safety**

20. Only conduct construction work within normal working hours and not on weekends.

21. Investigate the use of construction vehicles without reversing beepers. Rather use flagmen and flashing lights in hazardous situations.

22. Conduct regular HIV/AIDS awareness and prevention training (as per MCC/A support programme).

23. Ensure that all workers use personal protective equipment (PPE) at all times.

24. Adhere to speed limits on access roads at all times.

25. Maintain first aid kit at all construction sites, including snake bite anti-venom and bee sting antihistamines.
Rehabilitation

26. On completion of construction, all disturbed areas are to be cleaned of all industrial waste, contaminated soil, etc. This waste is NOT to be buried but removed from site to a registered landfill.

27. The pipeline trench is to be backfilled with overburden material followed by the stockpiled topsoil.

28. Cover with cut branches (from initial site clearing) to protect the area from erosion.
Part E. EMP for Game Camp Operations

INSTRUCTIONS FOR THE GAME CAMP MANAGER /RESPONSIBLE CONSERVANCY REPRESENTATIVE

Objective: To manage the game camp with minimal disturbance to the surrounding natural environment; to ensure that management of breeding herds of wildlife does not impact negatively on the environment, other wildlife, and local communities; and ensure that viable herds of wildlife are produced for reintroductions into new areas.

The term “environment” includes the natural and human environment, which is why this EMP deals with both. However, the EMP does NOT cover equally important aspects such as genetic management, species husbandry, etc. These wildlife management issues are outside the scope of an EMP, although they are critical in achieving the overall objectives of the camp.

Environmental performance indicators:

- A sustainable resource base (grazing) for game species to utilize.
- Annual rangeland condition inspections by MET indicate rangeland condition of good to excellent is maintained.
- Minimal wildlife conflicts with fencing is observed (mortalities, fence damage).
- Annual inspections by MET show that all environmental guidelines, laws, and regulations, as well as this EMP, are being correctly implemented.

Who is responsible?

✓ The designated Game Camp Manager is responsible for developing and implementing a wildlife management plan and grazing management plan.
✓ The MET must inspect the camp at least once per year to make sure that the measures are being implemented.
✓ The Game Camp Manager must complete a monthly environmental report according to a prescribed format, and submit this to the Conservancy Committee and the MET.

In addition the following environmental management issues require attention:

A. Water management
B. Pest management
C. Community relations
D. Grazing management
E. Fence management
### A. Water Management Objectives

Keep water consumption as low as possible, by adopting the following strategies:

1. Ensure water-points are maintained so as to have minimal surface area for evaporation.
2. Implement weekly cleaning and maintenance programmes to avoid leakage from water-points or reduction in water quality.
3. Ensure that all pipes are well maintained and leaks are repaired immediately.
4. Install a water metre, and check this daily if possible, or once a month as a minimum.
   Keep a register of water consumption per water-point so that trends can be monitored.

### B. Pest Management Objectives

1. NEVER feed wildlife.
2. NEVER leave food uncovered or in a place where it is accessible to wildlife.
3. Manage waste properly, so that it does not attract scavengers.
4. Manage predators as part of the general wildlife management programme.

### C. Community Relations

Game camps require large areas of land and, although their purpose is indirectly to benefit local communities, it is still important for management to maintain a healthy relationship with the community. Failing this, poaching, illegal grazing of livestock within game camps, and fence theft could be experienced. Good community relations can be achieved through the following:

- Plan game camps in collaboration with communities existing in the area.
- Ensure the camps do not encompass any cultural or archaeological sites.
- Employ as many locals as possible for all levels of operation in the camp.
- Provide opportunities for career advancement and skills development.
- Develop an outreach programme, where community representatives, including the youth are brought to the camp from time to time, so that they have a better appreciation of wildlife and their value.

### D. Grazing Management Objectives

1. Stocking of species should consider the ratio of selective to non-selective (or bulk) grazers.
2. Wildlife species numbers should not exceed the carrying capacity of the camp (determined for a poor rainfall year).
3. Movement tools for wildlife (water provision, fire, supplementary licks) should be used to “rotate” grazing—allowing for rest periods on over-utilized areas.

### E. Fence Management Objectives

1. Weekly fence inspections and maintenance needs.
2. Fence-lines need to be kept clear of vegetation to increase their visibility (avoid the use of herbicides wherever possible)
3. Weekly clearing of drift-material where fencing crosses waterways.
Part F. EMP for Quarantine Camp Operations

INSTRUCTIONS FOR THE GAME CAMP MANAGER/RESPONSIBLE CONSERVANCY REPRESENTATIVE

Objective: To manage the quarantine camp with minimal disturbance to the natural environment (within the camp and surrounding areas), and to ensure that the activities of quarantined livestock do not impact negatively on the rangeland within the camp.

Environmental performance indicators:

• A sustainable resource base (grazing, water) for livestock to utilize is maintained.
• Annual rangeland condition inspections by MET indicate rangeland condition of good to excellent is maintained.
• Minimal wildlife conflicts with fencing or livestock is recorded (mortalities, fence damage).
• No spread of diseases from livestock inside the camp to wildlife or livestock outside the camp is recorded.
• Annual inspections by MET show that all environmental guidelines, laws, and regulations, as well as this EMP are being correctly implemented.

Who is responsible?

✓ The designated Quarantine Camp Manager is responsible for developing and implementing a grazing management plan;
✓ The MET must inspect the camp at least once per year to make sure that the measures are being implemented;
✓ The Quarantine Camp Manager must complete a monthly environmental report according to a prescribed format, and submit this to the Conservancy Committee and the MET.

In addition the following environmental management issues require attention:

A. Water management
B. Pest management
C. Community relations
D. Grazing management
E. Fence management
### A. Water Management Objectives

Keep water consumption as low as possible, by adopting the following strategies:

1. Ensure water-points are maintained so as to have minimal surface area for evaporation.
2. Implement weekly cleaning and maintenance programmes to avoid leakage from water-points or reduction in water quality.
3. Ensure that all pipes are well maintained and leaks are repaired immediately.
4. Install a water metre, and check this daily if possible, or once a month as a minimum. Keep a register of water consumption per water-point so that trends can be monitored.

### B. Pest Management Objectives

1. NEVER feed wildlife.
2. NEVER leave food uncovered or in a place where it is accessible to wildlife.
3. Manage waste properly, so that it does not attract scavengers.
4. Manage predators as part of the general wildlife management programme.

### C. Community Relations

Game camps require large areas of land and, although their purpose is indirectly to benefit local communities, it is still important for management to maintain a healthy relationship with the community. Failing this, poaching, illegal grazing of livestock within game camps, and fence theft could be experienced. Good community relations can be achieved through the following:

- Plan game camps in collaboration with communities existing in the area.
- Ensure the camps do not encompass any cultural or archaeological sites.
- Employ as many locals as possible for all levels of operation in the camp.
- Provide opportunities for career advancement and skills development.
- Develop an outreach programme, where community representatives, including the youth are brought to the camp from time to time, so that they have a better appreciation of wildlife and their value.

### D. Grazing Management Objectives

1. Stocking of species should consider the ratio of selective to non-selective (or bulk) grazers.
2. Wildlife species numbers should not exceed the carrying capacity of the camp (determined for a poor rainfall year).
3. Movement tools for wildlife (water provision, fire, supplementary licks) should be used to "rotate" grazing—allowing for rest periods on over-utilized areas.

### Fence Management Objectives

1. Weekly fence inspections and maintenance needs.
2. Fence-lines need to be kept clear of vegetation to increase their visibility (avoid the use of herbicides wherever possible).
3. Weekly clearing of drift-material where fencing crosses waterways.
Implementation Tool 9
Integrated Land Use Planning and Management
1. **Current Situation and Rationale**

Land use planning and management is often conducted in a sectoral manner. Different stakeholders from both governmental and nongovernmental institutions frequently approach the same community separately and without properly consulting other important partners and stakeholders. Additionally, meetings are often called in an uncoordinated manner by outsiders with the objective of assisting communities in their development. This results in overlap and conflicting goals among different stakeholders, which may often lead to disillusioned communities.

A mechanism that allows local communities to take the lead in planning and implementing their development goals was developed and tested over many years in Namibia. This framework is referred to as the Forum for Integrated Resource Management (FIRM). The FIRM approach was initially tested in response to meeting fatigue among local communities in the Grootberg conservancy in Kunene region (Kruger, 2001). This approach allows the community to take the lead in their own planning and development. Integrated land use plans, annual work plans, and budgets are prepared by the community members working with their service providers. Based on these plans, relevant stakeholders are invited to support the community in reaching these goals. The forum has also become a tool to enhance decision making toward better resource management and diversification, based on local level monitoring, and serves as an appropriate platform where interdisciplinary and integrated land use planning can be conducted (Kruger, 2001).

2. **What is Integrated Land Use Planning?**

Integrated land use planning is an interdisciplinary approach that tries to achieve the basic concept of a holistic, network-oriented landscape assessment, from problem solving to the implementation of measures. Participatory land use planning (PLUP) is a participatory process that ensures that communities take a central role in the development of land use plans, enhancing ownership and responsibility for the implementation of the plans (FAO/UNEP, 1993). This process works with communities to analyze their physical environment, identify the natural resources on which they depend, and develop plans for using these resources in a fair and sustainable way.

To implement and monitor these plans, committees are formed to coordinate activities of different stakeholders in the area and conduct proper monitoring of plan implementation. The main advantage of PLUP is that local people take ownership of the plans, thus improving the likelihood that they will willingly implement them. Execution of land use plans involves considerable work and usually yields benefits only in the long term; ways must be found to provide tangible short-term benefits. Regular follow-up and backstopping by technical experts is also necessary to build capacity within management committees to oversee plan implementation.

Linking participatory land use planning to global information systems (GIS) provides a powerful tool to assist local resource users in understanding their environment and making the right decisions on how to use it. Participatory GIS (PGIS) has its roots in participatory learning and action and participatory rural appraisal and combines local knowledge with expert knowledge. The results are presented in a visualized manner, including maps or 3-D models (Rambaldi et al, 2006).

3. **The Process**

Rambaldi and Callosa-Tarr (2002) describe the PGIS process in the manual Participatory 3-Dimensional Modeling: Guiding Principles and Applications. The principles of PGIS are currently extensively used in PLUP with local livestock farmers at several locations in Namibia, as described in a case study from Orukune, Okaari, and Omazera villages (Kruger, 2006). This case study, implemented in the eastern communal lands of Namibia, used the process presented below—specifically with relation to participatory
planning for improved rangeland management—but the principles are applicable to a much wider audience using FIRM.

3.1. **Orientate yourself**

A number of information meetings should initially be held with traditional leaders, community members, and other development partners in the area to discuss the problems of rangeland degradation, the impact of drought and rainfall variation, and the decline in livestock productivity. At these meetings, the communities will have a chance to express their interest in becoming part of these initiatives and to nominate villages for possible support and intervention.

3.1.1. **Develop a village resource map**

It is important to assess the village, including its boundaries, location of households, and other infrastructure (e.g., boreholes, reservoirs, pipelines, fences, and roads). For this purpose, the community should develop a village resource map, using local materials. After discussing the map, a team member should transfer it to paper for future use.

3.1.2. **Identify major constraints and opportunities**

Using the village resource map, the location and condition of natural resources (like grazing, wood, earth dams, poisonous plants and other features) can be identified. At the same time, information can be shared regarding current land uses, major constraints, and possible solutions to overcome these constraints.

3.2. **Improve understanding of the area**

The village resource map is an initial attempt to get oriented and serve as connecting point between the external support team and the community. This map is not to scale and does not provide exact information—for example, the actual sizes of grazing areas and distances between water points. After discussing the village resource map, agreement is reached on the need for more accurate information. Information needs are then categorized into three major themes:

- **Socio-economic** (number of households, size of households, income sources, etc.)
- **Physical** (number and size of camps, location of infrastructure such as boreholes and earth dams, location of roads, etc.)
- **Natural** (rangeland condition and productivity, livestock numbers, and off-take figures)

Collecting this information requires sensitivity when approaching individual households.

The next sections illustrate the process of obtaining this information and presents some of the most relevant data.

3.3. **Create institutional capacity**

Strong community-based organizations are important where natural resources such as water and rangelands are managed in an open system. It is better to make use of existing community-based structures than to create new ones. In many cases, existing water point committees can be used.

3.3.1. **Establish an appropriate management forum**

In collaboration with the local traditional authority and the Directorate of Rural Water Supply, water point committees should be approached to request that they consider expanding their mandates to include rangeland related functions.
3.3.2. Expanding the water point committees’ Terms of Reference

Water point committees already have the mandate to control access to water resources in communal areas, the rationale being that those who control the water point tend to also control the surrounding grazing resources. It therefore makes sense to approach local water point committees to expand their jurisdiction to the management of the rangeland resources.

3.4. Introduce local level monitoring

Local level monitoring (LLM) for enhanced decision making is a methodology developed and implemented in numerous areas and with many communities in Namibia. Using LLM, four indicators are considered by livestock farmers as extremely important for pro-active decision making: livestock condition, fodder availability, rainfall, and rangeland condition/bush density. By collecting regular data on these indicators and facilitating regular meetings to present and discuss these data, farmers are creating opportunities to keep record of the trends in these important indicators and to make timely decisions on how best to react to these changes. Having real time information also helps farmers to make pro-active decisions on rangeland management and livestock production.

3.5. Use LLM for informed decision making

Collecting data is only part of the process—without understanding and using it for improved decision making, data collection is a useless exercise. Several steps are suggested to support communities and farmers to use their data.

3.5.1. Support communities in data interpretation and analysis

Following a period of data collection, a meeting should be held with participating farmers to support them in analyzing and understanding their data. This step is very important because it not only helps the farmers comprehend the information, but it serves as an incentive to continue the data collection process.

3.5.2. Present data to community

Since rangeland resources are communally used, it is important that the broader community be regularly briefed on its condition and productivity. To do so, extension agents should support the water point committees to collate all data from individuals in the area. These data are then combined and an overall picture regarding the different indicators is presented to the community.

3.5.3. Facilitate elaboration of options

It is important to allow farmers to ask questions about the data. This will improve their understanding and acceptance of the data. At the end of the process and based on their own findings, farmers should be guided toward articulating possible management options to address the challenges they face.

3.6. Regular monitoring, evaluation, and adjustment

Getting involved with farmers in this way is a long-term commitment. Extension staff and development agents must visit communities regularly to help them interpret their data and to facilitate meetings where management options can be discussed and refined.

3.7. Out- and Up-scaling

Even if results are achieved in a relatively small pilot site, this approach can be applied under similar conditions in other communal areas in Namibia and beyond. For this to happen, involvement of locally based agricultural extension technicians and mainstreaming thereof into the broader system of agricultural extension service provision are required. Using this approach at a national scale has the potential to provide decision makers at higher levels (regional and national) with real time information on livestock
condition, fodder availability, rainfall, and rangeland condition. If these data are coordinated at a national level, regular “state-of-the-nation” livestock condition or fodder availability reports could be produced that can be invaluable for decision making as to potential drought support to farmers. It will also urge farmers to take control of their rangeland and livestock farming enterprises and reduce their dependence on government support during droughts. This is in line with the National Drought Policy of the Ministry of Agriculture, Water, and Forestry.

4. **Indicators for Success**

In addition to providing people with participatory planning tools, measuring trends in rangeland condition and productivity is also needed. Communities need assistance in interpreting, analyzing, and discussing the results of their own data to take informed decisions on how to adjust their management plans. Objectively verifiable indicators to measure success can be divided into process- and impact-oriented indicators.

4.1. **Process indicators**

These indicators should reflect achievements made in the development and implementation of the participatory land use plan process. Indicators measuring the process should reflect:

- Existence of a land use plan
- Existence and quality of local level monitoring data
- Regularity of meetings to evaluate and adjust aspects of the land use plan
- Meeting attendees
- Major decisions made
- Ability of the community to implement decisions.

Minutes of the community-based group responsible for overseeing the land use plan (in this case, the water point committee) could be used as a source of process verification.

4.2. **Impact indicators**

These indicators should reflect the impact of management decisions taken by the community. Possible indicators in this regard could include:

- Current stocking rate in relation to recommended stocking rate using local level monitoring methodology.
- Evidence of de-stocking that took place in reaction to results of vegetation monitoring.
- Change in rangeland condition and bush encroachment.
- Dependence on government support during droughts.
- Trends in quality and quantity of livestock marketed.

Records kept by community-based organizations and local extension and veterinary officers should be adequate to provide the data needed to verify these indicators.

5. **References**


