

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE CHOBE SAVANNA
LODGE, KABBE SOUTH CONSTITUENCY, ZAMBEZI REGION, NAMIBIA**

APP-001596



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Prepared by:



Prepared for:



CONTACT DETAILS



Dr Andre Birkenstock
Director
Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe
Savanna Lodge
P. O. Box 1889
Ngweze
Katima Mulilo
Namibia
Tel: +267 74479943
Fax: N/A
E-mail: andre.birkenstock@chobegamelodge.com
Web: <https://desertdelta.com/>



Dr Lima Maartens
LM Environmental Consulting
P.O. Box 1284
Windhoek
Namibia
Tel: +264 61 255750
Fax: +264 88 619004
E-mail: lima@iway.na

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ABBREVIATIONS / ACRONYMS / SYMBOLS / UNITS

The following is a list of the abbreviations, acronyms, symbols, and units used in this Report:

AC	Alternating Current
AIDS	Acquired Immunodeficiency Syndrome
AU	African Union
CE	Circular Economy
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CFLs	Compact Fluorescent Globes
DEA	Directorate of Environmental Affairs
DWA	Department of Water Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
EAPAN	Environmental Assessment Professionals of Namibia
ECC	Environmental Clearance Certificate
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPA	Environmental Protection Agency/Authority
FAO	Food and Agriculture Organization
FSMS	Food Safety Management System
GIIP	Good International Industry Practice
GN	Government Notice
GRN	Government of the Republic of Namibia
HAN	Hospitality Association of Namibia
HIV	Human Immunodeficiency Virus
HVAC	Heating, Ventilation, and Air Conditioning
I&APs	Interested and Affected Parties
IBA	Important Bird Area
ICESCR	International Covenant on Economic, Social and Cultural Rights
IEMA	Institute of Environmental Management and Assessment
IFC	International Finance Corporation
ISO	International Organization for Standardization
IWM	Integrated Waste Management
KAZA TFCA	Kavango Zambezi Transfrontier Conservation Area
km	kilometre
km ²	square kilometre
kVA	kilo Volt-Ampere
LAC	Legal Assistance Centre
l	litre
m	metre
MAWF	Ministry of Agriculture, Water and Forestry
MAWLR	Ministry of Agriculture, Water, and Land Reform
MET	Ministry of Environment and Tourism
MEFT	Ministry of Environment, Forestry and Tourism
MFMR	Ministry of Fisheries and Marine Resources

MHSS	Ministry of Health and Social Services
MME	Ministry of Mines and Energy
MSDS	Material Safety Data Sheet
NCE	Namibia Chamber of Environment
NDP	National Development Plan
NTB	Namibia Tourism Board
PM	Particulate Matter
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
RETOSA	Regional Tourism Organisation of Southern Africa
SA	South Africa
SADC	Southern African Development Community
SHE	Safety, Health and Environment
STIs	Sexually Transmitted Infections
SWA	South West Africa
TB	Tuberculosis
UK	United Kingdom
UN	United Nations
UNAM	University of Namibia
UNCCD	United Nations Convention to Combat Desertification
UNWTO	United Nations World Tourism Organization
US	United States
V	Volt
VOC	Volatile Organic Compound
WHO	World Health Organization

Aspect	Element of an organization's activities or products or services that can interact with the environment (International Organization for Standardization (ISO), 2004).
Biodiversity	Defined in the Convention on Biological Diversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.”
Circular Economy (CE)	A CE is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems (see https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy). Organisations need to engage in the transition from waste management to resource management. The Institute of Environmental Management and Assessment (IEMA) translated the concept into four practical areas of business action: i) <u>Efficiency</u> : making the most of material resources while minimising the production of waste; ii) <u>Effectiveness</u> : optimising resource efficiency to avoid environmental harm and drive societal benefits; iii) <u>Security</u> : responsibly sourcing a reliable and affordable supply of materials; and iv) <u>Cycling</u> : ensuring unused and end of use materials are returned to productive use (IEMA, 2014). Key materials may include: oil, steel, rare earth minerals, timber; there is also conflict materials and palm oil.
Disposal	The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid or hazardous waste on or in the land or water (United States (US), Environmental Protection Agency (EPA)).
Environment	Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation (ISO, 2004).
Environmental Assessment (EA)	The process of identifying, predicting and evaluating the effects of proposed activities on the environment. It should include information about the risks and consequences of activities, possible alternatives, and steps which can be taken to mitigate (minimise or offset) any negative impacts. It should also discuss steps to increase positive impacts and to promote compliance with the principles of environmental management. Both Government bodies and private persons or groups (such as private companies) can be required to carry out environmental assessments (Ministry of Environment and Tourism (MET) (now Ministry of Environment, Forestry and Tourism (MEFT)), 2008).
Environmental Clearance Certificate (ECC)	A certificate which allows a listed activity to go ahead. The certificate means that the Ministry of Environment and Tourism is satisfied that the activity in question will not have an unduly negative impact on the environment. It may set conditions for the activity to prevent or to minimise harmful impacts on the environment (MET, 2008).

Environmental Management Plan (EMP)	A key document that should consist of the set of measures to be taken during implementation and operation to eliminate, offset, or reduce adverse environmental impacts to acceptable levels. Also included in the plan are the actions needed to implement them (Directorate of Environmental Affairs (DEA), 2008).
Erosion	The breaking down and subsequent removal of either rock or surface material by wind, rain, wave action, freezing and thawing and other processes (The Northern Miner, 2007).
Good International Industry Practice (GIIP)	The exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such an exercise should be that the project employs the most appropriate technologies in the project-specific circumstances (International Finance Corporation (IFC), 2007a).
(Grouped) Hazardous Substance	Any substance, mixture of substances, product or material declared in terms of section 3 (1) to be a hazardous substance of any kind (Hazardous Substances Ordinance No. 14 of 1974).
Hazardous Waste	Waste that poses substantial or potential threats to public health or the environment. There are four factors that determine whether or not a substance is hazardous: i) ignitability (i.e. flammable); ii) reactivity; iii) corrosivity; and iv) toxicity (Wikipedia).
Impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects (ISO, 2004).
Important Bird Area (IBA)	Important Bird Areas (IBAs) are discrete regions in which: i) significant assemblages of birds occur (defined as 5,000 birds at a national level, or 20,000 globally); ii) significant numbers of restricted-range or biome-specific birds occur; iii) significant numbers of threatened birds occur (i.e. globally and nationally threatened Red Data species); or iv) 1 percent (%) of the world population of any species occurs (Simmons <i>et al.</i> , 1999).
Innovation Principle	Innovation Principle: policy or regulatory decisions and controls should consider the role of innovation as a driver for jobs, growth, social and environmental improvement (IEMA, 2017)
Integrated approach	Integrated approach: systems thinking should underpin an integrated approach to environmental management, helping to prevent shifting environmental burdens and optimise outcomes (IEMA, 2017).
Invasive Alien Species	The intentional or accidental introduction of alien, or non-native, species of flora and fauna into areas where they are not normally found can be a significant threat to biodiversity, since some alien species can become invasive, spreading rapidly and out-competing native species (IFC, 2012).
Integrated Waste Management (IWM)	Concept of employing several waste control and disposal methods to minimise the environmental impact of commercial and industrial waste streams (Business Dictionary). The generation of waste should be <u>avoided</u> as far as practicable; where it cannot be avoided, waste should be <u>reduced</u> , <u>re-used</u> and <u>recovered</u> (including recycling and composting); where waste cannot be reduced, re-used and/or recovered, it should be <u>disposed</u> of in an environmentally sound manner.
Mitigation	Any action intended to either reduce or avert exposure or the likelihood of exposure to sources that are not part of a controlled practice, or which are out of control as a consequence of an accident (DEA, 2008).
Mitigation Hierarchy	Adoption of a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, or compensate/offset for risks and impacts to workers, Affected Communities, and the environment is widely regarded as a Good International Industry Practice (GIIP) approach to managing environmental and social risks and impacts: <u>Avoidance</u> requires the client to identify and, where available and technically and financially feasible, make changes to the project's design (or potential location) to avoid adverse risks and impacts on social and/or environmental features. Avoidance is considered to be the most acceptable form of mitigation. <u>Minimisation</u> : where avoidance is not possible, adverse impacts and risks can be minimised through environmental and social measures/treatments/design. Acceptable options to minimise will vary and include: abate, rectify, repair, and/or restore impacts, as appropriate. <u>Compensation/Offset</u> : where avoidance or minimisation measures are not available, it may be appropriate to design and implement measures that compensate/offset for residual risks and impacts. It should be noted that these measures do not eliminate the identified adverse risks and impacts, but they seek to offset it with an (at least) comparable positive one (IFC, 2012).

Monitoring	The repetitive and continued observation, measurement and evaluation of environmental data to follow changes over a period of time to assess the efficiency of control measures (DEA, 2008).
Pollution	The direct or indirect introduction of something which is harmful to people, property, or the environment into the air, land, or water. Pollution can be caused by substances, vibrations, heat, radiation or noise. One of the key ideas behind the law is that the polluter must pay the costs of pollution (MET, 2008).
Pollution Prevention	Reducing or eliminating pollution at source based on taking an integrated approach to environmental protection (IEMA, 2017).
Polluter Pays Principle	The environmental costs of pollution should be borne by those who cause the pollution (IEMA, 2017).
Precautionary Principle	Where there is the potential for significant or irreversible environmental damage, lack of full scientific evidence should not be used as the basis for not taking appropriate measures to prevent or mitigate environmental harm (IEMA, 2017).
Proximity Principle	Environmental damage should be rectified, compensated or treated at or as near to source as practicable and waste should be dealt with as close as possible to where it is produced (IEMA, 2017).
Sewage	The subset of wastewater that is contaminated with faeces and/or urine; it includes domestic, municipal, or industrial liquid waste products disposed of, usually via a pipe or sewer or similar structure (Wikipedia).
Significant Effect	Having, or likely to have, a consequential qualitative or quantitative impact on the environment, including changes in ecological, aesthetic, cultural, historic, economic and social factors, whether directly or indirectly, individually or collectively (Environmental Management Act (EMA) 7 of 2007).
Stormwater	Water that originates during precipitation (rainfall) events. Stormwater that does not soak into the ground becomes surface runoff. Stormwater is of concern for the following two reasons: one is related to the volume and timing of runoff water (for flood control and the supply of water) and the other is related to the potential contaminants that the water may be carrying and subsequent water pollution (Wikipedia).
Sustainable Development	Meeting the needs of the present, without compromising the ability of future generations to meet their own needs (IEMA, 2017).
Sustainable Use	Using natural resources in a way and at a rate that does not lead to a long-term decline, so that the environment will be able to meet the needs of future generations, i.e. the natural resources of the earth must be shared fairly between present and future generations (MET, 2008).
Transparency & Inclusivity	Multi-level and multi-sector stakeholder engagement, accountability and empowerment should underpin environmental policy development. Local level buy-in and participation should guide the design of local solutions (IEMA, 2017).
Waste	An unwanted or undesired material or substance. It is also referred to as rubbish, trash, refuse, garbage, or junk, depending on the type of material. Litter is waste that has been carelessly disposed of in plain sight. Waste is “dumped” in order to avoid paying waste disposal fees (Wikipedia).
Waste Management	The collection, transport, processing, recycling or disposal, and monitoring of waste materials (Wikipedia).
Wastewater	Any water that has been adversely affected in quality by anthropogenic (human) influences, i.e. liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations (Wikipedia).
Wetlands	“...wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres” (Article 1.1) and wetlands “...may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands.” (Article 2.1) (International Convention on Wetlands (Ramsar Convention), 1971).

1 Introduction

1.1 Background

Desert & Delta Safaris, created in 1982, is considered the most established safari circuit in Botswana. It currently owns eight premier safari properties, seven in Botswana and one in Namibia: Xugana Island Lodge, Camp Okavango, and Camp Xakanaxa (Okavango Delta); Camp Moremi (Moremi Game Reserve); Leroo La Tau (Makgadikgadi Pans National Park); Savute Safari Lodge and Chobe Game Lodge (Chobe National Park); and Chobe Savanna Lodge (see <https://desertdelta.com/>).

Chobe Savanna Lodge, situated on the Chobe River floodplain, Zambezi Region, Namibia (see Figure 1) was built in 1999; the present owner, Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge, purchased the property in 2002.

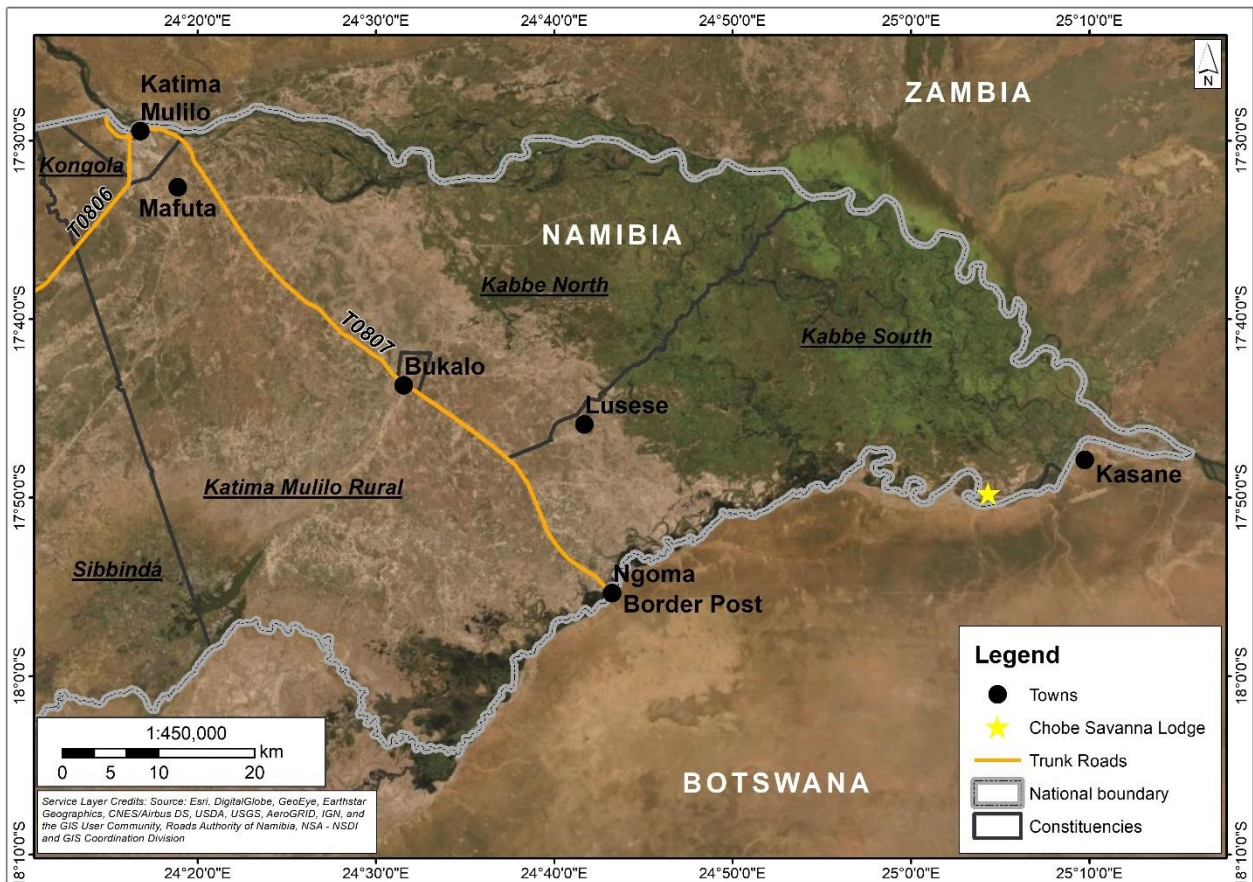


Figure 1: Map showing the location of the Chobe Savanna Lodge, Kabbe South Constituency, Zambezi Region, Namibia (Source: Miss Maïke Prickett, GIS Specialist, 09 July 2020).

WASTE MANAGEMENT, TREATMENT, HANDLING AND DISPOSAL ACTIVITIES 2.3 The import, processing, use and recycling, temporary storage, transit or export of waste; TOURISM DEVELOPMENT ACTIVITIES 6 The construction of resorts, lodges, hotels or other tourism and hospitality facilities; WATER RESOURCE DEVELOPMENTS 8.1 The abstraction of ground or surface water for industrial or commercial purposes; 8.3 Any water abstraction from a river that forms an international boundary; and OTHER ACTIVITIES 11.2 Construction of ..., leisure and recreation sites are regarded as activities that may not be undertaken without an Environmental Clearance Certificate (ECC).

In line with the Commencement of the Environmental Management Act (EMA), 2007 (Act No. 7 of 2007) (06 February 2012; Government Notice (GN) No. 28), the Listed Activities that may not be undertaken without an ECC (GN No. 29), and the Environmental Impact Assessment (EIA) Regulations (GN No. 30) (Government of

the Republic of Namibia (GRN), 2012), Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge thus applied to the Environmental Commissioner, Ministry of Environment and Tourism (MET; now Ministry of Environment, Forestry and Tourism (MEFT)) for an ECC on 09 July 2020. The MEFT verified the application APP-001596 and requested the uploading of the following documents: Environmental Management Plan (EMP); Consent letter or support document from the relevant Authority; Project Site Area (map) with clear coordinates; and Curriculum Vitae of designated EAP (Environmental Assessment Practitioner) to manage the assessment process on 09 July 2020.

Chobe Savanna Lodge is registered with the Namibia Tourism Board (NTB) and is also a member of the Hospitality Association of Namibia (HAN) (Mr Johan Bruwer, Director, Chobe Game Lodge, pers. comm.).

1.2 Terms of Reference

LM Environmental Consulting was appointed by Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge on 16 June 2020 to prepare an Environmental Management Plan (EMP) for the Chobe Savanna Lodge.

A site visit was undertaken by Dr Lima Maartens T/A LM Environmental Consulting between 01 and 03 July 2020.

1.3 Environmental Assessment Practitioner

The author of this Report is Dr Lima Maartens who has more than 27 years' experience in natural resource management (she gained her doctorate (Ph.D.) in Fisheries Science from Rhodes University, South Africa (SA) while working for the Namibian Ministry of Fisheries and Marine Resources (MFMR) in 2000, lecturing (University of Namibia (UNAM)), environmental science and management (De Beers Marine Namibia and the Canadian Forsys Metals Corp), and consulting). Dr Maartens is registered as a Lead Practitioner and Reviewer with the Environmental Assessment Professionals of Namibia (EAPAN) (she served on the Executive Committee during 2016/17), an Associate Member and Environmental Auditor with the Institute of Environmental Management and Assessment (IEMA) in the United Kingdom (UK), an Associate Member of the Namibia Chamber of Environment (NCE), and a Member of the Namibia Scientific Society. LM Environmental Consulting was established by Dr Maartens in October 2009.

2 Description of the Project

2.1 Location

The Chobe Savanna Lodge is situated on the Chobe River floodplain, 15 kilometres (km) upstream from Impalila Island, Kabbe South Constituency, Zambezi Region, Namibia.

The Lodge is located within the Kasika Conservancy (meaning “small Mangosteen”). The Conservancy was registered in 2005 and covers an area of 147 square kilometres (km²). Around 1,094 people reside in the Kasika Conservancy; the main language spoken is Subia (see <http://www.nacso.org.na/conservancies/kasika>).

The Eastern Caprivi Wetlands is a Globally Important Bird Area (IBA); the area is divided into five geographically distinct zones: the Upper Kwando (137 km²); the Lower Kwando and Linyanti Swamp (3,830 km²); the ephemeral Lake Liambezi (406 km²); the Chobe River and marsh (311 km²); and the Zambezi floodplains (1,800 km²) (Simmons *et al.*, 1999).

Chobe Savanna Lodge also falls within the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA) (see <https://www.kavangozambezi.org/en/> and <http://www.met.gov.na/national-parks/kavango-zambezi-transfrontier-conservation-area-kaza-tfca/297/>).

2.2 Access

Access to the Lodge can be attained via flying to Katima Mulilo, driving from there to Kasane in Botswana (via the Chobe National Park), and then by boat; or via flying to Kasane, and from there by boat. Chobe Savanna Lodge has five boats, all with 4-stroke engines. A “service road” is used by the staff of Chobe Savanna Lodge (from Katima Mulilo and via gravel road to Nakabolewa, Mbalasinte, and Kasenu, and from there to the Lodge) during the dry season only (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.)

2.3 Facilities

The infrastructure layout of the Chobe Savanna Lodge can be seen in Figure 2.

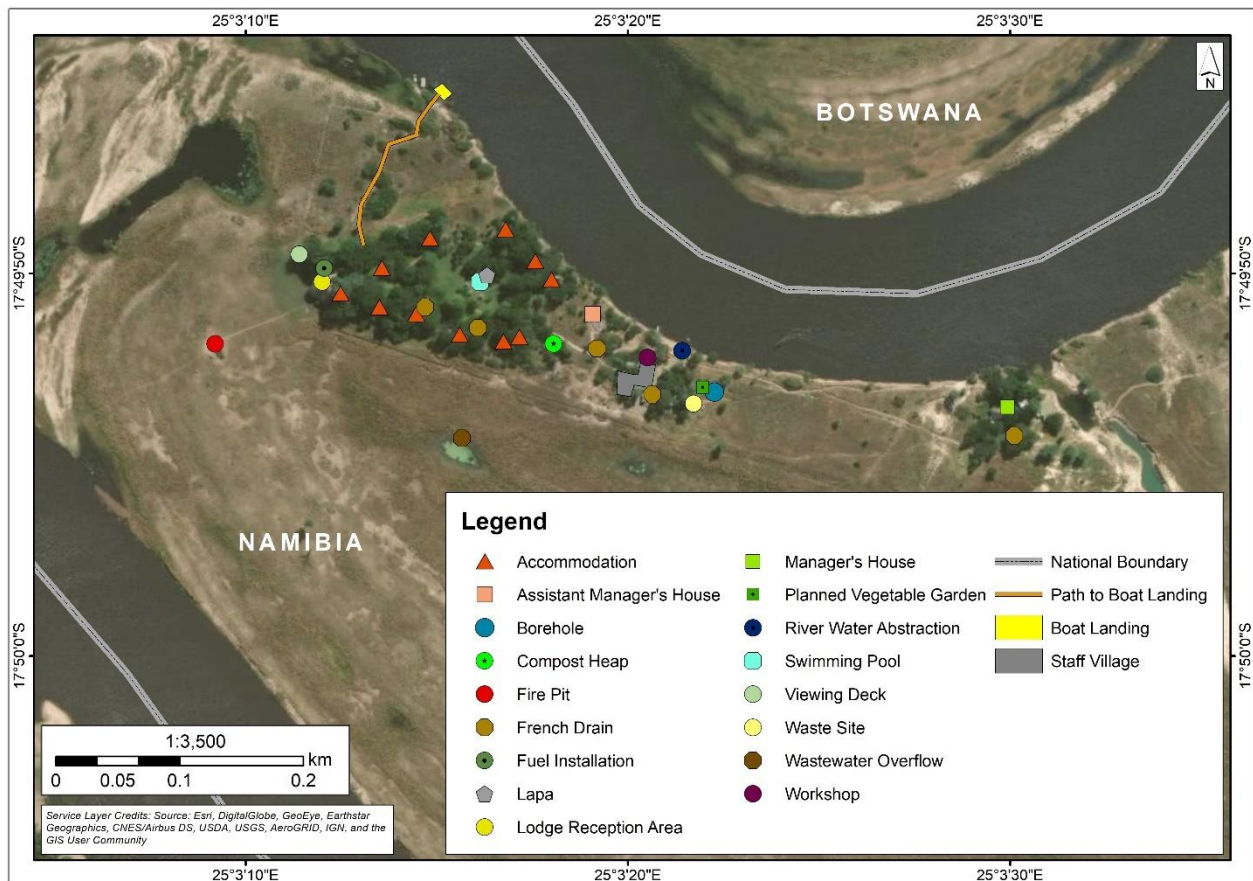


Figure 2: Map showing the infrastructure layout of the Chobe Savanna Lodge (Source: Miss Maike Prickett, GIS Specialist, 09 July 2020).

Infrastructure at Chobe Savanna Lodge consists of:

- A thatched, open-sided main building that features a 270 degree view over the Chobe River and Chobe National Park, and including: reception; public bathroom; lounge and dining areas; upstairs bar; and viewing deck (see Figure 3);
- A camp fire-area, located in front of the main building out on the Chobe floodplain (see Figure 2);



Figure 3: Pictures showing: a) the main building; and b) view from the upstairs bar (Source: L. Maartens, 02 July 2020).

- Thatched chalets that can accommodate 26 guests at a time (ten twin-bedded chalets (two sets interleading) and one family room); each of the chalets has a private deck, an integrated bedroom and lounge area, and en-suite facilities (shower, toilet, basin); the chalets are air-conditioned, have its own complimentary mini bars, and Wi-Fi is also available;
- Attractive gardens (a vegetable garden in raised bedding and under shade netting is planned), including a swimming pool and lapa-area (see Figure 4);



Figure 4: Pictures showing: a) gardens; b) swimming pool and lapa-area; and c) location for the planned vegetable garden (Source: L. Maartens, 02 and 03 July 2020).

- A boat station (see Figure 5);



Figure 5: Picture showing the boat station (Source: L. Maartens, 03 July 2020).

- Manager's house; and Assistant Manager's house (under construction; see Figure 6);



Figure 6: Picture showing the Assistant Manager's house (currently under construction) (Source: L. Maartens, 03 July 2020).

- A staff village, including: a kitchen; a laundry; four accommodation units, each with two beds; ablution (two toilets and two showers each for male and female staff) (see Figure 7); and two guide tents;



a)



b)



c)



d)

Figure 7: Pictures of the staff village showing: a) accommodation units; b) ablution; c) kitchen; and d) laundry (Source: L. Maartens, 02 July 2020).

- A workshop / tool-shed (see Figure 8);



a)



b)

Figure 8: Pictures showing: a) workshop / tool-shed; and b) fuel storage area (Source: L. Maartens, 02 July 2020).

2.4 Activities

The following activities are offered by Chobe Savanna Lodge: motorised boat safaris; fishing (catch-and-release for Bream or Tiger Fish); bird watching; and cultural excursions (to one of the surrounding communities) (also see <https://desertdelta.com/camps/chobe-savanna-lodge/>).

2.5 Engineering Services

2.5.1 Water Supply

Water for the irrigation of the gardens is abstracted from the Chobe River; water for the Chobe Savanna Lodge, staff village, and Manager's house is abstracted from one borehole (15 metres (m) deep), stored in one 5,000 and one 10,000 litre (l) tanks, after which the water is put through a filtration system (to obtain potable water) (see Figure 9). There are no water meters and the amount of water used per month is uncertain (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).



Figure 9: Pictures showing: a) water abstraction from the Chobe River; b) water supply borehole; c) two water storage tanks; and d) the potable water filtration system (Source: L. Maartens, 02 July 2020).

As water is abstracted for commercial purposes (and from an International water course), Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge needs to apply from the Department of Water Affairs (DWA), Ministry of Agriculture, Water and Land Reform (MAWLR) for a permit to abstract surface (Chobe River), as well as groundwater (from the borehole) (Mr Franciskus Witbooi, Deputy Director: Law Administration, Ministry of Agriculture, Water and Land Reform, pers. comm., 08 July 2020).

2.5.2 Power (and Fuel) Supply

Power is obtained from Botswana via the grid and AC (Alternating Current) 220 V (Volt) mains power is available 24 hours a day. A 86 kVA (kilo Volt-Ampere) standby generator automatically switches on whenever a power failure occurs (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).

Fuel (diesel) for the generator is brought in via boat in 200 litre drums and is stored in a steel tank to the left of the generator (see Figure 10).



Figure 10: Pictures showing: a) transformer; b) fuel tank and diesel generator (Source: L. Maartens, 02 July 2020).

It is advised that the fuel tank be put into a bunded enclosure with a net capacity of at least 120% of the net capacity of largest tank (Environment Protection Authority (EPA), 2004).

Additional fuel (mainly petrol for the boats; four 200 l drums and 33 25 l jerry cans) is stored in the workshop / tool-shed. Three 200 l drums containing diesel is also stored here (see Figure 8b).

Note A consumer fuel installation certificate is required from the Ministry of Mines and Energy (MME) should someone wish to have in possession more than 200 l of petrol or diesel in an urban area or more than 600 l of petrol or diesel in a rural area.

There are two gas stoves on the property, one at the Manager's house and one at the Assistant Manager's House (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).

2.5.3 Sewage

A septic tank and soak away system (French drain) (see Figure 2) have been in use since 1999 (the pipes are sometimes blocked by the roots of trees planted at the time of the construction of the Lodge; also, it was recognised that the overflow from the soak away, especially during the flood season, is unacceptable).

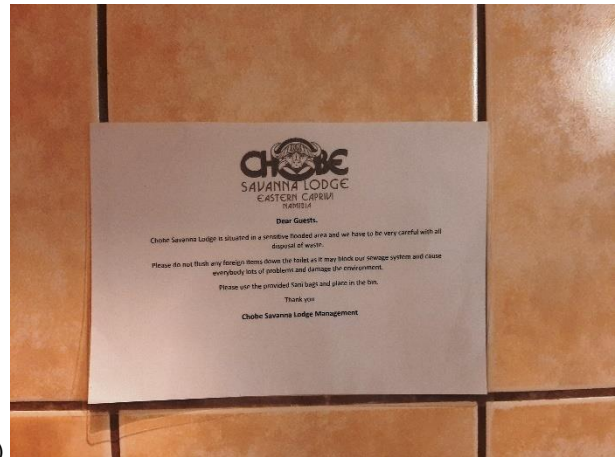


Figure 11: Pictures showing notices asking guests to: a) re-use their towels (to reduce the amount of detergent used); b) not flush any foreign objects down the toilets (Source: L. Maartens, 02 July 2020).

Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge needs to apply from the DWA, MAWLR for a permit to discharge effluent/wastewater (Mr Franciskus Witbooi, Deputy Director: Law Administration, Ministry of Agriculture, Water and Land Reform, pers. comm., 08 July 2020).

2.5.4 Waste Management

An Integrated Waste Management (IWM) approach is followed, i.e. employing several waste control and disposal methods in order to minimise the environmental impact of the commercial waste streams.

Where the generation of waste cannot be avoided or reduced, it is re-used, recovered (including recycling (tins, glass and plastic is taken by Seapride Foods to Katima Mulilo (Seapride delivers food and cleaning materials to the Lodges in the area on a weekly basis, and removes the waste; the Lodge's truck travels to and from Katima twice per month, but only during the dry season); scrap metal is collected and taken via truck to Katima Mulilo) and composting) and disposed of in an environmentally sound manner. Some of the paper waste is incinerated (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).

In the past, there has been some challenges related to the management of solid waste. For example, refuse was deposited in pits all over the property and their positions are revealed by erosion of the topsoil during high floods. It is advised that these areas be cleaned up and the waste removed and disposed of at Katima Mulilo landfill site.



Figure 12: Pictures showing: a) the fenced-off waste site where waste is stored temporarily and/or incinerated; and b) some hazardous waste (Source: L. Maartens, 02 July 2020).

It is also advised that all hazardous waste (e.g. fuel, oil, batteries, pharmaceuticals (i.e. medicines), obsolete computer equipment, fluorescent tubes and compact fluorescent globes (CFLs), etc.) be removed and disposed of at a licensed hazardous waste facility (e.g. Kupferberg in Windhoek).

2.6 Employment

Chobe Savanna Lodge currently employs around 20 permanent staff. The staff, consisting of Kitchen, Bar, Housekeeping, Maintenance, and Groundsmen, is split into two groups, of which the Kitchen and Bar staff are rotated.

The staff mainly comes from the Kasika-area and walk back to their homes after work. During the flood season, canoes are provided for transport by the Lodge. Approximately 15 of the 20 staff reside at the staff village (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).

2.7 Challenges

One of the challenges include the erosion of the river bank and topsoil. Currently seedlings are grown and planted on the river bank in an attempt to stabilise the bank (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.; see Figure 13).



Figure 13: Pictures showing: a) seedlings; and b) some seedlings have been planted in an attempt to stabilise the river bank (Source: L. Maartens, 02 July 2020).

Buffalo and elephants access the Lodge-area and sometimes cause damage (the buffalo break the electrical fences). During the past year, representatives from the Kasika Conservancy only twice patrolled the area.

The installation of a bio-filtering system (wastewater treatment) was envisaged and provision for such a system was made in the 2019-budget; this system has not been installed (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).

3 Regulatory Framework

The most pertinent legislation (Legal Assistance Centre (LAC), 2019; Ruppel and Ruppel-Schlichting, 2016), with the aim of informing Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge of the legal requirements pertaining to the Chobe Savanna Lodge is listed in Table 1.

Table 1: Regulatory framework for the Chobe Savanna Lodge, Kabbe South Constituency, Zambezi Region, Namibia.

National Law
Acts of Parliament, Regulations, Ordinances, Proclamations
The Constitution of the Republic of Namibia 1990 (and First Amendment Act 34 of 1998, Second Amendment Act 7 of 2010, and Third Amendment Act 8 of 2014)
Public Health Act 36 of 1919 (as amended by SWA (South West Africa) Proclamation 36 of 1920) (to be repealed by the Public and Environmental Health Act 1 of 2015 when that Act comes into force)
Employees' Compensation Act 30 of 1941 (as amended in South Africa prior to Namibian independence) (Amendment Act 5 of 1995 amends the Act substantially and changes its name from the Workmen's Compensation Act to the Employees' Compensation Act) (and the General Regulations 1961 (as amended))
Water Act 54 of 1956 (as made applicable in Namibia)
Soil Conservation Act 76 of 1969 (as amended in South Africa to March 1978)
General Health Regulations (Government Notice 121 of 14 October 1969 as amended)
Accommodation Establishments and Tourism Ordinance 20 of 1973 (and Amendments 25 of 1973, 17 of 1974, 12 of 1975, 5 of 1977, 14 of 1977, 4 of 1978, 11 of 1978 and 14 of 1979) (and the Regulations on Tourist Recreation Areas 1974 and the Regulations relating to Accommodation Establishments and Tourism 1974))
Hazardous Substance Ordinance 14 of 1974 (and the General Regulations 1979; no post-independence regulations have been promulgated)
International Health Regulations Act 28 of 1974 (as amended to December 1977)
Nature Conservation Ordinance 4 of 1975 (and the Regulations Relating to Nature Conservation 1976 and the amended Regulations)
Atmospheric Pollution Prevention Ordinance 11 of 1976 (Regulations are authorised by several sections of the Act; no post-independence regulations have been promulgated)
Regional Councils Act 22 of 1992 (and Amendment Acts 17 of 1997, 30 of 2000, 12 of 2002, 12 of 2010, 16 of 2010, and 7 of 2017) (and the Regulations: Commercialisation Regulations 2001; Joint Business Venture Regulations 2001; and Tender Board Regulations 2001)
Social Security Act 34 of 1994 (as amended by the State-owned Enterprises Governance Act 2 of 2006/ Public Enterprises Governance Act 2 of 2006, and the Labour Act 11 of 2007 (and the General Regulations 1995, and amendments))
Affirmative Action (Employment) Act 29 of 1998 (as amended by Act 6 of 2007 and the Labour Act 11 of 2007) (and the General Regulations 1999)
Road Traffic and Transport Act 22 of 1999 (as amended by the Road Traffic and Transport Amendment Act 6 of 2008) (and the Road Traffic and Transport Regulations 2001)
Namibia Tourism Board Act 21 of 2000 (as amended by the State-owned Enterprises Governance Act 2 of 2006/Public Enterprises Governance Act 2 of 2006) (and the Regulations relating to levies payable by accommodation establishments 2004, the Regulations relating to the registration of regulated businesses 2004, the Regulations relating to the registration of accommodation establishments 2004, and the National Star Grading Regulations relating to Accommodation Establishments 2012)
Traditional Authorities Act 25 of 2000 (and the Regulations 2001)
Inland Fisheries Resources Act 1 of 2003 (and the Regulations)
Environmental Management Act 7 of 2007 (and the Environmental Impact Assessment Regulations 2012)
Labour Act 11 of 2007 (and the Labour Amendment Act 2 of 2012) (and the Regulations relating to the Health and Safety of Employees at Work 1997, the Labour General Regulations 2008, and the Regulations relating to Domestic Workers 2017)
Tobacco Products Control Act 1 of 2010 (and the Regulations 2014)
Water Resources Management Act 11 of 2013 (to be brought into force on a date set by the Minister by notice in the Government Gazette)
Public and Environmental Health Act 1 of 2015 (to be brought into force on a date set by the Minister by notice in the Government Gazette)
Policies, Guidelines, National Strategies & Action Plans
Policies
Conservation of Biotic Diversity and Habitat Protection 1994
Namibia: National Code on HIV/AIDS in Employment 2000
National Water Policy White Paper - Policy Framework for Equitable, Efficient, and Sustainable Water Resources Management and Water Services 2000
Namibia's <i>Draft</i> Wetland Policy 2004
National Policy on HIV/AIDS 2007

Policy on Tourism and Wildlife Concessions on State Land 2007
Water Supply and Sanitation Policy (WASP) 2008
National Policy on Tourism for Namibia 2008
National Gender Policy 2010 - 2020
National Health Policy Framework 2010-2020 - "towards quality health and social welfare services"
National Policy on Climate Change for Namibia 2011
National Policy on Community Based Natural Resource Management 2013
Revised National Policy on Human Wildlife Conflict Management 2018-2027
Guidelines
Code of Practice: Volume 1 Septic Tank Systems General Guidelines June 2007
*Draft Water Quality Guidelines and Standards for Potable Water, as well as Water Quality Standards for Effluent 2008
Petroleum Products Regulations, 2000 Guidelines for Consumer Installations
National Strategies & Action Plans
Namibia's Green Plan 1992
Vision 2030 2004
National Climate Change Strategy & Action Plan (2013 – 2020)
Namibia's Second National Biodiversity Strategy and Action Plan (NBSAP 2) (2013 – 2022)
Third National Action Programme for Namibia to Implement the United Nations Convention to Combat Desertification (2014 – 2024)
Namibia's 5th National Development Plan (NDP5) – Working together towards prosperity (2017/18 – 2021/22)
National Solid Waste Management Strategy 2018
Town Planning Schemes, Structure Plans, & Land Use Plans
N/A
Strategic Environmental Assessments (SEAs)
N/A
International Law
African Union (AU)/Regional
African Charter on Human and Peoples' Rights (Banjul Charter) 1981, the Protocol to the African Charter on Human and Peoples' Rights on the establishment of the African Court on Human and Peoples' Rights 1998 (non-binding), and the Protocol to the African Charter for Human and Peoples' Rights on the Rights of Women in Africa 2003
Revised (Algiers) Convention on the Conservation of Nature and Natural Resources 2003
African Convention on the Conservation of Nature and Natural Resources (Revised Version) 2003 (non-binding)
Agreement for the Establishment of the Africa Institute for the Environmentally Sound Management of Hazardous and Other Wastes Agreement 2004
Treaty on the Establishment of the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA) 2011
Regional Policy Guidelines Economic Instruments for the Environmentally Sound Management of Waste Oil 2013
Southern African Development Community (SADC)
Treaty of the Southern African Development Community 1992 (and Agreement Amending the Treaty 2001; Agreement Amending Article 22 of the Treaty 2007; Agreement Amending the Treaty 2008; Agreement Amending the Treaty 2009 – DES; and Agreement Amending the Treaty 2009 – ORGAN)
Charter of the Regional Tourism Organisation of Southern Africa (RETOSA) 1997
Protocol on the Development of Tourism 1998
Protocol on Health 1999
SADC Protocol on Shared Watercourse Systems 1995 - Note: This Protocol has been repealed and replaced by the SADC Revised Protocol on Shared Watercourses, 2000, for the SADC member states that are parties to the Revised Protocol. The 1995 Protocol remains in force between Namibia and SADC states that are a party to it but not to the Revised Protocol.
Charter of Fundamental Social Rights in SADC 2003
SADC Protocol on Environmental Management for Sustainable Development 2014 (non-binding)
United Nations (UN) / International Conventions
Constitution of the Food and Agriculture Organization of the United Nations (FAO) 1945
Constitution of the World Health Organization (WHO) 1946 (and Amendment to Article 7 of the Constitution of the World Health Organization 1965; Amendment to Article 74 of the Constitution of the World Health Organization 1978; Amendments to Articles 24 and 25 of the Constitution of the World Health Organization 1986; and Amendments to Articles 24 and 25 of the Constitution of the World Health Organization 1998)
International Convention on the Elimination of All Forms of Racial Discrimination 1966
International Covenant on Economic, Social and Cultural Rights (ICESCR) 1966
Statutes of the World Tourism Organization (UNWTO) 1970 (Amendment to Article 38 of the Statutes of the World Tourism Organization 1979)
Declaration of the United Nations Conference on the Human Environment 1972
Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) 1979 and Optional Protocol to the Convention on the Elimination of all Forms of Discrimination against Women 1999
Vienna Convention for the Protection of the Ozone Layer 1985 and Montreal Protocol on Substances that Deplete the Ozone Layer 1987 (and Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Adopted at the Second Meeting of the Parties on 29 June 1990; Amendment to the Montreal Protocol on Substances that Deplete

the Ozone Layer, Adopted at the Fourth Meeting of the Parties at Copenhagen on 25 November 1992; Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Adopted by the Ninth Meeting of the Parties at Montreal on 17 September 1997; and Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, at the Eleventh Meeting of the Parties on 3 December 1999)
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989
Convention on Biological Diversity (Biodiversity Convention) 1992, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Montreal 2000, and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity 2010
United Nations (UN) Framework Convention on Climate Change 1992 and the Kyoto Protocol to the UN Framework Convention on Climate Change 1997
United Nations Convention to Combat Desertification (UNCCD) in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa 1994
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade 1998 with Annexes as amended
Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances 2000 (OPRC-HNS Protocol)
Stockholm Convention on Persistent Organic Pollutants (POPs) 2001 with Annexes (as amended in 2009, 2011, 2013 and 2015)
Convention for the Safeguarding of the Intangible Cultural Heritage 2003
WHO Framework Convention on Tobacco Control (WHO FCTC) 2003
Convention on the Protection and Promotion of the Diversity of Cultural Expressions 2005
World Health Organization (WHO) International Health Regulations 2005
United Nations Guiding Principles on Business and Human Rights 2011
Paris Agreement (United Nations Framework Convention on Climate Change) 2016
International Best Practice
International Finance Corporation (IFC) Environmental Health and Safety (EHS) Guidelines 2007 and the EHS Guidelines for Tourism and Hospitality Development 2007

**The Department of Water Affairs and Forestry, Ministry of Agriculture, Water and Forestry prepared Water Quality Guidelines and these were adopted in 1998. Subsequently (in 2008), draft Water Quality Guidelines and Standards for Potable Water, as well as Water Quality Standards for Effluent were prepared to become Regulations under the Water Resources Management Act 24 of 2004 (which never came into force). The latter Guidelines/Standards may be used, but are not yet enforceable.*

4 Environmental Management Plan

4.1 Goal, Aim and Structure of the Environmental Management Plan

The ultimate goal of an Environmental Management Plan (EMP) is to ensure that the physical, biophysical and socio-economic objectives are met to such an extent that the overall product of the activity will not result in a net negative impact.

The aim of the EMP is to assist Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge to ensure that the day-to-day operations are carried out in an environmentally responsible manner, thereby preventing or minimising the negative effects and maximising the positive effects of the Chobe Savanna Lodge.

Once approved by the Directorate of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT), in the form of an Environmental Clearance Certificate (ECC), the EMP will become a legally binding document and Chobe Savanna Lodge, and their Contractor(s), are required to abide to the conditions stipulated in the EMP.

The EMP is presented as a comprehensive matrix: for each Activity/Process and related Aspects and Impacts, Management Actions required to address the impacts arising directly and indirectly from the various aspects of the Chobe Savanna Lodge are listed.

A copy of the EMP should be made available at the Chobe Savanna Lodge.

Auditing (and monitoring) should be carried out to ensure compliance with the EMP. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that needs to be undertaken.

Note that the EMP is not a static document and that the document should be updated as Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge's activities at the Chobe Savanna Lodge progresses.

4.2 Permits and Approvals

The most pertinent legislation, with the aim of informing Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge of the legal requirements pertaining to the activities at the Chobe Savanna Lodge, is listed under Section 3 of this Report.

A summary of the relevant legislation and regulatory authorities (including contact details) as far as permits and/or approvals are concerned, is provided:

Legislation	Regulatory Authority	Permit/Approval	Contact Details
Water Act 54 of 1956 (as amended)	Ministry of Agriculture, Water and Land Reform (MAWLR), Department of Water Affairs (DWA)	Surface and Groundwater Abstraction Permits Effluent/Wastewater Discharge Permit	Mr Franciskus Witbooi Deputy Director: Law Administration Tel. 061-2087226 witbooi@mawf.gov.na
Environmental Management Act 7 of 2007	Ministry of Environment, Forestry and Tourism (MEFT), Directorate of Environmental Affairs (DEA)	Environmental Clearance Certificate	Mr Timoteus Mufeti Environmental Commissioner Tel. 061-2842751 Timoteus.Mufeti@met.gov.na
Labour Act 11 of 2007	Ministry of Labour, Industrial Relations and Employment Creation	Permission is needed to run 12-hour shifts (should it be required)	Mr Henri Kassen Labour Commissioner Tel. 061-379100 hkassen@mol.gov.na

4.3 Roles and Responsibilities

Representatives from Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge are responsible for fulfilling the requirements in the EMP.

In addition to the before-mentioned, the following actions are proposed:

1. The provision by Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge of, on an on-going basis, sufficient management sponsorship and human and financial resources for the implementation of the EMP;
2. The development of the proposed monitoring programme(s) (see Section 4.5); and
3. Auditing of the management actions as contained in the EMP for the Chobe Savanna Lodge.

4.4 Environmental Management Plan

This Section contains the Environmental Management Plan (EMP) for the Chobe Savanna Lodge (Table 2) (also see IFC, 2007a; b).

Table 2: Environmental Management Plan for the Chobe Savanna Lodge, Kabbe South Constituency, Zambezi Region, Namibia.

Aspect	Impact	Mitigation
Social and Environmental Performance		
Management and Monitoring	Social and Environmental Performance	Adhere to all Namibian Legislation, including Best Practice Guidelines. Ensure that all aspects related to the Environmental Management Plan (EMP) are implemented.
Consultation and Disclosure	Social and Environmental Performance	Maintain open and direct lines of communication with the Authorities and Interested and Affected Parties (I&APs) (e.g. representatives from the Zambezi Communal Land Board, Kabbe South Constituency and Kasika Conservancy, the Ministry of Environment, Forestry and Tourism (MEFT), the Ministry of Health and Social Services (MHSS), the Namibia Tourism Board (NTB), etc.) with regards to environmental matters. Consult with I&APs throughout the project process and adequately incorporate I&APs' concerns.
Grievance Mechanism	Social and Environmental Performance	Implement a grievance mechanism for receiving and resolving any concerns and grievances related to the project's social and environmental performance throughout the project life cycle. Inform all I&APs about the mechanism. Address concerns promptly and transparently and in a culturally appropriate manner. Keep a register of all concerns/issues received from I&APs, as well as the measures taken to address these.
Training, including awareness and inductions	Social and Environmental Performance	Train employees in matters related to the project's social and environmental performance and Namibia's regulatory requirements. Ensure adequate environmental awareness training for all personnel.

Aspect	Impact	Mitigation
Employment and procurement opportunities	Social and Environmental Performance	<p>Give environmental induction presentations to all personnel.</p> <p>Source contracting companies/service providers/workers based on merit and expertise giving preference to local contractors/service providers/workers on condition that the local contractors/service providers/workers have the required experience and expertise. <i>Few contractors area used; these include: Seapride; the people that service the fire extinguishers; and people from Botswana that service the air conditioners (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).</i></p> <p>Ensure that contractors/service providers adhere to the Namibian Labour, Social Security, Health and Safety, and Affirmative Action laws.</p> <p>Source maximally from local resources to ensure maximum economic beneficiation of local businesses in terms of new business sales.</p>
Labour and Working Conditions	Social and Environmental Performance	<p>Establish, maintain and improve the worker-management relationship. Base the employment relationship on equal opportunity and fair treatment and no discrimination to be allowed.</p> <p>Comply with Namibia's labour and employment laws.</p> <p>Promote safe and healthy working conditions and the protection and promotion of worker health.</p> <p>Document and communicate the Working Conditions and Terms of Employment.</p> <p>Respect Collective Agreements and the right of workers to organise and bargain collectively.</p> <p>Implement a Grievance Mechanism.</p>
Occupational and Community Health and Safety and Security	Social and Environmental Performance	<p>Adhere to all Namibia's Health and Safety Regulations (Labour Act, 1992: Regulations Relating to the Health and Safety of Employees at Work).</p> <p><i>Chobe Savanna Lodge is in possession of a Certificate of Fitness (General Health Regulations, G127 of 14 October 1969) issued by the MHSS and that is valid until 31 March 2021.</i></p> <p>Ensure that an HIV/AIDS Policy and Programme and Health and Safety Plan is in place.</p> <p>A SHE (Safety, Health, Environment) Representative to be appointed once the staff complement reaches 20.</p>

Aspect	Impact	Mitigation
		<p>Occupational Health and Safety Training to be provided to all employees.</p> <p>Ensure that qualified first aid can be provided at all times.</p> <p>Comply with all safety regulations re. electricity supply.</p> <p>Ensure that employees are trained in the use of appropriate fire fighting equipment and ensure that such equipment is on hand at all times. <i>All the fire extinguishers were serviced in 2019 (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).</i></p> <p>Provide and ensure the active use of Personal Protective Equipment (PPE).</p> <p>Make suitable arrangements, as far as practicable, for the maintenance of health, the prevention and overcoming of outbreaks of disease (e.g. Tuberculosis (TB)) and of adequate first aid services.</p> <p>Prevent communicable disease (e.g. Sexually Transmitted Infections (STIs) such as HIV transmission): provide surveillance and active screening and treatment of employees; prevent illness among employees (through health awareness and education initiatives); ensure ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers; and promote immunization.</p> <p>Ensure that security arrangements are in place. <i>There are two security guards that patrol the Lodge-area between 19h00 and 07h00 daily (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).</i></p>
Flooding of the Chobe River	Occupational and Community Health and Safety	<p>Obtain the Daily Flood Bulletin from the Namibia Hydrological Services, Ministry of Agriculture, Water and Land Reform (MAWLR).</p> <p>Prepare an Emergency Preparedness and Response Plan / Disaster Management and Evacuation Plan.</p>
Chobe Savanna Lodge		
Operational activities	Negative impact on floral species	<p>Avoid/prevent the planting of potentially invasive alien plant species for ornamental purposes as part of the landscaping (these species often “escape” and become invasive causing further ecological damage); rather incorporate indigenous vegetation into the overall landscaping of the area (this would create a natural ambiance and indigenous species require less water and overall maintenance).</p>

Aspect	Impact	Mitigation
Operational activities	Pollution of biophysical environment (surface and groundwater)	<p>Promote appropriate guest and staff behaviour (e.g. do not allow any native plant species to be removed/damaged).</p> <p><u>Fertilizers:</u> Conduct regular soil testing (to establish nutrient needs) in order to determine fertilizer application rates/correct doses. Store fertilizers in their original packaging in a dedicated, locked area, with proper signage, and with access limited only to authorised personnel. Use slow-release and/or natural organic fertilizers. Manure can be an alternative, but if over applied it may also cause pollution. Prepare a management plan covering the measures for containment, storage and ultimate destruction of obsolete fertilizers in accordance to the Food and Agriculture Organization (FAO) guidelines (and consistent with country commitments under the Stockholm, Rotterdam and Basel Conventions).</p> <p><u>Pesticides:</u> Consider non-chemical methods (e.g. use beneficial organisms to perform the biological control of pests, or use mechanical controls, i.e. traps, barriers, light and sound to kill/relocate/repel pests, or use mechanical weed control/thermal weeding) before resorting to chemical application. Maintain a pesticide logbook: e.g. field observations, weather data, time and dosage of treatment, and effectiveness and apply pesticides based on these criteria. Ensure that only the minimum effective dose is applied. Avoid the use of pesticides that fall under the World Health Organization (WHO) Recommended Classification of Pesticides by Hazard Classes 1a and b, and by Hazard Class II. Also those that are listed in Annexes A and B of the Stockholm Convention (except under the conditions noted in the convention). Only use pesticides that are manufactured under license, registered and approved by the appropriate authority and in accordance with the FAO's International Code of Conduct on the Distribution and Use of Pesticides. Only use pesticides that are labeled in accordance with international standards and norms. Pesticide application equipment to be maintained and calibrated in accordance with manufacturer's recommendations. Store pesticides in their original packaging in a dedicated, dry, cool, frost-free, well aerated, locked area, with proper signage, and with access limited only to authorised personnel. Also ensure that spill containment measures are in place. Ensure that the personnel applying pesticides are properly trained; mixing and transfer of pesticides to be done in</p>

Aspect	Impact	Mitigation
		<p>ventilated and well-lit areas using containers designed/dedicated for the task. Contaminated containers to be handled and treated as hazardous waste (see Hazardous materials management). Purchase and store only the required amounts of pesticides. <i>Pesticides used include: Raid; Doom; and Peaceful Sleep (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).</i></p>
Traffic on the Gravel / "Service" Road	Air quality (dust or Particulate Matter (PM) pollution) and Occupational and community health and safety	<p>Maintain the road surface to preserve surface characteristics (e.g. texture and roughness).</p> <p>Use dust control/suppression methods, such as applying (semi-purified) water to minimise dust (oil and oil by-products is not a recommended measure to control road dust).</p> <p>Fleet owners/operators to implement manufacturer recommended engine maintenance programs (to control vehicle emissions: Carbon Monoxide (CO), Carbon Dioxide (CO₂), Nitrogen Oxide (NO_x), Sulphur Dioxide (SO₂), Particulate Matter (PM) and Volatile Organic Compounds (VOCs)).</p> <p>Adopt best transport safety practices by implementing the following measures: emphasise safety aspects among drivers; improve driving skills and require licensing of drivers; adopt limits for trip duration; avoid dangerous routes and times of day; and use speed control devices.</p> <p>Regularly maintain vehicles and use manufacturer approved parts.</p> <p>Use locally sourced materials (where possible) to minimise transport distances.</p>
Chobe Savanna Lodge: Resource Use		
Energy Management	Resource use (e.g. coal) / depletion of natural resources	<p>Promote the sustainable use of energy (that will result in the reduction of use and cost reductions) (e.g. energy efficient light sources).</p> <p>Raise awareness amongst the residents, staff (and contractors).</p> <p>For reduction of energy consumption associated with heating, ventilation, and air conditioning (HVAC), lighting, and cooking and refrigeration equipment see IFC (2007b).</p>
Water-efficient design features	Resource use (water) / depletion of natural resources	Use, where feasible, water saving equipment including ultra-low-flush toilets, spray nozzles, urinals, faucet aerators, and low-flow showerheads, infrared and ultrasonic sensors, water spigots, and pressure-control valves.
Water Management	Resource use / depletion of natural resources	Implement a water conservation program, promoting the continuous reduction in water consumption.

Aspect	Impact	Mitigation
		<p>Promote and enforce a policy on landscape and garden designs that minimise water consumption e.g. the use of indigenous plants.</p> <p>Raise awareness amongst the residents, staff (and contractors) re the importance of saving water.</p>
Chobe Savanna Lodge: Hazardous Materials Management		
Hazardous materials management	Social and Environmental Performance	<p>Establish hazardous materials management priorities (based on hazard analysis of risky operations).</p> <p>Avoid, or minimise the use of hazardous materials.</p> <p>Prevent uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that may result in fire or explosion.</p> <p>Implement management controls (procedures, inspections and training, communication and drills) to address residual risks.</p>
Hazardous materials management	Pollution of biophysical environment (soil and water)	<p>Implement prevention and control measures for the use, handling and storage of hazardous materials:</p> <p><u>Materials transfer:</u> regularly inspect, maintain and repair fittings/pipes/hoses; make use of drip trays/other drip containment measures at connection/possible overflow points;</p> <p><u>Overfill protection:</u> use trained filling operators; install gauges on tanks to measure the volume inside; make use of dripless hose connections (vehicle tanks) and fixed connections (storage tanks); use a catch basin/drip tray around the fill pipe to collect spills;</p> <p><u>Reaction, fire, and explosion prevention:</u> hazardous materials to be stored in marked containers and separate (from non-hazardous materials); incompatible hazardous materials (acids, bases, flammables, oxidizers, reactive chemicals) to be stored in separate areas and with containment facilities separating material storage; smoking or working with open flames not to be permitted in the presence of these substances; limit access to hazardous waste storage areas and clearly label and demarcate the area; conduct regular inspections of the areas and document the findings; prepare and implement spill response and emergency plans; train employees in the use of appropriate fire fighting equipment and ensure that such equipment is on hand at all times.</p> <p>Train workers on the correct transfer and handling of fuels and chemicals and the response to spills.</p>

Aspect	Impact	Mitigation
		Immediately report and clean up any accidental hydrocarbon spill: Sunisorb, Drizit, Peatsorb can be used to clean up small spills; in case of larger spills, the spill together with the polluted soil should be removed and disposed of at e.g. a biological remediation site.
Hazardous materials management	Occupational health and safety	Implement hazard communication and training programmes (including information on Material Safety Data Sheets (MSDS)) to make employees aware of workplace chemical hazards and how to respond to these. Provide and ensure the active use of PPE.
Chobe Savanna Lodge: Waste Management		
Waste management: non-hazardous and hazardous	Pollution of biophysical environment	<p>Identify all the waste streams and prepare an Integrated Waste Management Plan. The generation of waste should be avoided as far as practicable; where it cannot be avoided, waste should be reduced, re-used and recovered (including recycling and composting) (e.g. set up collection points for the recycling of solid waste); where waste cannot be reduced, re-used and/or recovered, it should be disposed of in an environmentally sound manner.</p> <p>Waste reduction can be achieved by: buying in bulk quantities; using refillable, bulk dispensers (e.g. toiletries) (vs. individually packaged products); working with suppliers in order to limit the use of, and establishing recycling for, product packaging; avoiding the use of polystyrene foam altogether; using glass/durable plastic rather than disposable plastic items (straws/cups); providing in-room recycling procedures and appropriate receptacles.</p> <p>Raise awareness amongst residents, staff and contractors (to reduce, re-use, and recover waste).</p> <p>Stamp down on any form of littering.</p> <p>Non-hazardous and hazardous waste to be collected and stored separately.</p> <p>Hazardous waste: recycle petroleum (fuels and lubricants) waste products and collect and recycle batteries and print cartridges. The remainder to be transported by an approved contractor to a recognised hazardous waste disposal site (Kupferberg outside Windhoek).</p>
Waste management: sanitary	Pollution of biophysical environment	<p>Ensure that the discharge of sanitary wastewater to land conform to the regulatory requirements (Ministry of Agriculture, Water and Land Reform's Water Quality Standards for Effluent, 2008).</p> <p>Use bio-degradable toilet cleaners that do not kill the bacteria in the septic tanks.</p>
Wastewater management	Pollution of biophysical environment	Ensure that the discharge of process wastewater and/or sanitary wastewater

Aspect	Impact	Mitigation
		<p>and/or wastewater from utility operations and/or stormwater conform to the regulatory requirements (i.e. of the Ministry of Agriculture, Water and Land Reform).</p> <p>Ensure that the Kitchen and the other developments are equipped with the required means to ensure that effluent disposal remains within the set limits.</p> <p>Ensure that the disposal of chemicals is as per the prescriptions in the relevant MSDS.</p> <p>Minimise the use of the laundry through asking guests to reuse the towels and bedding. <i>Guests are requested to re-use their towels (to reduce the amount of detergent used).</i></p> <p>Control the consumption of cleaning materials. If feasible, substitute cleaning materials with biodegradable products.</p> <p>Avoid/minimise the use of cleaning agents that contain phosphates, nitrilotriacetic acid or any of its salts, ethylene diaminetetraacetic acid and ethylene dinitrilotetraacetic acid or any of their salts, alkylphenol ethoxylate, halogenated organic solvents, butoxy-ethanol, and VOCs in excess of 10 percent by mass.</p> <p>Runoff from areas where surface water might have become contaminated should be captured and treated to sewage effluent standards; uncontaminated runoff should be diverted around areas where such water might become contaminated.</p>
Wastewater management - stormwater management	Soil erosion	Regular inspection and maintenance of permanent erosion and runoff control features.
Chobe Savanna Lodge: Occupational and Community Health and Safety		
Food quality	Occupational and community health and safety	Apply international standards/implement systems re. the handling, preparation and storage of food, e.g. SANS 10049:2001 (Food Hygiene Management) and/or ISO (International Organization for Standardization) 22000:2018 (Food Safety Management System (FSMS)). <i>Kitchen staff recently received health and safety training (Mr Niel Hamman, Assistant Manager, Chobe Savanna Lodge, pers. comm.).</i>
Indoor air quality	Occupational and community health and safety	<p>Use low VOC-emitting products.</p> <p>Avoid, where possible, the use of aerosols, sprays and air fresheners.</p> <p>Housekeeping and cleaning products to be used during unoccupied hours.</p> <p>HVAC system: conduct periodic, preventive maintenance (incl. cleaning drain pans and changing filters); keep duct lining dry; ensure clean mechanical rooms; and fix leaks and clean spills immediately.</p>

Aspect	Impact	Mitigation
Swimming pool	Community health and safety	Implement a pool water sanitisation programme; the programme should include the monitoring of water quality (also see WHO, 2006).

4.5 Monitoring and Reporting

The following monitoring and reporting, at least but not limited to, need to be carried out:

Type	Parameter	Frequency	Responsible Person
Water abstraction from the Chobe River and Production borehole	Volumes of surface and groundwater abstracted	Monthly and reported quarterly to the Department of Water Affairs (DWA) (or as per water abstraction permits' requirements)	Designated Person(s)
	Rest Water Level (Borehole)	Once every three months (or as per water abstraction permit requirement)	Designated Person(s)
*Wastewater discharge	As per the Department of Water Affairs (DWA), Ministry of Agriculture, Water and Land Reform's Effluent Numeric Requirements	As per DWA Effluent/Wastewater Discharge Permit requirements	Designated Person(s)
Swimming pool water sanitisation	Monitor the water quality to establish treatment need and frequency	<i>Ad hoc</i>	Designated Person(s)
Stormwater and soil erosion	Soil erosion rates	<i>Ad hoc</i> (rainy season)	Designated Person(s)
Alien invasive plant species	Identification and removal of any alien invasive species	Three-monthly monitoring	Designated Person(s)
Environmental Management Plan	Environmental performance / corrective measures to be taken as or when required	Bi-Annual Environmental Reports to be submitted to the Directorate of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT)	Designated Person(s)

**The Department of Water Affairs and Forestry, Ministry of Agriculture, Water and Forestry prepared Water Quality Guidelines and these were adopted in 1998. Subsequently (in 2008), draft Water Quality Guidelines and Standards for Potable Water, as well as Water Quality Standards for Effluent were prepared to become Regulations under the Water Resources Management Act 24 of 2004 (which never came into force). The latter Guidelines/Standards may be used, but are not yet enforceable.*

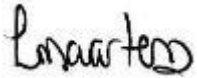
5 Conclusions and Recommendations

The Chobe Savanna Lodge, situated on the Chobe River floodplain, was built in 1999. The present owner, Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge, purchased the property in 2002.

The following is advised that Caprivi Fly Fishing Safaris (Pty) Ltd T/A Chobe Savanna Lodge:

- Applies to the Department of Water Affairs, Ministry of Agriculture, Water and Land Reform for permits to abstract surface and groundwater for commercial purposes; and
- Applies to the Department of Water Affairs, Ministry of Agriculture, Water and Land Reform for a permit to discharge effluent/wastewater.

It is advised that Chobe Savanna Lodge (and their employees and contractors) should implement and observe the Environmental Management Plan on an ongoing basis. Environmental performance should be regularly monitored (so that the lessons learnt can be incorporated into the improvement of the Environmental Management Plan over time) and corrective measures taken as or when required.



Dr Lima Maartens
LM Environmental Consulting

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