# Speed Sailing Lüderitz

# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESIA) REPORT

for

**Wind-surfing and Kite-surfing activities utilizing temporary Floating Water-based wave Breakers in the Lüderitz Second Lagoon, Lüderitz, //Kharas region, Namibia**

**Document Type: Environmental and Social Management Plan (ESMP) Report**
**Document Version: 1**
**Application No.: N/A**


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**June 2025**

Table of Contents

# 1. INTRODUCTION AND BACKGROUND

## 1.1 Background

Proposed wind and kite surfing in the Lüderitz Second Lagoon is currently limited to windsurfing and take place in dredged channel. This restricts investment and job creation with only one annual event annually. The new proposal for twice-yearly events using eco-friendly temporary wave breakers aims to establish Lüderitz as a global extreme water sports hub.

The ESIA Report prepared for the proposed wind and kite surfing predicted, described and evaluated potential negative impacts of the proposed activities on the environmental. Unfortunately, the ESIA process was limited only to evaluation of impacts in the early stage of the project and was unable to mitigate and manage potential negative impacts.

## 1.2 Introduction

As described already in **Section 9** of the ESIA report, the ESIA process has several limitations as summarised below:

- The impact evaluation in the ESIA process was of a preliminary nature; offering a snapshot of potential impacts that may not account for future changes.
- The ESIA primarily focused on assessment and proposing mitigations, without directly ensuring their implementation and ongoing management.
- It is often criticized that the ESIA process is a mere procedural requirement to obtain the Environmental Clearance Certificate (ECC), potentially lacking a strong commitment to long-term sustainability and robust management mechanisms.

## 1.2 Precautionary approach principles

The precautionary approach used to address the limitations of the ESIA for the Speed Sailing Lüderitz project, was the development of the ESMP. The ESMP will be central in meeting conditions that will be stipulated in the ECC as the sole document mentioned. The ESMP provides an implementation framework by turning ESIA mitigation into actionable plans with clear responsibilities, timelines, and monitoring. Unlike the ESIA's static report, the ESMP is a dynamic document for ongoing management, monitoring, and adaptation throughout the project, allowing for the handling of unforeseen impacts and ensuring effective mitigation. It also defines roles for environmental and social performance, fostering accountability, and facilitates adaptive management through regular reviews, enhancing the project's resilience.

# 2. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The ESMP (Environmental and Social Management Plan) is a commitment by the proponent to incorporate environmental protection during the wind-surfing and kite-surfing activities.

More importantly, the proponent further undertakes to integrate this ESMP into the company environmental policy statement.

The ESMP provides a clear and concise baseline environmental monitoring plan detailing which environmental indicators will be monitored and the SOPs (standard operation procedures) to be used for each environmental indicator. Environmental indicators will be used to describe state of the environment including seawater quality and sediment before and after the wind-surfing and kite-surfing activities. Environmental indicators are divided into 2 categories viz. physical/chemical and biological indicators.

Within each category are parameters which will be measured using various equipment and instruments.

## 3. OBJECTIVES

The purpose of this ESMP is to describe how the proponent intends to implement the ESMP by providing a clear and concise baseline environmental monitoring plan detailing which environmental indicators will be monitored and the SOPs to be used for each indicator.

Specific objectives are to:

- List documentations (e.g. permits, method statements, SOPs, etc) required for performing underwater hull cleaning activities;
- Identify baseline environmental indicators and parametres to be measured;
- Prescribe technology and equipment required;
- Establish the MC (Environmental Management Committee) and identify human capacity requirements;
- Translate ESMP and baseline mitigation plan into a company environmental policy, and
- Describe in details mitigation actions required to minimize or reduce negative impacts.

## 4. ENVIRONMENTAL CERTIFICATIONS AND DOCUMENTATIONS

Environmental certifications will include permits and certificates needed to authorize performance of underwater hull cleaning as required by other Government Republic of

Namibia (GRN) entities including Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR) and others. Documentations will be communicable materials that will be required to describe, explain or instruct and communicate information regarding the underwater hull cleaning operational and monitoring procedures.

Before commencement of the proposed wind-surfing and kite-surfing activities, the following environmental certifications and documentations shall be required:

***Table 1:*** Permits and authorization.

| **Certification and documentation** | **GRN entity/competent authority** | **Contact person/details** |
|---|---|---|
| Environmental clearance certificate | Ministry of Environment, Forestry and Tourism | Environmental Commissioner |
| Written permission to operate | Namibia Ports Authority | Harbor master |
| Domestic and industrial wastewater and effluent discharge permits | Ministry of Agriculture, Fisheries, Water and Land Reform | Department of Water Affairs |
| Pre-cleaning inspection report | Namibia Ports Authority | Harbor master |
| Method statements | Namibia Ports Authority | Harbor master |
| Cleaning exit operation plan | Namibia Ports Authority | Harbor master |
| Baseline environmental monitoring plan | Namibia Ports Authority | Harbor master |
| SOPs (Standard operation procedures) | Namibia Ports Authority | Harbor master |

### 4.1 Recommendations

Contents and conditions of ECC will be provided in the ECC. Amongst others, the following conditions should be included:

- Regular environmental monitoring and evaluations on environmental performance should be conducted at the site and targets for improvements established and monitored throughout the wind-surfing and kite-surfing activities.

- The ECC should be valid for a period of 3 (three) years, from the date of issue.

- On expiry of the ECC, the proponent will be required to submit within a period not exceeding one month, and in the prescribed form and manner an application to the Office of the Environmental Commissioner (OEC) of the renewal of the ECC.

- All other applicable and required permits or authorizations from relevant competent authorities mut be obtained prior to commencement of the proposed activities and must be adhered to.

- Granting of ECC constitute an approval for the implementation of mitigation measures proposed in the approved ESMP, hence making the ESMP a legally binding document.

- The proponent shall appoint a suitably qualified Environmental Control Officer, or site agent where appropriate, before commencement of listed activities to ensure compliance with the conditions of approval and mitigation stipulated in the approved ESMP.

- The proponent is required from date of commencing implementation of the project activities, to compile and submit environmental monitoring reports (on the project progress and the management profile) on bi-annual basis to office of the OEC.

- Any changes to, or deviations from the scope of project activities approved in respect to the assessment received and reviewed for the purpose of or granting the ECC will be subject to an amendment application and approval by the OEC prior to adopting/implementing any such changes/deviations.

### 4.2 Other permits or licences

Conditions and contents in other permits such as the written permission to operate as well as domestic and industrial wastewater and effluent discharge permits will be determined by the competent authorizing entities.

## 5. BASELINE ENVIRONMENTAL MONITORING INDICATORS

### 5.1 Physical/chemical environmental indicators

Some or all of the following parametres will be measured to indicate water quality:

- Free Carbon Dioxide;
- Water temperatures;
- Dissolved oxygen (DO);

- Turbidity;
- Total suspended and dissolved solids;
- Nutrients (nitrates, nitrites, total phosphate, free chlorine, etc);
- pH, conductivity/salinity metre;
- Pathogens (bacteria, virus, etc), and
- Trace metals.

Water samples for the above parametres should be collected before, during and after the wind-surfing and kite-surfing activities at each site where cleaning operations were performed. Samples could either be measured on site or transported to a laboratory for analysis. Data will be recorded using various forms (see example **Form-1)**. Detailed data collection and laboratory procedures will be provided in the SOPs for each parameter.

### 5.2 Baseline biological sampling

The following parametres will be used as biological indicators:

- Phytoplankton;
- Zooplankton;
- Epi-fauna, and
- Benthic fauna.

Phytoplankton and zooplankton samples for the each parametres should be collected before, during and after the underwater hull cleaning operation.

Samples for benthic fauna should be collected once a year only.

## 6. TECHNOLOGY AND EQUIPMENT REQUIREMENTS

Equipment and technologies required for ESMP implementation and baseline environmental monitoring are provided below. These equipment and technology are available from various institutions in Namibia such as NCRST (National Council on Research, Science and Technology), NUST (Namibia University of Science and Technology), UNAM (University of Science and Technology), NAMWATER (Namibia Water Corporation), MAFWLR (Ministry of Agriculture, Fisheries, Water and Land Reform) and commercial laboratories.

With regard to technologies and equipment requirements, the local capacity for baseline environmental monitoring exist in Namibia. Therefore, it will not be necessary for the proponent to purchase these technologies and equipment. Rather it will be advisable for the proponent to collaborate with local institutions in order to invest in the local capacity for environmental baseline monitoring activities. These activities which will involve hiring of environmental consultants; training of students and in-service staffs in conducting baseline surveys; sample collection; sample processing and analysis and reporting; will positively contribute to a cleaner and safer port of Walvis Bay.

***Table 2:*** Technology and equipment requirements.

| **Parametre** | **Equipment/method** |
|---|---|
| Free Carbon Dioxide ($CO_2$) | -Measure $CO_2$ directly using beverage carbonation metre. The recommended **OxyGuard portable $CO_2$ meter** is a reliable and easy-to-use instrument that measures dissolved $CO_2$) in water. The meter consists of a probe and a battery-powered transmitter. The meter displays $CO_2$ concentration and an analog signal as output.<br><br>-The titration method can also be used, though not recommended. |
| Water tESMPerature | -Measure using a **thermometer**.<br><br>-The **Hach HQ30D** also measures tESMPerature.<br><br>-Currently there are online weather databases that provide daily water tESMPerature data. |
| Dissolved oxygen | -*The recommended **Hach HQ30D*** **portable multi-parametre** gives maximum measurement flexibility and ease of operation with interchangeable probes and automatic parameter recognition.<br><br>-The **Winkler's titration** method will be used for comparison. |
| Turbidity | -The recommended **HACH 2100Q turbidometre** is accurate and reliable in measuring turbidity. It is portable and battery powered; so measurements could be taken and recorded while in the field.<br><br>-The **HACH HQ30D** also measures TDS (total dissolved solids) and could be ideal in case the **HACH 2100Q turbidometre** is not available. TDS could be used to indicate turbidity. |
| Total suspended and volatile solids | TSS and TVS could be measured either using the HACH DR 2700, DR 2800 or DR 900. The recommend **HACH DR 900** is portable, LED- |

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| Nutrients (nitrates, nitrites, total phosphate, free chlorine, etc) | sourced colorimeter and it measures at wavelengths of 420, 520, 560 nd 610 nm. Measurements could be taken and recorded while in the field; eliminating the need for sample transportation. |
| pH, conductivity/salinity metre | The **Hach HQ30D** mlti-parametre is recommended. |
| Pathogens | Pathological samples shall be taken for analysis of total coliforms and *Streptococcus sp*. Other indicators may be selected according to the ECO's discretion and factors inherent at site. |
| Trace metals | It is recommended that analysis for trace metals are performed by a commercial laboratory. The proponent or the ECO should collect samples, preserve and send them to a commercial laboratory (e.g. Analytical laboratory or NAMWATER). |
| Phytoplankton | Use a phytoplankton net to collect the samples. The samples should be analysed under a compound microscope (recommended is the **Olympus** type). |
| Zooplankton | Use a zooplankton net to collect the samples. The samples should be analysed under a light microscope (recommended is the **Zeiss** type). |
| Epi-fauna | Sample should be collected from vessel hulls or sub-merged structures as well as from rocks and soft sediments (sandy shores). Microscopes maybe required for tiny organisms. |
| Benthic fauna | A **Van veen grab** will be used to collect sediment samples. The samples should be analysed either under a light or compound microscopes (recommended is the Olympus and Zeiss type). |
| Sediment size analysis | Part of the sediment will be used to study grain size using the **Sieving Assemblage-Wilson** instrument. |

## 7. ENVIRONMENTAL MANAGEMENT COMMITTEE

There shall be established an environmental management committee. There will be no need for the proponent to recruit new employees as the committee will only meet on quarterly basis.

For specialized environmental services, the proponent may hire an Environmental Control Officer on contract basis.

Below are proposed committee members as well as required competency and responsibilities.

***Table 3:*** Composition of environmental management committee.

| **Personnel** | **Competence** | **Responsibilities** |
|---|---|---|
| **Environmental management representative (EMR)** | Should be in employment of the proponent. Should be a senior staff member with a management position in the company. | • Represent management on environmental safety and occupational issues related to underwater hull cleaning operations.<br>• Provide support and avail resources needed to endorse and implement the company's environmental policy.<br>• Upon advice from the ESOR and ECO, the EMR may call off an underwater cleaning operation. |
| **Environmental safety and occupational representative (ESOR)** | Should be in employment of the proponent. A minimum of grade 12, sufficient knowledge of environment, safety and ethics at work place. Preferably, a professional diver. | • Represent employees' environmental safety and occupational concerns related to wind-surfing and kite-surfing activities.<br>• Ensure other employees comply to conditions as required in the environmental compliance certificates or permits.<br>• Where untoward situation arises that may constitute a hazard human life or environment and the equipment or other assets. |
| **Independent Environmental Consultant** (ECO) | Master's degree or MSc. in the field of environmental or natural resources management, marine biology or water | • The overall responsibility of the ECO is to assist the proponent in implementation of the ESMP and baseline environmental plan; ensure environmental compliance and |

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| | science. Knowledge of environmental impact assessment, ESMP implementation and baseline environmental monitoring is compulsory. More than 10 years of field survey co-ordination and laboratory analytical skills will an added advantage. | certification with GRN policies and legislations.<br>• ECO will advise the committee in domestication of the ESMP, scientific interpretation of results from baseline environmental surveys as well as reporting. |

## 8. MITIGATION ACTIONS

Mitigation actions that are required to reduce or minimize negative impacts are described in ***Table 4*****. Impacts preparedness and response plan.**

Risk is an event that may or may not happen; whereas an impact is what will happen if a risk occurs. Risks poses a significant impact on people, the environment or property. Although they may or not happen, there is a need to be prepared to response to risks at all times.

All response actions should be geared toward the following priorities in the order below:

- ***Safety*** of people (always First);
- ***Protection*** of the Environment, and
- ***Protection*** of Assets.
- Emergence preparedness and response management involves 5 basic steps as follows:

  **Preventive actions** are taken to avoid an incident.
- **Mitigation measures** are actions taken to prevent an emergency, reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies.
- **Preparedness** increases the proponent's ability to respond when a risk occurs. Typical preparedness measures include developing method statement and emergence exit procedures, awareness and training for both response personnel and affected parties and conducting drills to reinforce training and test capabilities.

- **Response** is an action carried out immediately before, during, and immediately after a hazard impact, which is aimed at saving lives, reducing economic losses, and alleviating suffering. Response actions may include activating the emergency operations center, evacuating threatened employees or equipmrent, opening shelters and providing mass care, emergency rescue and medical care, firefighting, and sea search and rescue.
- **Recovery**: These are actions taken to return to normal or near-normal conditions, including the restoration of basic services and the repair of environmental, social and economic damages. Typical recovery actions include debris cleanup, financial assistance to individuals, rebuilding of infrastructures and key facilities, and sustained mass care for displaced marine animal populations.

## 9. GRIEVANCE MECHANISM

The procedure the management will apply to deal with the employees' grievances will be enforced as follows:

### 9.1 Timely Action

The first and foremost requisite in grievance handling shall be immediate settlement as they arise. The sooner a grievance is settled, the lesser it will affect employees' performance. This requires the first line supervisors to be trained in recognizing and handling a grievance properly and promptly.

### 9.2 Accepting the Grievance

The supervisor shall recognize and accept the employees' grievances as and when it shall be expressed. Acceptance shall not necessarily mean agreeing with the grievance; it rather shows the supervisor's willingness to look into the complaint objectively and dispassionately.

### 9.3 Identifying the Problem

The grievance expressed by the employee shall be at times simply emotional, over-toned, imaginary or vague. The supervisor, therefore, shall be required to identify or diagnose the problem stated by the employee.

### 9.4 Collecting the Facts

Once the problem is identified as a real problem; the supervisor should, then, collect all the relevant facts and proofs relating to the grievance. The facts so collected shall be separated from the opinions and feelings to avoid distortions of the facts.

### 9.5 Analyzing the cause of the Grievance

Having collected all the facts and figures relating to the grievance, the next step involved in the grievance procedure shall be to establish and analyse the cause that led to grievance. The analysis of the cause shall involve studying various aspects of the grievance such as the

employee's past history, frequency of the occurrence, management practices, union practices, etc. Identification of the cause of the grievance helps the management to take corrective measures to settle the grievance and also to prevent its recurrence.

### 9.6 Decision making

In order to take the best decision to handle the grievance, alternative courses of actions shall be worked out. These are, then, evaluated in view of their consequences on the aggrieved employee, the union and the management. Finally, a decision taken should best suite a given situation. Such decision should serve as a precedent both within the department and the company.

### 9.7 Implementing the Decision

The decision shall be immediately communicated to the employee and also implemented by the competent authority.

In case, it is not resolved, the supervisor once again needs to go back to the whole procedure step by step to find out an appropriate decision or solution to resolve the grievance.

## 10. EXTERNAL COMMUNICATIONS

External communications shall be handled in line with company procedures.

## 11. RECOMMENDATIONS

It is recommended that:

- The proponent strictly adheres to ESMP and undertake baseline environmental monitoring;
- Data from baseline environmental monitoring should be kept and availed to GRN authorities when requested, and
- The technology and equipment may be hired.

## 12. REPORTING

Baseline monitoring and environmental monitoring should be reported to NAMPORT and other GRN authorities when requested. This should be done either by submitting quarterly or annual reports.

***Table 4:*** Impacts preparedness and response plan.

| RECEIVING ENVIRONMENTAL RECEPTORS | IMPACTS | MITIGATION ACTIONS | RESPONSIBLE PERSONS OR ENTITY |
|---|---|---|---|
| **PHYSICAL AND BIOLOGICAL ENVIRONMENTAL RECEPTORS** | | | |
| **Air quality** | Windsurfing and kitesurfing are **low-impact, wind-powered sports** that generally have a **minimal direct effect on air quality**—especially when compared to motorized water sports (e.g., jet skiing or powerboating). However, some negative impacts include:<br><br>**Transport-Related Emissions**<br><br>• Most participants **travel by car or plane** to reach lagoon sites, contributing to:<br>  ○ **$CO_2$ emissions** from flights (especially international tourists).<br>  ○ **Vehicle exhaust** from shuttle services to remote beaches.<br><br>**Equipment Manufacturing & Shipping**<br><br>• Kites and boards are often made from petroleum-based materials (e.g., polyester, PVC, carbon fiber).<br>• Production and global shipping of gear generate GHG | **Protect Coastal Ecosystems**<br><br>• **Respect Protected Areas:** Be aware of and avoid windsurfing or kitesurfing in sensitive coastal areas that are crucial for wildlife, especially during breeding seasons.<br>• **Minimize Disturbance:** Be mindful of noise levels and avoid actions that could disturb birds or marine life.<br>• **Leave No Trace:** Always take all litter away from beaches and coastal areas.<br><br>**Support Environmental Awareness and Conservation**<br><br>• **Participate in Clean-ups:** Join local beach or coastal clean-up initiatives.<br>• **Educate Others:** Raise awareness within the windsurfing and kitesurfing community about environmental responsibility.<br>• **Support Eco-Conscious Businesses:** Choose to support schools, centers, and manufacturers that prioritize sustainability.<br><br>**Advocate for Sustainable Tourism:**<br><br>• **Choose Eco-Friendly Accommodations:** When traveling for windsurfing or kitesurfing, opt for accommodations with sustainable practices. | **Relevant Authorities**<br><br>**Proponent** |

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| | emissions, though some brands now use recycled materials.<br><br>**Support Boat Use (Occasional)**<br><br>• Some schools/rescue teams use motorized boats, which emit:<br>  ○ **$CO_2$, NOx, and hydrocarbons** (if gasoline/diesel-powered).<br><br>**Oil residue** risks in the water (indirectly affecting air via evaporation). | • **Support Local Economies Responsibly:** Be mindful of the impact of tourism on local communities and the environment. | |
| **Noise generation** | While windsurfing and kitesurfing are generally quieter than motorized water sports (e.g., jet skis or speedboats), they still contribute to **underwater and aerial noise pollution**, which can disturb marine and bird life.<br><br>**Kite Noise (Aerial)**<br>  ○ The flapping and vibration of **kite fabric and lines** generate **low-frequency humming or whistling sounds**, especially in strong winds.<br>  ○ This can **startle seabirds** (e.g., flamingos, pelicans) and disrupt their feeding or nesting behaviors. | **Promote Sustainable Gear and Practices:**<br><br>• **Durable and Repairable Equipment:** Choosing high-quality, durable gear and repairing it when damaged reduces the need for frequent replacements, thus lowering the demand for energy-intensive manufacturing processes.<br>• **Eco-Friendly Materials:** Support brands that utilize recycled, upcycled, or sustainable materials in their equipment.<br>• **Reduce Waste:** Properly dispose of old gear and packaging, and avoid single-use plastics at windsurfing and kitesurfing locations.<br>• **Maintain Equipment Hygiene:** Regularly cleaning gear can prevent the spread of foreign organisms.<br><br>**Protect Coastal Ecosystems:**<br><br>• **Respect Protected Areas:** Be aware of and avoid windsurfing or kitesurfing in sensitive coastal areas that are crucial for wildlife, especially during breeding seasons. | **Proponent**<br><br>**ECO** |

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| | **Board & Water Interaction (Underwater Noise)**<br>○ The **slapping of waves against boards** and **fins cutting through water** create **high-frequency pulses**.<br>○ Repeated splashing and maneuvering can **disturb fish, seals, and dolphins**, which rely on sound for communication and navigation.<br><br>**Human Activity (Shouting, Equipment Handling)**<br>○ Instructors and participants often **shout to communicate**, adding to ambient noise.<br>○ The **clanking of rigging, harnesses, and pumps** during setup contributes to shoreline noise pollution.<br><br>**Support Boats (If Used)**<br>○ Some operators use **motorized rescue boats**, which introduce **engine noise and propeller sounds**, further disturbing marine life. | • **Minimize Disturbance:** Be mindful of noise levels and avoid actions that could disturb birds or marine life.<br>• **Leave No Trace:** Always take all litter away from beaches and coastal areas.<br><br>**Support Environmental Awareness and Conservation:**<br><br>• **Participate in Clean-ups:** Join local beach or coastal clean-up initiatives.<br>• **Educate Others:** Raise awareness within the windsurfing and kitesurfing community about environmental responsibility.<br>• **Support Eco-Conscious Businesses:** Choose to support schools, centers, and manufacturers that prioritize sustainability.<br><br>**Advocate for Sustainable Tourism:**<br><br>• **Choose Eco-Friendly Accommodations:** When traveling for windsurfing or kitesurfing, opt for accommodations with sustainable practices.<br>• **Support Local Economies Responsibly:** Be mindful of the impact of tourism on local communities and the environment. | |

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| | **Disruption of Marine Mammals**<br>○ Dolphins and seals in the Second Lagoon use **echolocation** for hunting.<br>○ Constant water sports noise can **mask their communication**, leading to stress or displacement.<br><br>**Bird Disturbance**<br>○ Migratory birds (e.g., Greater Flamingos) are sensitive to **unfamiliar sounds**.<br>○ Persistent noise may **force them to abandon feeding grounds**, reducing their energy reserves for migration.<br><br>**Fish Behavior Changes**<br>○ Some fish species **avoid noisy areas**, affecting local fishing and ecosystem balance. | | |
| **Land and soil resources** | **Seabed & Benthic Damage**:<br>• Kitesurfers and windsurfers often launch from shallow areas, where their fins or boards can scrape the seabed, damaging seagrass beds, algae mats, and benthic organisms. | **Avoid Shallow and Sensitive Areas:** Steer clear of seagrass beds, coral reefs, shellfish beds, and other known sensitive benthic habitats, especially during low tide.<br><br>**Launch and Land Responsibly:** Choose sandy areas free of vegetation or structures for launching and landing to prevent damage from dragging equipment. | **Proponent**<br>**ECO** |

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| | • Repeated activity can lead to sediment resuspension, reducing water clarity and smothering filter-feeding species.<br><br>**Conflict with Conservation Zones**<br>• Encroachment into Protected Areas:<br>○ Unregulated kitesurfing may intrude into Ramsar sites or no-take zones, disrupting conservation efforts.<br>○ Luderitz Second Lagoon is a critical wetland for seabirds**;** excessive sports activity could degrade their habitat. | **Minimize Walking and Standing on the Seabed:** Avoid walking or standing in shallow areas with sensitive benthic life. If you must, do so carefully in sandy patches.<br><br>**Prevent Equipment Dragging:** Be mindful of boards, fins, and lines, ensuring they don't drag along the seabed, particularly in shallow areas.<br><br>**Anchor Responsibly (if applicable):** If using a support boat or taking breaks, anchor in sandy areas away from sensitive habitats and ensure the anchor doesn't drag.<br><br>**Support Conservation Efforts:** Participate in or support local initiatives focused on coastal and marine conservation and habitat protection. | |
| **Water quality** | **Water Quality Degradation**<br>• Erosion & Turbidity:<br>○ Frequent activity near shores can accelerate erosion, destabilizing mangrove roots (where present) and increasing sediment runoff.<br>○ Turbidy water reduces sunlight penetration, affecting phytoplankton and seagrass photosynthesis.<br>• Fuel Contamination (Motorized Support Boats): | **Prevent Fuel and Oil Spills:** If using any motorized support craft, ensure proper maintenance to prevent leaks and refuel carefully away from the water. Use environmentally friendly fuels if possible.<br><br>**Choose Eco-Friendly Sunscreens and Personal Care Products:** Opt for reef-safe and biodegradable sunscreens and other personal care products to minimize the release of harmful chemicals into the water.<br><br>**Respect Wildlife and Their Habitats:** Avoid disturbing nesting birds or other wildlife, and be mindful of potential impacts on their feeding or breeding areas, which can indirectly affect water quality. | **Proponent**<br><br>**ECO** |

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| | ○ Some operators use motorboats for rescue or lessons, risking oil spills and fuel leakage in the lagoon. | **Maintain Equipment Hygiene:** Regularly clean your gear to prevent the spread of non-native species or contaminants between different water bodies.<br><br>**Support Clean Water Initiatives:** Participate in or support local organizations dedicated to maintaining and improving water quality in coastal areas. | |
| **FLORA DIVERSITY** | | | |

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| | **Direct Impacts**<br><br>• **Physical Disturbance:** The boards and fins of windsurfers and kitesurfers could cause minor, temporary turbulence in the very surface layer of the water. Phytoplankton are microscopic and distributed throughout the water column, so this surface-level disturbance is unlikely to have a significant impact on the overall phytoplankton population or their distribution.<br>• **Resuspension of Sediments:** In very shallow areas, particularly during low tide or near the shoreline, the fins might occasionally stir up fine sediments from the bottom. This could temporarily increase turbidity, potentially reducing light penetration needed for phytoplankton photosynthesis. However, this effect would be localized and short-lived.<br>• **Nutrient Mixing (Negligible):** While wind itself is a major driver of water column mixing on a larger scale (which *does* affect phytoplankton by distributing nutrients), the localized turbulence caused by the sports is unlikely to significantly alter nutrient availability for phytoplankton. | **Avoid Shallow and Sensitive Areas:** Steer clear of seagrass beds, coral reefs, shellfish beds, and other known sensitive benthic habitats, especially during low tide.<br><br>**Minimize the Introduction of Foreign Materials:** Avoid bringing single-use plastics or other potential pollutants to the beach or water. Properly dispose of any waste away from the shoreline.<br><br>**Launch and Land Responsibly:** Choose sandy areas free of vegetation or structures for launching and landing to prevent damage from dragging equipment.<br><br>**Environmental monitoring:** implement or contribute to a water monitoring programme. | **Proponent**<br><br>**ECO** |

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| | • **Pollution:** Increased human presence can lead to littering or other forms of pollution that could eventually affect water quality and, consequently, phytoplankton health, but this isn't a direct impact of the sports themselves. | | |
| **FAUNA DIVERSITY** | | | |

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| **Avi-fauna** | **Marine birds**<br>• Lagoons serve as critical habitats for migratory birds (e.g., flamingos, pelicans) and marine species (e.g., seals, dolphins).<br>• High-speed kitesurfers can collide with birds or disrupt feeding/breeding grounds, forcing wildlife to abandon areas. | • Avoid nesting and feeding areas, especially during sensitive seasons.<br>• Limit activities to only seasons where no migratory birds are present.<br>• Maintain a respectful distance to prevent disturbance.<br>• Be mindful of noise levels.<br>• Do not chase or harass birds.<br>• Support conservation efforts and educate others.<br>• Sponsor marine bird counting surveys. | **Proponent**<br>**ECO** |
| **Marine invertebrates** | The environmental impacts of windsurfing and kitesurfing on invertebrates are generally considered **minimal and localized** due to the nature of the activities. However, some potential indirect effects warrant consideration:<br>**Potential Direct Impacts**<br>• **Physical Disturbance (Negligible):** The boards and fins might cause minor, temporary turbulence in the surface waters or very shallow areas. Invertebrates are diverse in their habitats (water column, seabed, intertidal zones), and this surface-level disturbance is unlikely to significantly affect most populations.<br>• **Resuspension of Sediments (Localized):** In very shallow areas, fins could stir up sediments, temporarily increasing turbidity. This might briefly impact filter-feeding invertebrates by clogging feeding structures or reducing | • Avoid shallow, sensitive habitats like seagrass beds and reefs.<br>• Minimize walking or standing on the seabed in these areas.<br>• Prevent equipment from dragging on the bottom.<br>• Anchor responsibly in sandy areas, away from sensitive life. | **Proponent**<br>**ECO** |

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| | water quality locally. However, this effect is usually short-lived.<br>• **Direct Contact (Unlikely):** Direct physical contact between the equipment and larger, sessile invertebrates (like some anemones or corals in other regions, not typical of Lüderitz Lagoon's shallows) is possible but generally avoided by participants. | | |
| **Fish diversity** | The environmental impacts of windsurfing and kitesurfing on fish diversity in Lüderitz Second Lagoon are likely to be **minimal and indirect** under most circumstances:<br><br>**Potential Direct Impacts**<br><br>• **Physical Disturbance (Very Low Risk):** Direct collisions between windsurfers/kitesurfers and fish are highly unlikely due to the size and maneuverability of fish compared to the relatively slow and predictable movements of the boards and kites.<br>• **Underwater Noise (Generally Low):** While the crashing of sails or kites on the water surface can produce some underwater noise, and fins create turbulence, the sound levels generated by these activities are generally considered to be below the natural ambient noise levels caused by waves and currents. Therefore, significant | • Avoid spawning and nursery areas, especially during sensitive times.<br>• Minimize disturbance in shallow coastal habitats.<br>• Be aware of fishing regulations and avoid interfering with fishing activities.<br>• Prevent pollution from equipment or personal items. | **Proponent**<br><br>**ECO** |

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| | direct impacts on fish behavior or physiology due to noise are not expected. Fish are known to be sensitive to noise, which can cause stress, habitat avoidance, and interfere with communication, but windsurfing and kitesurfing are not typically loud or persistent noise sources underwater. [1]<br><br>**Potential Indirect Impacts (More Relevant)**<br><br>• **Habitat Disturbance (Access Points):** Similar to invertebrates, increased foot traffic and gear handling at access points could lead to habitat degradation in shallow coastal areas that might serve as nursery grounds or foraging areas for some fish species. Trampling of vegetation or substrate compaction could negatively impact these sensitive habitats.<br>• **Disturbance to Basking Sharks (Specific Species Concern):** Globally, there is evidence that basking sharks, a large filter-feeding fish, can exhibit avoidance behavior (startle responses, changes in foraging) when windsurfers or kitesurfers intentionally approach them closely or obstruct their path. While basking sharks may | | |

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| | occasionally be present off the coast of Lüderitz, the likelihood of frequent and significant disturbance by these recreational activities is uncertain.<br>• **Food Web Effects (Indirect):** If windsurfing and kitesurfing activities significantly disturb bird or marine mammal populations that prey on fish in the lagoon, there could be indirect effects on fish populations. However, as noted before, the direct impact of these sports on larger wildlife needs careful consideration.<br>• **Visual Disturbance:** The presence of boards, sails, and kites might cause some visual disturbance to fish in the immediate vicinity. However, fish are generally adapted to various visual stimuli in their environment, and the long-term consequences of this are likely minimal. | | |
| **Marine mammals** | • | • Maintain a significant distance and never approach or chase them.<br>• Be aware of noise levels, especially near sensitive habitats.<br>• Avoid areas known for their presence, particularly during breeding or feeding seasons.<br>• Do not obstruct their movement or migration routes. | **Proponent**<br><br>**ECO** |

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| | | • Report any sightings of distressed animals to relevant authorities.<br>• Maintaining a safe distance from marine mammals (both in the water and from haul-out sites).<br>• Avoiding sudden or erratic movements when near marine mammals.<br>• Being aware of sensitive areas and avoiding them, especially during breeding or calving seasons.<br>• Educating participants about responsible wildlife viewing and the potential impacts of their activities.<br>• Considering designated zones for windsurfing and kitesurfing that minimize overlap with key marine mammal habitats. | |
| **SOCIO-ECONOMIC SETTING AND GOVERNANCE** | | | |
| **Resources efficiency, pollution prevention and management** | • Microplastic & Gear Debris:<br>○ Broken equipment (kite lines, board fragments) can become marine litter, harming fish and seabirds through entanglement or ingestion.<br>○ Sunscreen and oils from gear maintenance may introduce chemical pollutants into the water. | • Never leave any trash behind; practice "leave no trace."<br>• Properly secure all gear to prevent loss of small parts.<br>• Actively collect any plastic litter you encounter on beaches or in the water.<br>• Choose reusable water bottles and avoid single-use plastics.<br>• Support initiatives focused on reducing marine plastic pollution.<br>• Educate others about responsible waste management.<br>• Undertake environmental monitoring activities. | **Proponent**<br>**ECO** |
| **Tourism and recreation** | If bird populations decline or sensitive habitats are degraded due to disturbance, it could negatively impact wildlife tourism (e.g., birdwatching) and the aesthetic value of coastal areas, potentially affecting the broader tourism sector. | • Avoid disturbing birds.<br>• Undertake environmental monitoring of marine birds. | **Proponent**<br>**ECO** |

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| **Fishing and mariculture** | Disturbances to marine ecosystems could indirectly affect fish populations, impacting local fishers and their livelihoods. | • Avoid disturbing fish.<br>• Undertake environmental monitoring of fish. | **Proponent**<br><br>**ECO** |
| **Exclusion of other users** | • **Collision Risks:** The high speeds and dynamic movements of windsurfers and kitesurfers, especially with long lines in kitesurfing, increase the risk of collisions with slower-moving vessels like fishing boats, kayaks, or sailing dinghies.<br>• **Navigation Obstruction:** Windsurfers and kitesurfers maneuvering in the lagoon could impede the navigation of other boats, particularly in narrower channels or near launching/landing areas.<br>• **Hazards for Swimmers and Waders:** Uncontrolled boards or kites could pose a safety hazard to swimmers or people wading in shallow areas, especially with the potential for entanglement in kite lines.<br><br>**Spatial Conflicts and Reduced Amenity:**<br><br>• **Crowding:** Popular windsurfing and kitesurfing areas could become crowded, reducing the space available for other activities like recreational fishing, sailing, or leisurely boat trips. | • Establishing designated zones for windsurfing and kitesurfing, away from high-traffic areas for other activities.<br>• Implementing speed limits and right-of-way rules for windsurfers and kitesurfers.<br>• Providing clear guidelines and education on safe and responsible behavior around other water users.<br>• Encouraging communication and mutual respect among all user groups.<br>• Regularly reviewing and adapting management strategies based on user feedback and observed impacts.<br>• Co-ordinate wind-surfing and kite-surfing activities to avoid conflicts.<br>• Undertake wind-surfing and kite-surfing activities at different times of the year or only when the all activities are complementing one another.<br>• Wind-surfing and kite-surfing activities should be undertaken at different areas with the lagoon. | **Proponent**<br><br>**Other users** |

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| | • **Noise Pollution:** While generally not excessive underwater, increased shouting or the flapping of large kites could detract from the peaceful enjoyment of the lagoon for other users.<br>• **Visual Impact:** A large number of brightly colored kites and sails might alter the natural aesthetic of the lagoon, which some users may find less appealing.<br>• **Restricted Access:** Designating specific zones for windsurfing and kitesurfing, while potentially beneficial for safety and environmental reasons, could restrict access to certain parts of the lagoon for other users.<br><br>**Damage to Infrastructure and Environment (Indirect User Impacts):**<br><br>• **Damage to Fishing Gear:** Errant kites or boards could potentially damage fishing nets or lines.<br>• **Disturbance of Fishing Activities:** The presence of windsurfers and kitesurfers might scare away fish, negatively impacting recreational or small-scale local fishing.<br>• **Impacts on Wildlife Viewing:** Noise and activity from windsurfing and kitesurfing could disturb wildlife that other | | |

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| | users (e.g., birdwatchers, nature tourists) come to the lagoon to observe.<br><br>**Perceived Safety and Exclusivity:**<br><br>• **Fear and Intimidation:** Less experienced water users might feel intimidated by the fast-paced activities of windsurfers and kitesurfers, potentially discouraging them from using certain areas of the lagoon.<br>• **Sense of Exclusivity:** If windsurfing and kitesurfing become dominant activities in certain areas, other users might feel excluded or that their traditional uses of the lagoon are being marginalized. | | |

## OBJECTIVES

- Install a water-based “wave breaker,” a barrier.
- Ensure the speed strip in Second Lagoon is safe for high-speed activities.
- Successfully host windsurfing and kite surfing events, reinstating the kite surfing division.
- Optimize the Speed Sailing Lüderitz to attract more participants and visitors.

## VISION STATEMENT

The vision is to establish Lüderitz as a premier destination for international sailing events during the windy season, leveraging its exceptional wind conditions (consistently 30–50 knots).

## MISION STATEMENT

Host each event with a televised award ceremony at a prestigious Lüderitz hotel, celebrating record-breaking athletes with VIPs and media; thereof boosting Namibia’s investment portfolio.

## TARGET

The expansion aims to host a minimum of 2 events annually.
The new kite surfing facility, with its wave breaker, will cater to an additional 30–40 kite surfers annually, increasing total participation to between 50 and 70 athletes annually across both sports.

## IMPACT

Attract more international athletes by offering world-class conditions and comfort in Lüderitz.