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ENVIRONMENTAL MANAGEMENT PLAN

Pangolin Voyager

Houseboat

October 2018

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Environmental Compliance Consultancy Contact Details:

We welcome any enquiries regarding this document and its content please contact:

Stephan Bezuidenhout

Environmental Consultant & Practitioner
Tel: +264 81 262 7872
Fax: +27 (86) 229 4009
Email: stephan@eccenvironmental.com
www.eccenvironmental.com

Jessica Mooney

Environmental Consultant & Practitioner
Tel: +264 81 653 1214
Fax: +27 (86) 229 4009
Email: jessica@eccenvironmental.com
www.eccenvironmental.com

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Contents

1.	INTRODUCTION.....	5
1.1.	BACKGROUND TO THE PROPOSED PROJECT.....	5
1.2.	ENVIRONMENTAL REQUIREMENTS	6
1.2.1.	CORRESPONDENCE WITH THE MINISTRY OF ENVIRONMENT AND TOURISM	6
1.2.2.	ENVIRONMENTAL CLEARANCE CERTIFICATE	6
1.3.	PURPOSE AND SCOPE OF THIS REPORT	6
1.4.	EMP OBJECTIVES.....	6
1.5.	IMPLEMENTATION AND MANAGEMENT OF THIS EMP	7
1.6.	LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS OF THIS EMP	7
1.7.	ENVIRONMENTAL CONSULTANCY.....	7
1.8.	EMP STRUCTURE.....	7
2.	PROJECT MANAGEMENT AND PERSONNEL	8
2.1.	PANGOLIN VOYAGER ENVIRONMENTAL MANAGEMENT TEAM	8
2.2.	ROLES AND RESPONSIBILITIES	8
2.3.	CONTRACTORS.....	10
2.4.	EMPLOYMENT	10
2.4.1.	EMPLOYMENT AND SKILLS DEVELOPMENT PLAN	10
3.	COMMUNICATIONS AND TRAINING	11
3.1.	INTRODUCTION	11
3.2.	CONSERVANCY AREAS	11
3.3.	ENVIRONMENTAL AWARENESS TRAINING.....	11
4.	REPORTING, COMPLIANCE AND ENFORCEMENT	12
4.1.	ENVIRONMENTAL PERFORMANCE MANAGEMENT.....	12
4.1.1.	SUMMARY OF ENVIRONMENTAL RISKS AND MITIGATION MEASURES	12
4.1.2.	MONTHLY COMPLIANCE MONITORING	12
4.1.3.	INSPECTION OF PLANT AND EQUIPMENT.....	12
4.2.	REPORTING	12
4.3.	NON-COMPLIANCE	12
4.3.1.	DISCIPLINARY ACTION	13
4.4.	CONTROL OF RECORDS	13
4.5.	ENVIRONMENTAL PERMITS.....	13
4.5.1.	DISCHARGE PERMIT.....	13
5.	ENVIRONMENTAL MANAGEMENT	14
5.1.	OBJECTIVES AND TARGETS	14
5.2.	BOATING SAFETY INFORMATION	14
5.3.	POLLUTION CONTROL.....	14
5.3.1.	HANDLING OF FUEL, OIL AND CHEMICALS.....	14
5.3.2.	SEWERAGE AND GREYWATER	15
5.4.	GENERAL WASTE	15
5.5.	ENVIRONMENTAL MONITORING.....	15
6.	REGISTER OF ENVIRONMENTAL RISKS AND ISSUES	16
6.1.	INTRODUCTION	16
7.	IMPLEMENTATION OF THIS EMP	21

TABLES

Table 1 – Key Roles and Responsibilities	8
Table 2 – Environmental Risks and Issues, Mitigation and Monitoring Measures	16

FIGURES

Figure 1 - Location of Nguni Zambezi Houseboat and the operating areas	5
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DEFINITIONS AND ABBREVIATIONS

DEA	Directorate of Environmental Affairs
ECC	Environmental Compliance Consultancy
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
I&APS	Interested and affected parties
MAWF	Ministry of Agriculture Water and Forestry
MET	Ministry of Environment and Tourism

1. INTRODUCTION

1.1. BACKGROUND TO THE PROPOSED PROJECT

Nguni Zambezi House Boat CC owns and operates the Pangolin Voyager Houseboat the operations on the Chobe River and Kasai Channel in the Zambezi Region of Namibia.

The project comprises of one houseboat. The houseboat offers recreational and tourism activities on the Chobe River. The houseboat consists of the following:

- Dimensions: 6 m (width) x 20m (length)
- Material: Aluminum, stainless steel, wood
- Energy: Solar powered with a heavy-duty battery in each unit and back-up generator (petrol/diesel), Stove operated with LP gas and Hot water powered by Solar
- Waste management: Fusion Wastewater Treatment Plant, domestic waste bins (separated), and
- Facilities and amenities: Outdoor decks, lounge, kitchen, dining area, sleeping area and bathroom.

The boat is able to accommodate 10 guests.

The houseboat will be launched from the existing boat launching area and will be located on sites illustrated in

Figure 1.

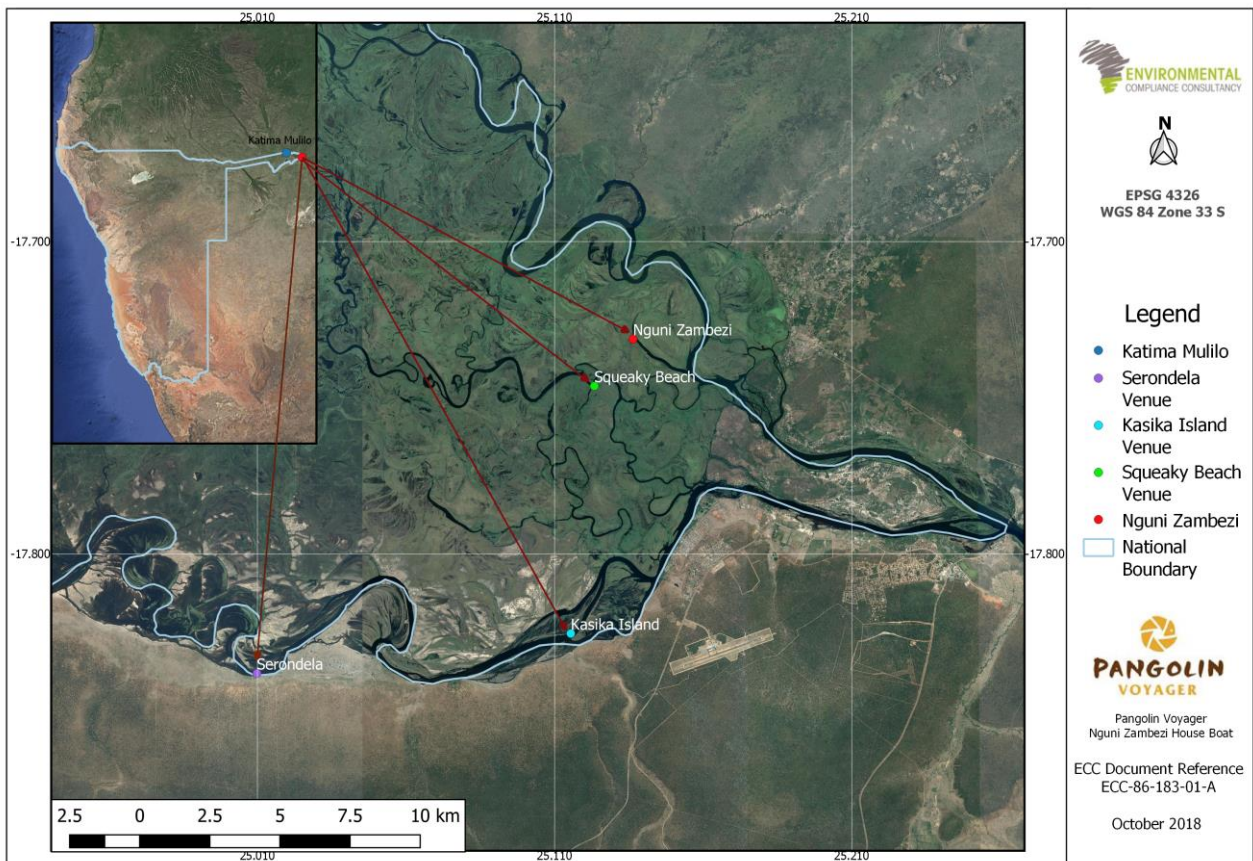


Figure 1 - Location of Nguni Zambezi Houseboat and the operating areas

1.2. ENVIRONMENTAL REQUIREMENTS

1.2.1. CORRESPONDENCE WITH THE MINISTRY OF ENVIRONMENT AND TOURISM

In September 2018, the proponent received a compliance order from the Ministry of Environment and Tourism (MET) to ensure that the operations of the Pangolin Voyager become compliant with the Environmental Management Act, 2007. In line with correspondence received from the Ministry of Environment and Tourism: Department of Environmental Affairs (MET: DEA) Pangolin Voyager engaged the services of Environmental Compliance Consultancy (ECC) to prepare the requested Environmental Management Plan (EMP) as requested in the Compliance Order.

This report has been prepared, in accordance with the requirements of the Environmental Management Act, 2007 (Act No. 7 of 2007) and to ensure the operations of the Pangolin Voyager become compliant.

1.2.2. ENVIRONMENTAL CLEARANCE CERTIFICATE

The Environmental Management Act, 2007 stipulates that an Environmental Clearance Certificate is required to undertake Listed Activities under the Act and associated Regulations. Listed activities triggered by the proposed project in accordance with the Environmental Management Act, 2007 and supporting regulations are as follows:

TOURISM DEVELOPMENT ACTIVITIES

6. The construction of resorts, lodges, hotels or other tourism and hospitality facilities.

1.3. PURPOSE AND SCOPE OF THIS REPORT

The purpose of this EMP is to provide a management framework for the planning and implementation of the operations of the houseboat and provide standards and operating arrangements so that potential environmental and social impacts of the houseboat are mitigated, prevented and minimised as far as reasonable practicable, and that statutory requirements and other legal obligations are fulfilled. This EMP also presents protocols and procedures, and roles and responsibilities to ensure the management arrangements are appropriately and effectively implemented.

This EMP is a live document and shall be reviewed at predetermined intervals, and/or updated when the scope of works alters, or when further data / information can be added. All personnel working on the project will be legally required to comply with the standards set out in this EMP.

1.4. EMP OBJECTIVES

The objectives of this EMP are to:

- a) Enhance the socio-economic and pro- biodiversity impacts of the operation
- b) Identify, minimise and mitigate negative environmental impacts of the operation
- c) Meet the requirements of relevant legislation
- d) Initiate a process, which ensures that successive managers have a consistent environmental approach to operating the houseboat
- e) Enable management to monitor and mitigate environmental impacts
- f) Create awareness amongst all staff on the importance of maintaining sound environmental practices in all spheres of operation
- g) Implement the environmental policies and philosophy of the Pangolin Voyager, and
- h) In close co-operation with management, promote and sustainably manage biodiversity conservation in the region, which in turn will increase the opportunities for ecotourism activities in the local area and create

employment opportunities (living museum, community development and engagement, botanical walks, bird watching cruises, fishing trips & Sundowner cruises).

The strategies employed to achieve the objectives include:

- a) Ensure that the EMP becomes an integral part of the daily operating procedures for the houseboat via the Annual Work Plan, which includes environmental monitoring
- b) Create environmental awareness among all staff and build environmental responsibility and authority into job descriptions and operations manuals
- c) Expose guests to this awareness program through information materials and encourage their active participation where appropriate, and
- d) Subject the operations of the houseboat and its activities to independent, external assessments from time to time via eco awards Namibia.

1.5. IMPLEMENTATION AND MANAGEMENT OF THIS EMP

Pangolin Voyager (the proponent) will hold the Environmental Clearance Certificate for the houseboat and shall be responsible for the implementation and management of this EMP.

Prior to the operations recommencing, this EMP shall be reviewed by the Houseboat Manager, and shall be amended as required and approved ready for implementation. The implementation and management of this EMP and thus the monitoring of compliance shall be undertaken through daily duties and activities and monthly inspections (see Section 4).

1.6. LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS OF THIS EMP

This EMP does not include measures for compliance with statutory occupational health and safety requirements. This will be provided in the safety management plan to be developed by the proponent.

Where there is any conflict between the provisions of this EMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, project approval conditions, permits, standards, guidelines and relevant laws), the contract and statutory requirements are to take precedence.

The information contained in this EMP has been based on the project description as provided by the proponent. Where the design or operations alter, this EMP may require updating and potential further assessment undertaken.

1.7. ENVIRONMENTAL CONSULTANCY

Environmental Compliance Consultancy (ECC), a Namibian consultancy registration number 2013/11401, has prepared this EMP on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients across Southern Africa in the public and private sector. ECC is independent to the proponent and has no vested or financial interest in the houseboat.

1.8. EMP STRUCTURE

The following structure has been adopted for this Report:

- Chapter 1 – Introduction
- Chapter 2 – Project Management and Personnel
- Chapter 3 – Communications and Training
- Chapter 4 – Compliance and Enforcement
- Chapter 5 – Environmental Management

- Chapter 6 – Register of Environmental Risks and Issues
- Annex A – Template for Monthly Compliance Report

2. PROJECT MANAGEMENT AND PERSONNEL

2.1. PANGOLIN VOYAGER ENVIRONMENTAL MANAGEMENT TEAM

An Environmental Officer will be elected to oversee environmental compliance of the houseboat. The Pangolin Voyager Management team is suitably qualified and is becoming well versed in the relevant national and international environmental policies, legislation and procedures.

Pangolin Voyager respects environmental conservation and sustainability in its operations. As such Pangolin Voyager has committed to subscribing its operations to the Eco Awards assessment for excellence in Namibian Tourism Operations.

2.2. ROLES AND RESPONSIBILITIES

The proponent shall be responsible for:

- Ensuring all members of the Project Team, including contractors and consultants comply with the procedures set out in this EMP
- Ensuring that all persons are provided with sufficient training, supervision and instruction to fulfil this requirement, and
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

The key personnel and environmental responsibilities of each role through the project life are presented in Table 1.

Table 1 – Key Roles and Responsibilities

ROLE	RESPONSIBILITY & DUTIES
Pangolin Voyager Management	<ul style="list-style-type: none"> - Responsible for steering the Organization and environmental commitments, and ensure the company operates in accordance with national and international environmental policies, legislation and procedures.
Environmental Officer	<ul style="list-style-type: none"> - Overall responsibility for the implementation and management of this EMP - Ensure environmental policy is communicated to all personnel throughout the proposed project - Responsible for providing the required resources (including financial and technical) to complete the required tasks - Responsible for environmental monitoring - Being the principal contact point in relation to environmental performance of the operations of the houseboat - Providing guidance to personnel in dealing with environmental matters, including legal and statutory requirements affecting the works - Being responsible for all environmental management plans and environmental monitoring, and production of associated reports/records - Being responsible for providing a response to environment-related complaints received from the public or other stakeholders - Ensuring that best environmental practice is undertaken throughout the duration of the project

ROLE	RESPONSIBILITY & DUTIES
	<ul style="list-style-type: none"> - Undertaking regular checks of the operations of the houseboat and associated activities - Provisioning of environmental awareness/management training and inductions - Responsible for the management, maintenance and revisions of this EMP and subsequent environmental plans (e.g. Waste Management Plan) - Timely distribution of any relevant environmental documentation, including revisions to this EMP, to all construction managers and contractors - External monitoring of EMP process via Eco-awards and the maintenance of these standards - Maintain communications between the personnel and houseboat, and the conservancy, and implement contract monitoring tool at quarterly joint venture meetings, and - Provide support where appropriate, for conservancy income generating enterprises.
<p style="text-align: center;">Operations Manager (Houseboat Manager)</p>	<p>Responsible for overseeing the day to day activities, routine and non-routine maintenance, and compliance with this EMP. works during operations, as well as the decommissioning of the development.</p> <ul style="list-style-type: none"> - Ensuring all personnel are aware of the commitments made in this EMP and any other relevant regulatory requirements and that the operations will be undertaken in compliance with these - Ensuring adequate resources are made available for implementation of this EMP - Reporting environmental performance to the Environmental Officer - Maintain the community issues and concern register - Keep records of complaints and delegate and report to management as required - Ensuring all employees and contractors participate in an Induction process prior to commencing work on the houseboat or associated activities - Maintain up to date register of employees who have completed the Site Induction - Report any non-compliance or accidents to the Regulatory Authority - External monitoring of EMP process via Eco-awards and the maintenance of these standards - Support with communications between the personnel and houseboat, and the conservancy, and implement contract monitoring tool at quarterly joint venture meetings, and - Provide support with wildlife monitoring.
<p style="text-align: center;">Houseboat Personnel</p>	<p>Responsible for being compliant with this EMP throughout operations in addition to:</p> <ul style="list-style-type: none"> - Ensuring they have undertaken a site induction and are conversant with the requirements of this EMP - Ensuring appropriate briefings for certain activities have been provided and fully understood - Adherence to this EMP at all times - Reporting of any operations and conditions that deviate from this EMP or any non-compliant issues or accidents to the Houseboat Manager, and - Provide support with wildlife monitoring.

2.3. CONTRACTORS

Any contractors hired during maintenance activities would need to be compliant with this EMP, and would be responsible for the following:

- Undertaking activities in accordance with this EMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements
- Implementing appropriate environmental and safety management measures
- Reporting of environmental issues, including actual or potential environmental incidents and hazards, to the Operations Manager, and
- Ensuring appropriate corrective or remedial action is taken to address all environmental hazards and incidents reported by employees and subcontractors.

2.4. EMPLOYMENT

The proponent and all contractors shall comply with the requirements of the Republic of Namibia Regulations for Labour, Health and Safety, and any amendments to these regulations. During operations, the following shall be complied with:

- In liaison with local government and community authorities the proponent shall ensure that local people have access to information about job opportunities and are considered first for construction contract employment positions
- The number of job opportunities shall be made known together with the associated skills and qualifications, and the maximum length of time the job is likely to last for shall be clearly indicated
- Foreign workers with no proof of permanent legal residence shall not be hired, and
- Every effort shall be made to recruit from the pool of unemployed workers living in the local communities.

Additional employment principals shall be developed and included to this EMP to ensure a robust employment policy is implemented across the proposed project.

2.4.1. EMPLOYMENT AND SKILLS DEVELOPMENT PLAN

The operations of the houseboat create approximately 11 full time jobs plus several indirect jobs. The Proponent hires local Namibians from the Kasika, Impalila, Masubia and Bukalo Conservancies. The main objectives of this Employment and Skills Development Plan are to:

- Clarify employment and recruitment procedures of local community members
- Clarify and adhere to Employment targets
- Formulate plans for the development of skills of local employees, and
- Develop a framework for regulating Social Responsibility efforts, assistance programmes, donation and community welfare efforts.

3. COMMUNICATIONS AND TRAINING

3.1. INTRODUCTION

The operations of the houseboat will involve various activities, which will take place in a sensitive environment. It is therefore important that personnel are appropriately informed of the risks and potential impacts, and appropriately trained. It is also important that regular communications are maintained with stakeholders and that guests are also made aware of their potential impacts and how to minimise and avoid them.

3.2. CONSERVANCY AREAS

The Pangolin Voyager Houseboat operates along the Chobe River and Kasai Channel and has made attempts to improve the residents of these communities by employing community members from Kasika and Impalila Conservancies. In addition, concession(s) and structured agreement between Nguni Zambezi Voyager Houseboat C.C. and the Injambwe Community and came into effect on January 2015. The agreement allows the Pangolin Voyager to moor on the Chobe river banks, within the village boundaries, and in doing so increase community benefits and improve community relations.

Regular communications between the Houseboat Manager, Pangolin Voyager Environmental Officer and the conservancy shall be undertaken, and any communications, including complaints from the conservancy shall be responded to in writing by the Environmental Officer.

3.3. ENVIRONMENTAL AWARENESS TRAINING

All personnel involved in the operations of the houseboat shall be inducted with specific environment and social awareness training, and health and safety issues. The environment and social awareness training shall ensure that personnel are familiar with the principles of this EMP, the environment and social aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The Houseboat Manager shall ensure a register of completed training is maintained and issued to the Environmental Officer monthly or when there are additions.

The Site Induction should include, but not limited to the following:

- A general site-specific induction that outlines:
 - o What is meant by “environment” and “social”
 - o Why the environment needs to be protected and conserved
 - o How construction activities can impact on the environment
 - o What can be done to mitigate against such impacts
- The inductee’s role and responsibilities with respect to implementing the EMP
- The environmental impacts and social responsibilities associated with the inductee’s working activities
- The site environmental rules
- Details of how to deal with, and who to contact if environmental problems should they occur
- Basic spill response and briefing on use of all location of spill kits
- The potential consequences of non-compliance with this EMP and relevant statutory requirements, and
- The role of responsible people for the proposed project.

4. REPORTING, COMPLIANCE AND ENFORCEMENT

4.1. ENVIRONMENTAL PERFORMANCE MANAGEMENT

4.1.1. SUMMARY OF ENVIRONMENTAL RISKS AND MITIGATION MEASURES

Chapter 6 provides a Register of Environmental Risks and Issues, which identifies mitigation and monitoring measures, as well as roles responsible. This register will be subject to regular review by the Houseboat Manager and the Environmental Officer.

This register will be used to undertake monthly inspections by the Houseboat Manager to ensure the project is compliant with this EMP.

4.1.2. MONTHLY COMPLIANCE MONITORING

Monthly inspections shall be undertaken by the Houseboat Manager to check that the standards and procedures set out in this EMP are being complied with and pollution control measures are in place and working correctly. Monthly Compliance Reports shall be produced, which shall be completed by the Houseboat Manager and shall be submitted to the Environmental Officer. The report shall contain a brief description of any areas of non-conformance, the reason for the non-conformance, the responsible party, the result (consequence), the corrective action taken and any necessary follow up measures required.

4.1.3. INSPECTION OF PLANT AND EQUIPMENT

All plant and equipment performing an environmental function shall be well maintained and serviced in line with their specification. A register of all plant and equipment under the responsibility of the Houseboat Manager. This register shall be reviewed monthly to ensure all checks and services for plant and equipment have been undertaken. The register shall include, but not limited to the following:

- Piece of plant and equipment
- Make and Model
- Frequency of required service and scheduled dates
- Dates of last inspection, maintenance and/or test
- Notes of any issues or concerns, and
- Responsible person.

4.2. REPORTING

There shall be a requirement to ensure that any incident or non-compliance, including any environmental issue, failure of plant and equipment that perform an environmental function or accident, is reported to the Houseboat Manager and the Environmental Officer.

4.3. NON-COMPLIANCE

Where it has been identified that works are not compliant with this EMP, the Houseboat Manager shall employ corrective actions so that the works return to being compliant as soon as possible. In instances where the requirements of this EMP are not upheld, a Non-Conformance and Corrective Action Notice shall be produced. The Notice shall be generated during the inspections and the Houseboat Manager shall be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming. The Houseboat Manager shall also report to the Environmental Officer.

A non-compliance event / situation, for example, is considered if:

- There is evidence of contravention of this EMP and associated indicators or objectives
- The Houseboat Manager has failed to comply with corrective or other instructions issued by the Environmental Manager or qualified authority, or
- The Houseboat Manager fails to respond to complaints from the public.

Activities shall be ceased in the event of a non-compliance, until corrective action(s) has been completed.

4.3.1. DISCIPLINARY ACTION

This EMP is a legally binding document and non-compliance with it shall result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to):

- Fines / penalties
- Legal action
- Monetary penalties imposed by the proponent on the contractor
- Withdrawal of licence/s, and
- Suspension of work.

The disciplinary action shall be determined according to the nature and extend of the transgression / non-compliance, and penalties are to be weighed against the severity of the incident.

4.4. CONTROL OF RECORDS

A range of environmental records, for example waste management records are required and specified throughout this EMP.

Environmental records shall be maintained, either in hard copy or electronic format and shall be readily identifiable, retrievable and protected against damage, deterioration or loss.

4.5. ENVIRONMENTAL PERMITS

4.5.1. DISCHARGE PERMIT

A discharge permit will be applied for at the Department of Agriculture Water and Forestry for the operations of the wastewater treatment plan onboard the houseboat and the discharge of treated effluent to the environment. Regular water samples will be taken from the houseboat to ensure that the effluent treated, complies with the prescribes general water standards. Where water quality does not meet prescribed standards, effluent will be contained on the houseboat and pumped into the existing on-land waste water treatment plant for further treatment.

5. ENVIRONMENTAL MANAGEMENT

5.1. OBJECTIVES AND TARGETS

Environmental objectives for the operations of the houseboat are as follows:

- Zero pollution incidents
- Minimise waste sent to landfill or being burnt
- Protect local flora and fauna and minimise disruption
- Minimise light and noise pollution, and
- Use natural resources effectively and efficiently.

Procedures for monitoring processes against the project environmental objectives will be agreed with the Environmental Officer and Houseboat Manager.

5.2. BOATING SAFETY INFORMATION

Houseboat safety management plan will be developed and implemented in accordance with the specifications of the houseboat and passenger water vessels in Namibia. A boating map of the proposed portion of the river will be navigable areas and points of interest along the river. The map will also contain useful boating information as well as an index and GPS reference.

5.3. POLLUTION CONTROL

5.3.1. HANDLING OF FUEL, OIL AND CHEMICALS

The Houseboat Manager shall take all reasonable precautions to prevent fuel, oil and chemical whilst undertaking works on site. To this end, the Site Manager shall ensure that:

- All necessary approvals are in place prior to bringing fuel, oil or chemicals to the houseboat
- All fuel, oil and chemical deliveries (if any) shall be supervised by a responsible person, who shall be trained to deal with any spills
- Regular checks are performed to verify that no leaking or defective equipment, and
- Equipment is maintained regularly to ensure that no fuel, oil or hydraulic leaks occur.

The Houseboat Manager shall ensure that there is sufficient absorbent material and spill kits available on site to manage accidental spills. The location of and instructions on how to use this equipment shall be included in the Induction. Nominated personnel will be appropriately trained to use spill kits.

Any accidental spillages of fuels and oils, or other hazardous substances, shall be cleaned up immediately and be reported Houseboat Manager and Environmental Officer. The following responses shall be undertaken:

Minor spill: Only diesel and oil, with no human injury, contamination to water bodies or other environmental receptors. Contain and clean up the spill using available spill kit. The Houseboat Manager shall inform the PM and Environmental Officer, supplying the following information:

- o Date, time, and location
- o Substance spilled and quantity, and
- o Actions taken, and any future remediation required.

Major Spill: Resulting in human injury or/and environmental contamination and water body contamination. Personnel shall contain the spill if possible and report the spill to the Houseboat Manager, who shall then alert the appropriate emergency services (see **Error! Reference source not found.**), and the Environment Officer. In addition to the above information for a minor spill, the Houseboat Manager shall also be informed of any immediate dangers, e.g. fire, explosion, release of chemical fumes.

5.3.2. SEWERAGE AND GREYWATER

The houseboat will use a completely closed solid waste management system to ensure that no solid waste or untreated sewage is discharged into the river. About 2 000 litres of Wastewater is pumped from the houseboat stainless steel holding tanks on a daily basis and transported to the Zambezi Queen Wastewater Treatment Plant. Thus, no water is released into the river. The system is designed to service up to + 13, 000 litres of sewerage per day, before discharging the effluent through sprinklers.

Nguni Zambezi House Boat will ascertain that all the necessary documentations, permits and measures are in place before discharge of wastewater or effluent is made. Thus, a discharge permit will be applied for at the Department of Agriculture Water and Forestry for the operations of this system and discharge to the environment. In the latter, comply with the set conditions of the permit (upon approval), to ensure that the effluent quality conforms with the prescribed general standards. Moreover, the effluent will be contained on the houseboat and pumped into the existing on-land waste water treatment plant for further treatment.

5.4. GENERAL WASTE

The houseboat will be equipped with designated rubbish bins to ensure that all domestic waste is collected and disposed of sustainably through the existing waste management arrangements. Waste separation will be practised, to ensure that all recyclable material is collected and sent for recycling.

It is recommended that the houseboat produce a Waste Management Plan. The EMA (2007), Section 3, paragraph (i) states that waste must be reduced, re-used and recycled where possible, therefore in accordance with the Act, waste generated as a result of operating the houseboat shall be managed and dealt with in accordance with a Waste Management Plan. This Plan shall be produced prior to operations of the houseboat commencing and include the following information:

- Describe each waste type expected to be produced
- Estimate the quantity of each waste type
- Identify the waste management action proposed for each waste stream, including re-using, recycling, recovery and disposal
- Designated areas to collect and separate waste, and
- Identify waste carrier and waste disposal company.

The Waste Management Plan shall be updated on a regular basis to ensure all waste and disposal route are identified. The aim of the Waste Management Plan is to achieve sustainable waste management. Their main purpose is to outline waste streams and identify the best treatment and disposal option for each one, applying the waste management hierarchy and avoiding as much waste as possible ending up at landfill or being burnt. In addition, it will also outline any potential economical and investment requirements for the treatment and / or disposal of waste.

5.5. ENVIRONMENTAL MONITORING

Monitoring during operations shall be undertaken to ensure the effects on society and the environment are minimised, and to evaluate how effective the environmental management has been, over an extended period of time. The Houseboat Manager will set out monitoring arrangements prior to the operations of the Houseboat.

6. REGISTER OF ENVIRONMENTAL RISKS AND ISSUES

6.1. INTRODUCTION

An environmental review of the operations of the houseboat has been completed to identify all the commitments and agreements made within the EIA report. From this, a schedule of environmental commitments and risks has been produced, which details deliverables including measures identified for the prevention of pollution or damage to the environment.

Table 2 – Environmental Risks and Issues, Mitigation and Monitoring Measures

REF NO.	ACTIVITY	RISKS AND POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	FREQUENCY	RESPONSIBILITY
1	Refuelling tender boat and houseboat's generator	Spillages of fuel, oil and lubricants.	Activity undertaken by a suitably qualified person Spill kits available Use of dips trays during the transfer	Monitor fuel use	Daily	Houseboat Manager Personnel
2	Operations of mechanical equipment and engines	Spillages of fuel, oil and lubricants.	Undertake regular checks of all plant and equipment Service plant and equipment annually Spill kits available Clear spills immediately	Daily checks Monthly inspections / compliance checks	Daily Monthly	Houseboat Manager Personnel
3	Increased tourists to the area and taking part in activities – use of generators, engines and general noise sources	Increase noise levels	Boat engine and moving components are to be kept in good working order at all times to avoid capsizing and to minimize noise impact Guests are to be provided awareness on interactions and impacts on aquatic ecology No loud music Careful siting of generators Turn off engines when not required	Daily checks Monthly inspections / compliance checks	Daily Monthly	Houseboat Manager Personnel

REF NO.	ACTIVITY	RISKS AND POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	FREQUENCY	RESPONSIBILITY
			No idling			
4	Increased tourists to the area and taking part in activities / houseboat in close proximity to animals	Human-wildlife conflicts – animal injury, disturbance or mortality	Train personnel and guides Provide environmental awareness to guests No-go areas on the river Limit the number of tender boat on the river at any one time Prevent killing of animals No stopping on the river unless approved by the Environmental Officer	Monthly checks of environment	Monthly	Houseboat Manager or Environmental Officer
5	Abstraction of water from the river	Disturbance to the natural environment and use of resources	Train personnel and environmental awareness -minimise use of water Inform guests of water usage and consumptions issues / use water wisely Maintenance of plant and equipment – no leaks	Test water annually to ensure it is appropriate for consumption	Annual	Houseboat Manager or Environmental Officer
6	Sewerage production and disposal	Reduction in water quality Flora and fauna affected	Sewerage waste treatment plant onboard each boat Sampling Maintenance of plant	Regular checks on the waste treatment facility. Regular water samples will be taken from those boat to ensure the treated water quality comply with the prescribes general standards	Daily Monthly	Houseboat Manager or Environmental Officer
7	Production and disposal of greywater (showers)	Reduction in water quality Flora and fauna affected	All of the sinks, showers, and toilets on each Houseboat will drain into a specially designed greywater tank. The capacity of this tank will accommodate all waste	Regular water quality samples	Weekly / monthly	Houseboat Manager or Environmental Officer

REF NO.	ACTIVITY	RISKS AND POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	FREQUENCY	RESPONSIBILITY
	and kitchen operations) Use of chemicals		<p>produced within the houseboat. Water to be treated prior to discharge to the river.</p> <p>Use environmental friendly products</p> <p>Minimise use of chemicals.</p> <p>Regular water quality samples must be taken to ensure the treated waste water comply to the prescribed general standards as set out in the Water Resources Management Act, 2004 (Act No. 24 of 2004).</p> <p>Should the treated waste water not meet the prescribed general standards, the discharge of the treated waste water may not be discharged into the environment.</p>			
8	Increased tourists - Increased waste	<p>Solid waste (litter) escaping into the environment.</p> <p>Greater quantity to be disposed of – landfill = land take, burning = air pollution</p>	<p>Implementation of the Waste Management Plan and application of the waste management hierarchy</p> <p>Suitable collection points for the waste on houseboat</p> <p>Waste collected weekly and transported in suitable containers.</p> <p>Any hazardous waste such as waste oil/lubricant cans should be stored in a hazardous waste storage bin and disposed of by an accredited hazardous waste handlers such as Ventclean, Rent A Drum and Kleen Tech.</p>	Monthly compliance checks	Monthly	Houseboat Manager Houseboat personnel

REF NO.	ACTIVITY	RISKS AND POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	FREQUENCY	RESPONSIBILITY
9	Increased tourists – Food introduced into the ecosystem	Change in the local flora and fauna, and habits of aquatic species	Notices to inform guests of the rules Appropriate bins and removal of waste each day	NA	NA	
10	Houseboat Maintenance or renovations	Oils, fuels, chemicals paints, waste entering the aquatic environment and causing pollution / contamination – reduce water quality, affect flora and fauna	Implementation of the Waste Management Plan Suitable collection points for the waste on houseboat Waste collected daily and transported in suitable containers Spill kits Limit use of chemicals Training of staff	Monthly compliance checks	Monthly	Houseboat Manager or Environmental Officer
11	Lighting from the houseboat	Artificial lighting could affect birds and fish in particular, as these species rely upon moonlight to navigate at night time. Amphibians, such as frogs could also be disturbed, and feeding and mating rituals could be affected. Sources	Use of energy efficient light forms Low beam / low LEDs Avoid lighting where unnecessary Avoid lights being grouped together. Lights switched off at night	Monthly compliance checks	Monthly	Houseboat Manager or Environmental Officer
12	Maintenance of area in the vicinity of the houseboat	Removal of vegetations	Remove invasive alien species Remove vegetation during the winter months or prescribed times by the Environmental Officer	Monthly checks to visually check the growth of vegetations	Monthly	Houseboat Manager Environmental Officer
13	Increased number of guests and operations	Water Resources: Use of Energy and waste production	Train staff so they are aware of the need to save energy	Monitor fuel use		Houseboat Manager or Environmental Officer

REF NO.	ACTIVITY	RISKS AND POTENTIAL IMPACTS	MANAGEMENT / MITIGATION MEASURES	MONITORING REQUIREMENTS	FREQUENCY	RESPONSIBILITY
			Inform guests and include information on the houseboat Use of energy wisely – solar power (ensure well maintained) and energy saving lightbulbs	Monitor energy consumption and water abstraction Monitor waste as part of waste management plan		
14	Location of Houseboat	Geomorphology and ecological impacts	The houseboat shall be moored at the same location which will not move during operations. These sites have been identified and shall not be deviated from except is sensitive environmental features are located in the area and the mooring spot needs to be moved by a few meters.	Weekly and monthly compliance checks	Weekly and monthly	Houseboat Manager

7. IMPLEMENTATION OF THIS EMP

This EMP:

- A. Has been prepared pursuant to a contract with the proponent
- B. Has been prepared on the basis of information provided to ECC up to October 2018
- C. Is for the sole use of the proponent, for the sole purpose of an EMP
- D. Must not be used (1) by any person other than the proponent or (2) for a purpose other than an EMP
- E. Must not be copied without the prior written permission of ECC, and
- F. ECC has prepared this EMP on the basis of information provided by the proponent.

ANNEX A - TEMPLATE FOR MONTHLY COMPLIANCE REPORT

INSPECTION DATE: _____

INSPECTION COMPLETED BY: _____

CONTRACTORS ON SITE:

SUMMARY OF CONSTRUCTION ACTIVITIES OCCURRING:

Ref No.	Item	Requirements	Responsibility	Compliant	Notes / Action Taken / Corrective Action Required
1	– Refuelling tender boat and houseboat’s generator	Activity undertaken by a suitably qualified person Spill kits available Use of dips trays during the transfer	Houseboat Manager	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
2	Operations of mechanical equipment and engines	Undertake regular checks of all plant and equipment Service plant and equipment annually Spill kits available Clear spills immediately	Houseboat Manager Personnel	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	

Ref No.	Item	Requirements	Responsibility	Compliant	Notes / Action Taken / Corrective Action Required
3	– Increased tourists to the area and taking part in activities – use of generators, engines and general noise sources	Boat engine and moving components are to be kept in good working order at all times to avoid capsizing and to minimize noise impact Guests are to be provided awareness on interactions and impacts on aquatic ecology No loud music Careful siting of generators Turn off engines when not required No idling	Houseboat Manager Personnel	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
4	– Increased tourists to the area and taking part in activities / houseboat in close proximity to animals	Train personnel and guides Provide environmental awareness to guests No-go areas on the river Limit the number of tender boat on the river at any one time Prevent killing of animals No stopping on the river unless approved by the Environmental Officer	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
5	– Abstraction of water from the river	Train personnel and environmental awareness -minimise use of water Inform guests of water usage and consumptions issues / use water wisely Maintenance of plant and equipment – no leaks	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	

Ref No.	Item	Requirements	Responsibility	Compliant	Notes / Action Taken / Corrective Action Required
6	– Sewerage production and disposal	Sewerage waste treatment plant onboard each boat Sampling Maintenance of plant	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
7	Production and disposal of greywater (showers and kitchen operations) – Use of chemicals	All of the sinks, showers, and toilets on each Houseboat will drain into a specially designed greywater tank. The capacity of this tank will accommodate all waste produced within the houseboat. Water to be treated prior to discharge to the river. Use environmental friendly products Minimise use of chemicals. Regular water quality samples must be taken to ensure the treated waste water comply to the prescribed general standards as set out in the Water Resources Management Act, 2004 (Act No. 24 of 2004). Should the treated waste water not meet the prescribed general standards, the discharge of the treated waste water may not be discharged into the environment.	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	

Ref No.	Item	Requirements	Responsibility	Compliant	Notes / Action Taken / Corrective Action Required
8	- Increased tourists - Increased waste	Implementation of the Waste Management Plan and application of the waste management hierarchy Suitable collection points for the waste on houseboat Waste collected daily and transported in suitable containers. Any hazardous waste such as waste oil/lubricant cans should be stored in a hazardous waste storage bin and disposed of by accredited hazardous waste handlers such as Ventclean, Rent A Drum and Kleen Tech.	Houseboat Manager Houseboat personnel	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
9	- Increased tourists – Food introduced into the ecosystem	Notices to inform guests of the rules Appropriate bins and removal of waste each day		Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
10	- Houseboat Maintenance or renovations	Implementation of the Waste Management Plan Suitable collection points for the waste on houseboat Waste collected daily and transported in suitable containers Spill kits Limit use of chemicals Training of staff	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	

Ref No.	Item	Requirements	Responsibility	Compliant	Notes / Action Taken / Corrective Action Required
11	– Lighting from the houseboat	Use of energy efficient light forms Low beam / low LEDs Avoid lighting where unnecessary Avoid lights being grouped together. Lights switched off at night	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
12	– Maintenance of area in the vicinity of the houseboat	Remove invasive alien species Remove vegetation during the winter months or prescribed times by the Environmental Officer	Houseboat Manager Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
13	– Increased number of guests and operations	Train staff so they are aware of the need to save energy Inform guests and include information on the houseboat Use of energy wisely – solar power (ensure well maintained) and energy saving lightbulbs	Houseboat Manager or Environmental Officer	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
14	– Location of Houseboat	The houseboat shall be moored at the same location which will not move during operations. These sites have been identified and shall not be deviated from except is sensitive environmental features are located in the area and the mooring spot needs to be moved by a few meters.	Houseboat Manager	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	

INSPECTION DATE: _____

INSPECTION COMPLETED BY: _____

APPROVED BY: _____

SUMMARY OF CONSTRUCTION ACTIVATES OCCURRING:

CONTRACTORS ON SITE:

NON-CONFORMANCE

AREA OF ACTIVITY:

REASON:

RESPONSIBLE PARTY

RESULT:

CORRECTIVE ACTION TAKEN:

FOLLOW-UP ACTION TO BE TAKEN:

ADDITIONAL COMMENTS:

GOOD PERFORMANCE

Description of activity or action in which contract went beyond compliance towards responsible care for the environment:

ADDITIONAL COMMENTS