



Uruq Bani Ma'arid
PA
General
Management plans

EXECUTIVE SUMMARY

Uruq Bani Ma'arid is a 1,276,500-hectare large Protected Area that was established in 1992, located approximately 600 km due south of Riyadh on the southern tip of the Tuwayq escarpment at the edge of the Ar-Rub' al-Khali (Empty Quarter).

In 2023, 'Uruq Bani Ma'arid was inscribed in UNESCO's World Heritage List (Dossier 1699) under criterion (vii) and (ix). Criterion (vii) describes Uruq Bani Ma'arid as an iconic hyper-arid sand desert representing the largest sand sea on Earth, Ar-Rub' al-Khali. Criterion (ix) focuses on the wide range of wildlife habitats and niches that is created through the varied topography, including ecological refuges for the Arabian Oryx, Arabian Sand Gazelles and Arabian Mountain Gazelles that were successfully reintroduced into their natural habitats (in the case of the Arabian Oryx, after decades of extinction in the wild). The animal populations are completely free ranging in a huge area with a high level of ecological integrity.

The major values of this Protected Area are:

- Iconic hyper-arid sand desert representing the largest sand sea on Earth.
- A tremendous sense-of-place and associated sense of wilderness.
- A wildlife refuge, the place where the last observation of the Arabian Oryx was made before its extinction from the wild, and the destination for its reintroduction to its natural habitat.
- The vast area ensures representation of the hyper-arid desert ecosystem with all its elements covered and subject to undisturbed evolution.
- At its north-western edge, 'Uruq Bani Ma'arid is bordered by the historical village of Al Faw, an ancient trading city which is believed to be the capital of the first Kingdom of Kindah. Al Faw is currently on the UNESCO World Heritage Tentative List.

Where the sands meet the Tuwayq escarpment, they form an extraordinary spectrum of juxtaposed contrasts and fusions of forms and colors. A number of parallel longitudinal sand dunes ('uruq in Arabic) reach up to 200 km in length and rise up to 170 m in height. The Protected Area conserves the 'Arabian Sand Desert' as well as the 'Jabal Tuwayq' ecoregions as part of NCW's representation of the Kingdom's biodiversity heritage.

Direct impact from illegal hunting and the contraction of available habitat through competition from livestock prevent the full expansion of the native wildlife. Despite multiple re-introductions of the iconic oryx, the current numbers remain low. This can be directly attributed to poaching. Widespread overgrazing, predominantly by camels, impacts up to 70% of the protected area, extending well beyond the Resource Use Zone into the Wilderness Zone. With around 100 households and private owners herding 25-40 camels each, these practices pose the most significant threat to the reserve's ecological integrity and sustainability. The trend in the vegetation cover and condition is however positive in those central areas protected within the 'ring' of seven ranger stations. Unregulated offroad driving by both staff and resource users is a pervasive issue across all zones of the Protected Area, including the Wilderness zone, where the practice is particularly disruptive.

The Protected Area's infrastructure is anchored by its headquarters at Al-Qarnay. This main ranger center is accessed by means of a sealed road from the west climbing up onto the Tuwayq escarpment. Another six ranger stations are located in a 'ring' that was initially aligned with the former resource use zone boundary, with a further two ranger stations closer to the northern boundary (making for a total of 9 stations including the headquarters). Despite the challenges of illegal hunting and livestock incursions, the reserve's protection currently depends on only 61 rangers conducting vehicle patrols with 24 vehicles, an approach that falls short given the area's scale and the intensity of poaching and livestock grazing. The

reserve's open boundaries and vast terrain necessitate a highly mobile and motivated ranger presence to protect the reserve and its wildlife.

Based on the major site values, the following vision applies:






'The flagship authentic Arabian sand desert protected area'

The mission is to establish an effectively conserved area within the Empty Quarter, globally renowned for its wilderness and vast desert dune landscapes. It aims to ensure the protection of free ranging ungulate populations across their natural range. Local communities are supported in diversifying their economies through sustainable tourism and are no longer dependent on the limited vegetation within the Reserve. Sustainable tourism thrives within the established Limits of Acceptable Change.

The following objectives were developed from the findings of the fieldwork and stakeholder consultations. The mission can be attained through these objectives:

1. **Area Integrity:** establish and maintain area integrity, allowing for the attainment of objective 2.
2. **Conservation and ecosystem management:** restore and maintain (within the environmental variability) the areas ecological ecosystems and biodiversity condition.
3. **Retain UNESCO registration as a WHS.**
4. **Community and visitor support and awareness:** ensure that communities & visitors are fully aware of rules, regulations, agreements, responsibilities, and opportunities within the PA.
5. **Research, data and information:** establish a research position for the PA with clear monitoring and research objectives resulting in more effective management and feedback systems.
6. **Sustainable management and development:** address impacts from waste, litter, pollution, rehabilitation of decommissioned developments, resource efficiency and climate change.
7. **Community livestock grazing management:** establish and implement effective and sustainable grazing management (and access) in the sustainable resource use zone through participative engagement with the local communities. This may not compromise objectives 1, 2 and 3.
8. **Tourism and visitor management:** optimize tourism potential in a sustainable and responsible manner that supports the overall vision and brand of the PA. This may not compromise objectives 1 and 2.

These key aspects and associated KPI's can be summarized as follows:

Vision	Objectives	KPIs	2030 Example target
THE FLAGSHIP AUTHENTIC ARABIAN SAND DESERT PROTECTED AREA	 Restore and maintain the area's ecosystems	Number of grazing incidents in unauthorized areas per year	<5
	 Ensure sustainable wildlife populations	Number of self-sustaining Oryx individuals ⁽²⁾	500
	 Retain UNESCO listing and exemplify effective protected area management in Saudi Arabia	Retain UNESCO listing	EFFECTIVE
	 Foster positive impact on neighbouring communities	Number of jobs in the protected area ⁽²⁾	150
	 Become the iconic desert destination in the GCC	Annual tourism traffic	30K

An Advisory Council is proposed to guide the PA's management and strategy. Involving local stakeholders, community representatives and local governance authorities, the council will aim to ensure decisions are relevant to local needs while conforming to national guidelines. Establishing this council is an important step towards participatory management, aiming for effective and inclusive site governance aligned with recognized conservation best practices.

The recovery and expansion of the large wildlife will depend on the development and implementation of an agreed-upon Sustainable Livestock Grazing Plan for the domestic livestock, improved law enforcement and supplementation through additional introductions of oryx and gazelles. A population of at least 500 free-ranging oryx should be possible which will also ensure its long-term genetic viability. A second attempt to re-introduce the once native ostrich should be made.

The escarpment and the buffer zone have ongoing limestone mining and cement production as well as abandoned quarry operations. In most cases the quarried, crushed material is still stockpiled and apart from removal of surface infrastructure, little rehabilitation has been undertaken. These areas require formal closure, decommissioning, and rehabilitation.

The current zoning plan for UBM (as found in the UNESCO nomination dossier) has been revisited and redefined to include a set of zonation categories that are firstly responsive to the IUCN categories, and secondly responsive to the natural, man-made and cultural historic environment of the Protected Area.

The visitor management plan recognizes the 2030 Vision for the Kingdom and consequent projected growth in the local and foreign tourism market. However, Uruq Bani Ma'arid is constrained in terms of distance from source markets, seasonal character, and logistical challenges of developing tourism deep into the sand dunes. A few natures, adventure and culturally based tourism experiences have been identified as being appropriate. The activity palette emphasizes low impact motorized and non-motorised activities including game drives, 4x4 adventure drives, e-quad trails, walking, hiking, mountain biking, and camel rides. Provision is also made for extreme sports or specialist pursuits such as hot air ballooning, paragliding, stargazing and immersive cultural experiences. Two Tourism Focus Areas are identified, accommodating a range of visitor facilities from picnicking, cultural camping, traditional camping and group camps to upmarket and privately managed glamping camps and eco-lodges. Provision is made for a total visitor capacity of 489 visitors daily, or 71,101 visitors annually at a 40% occupancy, with a strong bias towards accommodating the local and regional market. It is expected that the actual total annual visitor numbers will be much lower than the theoretically maximum due to low occupancies as a result of the intense seasonality.

This Management Plan is supplemented by a number of Accompanying Plans that provide additional detail to guide the management staff in terms of Operations, Financial Sustainability, Contact & Communication, Habitat & Wildlife Management, Zoning, Visitor Management, Waste Management and Crisis & Risk Management.

Implementation of the Management Plan should ensure that Uruq Bani Ma'arid remains on the UNESCO list of World Heritage Sites as well as becoming part of IUCN's Green List of Protected and Conserved Areas.



TABLE OF CONTENTS

Executive Summary	i
Table of Contents	iv
Abbreviations/ Acronyms	v
Glossary of Terms	vii
SECTION ONE: INTRODUCTION	1
1.1. Biogeography of Saudi Arabia	1
1.2. Social and Political Context.....	1
1.3. History of Protected Areas in the Kingdom	2
1.4. Introduction to Saudi protected areas.....	3
1.5. Management Plan objectives and approach	4
1.6. Overview of conducted field studies.....	5
SECTION TWO: LEGAL STATUS AND POLICY FRAMEWORK	8
2.1. Current and future policy framework.....	8
2.2. Uruq Bani Ma'arid Legal setting.....	9
SECTION THREE: PROTECTED AREA ASSESSMENT	12
3.1. Introduction to the UBM PA	12
3.2. Context and Accessibility	15
3.3. Management Resources and Infrastructure	18
3.4. Physical Environment Analysis	21
3.5. Biological Environment Analysis	28
3.6. Fauna and Ungulate Populations.....	30
3.7. Socio-cultural context and heritage assets.....	32
3.8. Stakeholder Analysis	32
3.9. Current Threats and Pressures	36
SECTION FOUR: VISION AND TARGET OUTCOMES	45
4.1. Major Site Values	45
4.2. Vision, Mission and Objectives.....	46
4.3. Strategic Objectives and Operational KPIs.....	49



ABBREVIATIONS/ ACRONYMS

<i>AI</i>	Artificial Intelligence
<i>AU</i>	Animal Unit
<i>BOT</i>	Build Operate and Transfer
<i>CASEVAC</i>	Casualty Evacuation
<i>CCTV</i>	Closed Circuit Television
<i>CO₂eq</i>	Carbon Equivalent Reduction
<i>COP</i>	Conference of Parties
<i>CZP</i>	Conservation Zoning Plan
<i>EV</i>	Electric Vehicle
<i>GCC</i>	Gulf Cooperation Council
<i>GIS</i>	Geographic Information System
<i>GPS</i>	Global Positioning System
<i>Ha</i>	Hectares
<i>HIUZ</i>	High Intensity Use Zone
<i>HVAC</i>	Heating, Ventilation, and Air Conditioning
<i>IBAT</i>	Integrated Biodiversity Assessment Tool
<i>ICS</i>	International Conservation Services
<i>INDC</i>	Intended National Determined Contribution
<i>IUCN</i>	International Union for Conservation of Nature
<i>KAUST</i>	King Abdullah University of Science and Technology
<i>Kg</i>	Kilograms
<i>Km²</i>	Square Kilometres
<i>KPI</i>	Key Performance Area
<i>KSA</i>	Kingdom of Saudi Arabia
<i>LACs</i>	Limits of Acceptable Change
<i>LIUZ</i>	Low Intensity Use Zone
<i>LoRa</i>	Long Range
<i>M</i>	Meters
<i>MEWA</i>	Ministry of Environment, Water and Agriculture
<i>MM</i>	Millimetres
<i>MoT</i>	Ministry of Tourism
<i>MP</i>	Management Plan



<i>MWAN</i>	National Center for Waste Management
<i>NBSAP</i>	National Biodiversity Strategy and Action Plan
<i>NCW</i>	National center for Wildlife
<i>NCWCD</i>	National Commission for Wildlife Conservation and Development
<i>NCWM</i>	National Center for Waste Management
<i>OW</i>	Oliver Wyman
<i>PA</i>	Protected Area
<i>PPE</i>	Personal Protective Equipment
<i>PTT</i>	Push to Talk
<i>RF</i>	Radio Frequency
<i>RUE</i>	Rainfall Use Efficiency
<i>SAR</i>	Saudi Arabia Riyal
<i>SASO</i>	Saudi Standards, Metrology, and Quality Organization
<i>SENS</i>	Saudi Environmental Society
<i>SFES</i>	Special Forces for Environmental Security
<i>SGI</i>	Saudi Green Initiative
<i>SIRC</i>	Saudi Investment Recycling Company
<i>TDF</i>	Tourism Development Framework
<i>TFA</i>	Tourism Focus Areas
<i>UBM</i>	Uruq Bani Ma'arid
<i>UNESCO</i>	United Nations Educational, Scientific and Cultural Organization
<i>VAC</i>	Visual Absorption Capacity



GLOSSARY OF TERMS

	DEFINITION
<i>Agri-tourism</i>	Agri-tourism is a form of commercial enterprise that links agricultural production and/or processing with tourism to attract visitors onto a farm, ranch, or other agricultural business for the purposes of entertaining or educating the visitors while generating income for the farm, ranch, or business owner.
<i>Alien invasive species</i>	A non-native plant or animal species that, when introduced to a new habitat, can spread if uncontrolled causing harm to the native species, environment, economy, or human health.
<i>Biodiversity</i>	Biodiversity is biological diversity - the full variety of living things – including plants, animals, fungi and bacteria. It is considered at all scales, from the different genes in an individual, to species and the populations they form, as well as the complex arrangements of ecosystems.
<i>Biogeography</i>	The distribution patterns of ecosystems and biodiversity across space and time and their geographic ranges.
<i>Build Operate and Transfer</i>	A project financing and development model where a private entity constructs and operates a facility or infrastructure project for a specified period, typically to recoup its investment, after which ownership is transferred to the government or another public entity.
<i>Carrying capacity</i>	The number of animals or visitors, intensity and type of use that can be accommodated in an area without deterioration of the essential biophysical, conservation and experiential values of a particular environment.
<i>Challenges</i>	challenges refer to ongoing or systemic issues that complicate the management and conservation efforts of the Protected areas. Overgrazing, for instance, is a challenge as it continually impacts habitat quality and requires sustained management strategies to balance ecological needs with local livelihoods. Challenges typically require long-term planning and solutions.
<i>Code of Conduct</i>	Framework for professional behavior aligning with the Reserve's mission and national vision
<i>Community Engagement</i>	Involvement and respect for local traditions and practices
<i>Contractor Compliance</i>	Expectations for contractors' operations, integrity, and professionalism
<i>Crisis</i>	in the UBM PA, a crisis is an urgent, significant event that poses an immediate threat to the Protected area's environment, wildlife, or people. It requires immediate action to prevent or minimize harm.
<i>Cultural heritage</i>	Inherited assets which people identify and value as a reflection and expression of their evolving knowledge, beliefs and traditions, and of their understanding of the beliefs and traditions of others.
<i>Data Protection</i>	Maintaining the confidentiality and security of data and information systems
<i>Ecoregions</i>	Distinct geographic areas characterized by specific combinations of climate, vegetation, and ecological features, serving as ecological units that help in understanding and managing biodiversity patterns.



	DEFINITION
<i>Eco-Lodge</i>	Environmentally friendly, fixed tourist accommodation designed to have the minimum possible impact on the natural environment in which it is situated. Usually caters for mid or upmarket segment. Requires locations with privacy and a substantial buffer area to ensure solitude and seclusion. Typically, 18-32 beds. Wellness and a range of daily activities on offer are key themes.
<i>Endangered species</i>	Species that are at significant risk of becoming extinct in the near future if effective conservation measures are not taken.
<i>Glamping</i>	A form of camping involving accommodation and facilities more luxurious than those associated with traditional camping. Usually, 8 to 12 beds.
<i>Group camp</i>	Dormitory style camp capable of accommodating large groups (school groups etc.). Can also be used as budget backpacker's accommodation.
<i>Home Stays</i>	Visitors share a residence with a local family in one of the towns or villages. Provides an authentic travel experience to live and breathe the local culture, make friends and explore destinations in an authentic and unique way.
<i>Impact</i>	An impact upon visual aspects of the heritage or natural setting, or a direct impact upon the physical environment or an impact on the biological components or properties of an ecosystem.
<i>Integrity and Transparency</i>	Conducting oneself with honesty, clear communication, and ethical decision-making
<i>Interpretation</i>	Gaining an understanding and learning of various natural landscapes and features as well as and cultural historic attractions through interactive and interpretive signage and other forms of information communication.
<i>IUCN Green List</i>	The IUCN Green List is a global program of certification aiming to achieve and promote effective, equitable, and successful protected and conserved areas by highlighting best practices and providing a benchmark for progress towards effective and equitable management.
<i>IUCN Red List</i>	The International Union for Conservation of Nature's list of species categorized by their risk of extinction.
<i>Integrity</i>	A measure to the wholeness and intactness of a Protected Area and the survival and condition of those elements that contribute to their significance.
<i>KPI</i>	Key Performance Indicators (KPIs) are the critical (key) quantifiable indicators of progress toward an intended result.
<i>Monitoring and Evaluation</i>	The systematic collection and analysis of data to assess the performance and effectiveness of management actions.
<i>Permissive (long term) camping</i>	An area set aside for traditional Bedouin style camping i.e. long term (up to 3 months) family camp, usually fully self-sufficient with modern amenities including power generators, air conditioning etc. Communal water point and ablution blocks. Large area per site (40x40m)
<i>Pitch & strike camping</i>	Traditional camping where campers provide own tents, bedding, cutlery etc. Each site furnished with water point and communal / shared ablution block. Average of 4 persons per camp site used for carrying capacity calculations in this report.
<i>Poaching</i>	Illegal hunting, capturing, or harvesting of wildlife, often for trade or consumption.
<i>Protected Area</i>	A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve

	DEFINITION
	the long-term conservation of nature with associated ecosystem services and cultural values.
<i>Regenerative tourism</i>	Regenerative tourism is a practice of sustainable traveling and discovering new destinations.” It goes beyond “helping to conserve” a destination. The main goal of this tourism is to inspire visitors to impact the destination positively
<i>Restoration</i>	To return a conservation asset to a known earlier state in terms of diversity, abundance and/or ecological functioning.
<i>Risk</i>	Risk refers to the likelihood of events or situations that could negatively impact the UBM PA, including environmental hazards, human activities, and social issues. It involves identifying and evaluating these threats to manage them effectively.
<i>Safety Protocols</i>	Adhering to guidelines for staff, visitor, and wildlife safety
<i>Sleep-outs / star beds</i>	Sleeping under the stars along a multiday trail. No formal amenities.
<i>Stakeholder engagement</i>	The process of involving individuals, groups, and organizations who have an interest or stake in the management of a protected area.
<i>Stakeholder Relationships</i>	Building and maintaining collaborative connections with various groups
<i>Stargazing / astro tourism</i>	Astro tourism combines astronomy and tourism, wherein travelers engage in activities like stargazing, watching the planets, peeking into other galaxies, watching eclipses, and more.
<i>Sustainable development</i>	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
<i>Teamwork</i>	Collaborative, respectful work environment with conflict resolution and professional development
<i>Tourism</i>	A social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes
<i>Tourism Focus Areas (TFA)</i>	Defined geospatial areas within the PA within which tourism activities and facilities will be focused. Can be considered ‘destinations’ within a destination. Each TFA has a distinct theme visitor experiential quality.
<i>Threats</i>	In the UBM PA context, threats are specific factors or activities that directly endanger the Protected area’s ecosystem, wildlife, or operational integrity. For example, poaching represents a direct threat to wildlife populations, undermining conservation efforts and disrupting the ecological balance.
<i>Visitor Management</i>	Providing informative and respectful experiences, ensuring visitor safety
<i>Zoning</i>	The process of delineation of a protected area into different zones, each with specific regulations and permitted activities.

SECTION ONE: INTRODUCTION

1.1. BIOGEOGRAPHY OF SAUDI ARABIA

The Kingdom of Saudi Arabia is about 2,000,000 km² occupying four-fifths of the Arabian Peninsula. It is the tenth largest country covering 1.64% of the land area of the world, and 8% of the land area of Asia.

Saudi Arabia divides naturally into seven terrestrial physiographic regions (with 30 subregions) and two marine regions (Child & Grainger, 1990). More recently, a new classification defines in a hierarchical manner 4 Realms, 20 Eco-regions and 65 Ecosystems (Llewellyn, 2023). These ecosystems span a wide diversity of terrestrial habitats, from mesic, cool, high mountains through arid desert steppes to hot, semi-arid coastal plains. The range of marine habitats is diverse and includes mangroves, sea grass beds and coral reefs of both the Western Indo-Pacific (Red Sea) and Indo-Malayan (Arabian Gulf) realms.

Despite this large area, the flora, of about 2,250 species, is comparatively modest in number of species, but it is biogeographically very interesting in containing elements of three major elements, namely the western part of the Palearctic, the Afrotropical, and the Oriental. Hence the region has a flora that includes representatives of European, Asian, and African groups (García, *et al.* 2015). Although well-known at a broad taxonomic level, details of the distribution and population status of many species is still poorly documented. Increasing human pressures leading to habitat loss, chronic overgrazing, cutting of trees for firewood and indiscriminate off-roading on fragile desert soils, exacerbate the impact of severe droughts and low and unpredictable rainfall even under normal conditions.

Diversity of large animals and birds is also modest. Species, such as Arabian oryx, Nubian ibex, Dugong and Arabian leopard, for example, are restricted in distribution whereas many migratory birds cross the Arabian Peninsula as part of a major migratory flyway. Many of the larger mammals were either extirpated (Arabian oryx, Saudi gazelle) or exist as fragmented, small populations (Nubian ibex, Mountain gazelle). The invertebrate fauna is poorly known and new species are regularly documented (Al-Qahtni *et al.*, 2023). Most elements of the fauna are under threat from changes in land use practises that alter habitats (especially mountains, wetlands, and coastal areas) as well as through unsustainable hunting practices.

1.2. SOCIAL AND POLITICAL CONTEXT

The following table provides an overview of the socio-cultural context pertaining to UBM PA.

Table 1: Socio-cultural context pertaining to UBM PA

LOCAL COMMUNITIES AND TRIBAL GROUPS	
<i>Local Communities</i>	Al-Khalidah, Sultanah, Al-Mundafin, Az-Zuhur / Az-Zufar, Qaryat al-Faw.
<i>Tribal Groups</i>	Traditional territories of Yam and Dawasir tribes. Other tribes include Murrah, Qahtan, and Sa'ar.
<i>Needs Expressed</i>	Demand for more grazing opportunities in the 'Ushayran' area during spring.
<i>Cultural Significance</i>	Adjacent to the archaeological site of Al-Faw, boasting artifacts like standing stones, cairns, watchtowers, and petroglyphs.
RESOURCE USES AND STAKEHOLDERS	
<i>Resource Uses</i>	Mainly grazing of camels and sheep, use of dead trees for firewood. Limited farming below the Al-'Arid escarpment.

<i>Stakeholders</i>	local livestock owners, Ministry of Environment, Water and Agriculture, local schools, Saudi Commission for Tourism and National Heritage, Frontier Guards, Najran, and Riyadh Imarahs.
TRADITIONAL CONSERVATION INITIATIVES	
<i>Conservation Initiatives</i>	No existing or former himas, agricultural terraces, rainwater harvesting, or local initiatives are known in the protected area.
VALUE FOR RURAL DEVELOPMENT	
<i>Tourism and Recreation</i>	High value, offering opportunities for guided wildlife viewing, photographic safaris, and wilderness leadership camps.
<i>Hunting</i>	Potentially low to moderate value in the future.
<i>Grazing by Livestock</i>	Moderate value requires rotational grazing management and monitoring.
<i>Production of Wood and Firewood</i>	Low value, suitable for local use but not for commercial exploitation.
VALUE FOR ENVIRONMENTAL EDUCATION	
<i>Educational Value</i>	High for ecology and geomorphology, low for traditional conservation practices.
THREATS AND CONFLICTS	
<i>Existing Threats</i>	Poaching (moderate potential threat), overgrazing, driving off main tracks, sewage outflow, refuse dump, rock crushers, cement mixers below Al-'Arid escarpment.
<i>Potential Threats</i>	Road construction, settlement, agricultural expansion, increased littering, and disturbance from tourism.
<i>Requested Development</i>	Communication towers on the escarpment (potential visual impact).
<i>Recent Infrastructure Development</i>	Dual carriageway on Najran highway; opportunity for protection via fencing.

1.3. HISTORY OF PROTECTED AREAS IN THE KINGDOM

The Kingdom of Saudi Arabia has two policy documents: the National Biodiversity Strategy and Action Plan (NBSAP) and the Protected Area System Plan, which set national targets and a vision for Protected Areas in the Kingdom. Under the Saudi Green Initiative (SGI), the Kingdom has committed to protecting 30% of its terrestrial and marine area and is working partnership with leading international organizations such as the IUCN to safeguard and restore the natural ecosystems and landscapes of the country.

The Kingdom has a long tradition of himas which are areas of reserved pasture, where trees and grazing lands are protected from indiscriminate harvest on a temporary or permanent basis. Formal conservation efforts began in Saudi Arabia after the Ministry of Agriculture and Water established the Asir National Park in 1981. The island of Umm Al-Qamari had been given *in fact* protected area status in 1977. The establishment of protected areas accelerated after the establishment of the National Commission for Wildlife Conservation and Development (NCWCD).

According to the National Database on Protected Areas (2024), there are currently a total of 36 designated Protected Areas in the Kingdom. These cover 91 734 km² of terrestrial area (18.1%) and 14382 km² of marine habitat (6.45%)

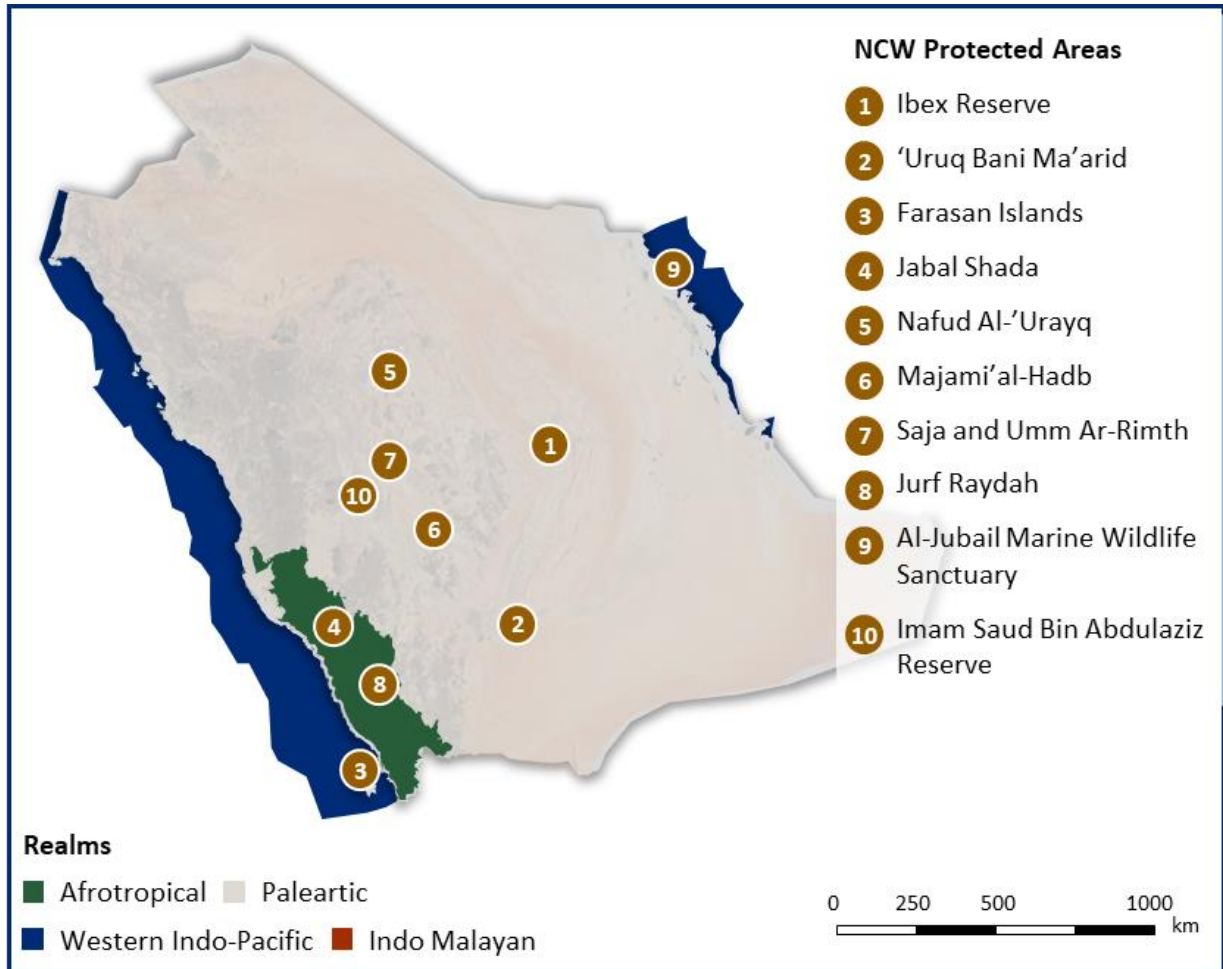
The Protected Areas in Saudi Arabia are managed by different authorities, including the National Centre of Wildlife (NCW) which has under its umbrella the 10 areas for which Management Plans are currently being compiled.

1.4. INTRODUCTION TO SAUDI PROTECTED AREAS

The 10 areas for which Management Plans are currently being compiled (Map 1) each address specific conservation elements that have been identified in the System Plan. They complement each other through their different size, topography, landscapes, ecosystems and biodiversity (Table 2).

Table 2: Brief characterization of the 10 Protected Areas.

NAME OF PA	YEAR OF PROCLAMATION	SIZE KM ²	MAJOR ECOREGION PROTECTED	SECONDARY ECOREGION PROTECTED
<i>'Uruq Bani Ma'arid</i>	1992	13,485	Arabian sand desert	Jabal Tuwayq
<i>Ibex Reserve</i>	1987	1,840	Jabal Tuwayq	Rawdahs
<i>Farasan Islands</i>	1988	5,798	Southern Red Sea	Southern Tihamah Coastal Plain
<i>Jabal Shada</i>	2001	78	Lower Asir Escarpment	Asir Escarpment Slope
<i>Nafud Al-'Urayq</i>	1994	2,036	Arabian sand desert	Granitic Outcrops
<i>Majami' al-Hadb</i>	1991	1,190	Hijaz Hills & Mountains	Pyroclastic Outcrops
<i>Saja and Umm Ar-Rimth</i>	1994	6,528	Najd Pediplain	Inland Sabkhahs
<i>Jurf Raydah</i>	1988	9	Asir Escarpment Crest	Asir Escarpment Slope
<i>Al-Jubail Marine Wildlife Sanctuary</i>	1987	2,410	Southern Arabian Gulf	Arabian Gulf Coastal Plain
<i>Imam Saud Bin Abdulaziz Reserve</i>	1987	2,240	Najd Pediplain	Central Harrahs – Old



Map 1: NCW Protected Areas

1.5. MANAGEMENT PLAN OBJECTIVES AND APPROACH

1.5.1. PROJECT OBJECTIVES

NCW requires an approved five-year management plan for each of its 10 protected areas, according to the International Union for Conservation of Nature (IUCN) standards.

The Objectives, as stated in the Scope of Work are:

1. Prepare a management plan that is approved by the official authority responsible for the protected area that:
 - Describes the protected area.
 - Describes the vital and abiotic information of the protected area and evaluates this information.
 - Identifies the problems and challenges that the protected area suffers from and opportunities for its management to protect biodiversity, natural resources and natural harmony in it, and the objectives included in it determined based on this information to be applied during a specified period.

2. Develop Accompanying plans as listed below:

- **Communication plan:** Detailed plan for communication and communication mechanisms with partners, stakeholders, and local communities
- **Zoning plan:** Dividing the protected area into a group of areas so that each area has activities that are permitted and activities that are prohibited in this area.
- **Operational plan:** Include all activities and procedures related to the implementation of the initiatives of the administrative plan for the protected area and specific time periods for implementation.
- **Visitor management plan:** Includes a set of administrative methods and tools used by the reserve management to direct the movement of visitors and their behavior within the protected area.
- **Waste management plan:** Outlines a mechanism for monitoring, collecting, transporting, treating, recycling, or disposing of waste in environmentally sustainable ways.
- **Crisis and risk management plan:** Shows the potential risks and crises that the protected area may face, and best practices and guidelines for dealing with these risks and crises.
- **Habitat management plan:** Outlines objectives and strategies to maintain or improve the quality of habitats for wildlife, while also considering human needs and activities
- **Financial sustainability plan:** Objectives of the reserve, expected financial cost for implementing these objectives and means to secure funding.

1.5.2. PROJECT APPROACH

A three-phase approach was followed to achieve the objectives as set out above.

Table 3: Project Approach

PHASE	STEPS
<i>Phase One: Protected Area Assessment</i>	1.1. Collect previously development information, studies, and documents. 1.2. Conduct a visit and high-level site assessments. 1.3. Identify strengths, weaknesses, threats, and opportunities of the protected area.
<i>Phase Two: Management Plan Design</i>	2.1. Design the vision and target outcomes per PA. 2.2. Build associated strategy and roadmap. 2.3. Define overall enablers and implementation plan. 2.4. Build draft management plan for the protected area.
<i>Phase Three: Accompanying plans and approvals</i>	3.1. Build draft accompanying plans. 3.2. Socialize the plans with concerned parties. 3.3. Finalize approved five-year management plan.

This management plan is an output of Phase Two.

1.6. OVERVIEW OF CONDUCTED FIELD STUDIES

A first orientation trip was conducted by Dr Marc Stalmans and Willie Boonzaaier with Hamza Benallal on 30/10/2023 and 31/10/2023. A comprehensive fieldtrip was undertaken between the 30/11/2023 and 04/12/2023. This trip was undertaken by Grant Jerome, David Parry, Peter Velcich and Laith Bani Yaseen. Both trips included on-site observations as well as interactions with various stakeholders.

Areas visited included the HQ and surrounds, sections of the escarpment, the north-western tourism zone, and limited areas 50 km east of the HQ.

Facilities visited within the PA included the HQ, numerous ranger outposts and the eco-lodge.

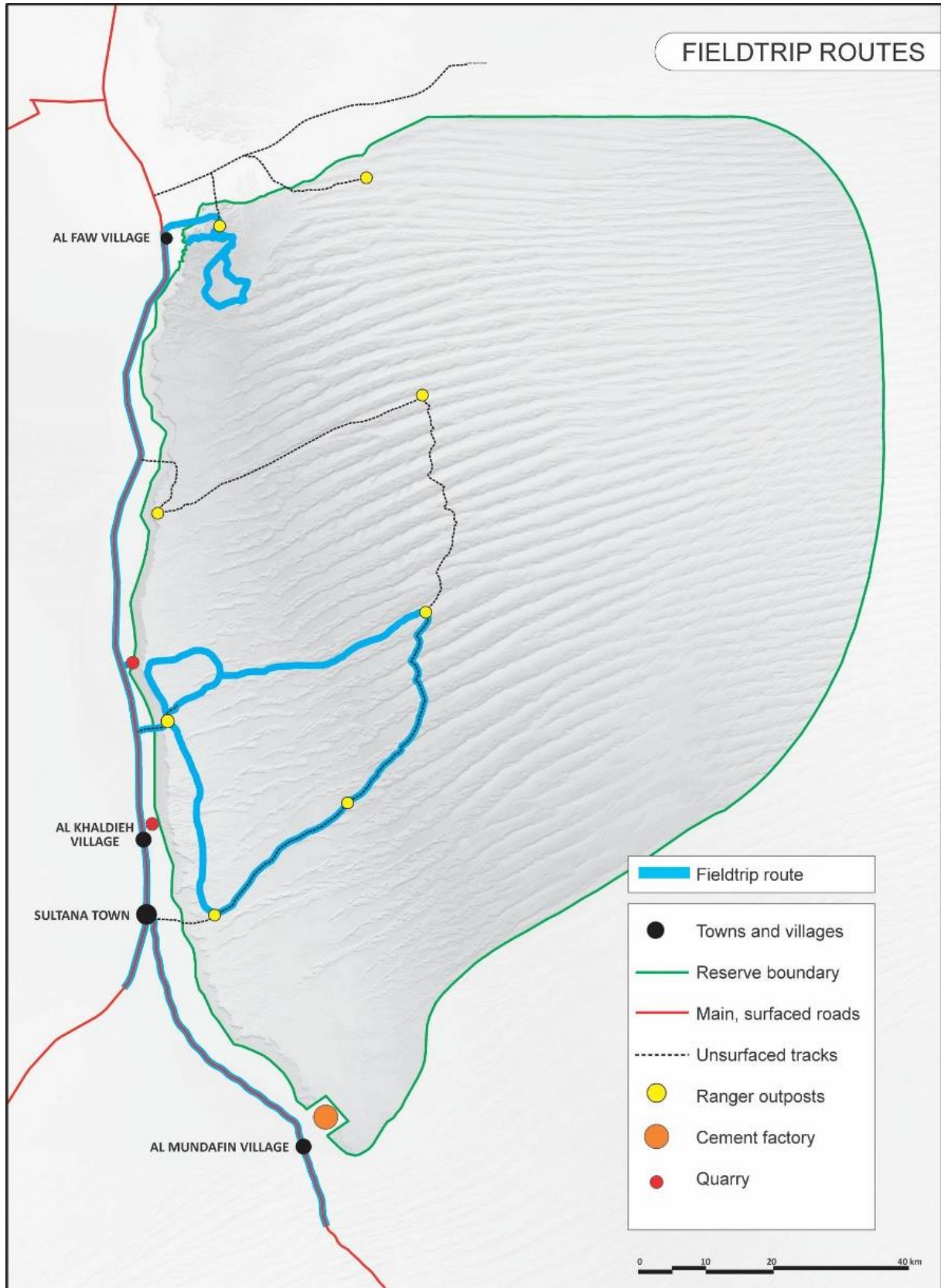
Externally, efforts were focused on the buffer zone, where the Al-Faw archaeological site was visited (Research Centre), as well as three of the closed quarries and the cement factory in the south-west.

Grant Jerome conducted a rapid threat and risk assessment which was undertaken through interviews with reserve staff and management, targeted discussions, focused field visits, and evaluations of maps and historical management records and surveys. The assessment classified various threats and pressures by their prevalence and impact, leading to a risk-level analysis. Causal factors were also evaluated, and potential solutions and mitigating measure discussed.

Sites and areas experiencing acute pressure were visited, where rangers explained the nature of the threats and challenges. Discussions were held around the current shortcomings and limitations of the patrolling strategy and profiles currently being applied.

A pressure mapping exercise to determine the spatial nature of key threats such as Livestock Grazing, Illegal hunting and Environmental Issues was conducted with 12 rangers and the area manager.

Grant Jerome also conducted a terrain, time, and distance appreciation exercise to understand the size of the PA, its terrain and topography challenges as they relate to law enforcement, and the various threats and challenges.



Map 2: Fieldtrip Routes

SECTION TWO: LEGAL STATUS AND POLICY FRAMEWORK

2.1. CURRENT AND FUTURE POLICY FRAMEWORK

2.1.1. LEGAL SETTING

General: The Kingdom has promulgated various Royal Decrees with respect to the establishment and management of protected areas and which directs the Ministry of Environment, Water and Agriculture through the National Centre for Wildlife for their implementation.

The main legal instrument which is relevant to the establishment of Uruq Bani Ma'arid is the "Executive Regulations for Protected Areas for the Environment System issued by the Royal Decree No. (M/ 165) on 19/11/1441 H.

This Decree grants NCW executive privilege to apply the provisions of the Decree to all protected areas administered or supervised by the Center within the Territory of the Kingdom, and also for the issuing of licenses for private reserves, in accordance with the requirements and controls it sets.

2.1.2. DIRECTIVES FOR PROTECTED AREA MANAGEMENT

Article 5 of the same Executive Regulations relate to the regulations governing the management of Protected Areas with the main directives being:

- (2) The NCW issues a decision to appoint a team of NCW staff to manage each protected area, including powers, competences, administrative controls, financial resources, decision-making mechanism, etc.
- (3) The management team prepares and updates the management plan for the protected area to achieve the sustainable development and accreditation of living organisms, habitats, and biodiversity from the Centre, and identifies all aspects of management, including protection ranges within the protected area.
- (4) The NCW should appoint a supervisory board for any protected area that includes and is not limited to representatives from the Centre, researchers, environmental associations, and the community located in the vicinity of the protected area; the decision to appoint includes the functions and powers of this council.
- (5) The NCW should fence what it sees as sites within protected areas and must develop landmarks indicating the boundaries of the protected area and guidelines setting out the objectives and scopes of protection in accordance with the management plan.
- (6) The NCW will establish the necessary facilities in each protected area in accordance with the protected area management plan.

2.1.4. INSTITUTIONAL SETTING:

NCW Mandate: The UBM is managed by the National Center for Wildlife (NCW) which was set up in 2019 (Cabinet Decree Number 417) with a new and enlightened mandate and mission statement* as part of the transformation of the Kingdom's environmental sector.

A National Registry for Protected Areas: Since 2021 a National Register for protected areas has been established with the issuance of the Royal Decree No. 26384 dated 22/4/1441 H (27/11/2021 G)

instructing the registration and designation of all protected areas in the Kingdom to be undertaken by the NCW of the Ministry of Environment, Water and Agriculture (MEWA).

The schematic flowchart below illustrates the process for the designation and registration of protected areas in KSA:

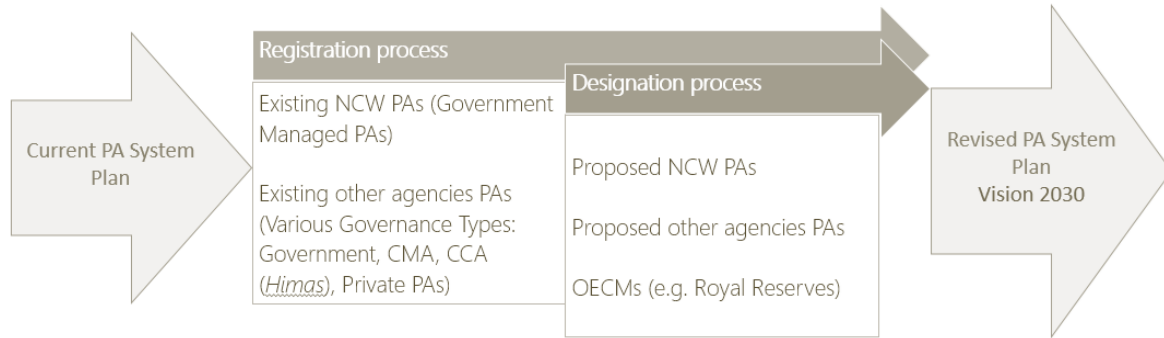


Figure 1: Designation and registration process for PAs in KSA

NCW Mission Statement: “Preserving and developing wildlife, biodiversity, and ecosystems by enhancing community participation through comprehensive and effective programs to achieve environmental sustainability and maximize social and economic benefits”.

2.2. URUQ BANI MA'ARID LEGAL SETTING

2.2.1. INITIAL ESTABLISHMENT

'Uruq Bani Ma'arid was nominated originally by the NCWCD, a parastatal established in 1986 to develop and implement plans to preserve wildlife in its natural ecology and to propose the establishment of proper protected areas and reserves for wildlife and to manage such reserves.

Legal Gazettement: 'Uruq Bani Ma'arid was proclaimed as a 'protected area' by the Cabinet of Ministers Decision No 77 dated 02/06/1417H (15/10/1996G) under the Protected Areas Law (Royal Decree No M/12 dated 26/10/1415H).

Land Ownership: There are no permanent human settlements inside the boundaries of the protected area. The area is totally state-owned and there are no private land claims in any of its areas.

2.2.2. CULTURAL VALUES

The main archaeological site of Al Faw, believed to be the capital of the first Kingdom of Kindah is located outside UBM's northwestern boundary. This archaeological site of Al Faw is currently on Saudi Arabia's tentative list for Cultural World Heritage Status. The NCW is in close coordination with the Heritage Commission regarding the areas of overlap between UMB's recent status as a World Heritage Site and the Tentative Al Faw Cultural Site to avoid potential conflicts of interest and agreeing boundaries.

2.2.3. PROTECTED AREA POLICY ENVIRONMENT

The Kingdom's revised protected area system plan being readied for publication, outlines the process guiding the development of Saudi Arabia's national system of protected areas. The Plan recognizes that individual protected areas are the foundation of the system plan and collectively they help to balance the system plan's different conservation objectives.

The plan identifies the following objectives for a protected area's management:

- Conserve the composition, structure, function, and evolutionary potential of biodiversity.
- Contribute to regional conservation strategies (as core reserves, buffer zones, corridors, stepping-stones for migratory species, etc.).
- Maintain diversity of landscapes or habitats and their associated species and ecosystems.
- Be of sufficient size to ensure the integrity and long-term maintenance of the specified conservation targets or be capable of being increased to achieve this end.
- Maintain in perpetuity the values for which it was assigned.
- Be operating under the guidance of a management plan, and a monitoring and evaluation program that supports adaptive management; and
- Have a clear, effective, and equitable governance system.

2.2.4. KINGDOM'S GENERAL OBLIGATIONS TO UNESCO WORLD HERITAGE COMMITTEE

As a State Party to the UNESCO World Heritage Convention, Saudi Arabia has certain general obligations toward the protection, conservation, and management of Uruq Bani Ma'arid as a World Heritage Site within their territories. Key obligations are recorded in the table below.

Table 4: Key obligations of KSA towards the UNESCO World Heritage Convention

<i>Protection and Conservation:</i>	States Parties are responsible for ensuring the protection, conservation, and preservation of the cultural and natural heritage sites within their boundaries. This includes taking appropriate legal, scientific, technical, administrative, and financial measures to safeguard these sites.
<i>Management and Planning:</i>	Developing and implementing management plans that outline strategies for the conservation, presentation, and sustainable use of World Heritage Sites is essential. These plans should involve stakeholders, local communities, and experts to ensure effective management.
<i>Monitoring and Reporting:</i>	States Parties are required to monitor the state of conservation of their World Heritage Sites and report regularly to UNESCO on their condition, any threats or changes, and the measures taken to address them.
<i>Legal Protection:</i>	Putting in place legal frameworks and regulations to safeguard the sites from potential threats such as urbanization, pollution, natural disasters, climate change, and unauthorized developments. This may involve establishing buffer zones, legal protections, and regulations governing the use of the site.
<i>Public Awareness and Education:</i>	Promoting public awareness and understanding of the importance of World Heritage Sites, their significance, and the need for their protection. This often involves educational programs, interpretation centers, and community engagement initiatives.
<i>International Cooperation:</i>	Collaborating with other States Parties, international organizations, and stakeholders to exchange information, expertise, and resources for the conservation and management of World Heritage Sites.

Emergency Measures: Taking immediate action in case of emergencies or sudden threats to the sites, such as natural disasters or armed conflicts, to minimize damage and ensure their recovery.

Failure to fulfil these obligations might result in a site being added to the list of World Heritage in danger or even being delisted from the World Heritage List. Each country's specific obligations and strategies for fulfilling them may differ based on the unique characteristics of their World Heritage Sites and their national capacities.

2.2.5. SPECIFIC OBLIGATIONS TO UNESCO WORLD HERITAGE COMMITTEE FOR URUQ BANU MA'ARID

The WH accession document for Uruq Bani Ma'arid requests the State Party to:

1. Ensure that no projects are developed in the buffer zone nor within the property area that could negatively impact the Outstanding Universal Value of the property,
2. Rehabilitate the two quarrying sites inside the buffer zone, as planned,
3. Continue consultations with the local communities to ensure camel grazing remains at sustainable levels,
4. Monitor and respond to any negative impacts from the established cement works located within the property's buffer zone,
5. Submit the updated management plan for 2024-2028 to the World Heritage Centre once it becomes available.

SECTION THREE: PROTECTED AREA ASSESSMENT

3.1. INTRODUCTION TO THE UBM PA

Established in 1992, UBM PA is a sprawling expanse located on the southwestern edge of the Empty Quarter (Ar Rub' al-Khali), recognized as the world's largest windblown tropical sand desert. Encompassing an impressive 13,485 km², it extends across the Ar Riyadh and Narjan Emirates, showcasing a rich tapestry of natural wonders.

The following table provides an overview of UBM PA, each of these elements are unpacked in this chapter.



Map 3: Uruq Bani Ma'arid Protected Area

Table 5: Overview of UBM PA

KEY FEATURES	
<i>Diverse Habitats</i>	The protected area boasts a mosaic of ecosystems, ranging from towering longitudinal sand dunes, a dissected limestone plateau, and the southern terminus of the Tuwayq Escarpment to gravel plains, inter-dune corridors, and verdant wadis
<i>Biodiversity Hotspot</i>	Renowned for hosting unparalleled biological diversity, it stands out as the region with the highest biodiversity within the Empty Quarter.
FLORA AND FAUNA	
<i>Flora</i>	The landscape is adorned with a diverse array of flora, dominated by <i>Haloxylon</i> , Acacia, moringa, tamarisk, <i>Calotropis procera</i> , and distinctive endemic species like <i>Calligonum crinitum</i> ssp. <i>arabicum</i> , <i>Cornulaca arabica</i> , among others.
<i>Fauna</i>	The protected area is a sanctuary for diverse fauna, including the Arabian wolf, Arabian oryx, sand cat, Ruppell's sand fox, striped hyena, rock hyrax, Rub'al-Khali hare, houbara bustard, lappet-faced vulture, and an array of endemic/near-endemic reptiles.
CONSERVATION SUCCESS	
<i>Reintroduction Program</i>	Noteworthy achievements include the successful reintroduction of Arabian oryx, Arabian sand gazelle, and mountain gazelle.
<i>Ongoing Considerations</i>	Further ecological balance is being considered through the potential reintroduction of ostriches, building on the area's historical significance as the last sighting of Arabian Oryx occurred in 1972.
CULTURAL AND ENVIRONMENTAL CONNECTIONS	
<i>Adjacency to Al-Faw</i>	The protected area shares proximity with the significant archaeological site of Al-Faw, characterized by stone "kites" used in gazelle hunting, numerous cairns, and ancient stone tools.
<i>Local Engagement</i>	A robust and positive relationship has been established with the local Bedouin community, evidenced by the presence of a liaison committee.
ADMINISTRATIVE FEATURES	
<i>Synonyms</i>	Also known as 'Uruq Bani Mu'arid, Al-'Arid, Bani Ma'arid, Bani Mu'arid.
<i>Category and establishment</i>	Designated as a Natural Reserve and proclaimed in 1994, with classifications including 1a Strict Nature Reserve, II National Park for ecosystem conservation and recreation, and VI Managed Resource Protected Area for sustainable use. Accepted by UNESCO as a Biosphere Reserve in 2023.
<i>Reasons for Protection</i>	Recognized as a vital part of Ar-Rub'al-Khali, boasting exceptional biological diversity and topographic richness. Suitable habitat for reintroduction of Arabian oryx, Arabian sand gazelle (reem), mountain gazelle (idmi), and ostrich. Significant archaeological artifacts also contribute to the area's importance.
<i>Management Authority</i>	NCW (National Centre for Wildlife).
<i>Tenure</i>	State-owned.
<i>Zonation</i>	Encompassing 13,485 km ² , Uruq Bani Ma'arid id divided into five zones - a core Wilderness Zone (6,847.5km ²), a Sustainable Resource Use Zone (5,601.4km ²), a Nature-Culture Ecotourism Zone (268.5km ²), a General Use Zone (42.9 km ²) and a Buffer Zone (806 km ²) on the west below the escarpment. ('Uruq Bani Ma'arid Protected Area Management Plan. (2021-2023)., 2021)



<i>Nearest Cities and Towns</i>	<ul style="list-style-type: none"> • Cities: Najran (population over 100,000). • Towns: Wadi ad-Dawasir, As-Sulayyil, Sharurah. 								
<i>Geographical Coordinates</i>	Lat 19° 20'N, Long. 45° 30'E.								
<i>Altitude</i>	Elevation ranges from 640 – 1,099 m asl.								
<i>Boundary Definition / Demarcation</i>	Well-defined western boundary running southward, and less defined boundaries known by local landmarks and inter-dune corridors. Demarcated by concrete stelae, supplemented with signs.								
<i>Rangers / Staff</i>	61 NCW rangers, a mechanic, an assistant mechanic, and 11 cooks/laborers (these need to be verified). Rangers patrol boundaries, supervise visits, assist in monitoring, and research, and liaise with scientific staff. Not officially empowered for law enforcement.								
<i>Infrastructure</i>	Seven ranger stations, with Al-Qarnayn as the main station. One sealed road provides main access. Three radio masts at Qarnayn, Muraykhah, and Al-Hisi support the communications network. (Llewellyn, 2013)								
NATURAL FEATURES									
<i>Bioregions</i>	<ul style="list-style-type: none"> • <i>Jabal Tuwayq (4a)</i>: Fair to good condition, stable. • <i>Al- 'Urumah / Al-Biyadh (4b)</i>: Fair to good condition, stable (160?). • <i>Central Sand Plains (5c)</i>: Fair to poor condition, declining. • <i>Ar-Rub' al-Khali Sands (5d1)</i>: Good condition, stable. 								
<i>Geology</i>	<ul style="list-style-type: none"> • Composed mainly of Quaternary aeolian sands of Ar-Rub' al-Khali. • Dominated by the cuesta of Jurassic Tuwayq Mountain limestone. • Younger Jurassic Hanifa and Jubaila limestones present in interdune corridors. • Tertiary limestone and sandstone exposed to the east. • Quaternary gravel sheets and gypsum deposits. 								
<i>Topography</i>	<ul style="list-style-type: none"> • Tuwayq escarpment terminates in a narrow limestone plateau. • Numerous incised wadis drain eastwards into interdune corridors. • Parallel linear dunes separate interdune corridors. <table border="1" data-bbox="539 1279 1410 1424"> <thead> <tr> <th>Name</th> <th>Uruq Bani Ma'arid</th> </tr> </thead> <tbody> <tr> <td>Min Elevation</td> <td>631.41</td> </tr> <tr> <td>Mean Elevation</td> <td>798.41</td> </tr> <tr> <td>Mean Elevation</td> <td>1071.53</td> </tr> </tbody> </table>	Name	Uruq Bani Ma'arid	Min Elevation	631.41	Mean Elevation	798.41	Mean Elevation	1071.53
Name	Uruq Bani Ma'arid								
Min Elevation	631.41								
Mean Elevation	798.41								
Mean Elevation	1071.53								
<i>Climate</i>	<ul style="list-style-type: none"> • Arid and hot conditions prevail. 								
<i>Water</i>	<ul style="list-style-type: none"> • Lack of perennial water sources. • Short ephemeral drainages from the escarpment into interdunal corridors. • Sands can retain moisture and support vegetation for several years after significant rain. 								
<i>Soils</i>	<ul style="list-style-type: none"> • Predominantly Torripsamments–Torriorthents in high dunes. • Eastern parts characterized by Torripsamments in dunes over 10 meters high. • Western escarpment characterized by Torriorthents, Calicorthids, and Camborthids. 								
FLORA AND FAUNA									
<i>Vegetation</i>	<ul style="list-style-type: none"> • Combination of Saharo-Arabian and Sudanian zone elements. 								



	<ul style="list-style-type: none"> • Dominant species include <i>Acacia tortilis</i>, <i>Maerua crassifolia</i>, and <i>Leptadenia pyrotechnica</i>. • Stands of <i>Ziziphus spina-christi</i>, <i>Moringa peregrina</i>, and <i>Commiphora myrrha</i>. • Endemic woody shrubs such as <i>Calligonum crinitum</i> ssp. <i>arabicum</i> and <i>Cornulaca arabica</i>. • Presence of perennial grasses and herbs in sand dunes.
Mammals	<ul style="list-style-type: none"> • Internationally significant for Arabian oryx, Arabian sand gazelle (reem), and mountain gazelle (idmi). • Successful reintroduction programs since 1995. • Habitat for sand cat, Ruppell's sand fox, Arabian and Rub' al-Khali hare, and more. • Historical presence of Nubian ibex, rock hyrax, caracal, and striped hyaena.
Birds	<ul style="list-style-type: none"> • Rich avian diversity with 104 recorded species. • Residents include brown-necked raven, sand partridge, desert lark, and more. • Breeding population of lappet-faced vulture and short-toed eagle. • Former range of the extinct Arabian ostrich. • Consideration for the introduction of North African ostrich.
Reptiles	<ul style="list-style-type: none"> • Various lizards and snakes, including desert monitor, small-scaled dhabb, and Arabian sand skink. • Presence of Jayakar's sand boa and Arabian horned viper.

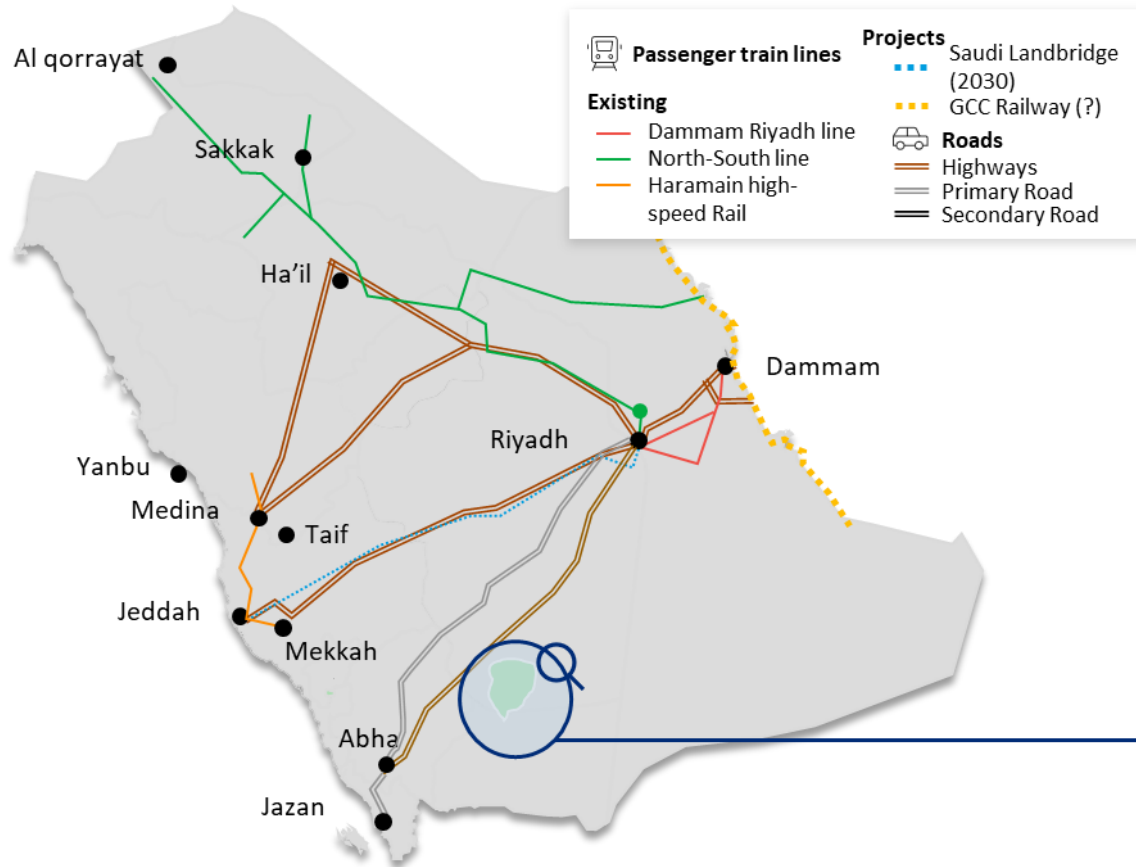
INTERNATIONAL AGREEMENTS

UBM PA has been accepted as a Biosphere Reserve by UNESCO, during October 2023. Having examined Documents WHC/23/45.COM/8B and WHC/23/45.COM/INF.8B2, UNESCO inscribed 'Uruq Bani Ma'arid, Saudi Arabia, on the World Heritage List in 2023 on the basis of criteria (vii) and (ix) whilst adopting a Statement of Outstanding Universal Value.

3.2. CONTEXT AND ACCESSIBILITY

3.2.1. ACCESSIBILITY

The PA is located in southern KSA on the western edge of the Empty Quarter, straddling the provinces of Najran and Riyadh. It is remotely situated, 780km from Riyadh in the north (8 hours by road) and 1000km from Jeddah in west (11 hours by road). Riyadh is serviced by the King Khalid International Airport, which receives direct flights from the USA, Europe, North Africa, China, South Korea, India, and other international cities. The shortest travel time from Riyadh is 5 hours (flight to Wadi ad-Dawasir, then by road).



Travel time to Ibex					
Riyadh center	8h		Riyadh Airport	5h	+
Abha	6h		Djeddah	5h30	+
Jazan	8h		Dubai	6h30	+

Map 4: Access to UBM PA

The King Abdullah bin Abdulaziz Airport in Jizan is the closest international airport (550km or 7 hours by road) with flights to Dubai and Cairo. The closest city and local airport is Wadi ad-Dawasir, 120km by road to the north-west. Locally, a good surfaced national road provide access to the western flank of the PA. A surfaced road also provides access to the PA HQ, however, the PA itself is only accessible via 4x4 vehicle, on unsurfaced roads and tracks. Large areas are inaccessible by vehicle due to topographical constraints. The boundary of the PA is generally porous, especially along the northern, eastern, and southern boundaries. There are no formal visitor gates to the PA.

3.2.2. POPULATION

UBM PA is situated in a very low-density area with no permanent human settlements inside the boundaries of the PA.

The following table provides an overview of the number of inhabitants located in major cities in the region.

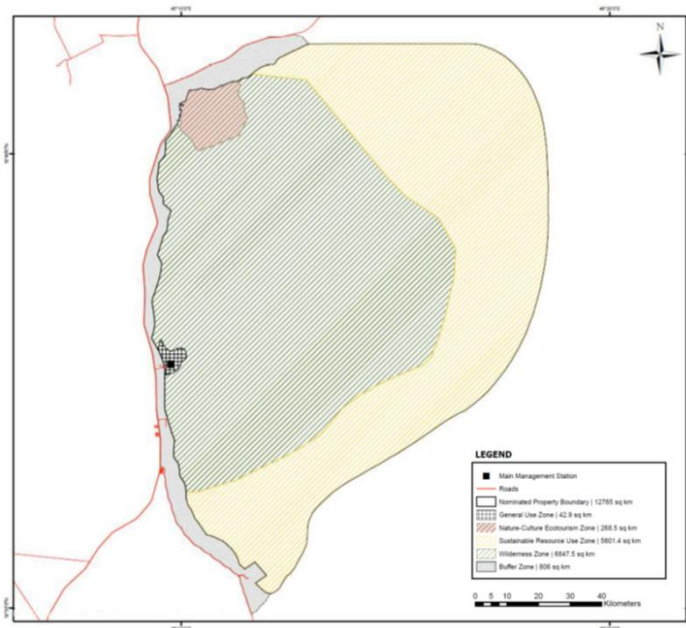
Table 6: Major cities population in the region

REGION	CITY	# INHABITANTS
<i>Riyadh</i>	Riyadh	8,000k
	Wadi ad Dawassir	185k
<i>Aseer</i>	Abha	1,093k
	Qalat Bishah	205k
<i>Makkah</i>	Taif	709k
	Djeddah	3,976k
<i>Najran</i>	Najran	506k

Najran, at a 220km distance is the closest significant city, with a population of 506,000 inhabitants. Wadi Ad Dawasir, with over 100,000 inhabitants and modern amenities, is located within 120km of the north-western corner of the PA.

Table 7: Surrounding villages population in the buffer zone

REGION	VILLAGE NAME	# INHABITANTS
<i>Riyadh</i>	Al Zahar Village	20
	AL Faw Village	10
	Al Hissi Village	50
<i>Najran</i>	Al Mindifin Village	120
	Sultana Town	800
	Al Khaldieh Village	400
	Al Khaldeh Village 2	200
TOTAL NUMBER OF INHABITANTS IN THE BUFFER ZONE		1,600



Map 5: Najran nearest city to UBM PA

3.2.3 FACILITIES

- Four 4* hotels in the city and fair amount of 3* standard options international low to middle standard food options among mostly local Domestic Wadi Ad Dawassar airport
No airstrip in the vicinity of the reserve
- Small village (Sultanah) – with one very low standard hotel and very few food options. New higher standard hotel is expected to open soon.

3.3. MANAGEMENT RESOURCES AND INFRASTRUCTURE

3.3.1. FINANCIAL RESOURCES

The financial resources of Uruq Bani Ma'arid Reserve are principally underpinned by government funding, which constitutes the mainstay of its fiscal resources. Income derived from limited visitor and tourism activities is directed into national coffers through an online booking system and is not retained by the reserve. It is noted that the revenue from tourism is minimal and does not fulfil any of the financial requirements of the reserve's operations. Salaries, capital outlays, and operational expenditures are disbursed from national funds, directed through the finance department at NCW in Riyadh. The reserve itself is not equipped with an autonomous finance department, nor does it employ a financial manager; instead, these functions are centralized at the national level.

A significant portion of the expenses is incurred for ranger patrols, encompassing their wages and the costs for leasing, upkeep, and fueling of patrol vehicles. Additionally, expenses include the lease and operation of generators and the diesel and water required for supplying the ranger field stations.

Table 8: Current and Projected Budget Summary¹

BUDGET	2023	2024	2025
<i>Personnel</i>	12 million SAR		
<i>Vehicles & Maintenance</i>			
<i>Fuel & Diesel</i>			
<i>Facilities and Maintenance</i>			
<i>Utilities (Electricity and Water)</i>			
<i>Revenue Generation/Income</i>			
<i>Conservation Operations</i>	10 million SAR		
<i>Other</i>	1.5 million SAR		
<i>Total</i>			

3.3.2. HUMAN RESOURCES

The staffing and deployment at the reserve are currently adequate for the limited conservation operations. However, given the vast area of the reserve and the rangers' additional responsibilities as escorts, there is an urgent need for increased staff numbers. This expansion is crucial for the required comprehensive conservation efforts, which include monitoring, restoration, patrolling, and managing ranger stations and access points. Presently, rangers mainly conduct vehicle-based patrols, which are somewhat ineffective in curbing illegal activities and trespassing.

¹ Additional information has been requested from NCW to provide a more comprehensive table.

Table 9: Human Resources

DEPARTMENT	QUANTITY	TITLE	ROLE
<i>Management</i>	1	Area Manager	Overall, in charge of the Reserve
	1	Deputy Area Manager	Deputy in-charge
	1	Administrative Unit Head	Finance, Human Resources and Administration
<i>Rangers</i>	1	Head Ranger	Approximately 40-50% of rangers are locals, with a policy to increase local employment and reallocate staff to their regions of origin.
	1	Deputy	
		Leaders	
	59	Rangers	
<i>Other</i>	?	Housekeeper/ Cooks	

3.3.3. EQUIPMENT

The reserve's current vehicle fleet and equipment are adequate for its present operations. However, additional, and varied equipment will be necessary for future expansion and achieving broader objectives, tailored to the specific needs of different departments. The existing reliance on diesel generators for powering ranger stations is financially costly and environmentally detrimental, given their greenhouse gas emissions, noise, and disturbance. Moreover, the logistical challenge of refueling these generators with tankers is inefficient and demands a shift towards more sustainable alternatives.

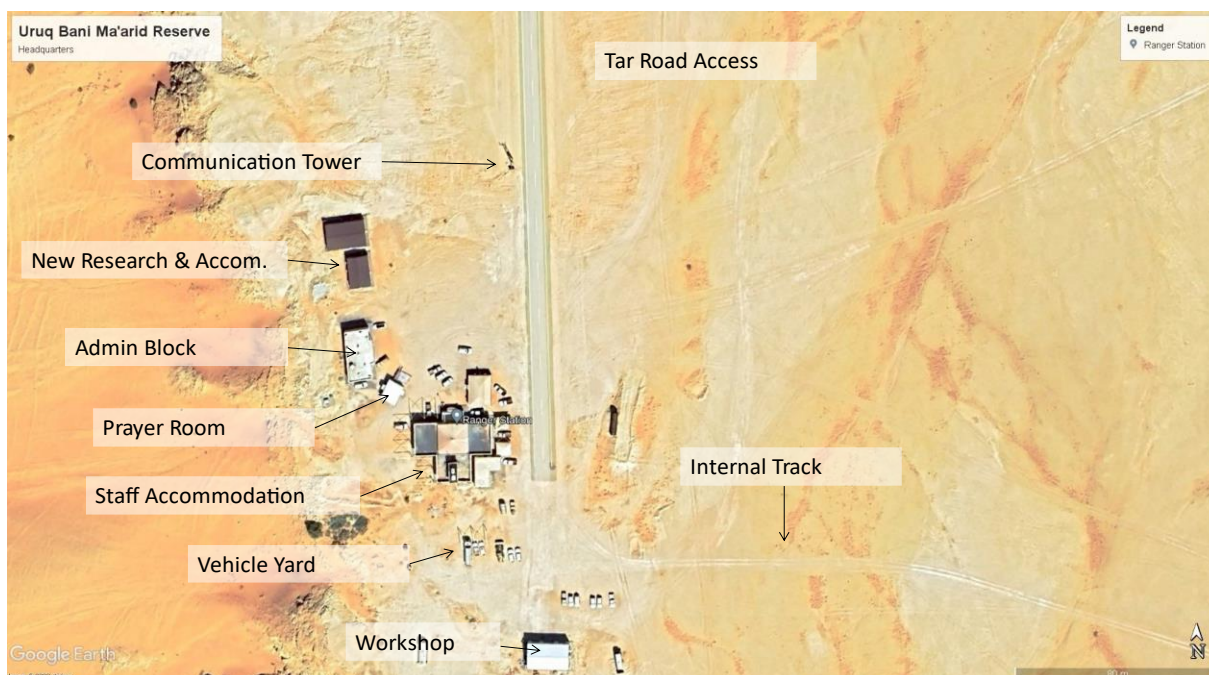
Table 10: Equipment

QTY	CATEGORY	DESCRIPTION
24	Vehicles	Primarily FJ Cruisers. 18 are leased, and 6 owned by NCW. All vehicles fitted with Fleet Management System (Sat & GSM)
9	Generators	Diesel
1	Fuel Tanker	
2	Water Tankers	
1	Radio Towers	Positioned centrally in the Reserve.
9	Fuel Tanks	Placed at Ranger station for refueling vehicles

3.3.4. INFRASTRUCTURE

The Uruq Bani Ma'arid Reserve's infrastructure centers around its headquarters, the Main Centre (Al-Qarnayn), situated atop the escarpment on the reserve's western edge. This central location, with asphalt road access and mains power, provides efficient centralized operations and visitor access. The Main Centre

includes an Administration office, Accommodation, Workshop, Kitchen, and Prayer Room.



Map 6: UBM PA Headquarters

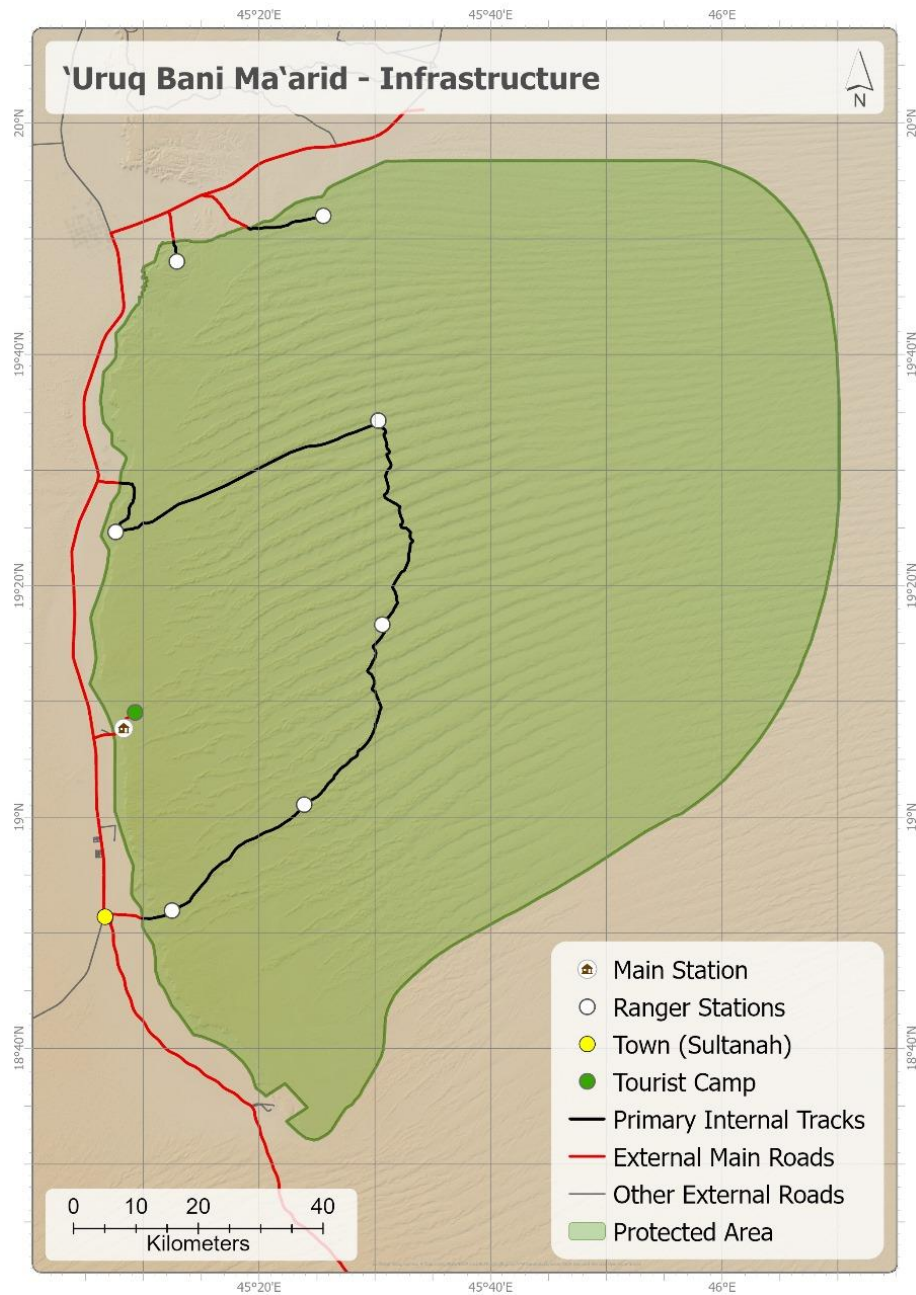
There are 9 Ranger stations, 6 of which were initially aligned with the former resource use zone boundary. With recent zoning changes, these stations are now within the core area, connected by a sand and gravel track used also for diesel and water replenishment. The Reserve is unfenced, with porous boundaries, and the escarpment provides the only natural boundary along the Western edge. Concrete boundary markers around the perimeter delineate the reserve's boundaries.

The reserve's infrastructure is currently only adequate for its current operations and will require significant development in the future to achieve the desired vision and objectives.

A summary of the reserve's infrastructure, including internal tracks and Ranger Stations, is detailed in the table below.

Table 11: Uruq Infrastructure, including internal tracks and Ranger Stations

QTY	CATEGORY	DESCRIPTION
180.8 km	Primary Internal tracks	Gravel and Sand
1	Main Centre	Al-Qarnayn, located on the escarpment
1	Workshop	~200m ²
1	Accommodation Centre	
1	Kitchen and Mess	
9	Ranger Stations	Positioned along the previous boundary between the core and resource use zone
?	Boundary Markers	Recently installed and Positioned along the entire boundary of the reserve



Map 7: UBM PA Infrastructure Map

3.4. PHYSICAL ENVIRONMENT ANALYSIS

3.4.1. CLIMATE

The nearest weather station is at Wadi Al Dawasir asl) located 70 km north of the PA. The area is arid and hot.

- Annual mean ambient temperature (1985–1993): 28.4°C

- Average daily minimum & maximum summer temperatures (1975–1984): 26°C; 42–44°C
- Average daily minimum & maximum winter temperatures (1975–1984): 9.5–10°C; 24–25°C
- Annual rainfall 25–35 mm. Annual rainfall (1985–1993): 30.2 mm.

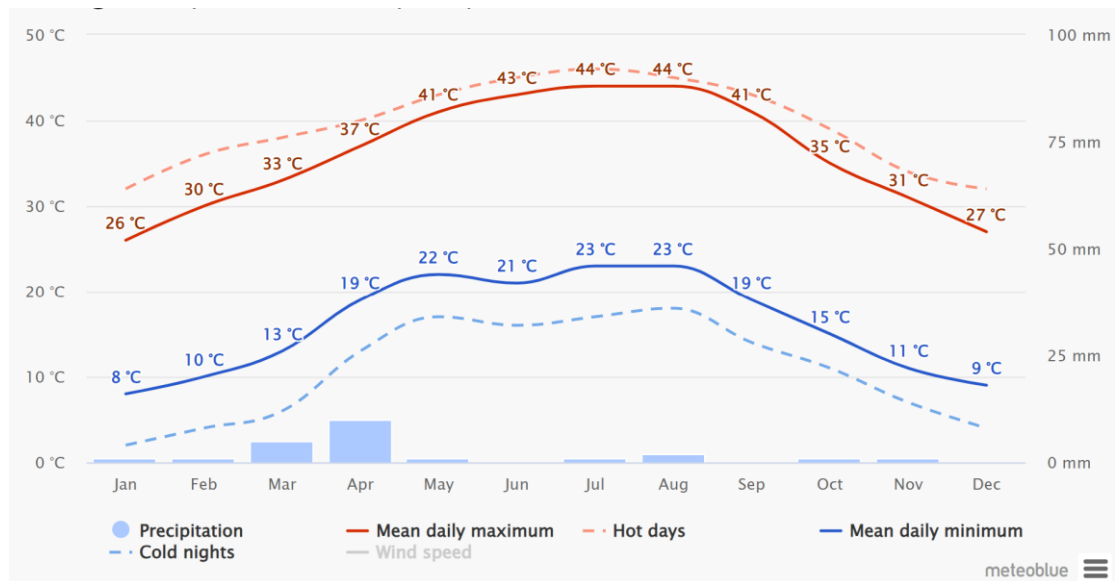


Figure 2: Climate

Hottest months are May – September and coolest months are November – February which are also the least windy period (tourism period limited to a maximum of six months but in reality, to four).

Rainfall averages are not particularly useful in the environment of the PA rainfall is extremely erratic with small amounts (generally 1-4 mm) falling between February and May - the wettest period is April. The windiest period is July. Drought years are frequent and due to the small erratic rainfall events, vegetation growth occurs in scattered patches within the PA. As a result, wild ungulates need to be free ranging to locate forage.

The month with the most relative humidity is January (37.23 %). The month with the least relative humidity is June (12.71 %). The wettest month is April (1.57 days), while the driest is June (0.00).

Sunshine hours increase from an average of 9.1 hours per day in December/January to 12.2 in June. This indicates likelihood of heat stress on visitors and biodiversity. It also emphasizes the non-viability of solar PV as power sources for isolated facilities.

Winds are largely from the north-east (which creates the longitudinal dunes).

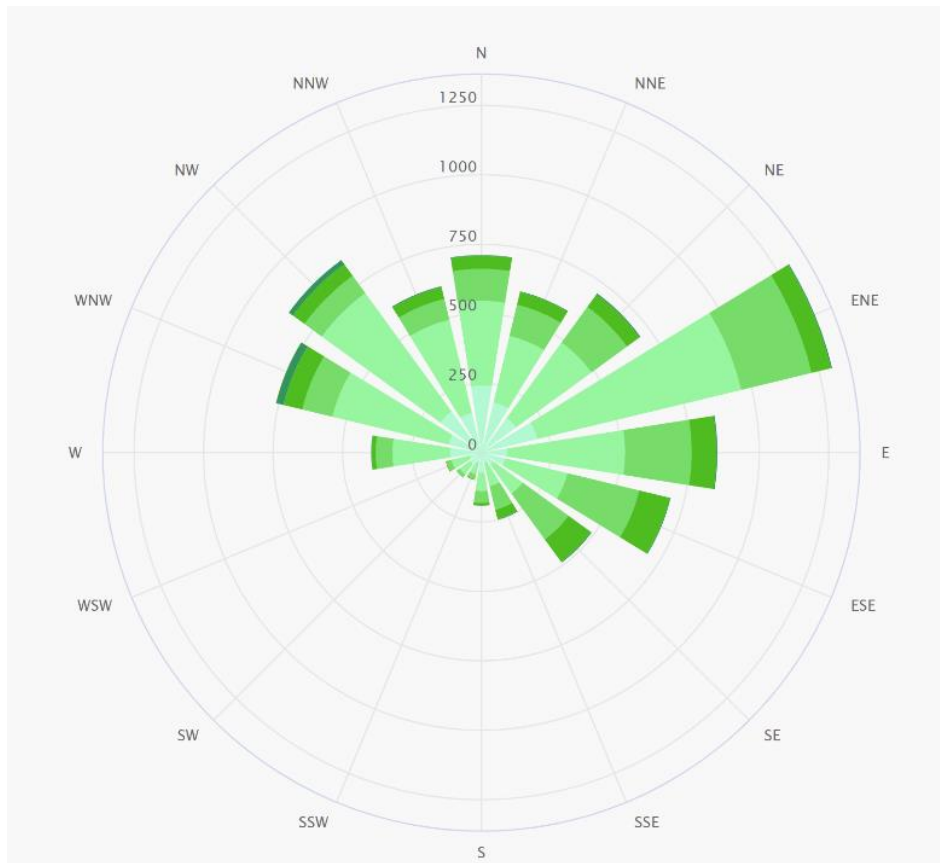


Figure 3: Simulated wind rose for Wadi AlDawasir (Source Meteoblue)

Wind, windspeed and dust storms.

Albugami (2019) found that the eastern part of Saudi Arabia experienced an increase in dust storm events over time (2000-2016), especially in the region near Al-Ahsa. Similarly, an increasing trend in dust storms was also observed in the west of the study area near Jeddah. Overall, the eastern part of Saudi Arabia experiences the highest number of dust storms per year (i.e., 10 to 60 events), followed by the northern region, with the south and the west having fewer dust storm events (i.e., five to 15 events per year). In addition, their results showed that the wind speeds during a dust storm are 15–20 m/s and above, while, on a non-dust day, the wind speeds are approximately 10–15 m/s or lower. Dust storms are most frequent in spring (March-May).

3.4.2. CLIMATE CHANGE

At the Conference of Parties (COP) 19 the KSA identified an Intended National Determined Contribution (INDC) for carbon equivalent reduction (CO₂eq) of 130 million tons per annum. This was increased to 278 million tons per annum by 2030 at the updated Nationally Determined Contribution in 2021. This is a reduction of 50% over the 2019 CO₂eq baseline of 540.4 tons per annum. KSA aims to become carbon neutral by 2060.

The NDC is contingent on KSA long-term economic growth and diversification – both of which the PA can contribute to. To meet these ambitious targets the PA would need to set similar targets of CO₂eq reductions, switch to renewable energy sources, establish carbon neutral tourism facilities, establish carbon

sinks (tree growth and recovery) contribute to climate adaptation through protection of water resources, and support the increased resilience of adjacent economies by economic diversification (tourism).

Long-term studies of the area (Komurcu, et al., 2020) indicate that rising temperatures and evaporation rates will further deplete scarce water resources critical to meeting the agricultural, industrial, and domestic needs of KSA; more extreme flooding events could endanger lives, the economy, and infrastructure.

Climate change will accentuate the impact of climate on wildlife populations (Almazroui, 2020) found that in general, the annual and wet seasonal rainfalls over Saudi Arabia reveal a decreasing trend during the study period (1978–2019). Almazroui found that for the country, extreme rainfall (defined as equal to or more than 26 mm event) contributes the most (52% of the total) in November and the least (20% of the total) in July. Overall, extreme rainfall contributes between 8% (Arar) and 50% (Yenbo) of the total rainfall in Saudi Arabia. It was also found that there is an increasing trend in the frequency of extreme rainfall events, though this is statistically insignificant for many stations. The implications of this to location of camps and infrastructure in or along drainages is important.

It is likely that the PA will experience reduced (average) rainfall and increased extreme weather such as floods and droughts. It will become hotter. The implications of climate change are that water resources within the reserve will become scarcer, wildlife populations will become more heat and water stressed and any new infrastructure needs to take into account increasing temperatures. This may require innovative approaches in terms of designing and siting of infrastructure and designing tourism activities to benefit from the cooler evening hours (night walks, star gazing etc.).

3.4.3. HYDROLOGY

Most rain that falls on the PA drains off the limestone plateau, eastwards down wadis and into the sands. Such recharge events can provide groundwater for vegetation growth for a couple of years.

3.4.4. TOPOGRAPHY AND GEOLOGY

Topography: The north-south running, west-facing Tuwayq escarpment terminates a narrow limestone plateau that is dissected by numerous incised wadis which drain eastwards into interdune corridors. Parallel linear dunes ('irq, 'uruq) of mobile red sand up to 165 meters high separate the interdune corridors (shiqqah, shiqaq) which are filled with sand, silt, or gravels. The altitude falls from 1,099 m asl on the dunes of 'Irq al-Khishbi near the escarpment in the southwest to 650 m asl in the north and 640 m asl in the interdune corridors of the northeast (Listing).

Geologically the site is composed mainly of the Quaternary aeolian sands of the Rub'al-Khali overlying the cuesta of Tuwayq mountain limestone. At the west of the site, the Tuwayq escarpment (running north-south) terminates a narrow limestone plateau which is dissected by numerous eastward-draining wadis. To the east of this plateau, parallel linear dunes of mobile red sand up to 165 m high separate the interdune corridors which are filled with sand, silt, or gravels. The altitude of the site ranges from 1099 m on the dunes of the 'Irq al-Khisbi near the escarpment in the southwest to 640 m in the interdune corridors of the northeast (Hall M., 2011).

3.4.5. HABITATS

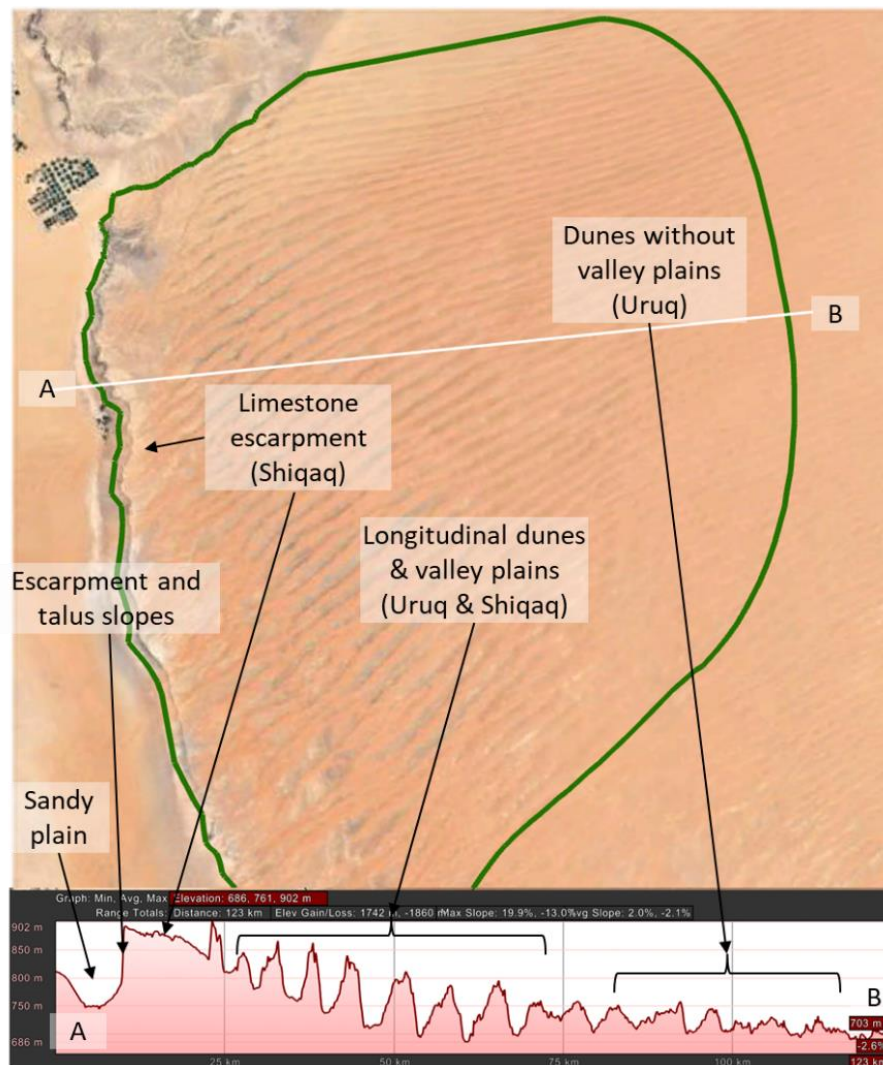


Figure 4: Habitats of the PA in relation to topography.

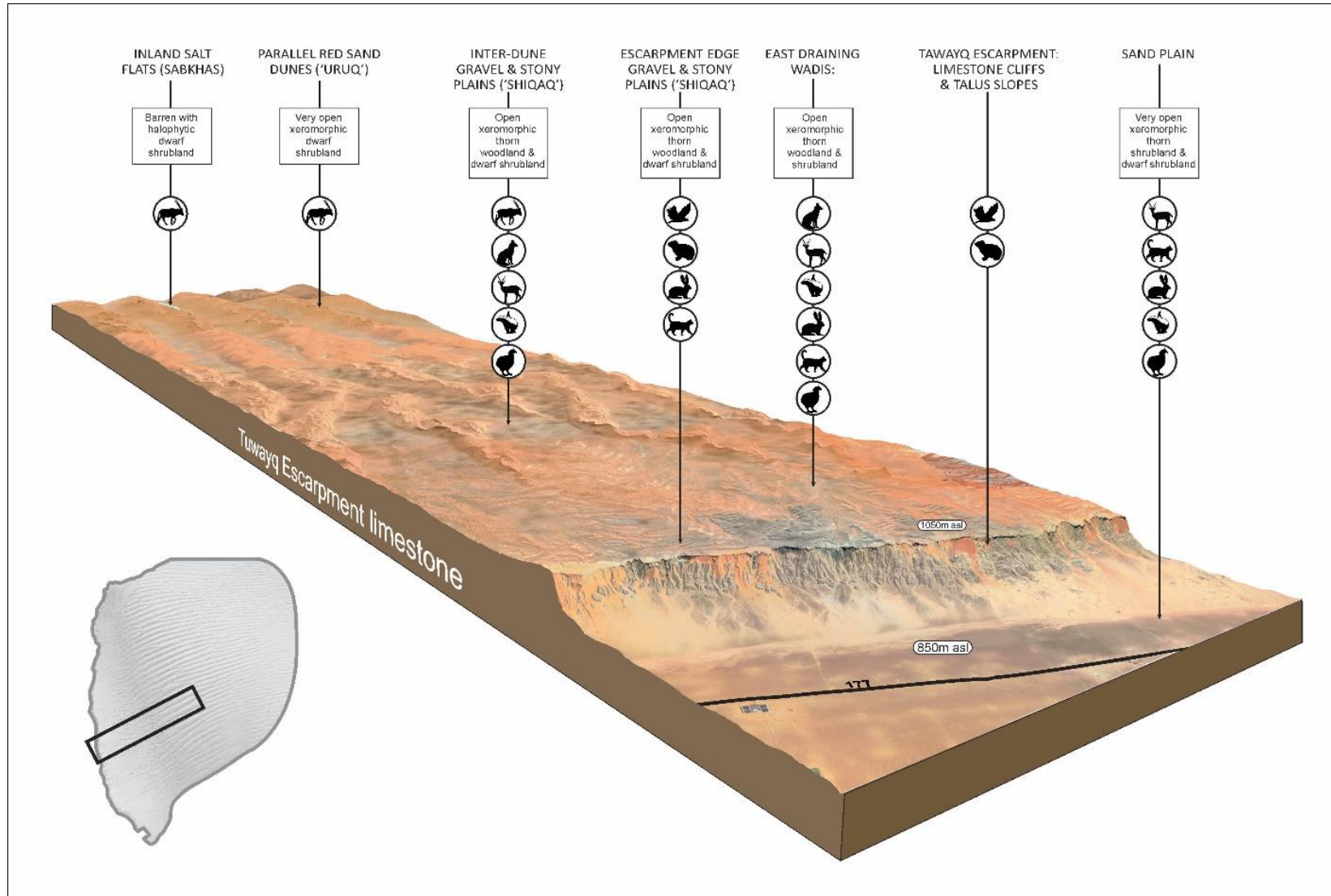
The PA has a small but important habitat of cliffs and talus slopes (about 1% of PA) in the west along the Tuwayq escarpment which is important for raptors and other species. The baron limestone plateau/Shiqaq (about 10% of the PA) is crossed with lines of dunes which form mixed habitat. The limestones are cut with a series of eastward draining wadis which support woody vegetation along the drainage lines (about 1% of the PA). Further east are tall longitudinal dunes with limestone valley floors providing a rich mix of habitats (about 40% of the PA), and further east the valley floors disappear under the sands as the dunes become smaller (about 42% of PA). The buffer zone, which lies west of the PA, is made up of sandy plains (about 6% of the total zoned area of the PA).

Table 12: Approximate area and percentage of the PA of the main habitat types

HABITAT	AREA (KM2)	% OF PA & BUFFER	COMMENTS
<i>Sand plain</i>	839.00	6.2	Mainly in the buffer zone
<i>Limestone plateau</i>	1 301.00	9.6	
<i>East flowing wadis</i>	128.00	0.9	Highest woody biomass



<i>Cliff and talus</i>	125.00	0.9	
<i>Longitudinal dunes and valley plains</i>	5 420.00	40.2	Important mixed habitat
<i>Dunes without valley plains</i>	5 682.00	42.1	
<i>Total & buffer</i>	13 495.00		
<i>PA excluding buffer</i>	12 658.50		Official total area of PA



Map 8: Habitats of Uruq Bani Ma'arid



3.5. BIOLOGICAL ENVIRONMENT ANALYSIS

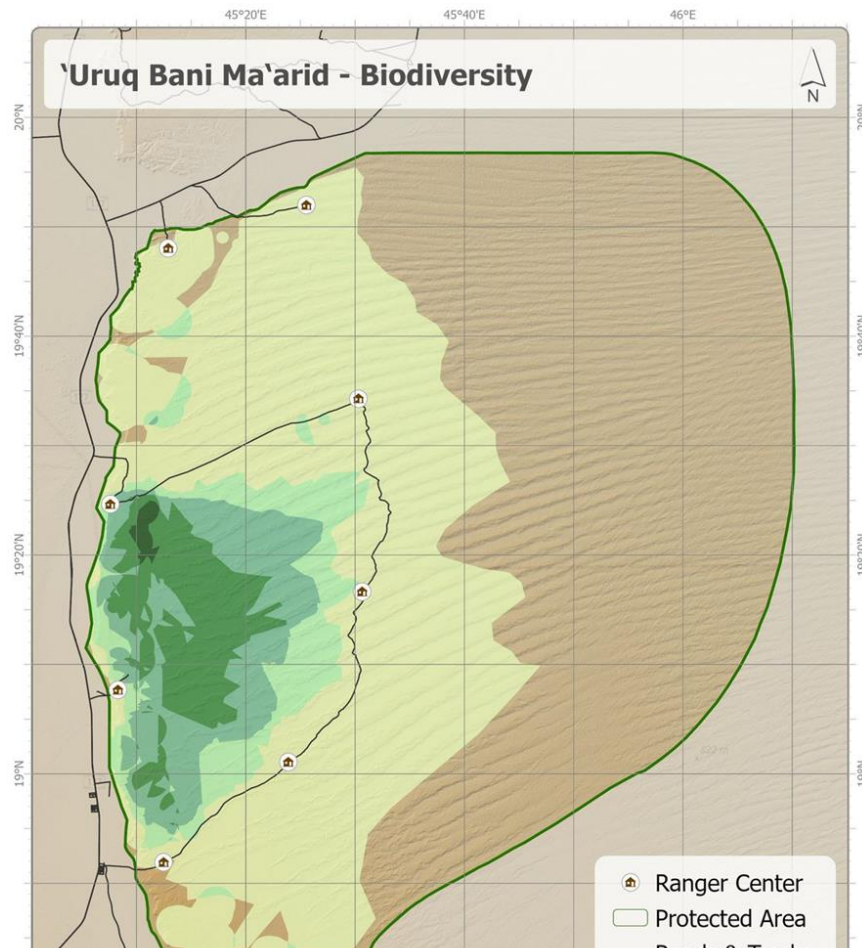
The biodiversity information made available to the team together with information provided during the site visits have been collated into a single biodiversity importance map (see below). The main sources of data are:

1. The management plan for the WHS (2021)
2. Wildlife census results for years 2019, 2020, 2021 and from the camera trapping (2019)

The results indicate that biodiversity (particularly ungulates) is situated in the central western section of the PA. The reasons for this anomaly are that this is the most effectively protected section of the PA and under less pressure from anthropogenic impacts than the rest of the PA.

Map 9: Areas of high biodiversity importance

3.5.1. PLANTS AND PLANT COMMUNITIES



The vegetation annexure of the UNESCO listing indicated that 112 plant species have been recorded from the area. Phytogeographically, the flora of 'Uruq Bani Ma'arid has affinities with the Arabian regional subzone of the Saharo-Sindian regional zone and the Sudanian floristic territory. The flora of the western Uruq is relatively species poor, it is important for a number of endemic plant taxa. Hall (2011) describes vegetation in the three major topographical zones in 'Uruq Bani Ma'arid:

3.5.2. LIMESTONE PLATEAU

In areas where sufficient groundwater collects, patches of vegetation occur. In the incised wadis and sandy plains, a sparse *Acacia* woodland predominates, with *Vachellia tortilis*, *V. oerfota*, *Vachellia flava* and *V. hamulosa* all present. Other notable tree species in the wadis include *Ziziphus spina-christi* and *Maerua crassifolia* as well as single stands of *Moringa peregrina* and *Commiphora myrrha*, respectively. In such areas of the plateau are found the shrub species *Leptadenia pyrotechnica*, *Haloxylon salicornicum*, *Ephedra foliata* and herbaceous species such as *Haplophyllum tuberculatum*, *Dipterygium glaucum*, *Leucas inflata*, *Fagonia indica*, *Limeum arabicum* and *Tribulus macropterus* var. *arabicus* as well as perennial grass species including *Panicum turgidum*. After rains the sandy plains overlying the limestone are covered in a sword of annual species including *Monsonia nivea*, *Astragalus hauarensis*, *Cleome amblyocarpa*, *Polygala erioptera* and *Fagonia indica* as well as annual grass species such as *Aristida adscensionis*. In the red sands overlying limestone at the junction of the Rub' al-Khali sands and the Tuwayq escarpment there are areas of very open *Acacia* woodland comprised of *Vachellia tortilis* and *A. oerfota*. Also present are *Haloxylon salicornicum*, *Rhazya stricta*, *Tribulus macropterus* var. *arabicus*, *Dipterygium glaucum*, *Farsetia burtoniae* and the perennial grass species *Panicum turgidum* and *Lasiurus scindicus*.

Rare plant taxa include *Limeum arabicum* and *Tribulus macropterus* var. *arabicus* are Arabian endemics known from Saudi Arabia, Yemen, Oman, and the United Arab Emirates.

3.5.3. SAND DUNES.

Covering approximately 60% of 'Uruq Bani Ma'arid, the parallel high sand dunes represent the largest plant habitat in the protected area. The plant communities of the red dunes are typical of the Rub' al-Khali. The woody shrub *Calligonum crinitum* subsp. *arabicum* occupies the unstable sand habitats in the crests of the high dunes, producing a community of very widely spaced shrubs. In the lower slopes of the dunes a sparse herbaceous community occurs with a number of species including *Cornulaca arabica*, *Limeum arabicum*, *Moltkiopsis ciliata*, *Neurada procumbens*, *Dipterygium glaucum*, *Corbichonia decumbens*, *Tephrosia uniflora*, *Farsetia longisiliqua* and *Farsetia burtoniae*. Common grasses include *Panicum turgidum* and *Lasiurus scindicus* along with *Centropodia fragilis* and *Stipagrostis drarii* which are rarely found growing on the dunes in the other areas of the Rub' al-Khali. In the sands, *Tribulus macropterus* var. *arabicus* and *Cyperus macrorrhizus* often dominate large areas within the sparse herbaceous communities. The latter species, a drought-adapted sedge, is one of the most important biomass producers in the Rub' al-Khali. On the western edge of the sands in Wadi Ghudayy there is an extensive stand of *Haloxylon persicum*.

Rare plant taxa: *Calligonum crinitum* subsp. *arabicum*, *Cornulaca arabica*, *Tribulus macropterus* var. *arabicus* and *Limeum arabicum* are all Arabian endemics.

3.5.4. INTERDUNE CORRIDORS

The vegetation of the interdune corridors has much in common with that of the limestone plateau and the lower sand dunes. On the sands and gravels between the towering red sand dunes the vegetation is very sparse and scattered individuals of *Vachellia tortilis* form the dominant tree flora (Fig. 5). In the surveyed areas in the west of 'Uruq Bani Ma'arid, the dwarf shrub layer is composed of sparsely distributed *Haloxylon salicornicum* along with woody-based herbaceous species *Dipterygium glaucum*, *Limeum arabicum*, *Fagonia indica* and *Tribulus macropterus* var. *Arabicus* and the grass species *Panicum turgidum* and *Stipagrostis* spp.

Rare plant taxa: *Tribulus macropterus* var. *arabicus* and *Limeum arabicum* both occur in this habitat.

3.5.5. PROBLEM PLANTS

None documented.

3.6. FAUNA AND UNGULATE POPULATIONS

On the faunal side, the UNESCO listing highlights that Uruq Bani Ma'arid is the most important site for the conservation of free-ranging Arabian Oryx and holds the largest extant population of Arabian Sand.

3.6.1. MAMMALS

The area is within the former range of Arabian oryx *Oryx leucoryx* and the Arabian sand gazelle (reem) *Gazella subgutturosa marica*, and mountain gazelle (idmi) *G. arabica*. These three species have been successfully reintroduced at the site since 1995. Idmi gazelles inhabit the acacia country on the plateau, wadis, and interdunal corridors of the western part of the reserve, while reem gazelle and oryx range throughout the reserve and especially reem gazelle range into the sands beyond the eastern boundary.

The reserve also provides important habitat for sand cat *Felis margarita harrisoni*, Ruppell's sand fox *Vulpes rueppelli sabaea*, and Arabian and Rub' al-Khali hare *Lepus capensis arabica* and *L. c. cheesmani*. Other species recorded in the reserve include red fox *Vulpes vulpes*, desert hedgehog *Paraechinus aethiopicus*, Cheesman's gerbil *Gerbillus cheesmani*, and lesser jerboa *Jaculus jaculus*. Arabian wolf *Canis lupus arabs* reportedly enter the rocky western part of the reserve from time to time in winter. The endemic Arabian jird *Meriones arimalius* is believed likely to inhabit the reserve but has not yet been recorded. Locally extinct species reported to have inhabited the site within living memory include Nubian ibex *Capra (ibex) nubiana*, hyrax *Procavia syriaca jayakari*, caracal *Felis (Caracal) caracal schmitzi*, and striped hyaena *Hyaena hyaena sultana*.

3.6.2. BIRDS



The current bird list for 'Uruq Bani Ma'arid contains 104 species (Cf. Wachter, 3-1998-018), including single observations of migrants. Some 16 species can be considered residents; among the more common species are brown-necked raven *Corvus ruficollis*, sand partridge *Ammoperdix heyi*, pale crag martin *Ptyonoprogne obsoleta*, desert lark *Ammomanes deserti*, white-crowned black wheatear *Oenanthe leucopyga*, trumpeter finch *Bucanetes githagineus*, Egyptian vulture *Neophron percnopterus*, Barbary falcon *Falco pelegrinoides*, southern grey shrike *Lanius meridionalis* / great grey shrike *Lanius excubitor*, rock dove *Columba livia*, bar-tailed lark *Ammomanes cinctura*, and greater hoopoe-lark *Alaemon alaudipes* are found in smaller numbers. The presence and documentation of a significant breeding population of lappet-faced vulture *Torgos tracheliotus* and breeding short-toed eagle *Circaetus gallicus* is also very important. These are large, slow-breeding species, potentially vulnerable and of regional as well as national conservation significance. Eastern houbara bustards *Chlamydotis (undulata) macqueenii* recorded in the reserve are probably rare spring migrants. Some rare or endangered species are at least seasonally present, such as sooty falcon *Falco concolor*, corncrake *Crex crex*, and Basra reed warbler *Acrocephalus griseldis*. Other species include the hooded wheatear *Oenanthe monacha*, Dunn's lark *Eremalauda dunni*, and great reed warbler *Acrocephalus arundinaceus*.

The site was part of the former range of the extinct Arabian ostrich *Struthio camelus syriacus*. Fragments of ostrich shells can easily be found throughout the reserve. A previous re-introduction has been unsuccessful.

3.6.3. REPTILES

A survey of the herpetofauna was undertaken by Aloufi *et al.* (2022) and 17 species of reptiles were recorded. These include desert monitor (waral) *Varanus griseus*, small-scaled dhabb *Uromastyx aegyptius microlepis* (a species classified as Vulnerable), Arabian toadhead agama *Phrynocephalus arabicus*, *Acanthodactylus boskianus*, *Stenodactylus doriae*, Jayakar's sand boa *Eryx jayakari*, and Arabian horned viper *Cerastes gasparettii*.

3.6.4. ECOSYSTEM PROCESSES

Rainfall is extremely low, averaging 30 mm/annum and is usually in small patchy events of 1-4 mm. Rainfall variability is high with annual rainfall varying considerably from no rainfall to flood events. Thus, the system can shift from wet to dry and rainfall can be erratically distributed with small patches of the sands receiving rains while others are dry. Plant productivity follows the same pattern as the rains creating small, isolated areas of grazing. Such a system requires ungulates to move in response to rains by constantly moving towards rainfall events and away from dry areas. Extended drought periods are a norm and freedom of movement of ungulate herds is the normal response to these events.

3.6.5. UNGULATE NUMBERS AND TRENDS

Based on the survey done from 2020 to 2023 and the census data available on numbers and population the shows the trend is stable, and the animals seen were reported to be in good condition and there were calves at foot.

Table 13: Ungulate Population estimates over the last five years.

SPECIES	2020	2021	2022	2023	2024
<i>Arabian Oryx</i>	81	127	100	105	116
<i>Reem</i>	507	507	450- 500	365	433
<i>Idmi</i>	223	162	100-150	100	103

3.7. SOCIO-CULTURAL CONTEXT AND HERITAGE ASSETS

3.7.1. HERITAGE ASSETS

At its northwestern edge, 'Uruq Bani Ma'arid is bordered by the historical village of Al Faw, an ancient trading city which is believed to be the capital of the first Kingdom of Kindah. The archeological site reveals a variety of features, such as residential areas, roads, cemeteries, wells, equipment, and tools showcasing a notable Greek influence. Considering the extreme desolation of the Empty Quarter, 'Uruq Bani Ma'arid area is assumed to have been a vital backdrop for the people residing at Al Faw as the source of their hunting grounds and firewood. The archeological site of Al Faw is currently on Saudi Arabia's tentative list for Cultural World Heritage, thus representing a potential for nature-culture linkage in the future.

Al Faw archaeological village is currently in the UNESCO World Heritage Tentative List.

3.8. STAKEHOLDER ANALYSIS

The stakeholder analysis approach for 'Uruq Bani Ma'arid Protected Area (UBM PA) was based on the existing management plan (NCW 2021) and uses the influence x interest analysis methodologies. Each stakeholder was assessed in terms of their level of influence in the PA management decisions and their level of interest in conserving and sustaining its natural heritage values and attributes. The assessment resulted in four types of stakeholders: the core stakeholders who have high influence - high interest level, the potential stakeholders which have low influence – high interest level, the critical stakeholders who have high influence - low interest level, and the marginal stakeholders who possess low influence - low interest level. Accordingly, the standard four stakeholder engagement strategies were identified, namely, full integration (for core stakeholders), empowerment (for potential stakeholders), outreach (for critical stakeholders), and keeping informed (for marginal stakeholders). The matrix below provides the stakeholder analysis results which are summarized in.



Table 14: Stakeholder analysis (NCW 2021)

STAKEHOLDER	ROLE OF STAKEHOLDER	LEVEL OF INFLUENCE	LEVEL OF INTEREST	ENGAGEMENT STRATEGY RECOMMENDED
<i>Imarah and governorates management</i>	Political, security, and social with in principle support to the PA as a government entity	High	High	Full integration and partnership, with a special program for continuous communication and coordination
<i>Judicial system</i>	Legal and social with limited support to the PA	High	Low	Specialized outreach for PA benefit with awareness raising and strategic/ political lobbying/ seriousness of illegal hunting
<i>Police</i>	Security and law enforcement	High	Medium	Partnerships and outreach with capacity building programs. - critical for enforcement
<i>Religious leaders and preachers</i>	Religious and social with limited support to the PA	High	Low	Systematic outreach with partnerships
<i>Ministry of Tourism</i>	Economic with high interest in the PA business- related development, often with overlapping mandates and roles	High	High	Full partnerships and strategic coordination and collaboration
<i>Ministry of Culture/Heritage</i>	Cultural and heritage focus with high support to the PA	High	High	Full partnerships, strategic coordination, and programmatic collaboration
<i>Eco-camp operating companies/commercial tourism</i>	Commercial focus with high awareness of the importance of PA conservation	Medium	High	Clear partnerships with strong regulatory and monitoring frameworks



STAKEHOLDER	ROLE OF STAKEHOLDER	LEVEL OF INFLUENCE	LEVEL OF INTEREST	ENGAGEMENT STRATEGY RECOMMENDED
<i>Visitors</i>	General interests in recreation with limited awareness of the PA importance	Low	Medium	Awareness raising, education, improved experiences, and strong enforcement of regulations
<i>Wildlife hunters</i>	Personal and social focus with high level of hostility towards the PA	High	Low	Effective law enforcement along with awareness raising, strong lobbying with local government entities, and possible consideration of hunting alternatives (e.g. hunting areas outside of PA).
<i>Livestock owners (mainly camel owners)</i>	Economic and social focus with high level of hostility towards the PA	High	Low	Effective law enforcement with strong outreach and alternative programs for sustainable grazing in and around the PA.
<i>Schools</i>	Social focus with good support for the PA concept	Low	High	Environmental awareness and education programs and facilitate gratis access and recreation in the PA.
<i>Universities (and research institutions)</i>	Academic focus with possible interest in the PA as a platform for higher education and research	Low	Medium	Development and applied research and management-oriented studies through partnerships and joint initiatives.
<i>Municipalities</i>	Local development focus in and around rural areas with limited support to the PA	Medium	Low	Collaboration in land use planning systems, especially near the PA, with strategic partnerships and political lobbying



STAKEHOLDER	ROLE OF STAKEHOLDER	LEVEL OF INFLUENCE	LEVEL OF INTEREST	ENGAGEMENT STRATEGY RECOMMENDED
<i>Najran Cement Factory</i>	Economic focus with negative attitude towards the PA	High	Low	Strategic outreach with focus on environmental compliance and off-sets leading to private sector compensation for environmental damage and ecosystem rehabilitation

A number of the core stakeholders were consulted for their views and requirements regarding the PA and its resources. These are indicated in the greyed-out stakeholders in the following figure.

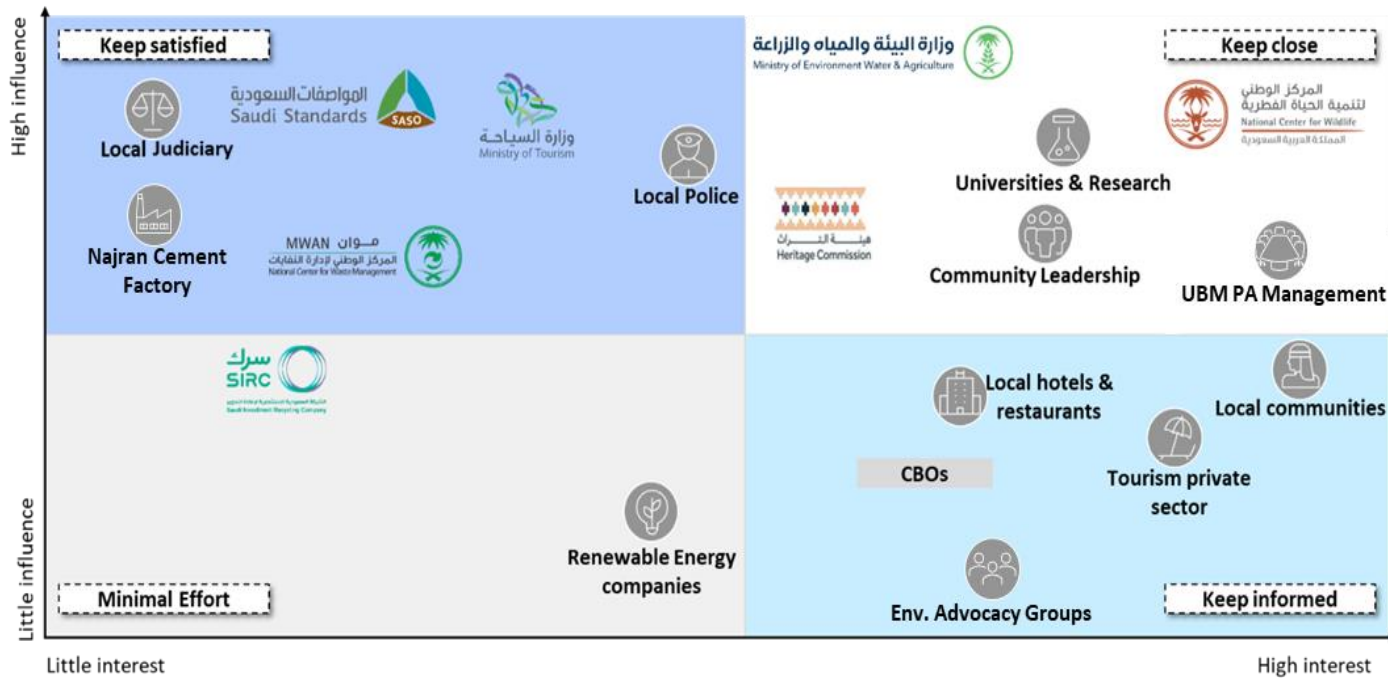


Figure 5: UBM PA stakeholder profile.

3.9. CURRENT THREATS AND PRESSURES

A risk assessment was undertaken through interviews with reserve staff and management, targeted discussions, focused field visits, and evaluations of historical management records and surveys. The assessment classified various threats and pressures by their prevalence and impact, leading to a risk level analysis. This analysis informs the prioritization and development of required intervention and mitigation strategies.

Historical overutilization and unsustainable practices have eroded the region's ecological resources, pinpointing overgrazing, illegal hunting, and environmental degradation as urgent issues. Moreover, urbanization and resource extraction, coupled with inadequate environmental awareness, amplify these threats.

To achieve restoration, rewilding, and tourism, establishing and maintaining the reserve's area integrity is paramount. The imminent deployment of the SFES, may be constrained by their current vehicular patrol model. Therefore, developing and implementing a security plan and strategy that introduces new strategies and engages all stakeholders, including the SFES, is crucial to confronting the specific threats faced by the reserve.

Table 15: Summary of Threats, Causes, and Values Threatened in Uruq Bani Ma'arid Reserve

HIGH THREAT AND RISK LEVEL	
1. Overgrazing by Livestock	Widespread overgrazing, predominantly by camels, With around 100 households and private owners herding 25-40 camels each, these practices pose the most significant threat to the reserve's ecological integrity and sustainability.
2. Illegal Hunting	Illegal hunting (Poaching) poses significant threats to wildlife within the Uruq Bani Ma'arid Reserve.
3. Offroad Driving	Unregulated offroad driving by both staff and resource users.
4. The use of poisons to control predators & veterinary medication containing <i>Diclofenac</i> .	The use of poisons to control predators and rodents results in the secondary poisoning of owls and raptors. The use of veterinary medicines containing <i>Diclofenac</i> is fatal to any vulture feeding on the carcass of an animal treated with such medication. The NCW must work towards have these phased out and the use of poisons banned.
MODERATE THREAT AND RISK LEVEL	
4. Litter and Plastic Pollution	Litter and plastic pollution present a significant challenge at the Uruq Bani Ma'arid Reserve, particularly around the urban perimeter and Bedouin encampments. The issue extends from the resource use zones to the wilderness areas, exacerbated by waste left by grazing caravans, which is subsequently dispersed across the landscape by wind and sand. Effective management requires a combination of educational initiatives, heightened awareness, and stringent regulations to mitigate the impacts of littering by all parties and to preserve the visual integrity of the reserve's interface with urban areas.
5. Water Scarcity and Drought	The hyper-arid system with extremely variable rainfall results in animals moving in and out of the protected area and often interacting with nomadic herders to the east, where they are persecuted
6. Abandoned Quarries	Within the buffer zone of the Uruq Bani Ma'arid Reserve, three limestone quarries spanning 4.264 km ² , require rehabilitation. These sites once supplied materials for



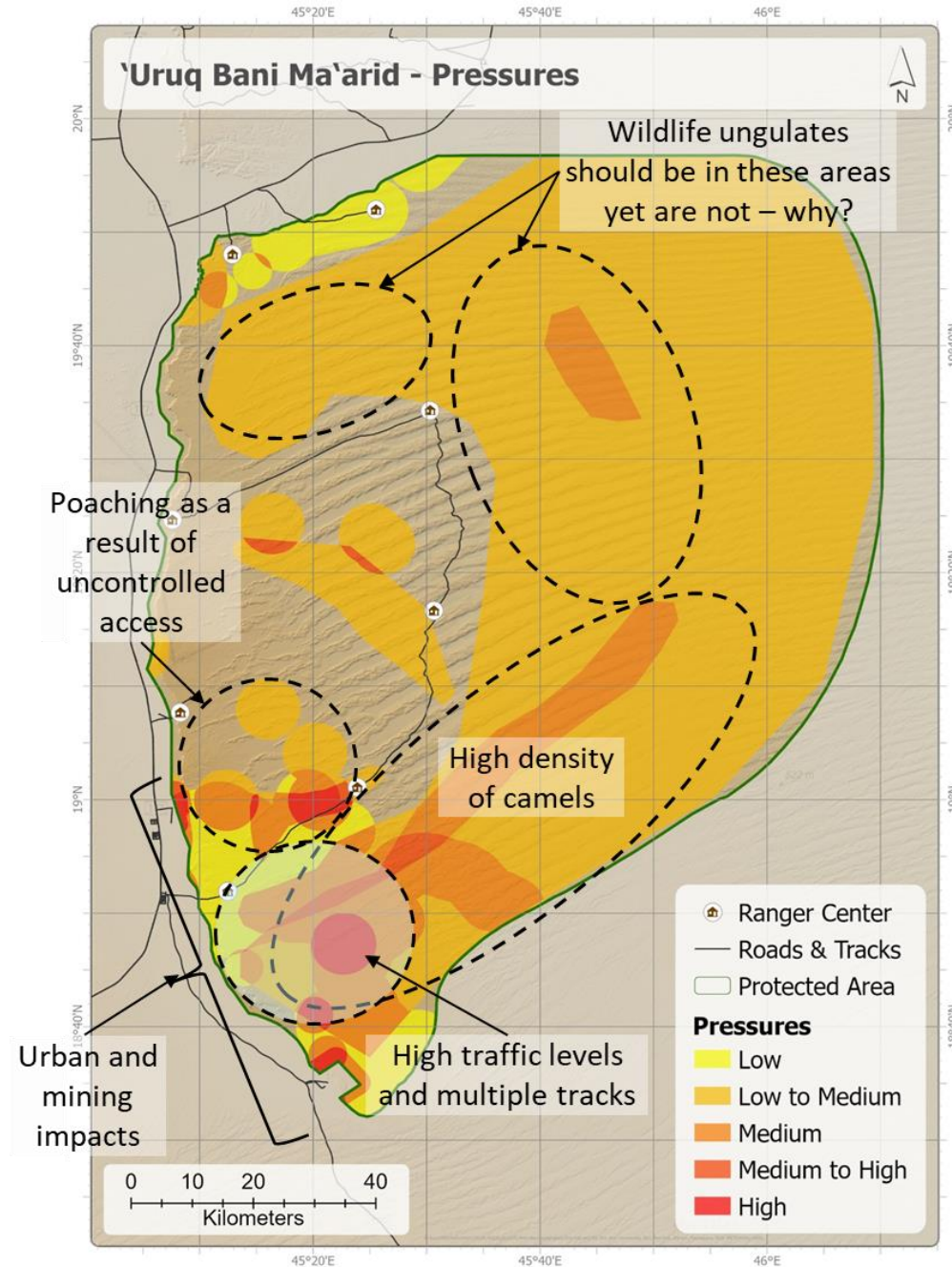
	road construction but have been inactive since 2019 following directives from the NCW, with support from regional and transport authorities. Initiatives that began in September 2021 to rehabilitate the areas are not advancing, despite NCW efforts.
7. Urban and Industrial Expansion	The expansion of Sultanah and Al Kaladeh, along with the active Najran Cement Factory operations at the western boundary, present escalating threats to the Uruq Bani Ma'arid Protected Area (PA). Urban sprawl brings increased human activity and infrastructure development to the edges of the PA, potentially disrupting its ecological balance and integrity. This proximity heightens the risk of ecological degradation due to intensified human encroachment and associated environmental impacts from industrial activities.
8. Pollution	The establishment of the Najran Cement Factory in 2005 in Al Mindifan, with a significant capital investment, has introduced environmental concerns for the adjacent protected areas. The factory's operations, which involve the extraction of raw materials such as limestone, clay, sandstone, and gypsum, present potential risks of air and soil pollution. These environmental risks result from the extraction processes and the associated industrial activities at the factory's main site and its grinding unit at Aakfah center, 240 km from Najran City. The proximity to the protected areas underscores the need for stringent environmental management to mitigate any adverse effects on the local ecosystem.

LOW THREAT AND RISK LEVEL

Urban and industrial developments	<ol style="list-style-type: none"> 1. Urban and industrial developments on its western boundary particularly in the reserve's buffer zone. These include town developments, lighting, quarries, mining, and industrial development (cement production). These include the utilities such as power supply and water provision (wellfield abstraction and desalination). 2. Other developments on the western boundary such as irrigation (in the buffer zone) and establishment of the Al-Faw heritage area (and research center). 3. Anthropogenic impacts arising from exploitation of resources within and around the Reserve. These include those that typically encourage desertification, such as wood cutting, overgrazing, off-road driving, and poaching.
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3.9.1. PRESSURES ON THE PA



Map 10: Anthropogenic pressures on the PA.

3.9.2. SWOT (STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS)

In the SWOT, most of the strengths can be built on, the weaknesses turned into opportunities and threats managed. The SWOT results are presented for the key areas Biodiversity Conservation, Visitor Management and Sustainable Tourism Development, Stakeholder Relationship and Park Management.

Table 16: SWOT and domains for the PA

	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Biodiversity Conservation	<ul style="list-style-type: none"> • Escarpment habitat allows for access control along western boundary. • Large scale of system • Wildlife representative of the area's recent historical diversity • Existing successful reintroductions of ungulate species • Special landscape including cliffs dunes and interdunal valleys. • Broad public support for biodiversity conservation and the continued protection of Uruq. 	<ul style="list-style-type: none"> • Hyper-arid system with extremely variable rainfall results in animals moving in and out of the protected area and often interacting with nomadic herders to the east. • pressure on grazing resources in the community zone, • Unsustainable loss of wildlife when entering the sustainable use zone. • Poaching and firewood theft. 	<ul style="list-style-type: none"> • Conservation and species recovery • Identify and protect habitats from vehicle tracks by developing a road and vehicle speed protocol for the different habitats. • Develop a comprehensive long-term plan for wildlife protection that aligns with tourism objectives and maintains ecological integrity. • Reduce HWC by moving camel camps out of the PA and controlling any access to align with sustainable grazing objectives. • Plan managed sustainable hunting Outside the perimeter of the Protected Area. • Develop a vulture restaurant so that birds reduce the risk of feeding on toxic carcasses. 	<ul style="list-style-type: none"> • Climate change and increase in extreme weather and drought cycles.



	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Visitor Management and Sustainable Tourism Development	<ul style="list-style-type: none"> Name and international profile, UNESCO site, international brand, numerous heritage sites. Exceptional landscape beauty (escarpment, different types of dunes, interdunal valleys, limestone rock outcrop). Diverse tourism opportunities Strong government support Limited tourism infrastructure development at present (i.e. blank canvas) 	<ul style="list-style-type: none"> No financial returns from tourism potential for visual impacts. Development along western boundary, light and noise pollution from main road, and towns. Track pollution. Distance to tourist markets. Poor marketing 	<ul style="list-style-type: none"> Clearer vision and objectives establishing the direction of all management, community involvement and tourism. Focused tourism development plan that supports the vision and international brand and backed with a targeted interpretive center. To include a strong educational element (in the interpretive center). Focus on mid to high-end tourism due to access costs. Al Faw archaeological site on the north-western boundary. Opportunities for cultural tourism Generate income through entrance fees, accommodation, activities, and spin-off opportunities. Strengthen marketing and positioning. Value chain opportunities. National policies that favor tourism development Political stability Existence of planning institutions Government support 	<ul style="list-style-type: none"> Short tourism is seasonal with a strong focus on the winter months. Conflicting tourism developments (due to driving versus empty quarter silence and peace) Global pandemics



	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Stakeholder Relationships	<ul style="list-style-type: none"> • Local reputation and international recognition. • High international profile of PA with it being registered as a UNESCO World Heritage site. • Growing consumer base (+12K by 2023) • General community support for the protected area • Local labor supply. • Traditional culture, skills, cuisine, and storytelling to attract tourists. 	<ul style="list-style-type: none"> • A prevalent culture of poaching is aggressive and challenging to authority. • livestock grazing. 	<ul style="list-style-type: none"> • Community engagement and support. • Community awareness and support program through involvement (in PA Board/advisory forum) and indigenous knowledge development (pos part of the interpretive center) • Link community involvement to a structured and justifiable grazing management system, nomad management and access protocols (to avoid conflict with SFES). • Document all rules, regulations and agreements with local communities and ensure rangers are aware of them and trained on interaction protocols. • Where possible, give preference to local communities when goods and services are outsourced. 	<ul style="list-style-type: none"> • SFES could undo all the support from communities and alienate visitors.



	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Park Management	<ul style="list-style-type: none"> • Support from municipalities. • Strong government support • Existing useful management plan and sub-plans (prepared locally to address identified threats • Experienced and well-managed ranger force with good leadership • Management controls and systems in place • Communications in place • Strong political support (e.g., SFES) • Well equipped with facilities and vehicles – move towards full outsourcing. • No artificial support systems yet (no water or feeding or fences. 	<ul style="list-style-type: none"> • Track pollution • Closed quarries in need of rehabilitation. • Large scale, requiring resources to manage. • Maturing ranger force • High carbon emissions need reduction efforts. • Absence of a waste management plan and some levels of litter in tourism zone and community grazing zone • Extensive porous boundary, easy incursions, difficult to effectively control. 	<ul style="list-style-type: none"> • Partnerships with training programs. • Clearer vision and objectives establishing the direction of all management, community involvement and tourism. • Define the role and protocols of the SFES. • Create induction programs for contractors and suppliers to ensure their alignment with conservation goals. • Identify and protect habitats from vehicle tracks by developing a road and vehicle speed protocol for the different habitats. • Removal of existing infrastructure waste, and rehabilitation program to be developed for quarries and other mining. • Determine the resource requirements for effective management activities and implement a new area integrity program, which may include air support and focused interventions. Restructure HR to meet increased protection challenges. • Full feedback from NCW about research results and raw information to assist in PA ecosystem management. • Audit, then reduce the PAs carbon footprint through changes in management and installation of renewable energy at ranger stations. • Create the capacity to undertake essential services “in House” without having to call for a contractor. 	<ul style="list-style-type: none"> • Active Najran Cement Factory on the western boundary. • The expansion of urban areas near the conservation boundary poses a direct threat by increasing human activity and infrastructure in proximity to the protected area. • Excessive grazing from livestock and the introduction of non-native plant species (destruction of trees and local plantation) • Two permanent human settlements within the protected area.

SECTION FOUR: VISION AND TARGET OUTCOMES

4.1. MAJOR SITE VALUES

Site Values identified from field visits and literature are presented in the table below. Overall, there are strong site values to guide management and tourism development.

Table 17: Site values identified for the PA.

	SITE VALUES
<i>Great values that led to WHS recognition</i>	<ul style="list-style-type: none"> ✓ Iconic hyper-arid sand desert representing the largest sand sea on Earth. ✓ A tremendous sense-of-place and associated sense of wilderness ✓ A wildlife refuge, the place where the last record of the Arabian Oryx was made before its extinction from the wild, and the destination for its reintroduction to its natural habitat. ✓ The vast area ensures representation of the hyper-arid desert ecosystem with all its elements covered and subject to undisturbed evolution.
<i>Biodiversity Conservation</i>	<ul style="list-style-type: none"> • Escarpment habitat allows for access control along western boundary. • Large scale of system • Wildlife representative of the area's recent historical diversity • Existing successful reintroductions of ungulate species • Special landscape including cliffs dunes and interdunal valleys. • Broad public support for biodiversity conservation and the continued protection of Uruq.
<i>Visitor Management and Sustainable Tourism Development</i>	<ul style="list-style-type: none"> • Name and international profile, UNESCO site, international brand, numerous heritage sites. • Exceptional landscape beauty (escarpment, different types of dunes, interdunal valleys, limestone rock outcrop). Diverse tourism opportunities • World-class attractive landscapes – attractive enough to constitute main feature of offer. • Strong government support • Limited tourism infrastructure development at present (i.e. blank canvas)
<i>Stakeholder Relationships</i>	<ul style="list-style-type: none"> • Local reputation and international recognition. • High international profile of PA with it being registered as a UNESCO World Heritage site. • Growing consumer base (+12K by 2023) • General community support for the protected area • Local labor supply. • Traditional culture, skills, cuisine, and storytelling to attract tourists.



SITE VALUES	
<i>Park Management</i>	<ul style="list-style-type: none"> • Recently listed as UNESCO world heritage site • Support from municipalities. • Existing and good management plan • Positive momentum in conservation and restoration of environment • Camel Grazing fairly under control • Existing ecolodge • Implementation of 2021 zoning plan • Existing useful management plan and sub-plans (prepared locally to address identified threats • Experienced and well-managed ranger force with good leadership • Management controls and systems in place • Communications in place • Strong political support (e.g., SFES) • Well equipped with facilities and vehicles – move towards full outsourcing. • No artificial support systems yet (no water or feeding or fences.

4.2. VISION, MISSION AND OBJECTIVES

For UBM PA to be protected and managed effectively, a desired state has been developed through an adaptive planning process to guide reserve management in its daily operations. To formulate this desired state, focus was placed on the mission, reserve and surrounding regional context, operating principles and vital attributes that make this reserve unique, or at least very special in its class.

Each attribute was discussed along with key factors determining/strengthening or threatening/ eroding these attributes. Using this information helped focus the exact formulation of the objectives, which aim to strengthen positive determinants and weaken or remove negative ones so that objectives are appropriate to the uniqueness and special nature of Uruq Bani Ma'arid Reserve and the landscape within which it is embedded.

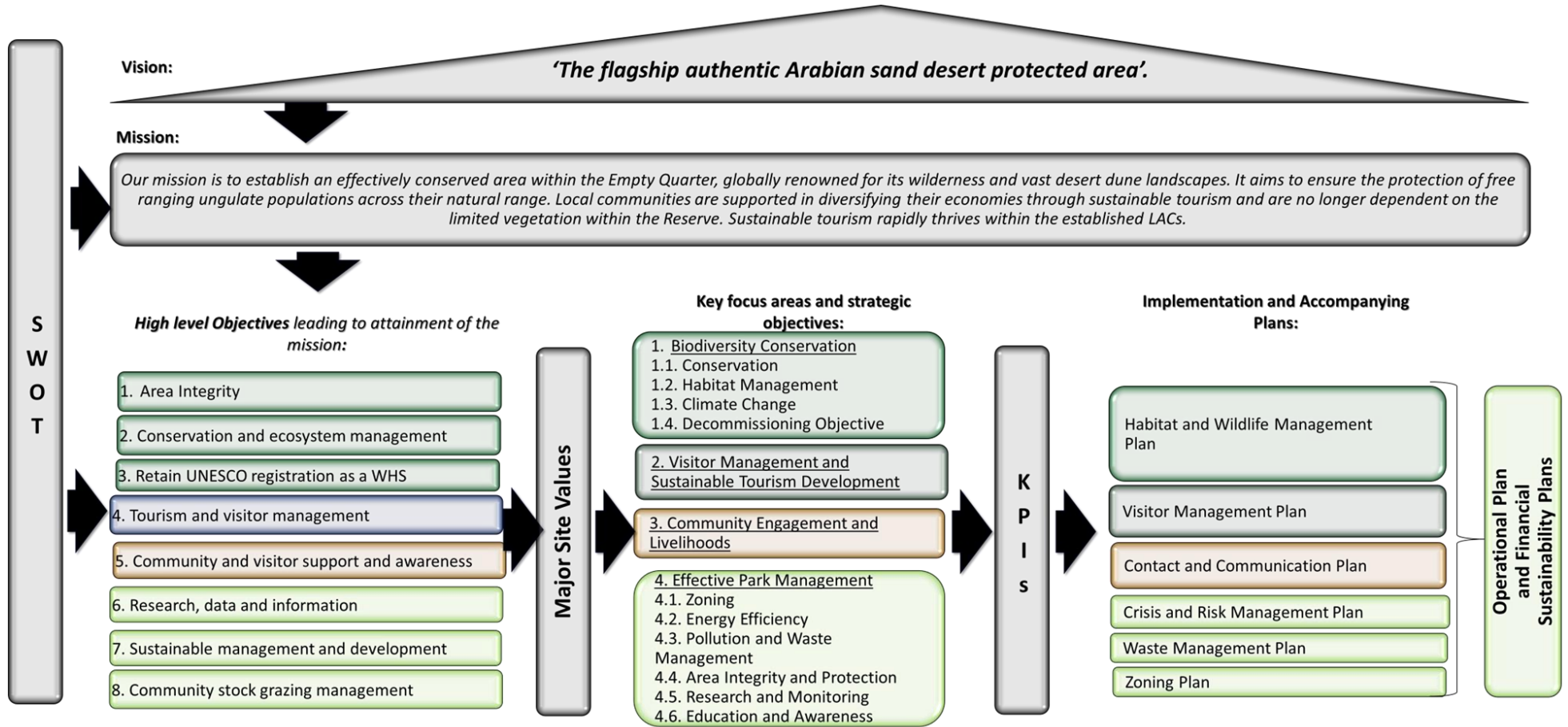


Figure 6: UBM PA Management Plan Framework

The vision is an inspirational statement designed to provide a picture of the envisaged future for the park. It answers the question of 'where do we want to go?'. The vision outlined in the existing (2021) plan is as follows:

"The UBM PA serves as a national model for effective protected area management, where biodiversity of global importance is recognized, and sustainable local development is achieved for the benefit of future generations."

This new plan proposes a short vision statement with a more detailed mission statements as follows:

VISION

The vision is an inspirational statement designed to provide a picture of the envisaged future for the park. It answers the question of 'where do we want to go?'. The vision for UBM PA is.

'The flagship authentic Arabian sand desert protected area'

MISSION

Our mission is to establish an effectively conserved area within the Empty Quarter, globally renowned for its wilderness and vast desert dune landscapes. It aims to ensure the protection of free ranging ungulate populations across their natural range. Local communities are supported in diversifying their economies through sustainable tourism and are no longer dependent on the limited vegetation within the Reserve. Sustainable tourism rapidly thrives within the established LACs.

Objectives:

The following objectives were developed from the findings of the fieldwork and stakeholder consultations. The mission can be attained through these objectives:

1. **Area Integrity:** Establish and maintain area integrity, allowing for the attainment of objective 2.
2. **Conservation and ecosystem management:** Restore and maintain (within the environmental variability) the areas ecological ecosystems and biodiversity condition.
3. **Retain UNESCO registration as a WHS.**
4. **Community and visitor support and awareness:** Ensure that communities & visitors are fully aware of rules, regulations, agreements, responsibilities, and opportunities within the PA.
5. **Research, data and information:** Establish a research position for the PA with clear monitoring and research objectives resulting in more effective management and feedback systems.
6. **Sustainable management and development:** Address impacts from waste, litter, pollution, rehabilitation of decommissioned developments, resource efficiency and climate change
7. **Community stock grazing management:** implement effective and sustainable grazing management (and access) in the sustainable resource use zone. Must not compromise objectives 1, 2 and 3, and
8. **Tourism and visitor management:** Optimize tourism potential of the area in a sustainable and responsible manner that supports the overall vision and brand of the PA. Must not compromise objectives 1, 2.

4.3. STRATEGIC OBJECTIVES AND OPERATIONAL KPIS

While the vision sets out the “*where do we want to go*”, high-level objectives act as the roadmap to achieve the mission. These high-level objectives tend to flow naturally from the key focus areas. The desired state is achieved by means of a hierarchy of objectives (see figure below), starting with an overall objective aligned with UBM PA 's vision and mission statements, then broad, high-level objectives (this section) and then to more detailed levels.

The high-level objectives listed above are now progressively being disaggregated through a series of ‘objectives’ of increasing focus. These are set out in the following table.

Table 18: Strategic Objectives and Operational KPIS

STRATEGIC OBJECTIVES	OPERATIONAL KPIS
1. BIODIVERSITY CONSERVATION	
1.1. CONSERVATION	
1.1.1. Establish status of endemic, rare or endangered species within the PA.	✓ <i>Status of any endemic, rare or endangered species established.</i>
1.1.2. Monitoring endangered and target species.	✓ <i>Monitoring of key species ongoing and information suitable for adaptive management.</i>
1.1.3. Implementing conservation strategies for endangered species protection.	✓ <i>Conservation strategies for R&E species implemented.</i>
1.1.4. Recovery of ungulate populations through protection in all zones of the PA.	✓ <i>Ungulate population effectively protected throughout the PA.</i>
1.1.5. Grazing resource protection.	✓ <i>Sustainable grazing plan prepared and outlined to communities.</i>
1.1.6. Rewilding of other (past) naturally occurring species including mammals (Reem and Arabian) and birds (Ostrich, Barbary falcon and Egyptian vulture).	✓ <i>Grazing resources protected through strict control of livestock grazing (sufficient safe & undisturbed grazing resources and habitat for wildlife populations).</i>
1.1.7. Control of alien plant and animal species including feral cats, dogs and Indian house crow.	✓ <i>Habitat secured and successful rewilding is ongoing. An open, natural PA where wildlife populations are self-sustaining (without need for reintroductions)</i> ✓ <i>Active monitoring and control program in place to keep numbers and impact of alien animal to a minimum with elimination as the desired outcome.</i>
1.2. HABITAT MANAGEMENT	
1.2.1. Full protection of grazing resources within the core zone.	✓ <i>Zones demarcated, and livestock camps moved beyond an 8 km buffer of the Phase 1 boundary (2027); All livestock camps moved outside of</i>



STRATEGIC OBJECTIVES	OPERATIONAL KPIs
<p>1.2.2. Identify sustainable livestock forage levels and management techniques (rest periods etc.).</p> <p>1.2.3. Any camel grazing within the PA is undertaken as per sustainable grazing plan.</p>	<p><i>the PA by 2030 with zero motorized entry apart from controlled access roads (Phase 2).</i></p> <ul style="list-style-type: none"> ✓ <i>Sustainable livestock grazing approach established; and</i> ✓ <i>Sustainable livestock grazing implemented in the “sustainable use” zone when conditions allow (as identified by the research officer).</i>
1.3. CLIMATE CHANGE	
<p>1.3.1. Assess the potential impacts of climate change on the PA and its biodiversity (Climate Change Impact Assessment).</p> <p>1.3.2. Developing strategies to mitigate the impacts of climate change on arid environments and their inhabitants/biodiversity.</p> <p>1.3.3. Implementing measures to adapt to changing climatic conditions and their effects on biodiversity.</p> <p>1.3.4. Reduction in CO₂e emissions to meet the NDC 2030 commitments.</p>	<ul style="list-style-type: none"> ✓ <i>CCIA prepared and results presented to management. End of year 2.</i> ✓ <i>Strategies developed and supported by management – end of year 2.</i> ✓ <i>Strategies to address key risks implemented as per the CCIA implementation schedule.</i> ✓ <i>GHG emissions baseline established for 2024 (end of year 1). Mitigation and monitoring plan agreed and GHG emissions reduced by 50% over 2024 baseline to meet the KSA NDC of 50% reduction by 2030.</i>
1.4. DECOMMISSIONING OBJECTIVE	
<p>1.4.1. Prepare and ensure implementation of decommissioning plans for existing (closed) quarries within the PA and buffer.</p> <p>1.4.2. Ensure the cement factory has an approved closure and decommissioning plan and funds.</p> <p>1.4.3. Map and then remove waste building rubble from past infrastructure in the PA</p>	<ul style="list-style-type: none"> ✓ <i>Quarries fully decommissioning and rehabilitation monitored.</i> ✓ <i>Cement factor closure plan approved, and closure fund established by cement factory.</i> ✓ <i>All old construction rubble removed from within the PA</i>
2. VISITOR MANAGEMENT AND SUSTAINABLE TOURISM DEVELOPMENT	
<p>2.1. Ensure all tourism development proposals are responsive to the applicable IUCN Green List Indicators.</p> <p>2.2. Take cognizance of and be responsive to, the needs and aspirations of all stakeholders, including the local community.</p> <p>2.3. Identify and describe appropriate target markets.</p> <p>2.4. Identify and describe a range of appropriate tourism experiential areas that showcase the biodiversity, landscapes and cultural historic assets of the PA.</p>	<ul style="list-style-type: none"> ✓ <i>A high-level tourism development framework that will guide the tourism development and management within the PA for the next 5 years.</i> ✓ <i>An area is defined for short- and extended camping stays by local community members.</i> ✓ <i>At least two new tourism facility (eco-lodge) has been planned, built and opened to visitors.</i>



STRATEGIC OBJECTIVES	OPERATIONAL KPIs
<p>2.5. Identify and describe appropriate visitor activity typologies compatible with the PA's character and its conservation values and environmental sensitivities.</p> <p>2.6. Identify and describe appropriate tourism amenity typologies compatible with the PA's character and its conservation values and environmental sensitivities.</p> <p>2.7. Identify and describe appropriate tourism products and tourism operational models.</p> <p>2.8. Identify and describe appropriate visitor and tourism management guidelines, including carrying capacity and effective access control.</p>	<ul style="list-style-type: none"> ✓ <i>A user-friendly system in place for the booking of access by local communities and other visitors for camping and other permissible leisure activities.</i> ✓ <i>Collaboration with Al-Faw Archaeological Site authorities with mutually beneficial visitor programmes, experiences and activities.</i> ✓ <i>A tourism route incorporating Uruq and two other iconic NCW reserves is developed, branded and marketed.</i>
3. COMMUNITY ENGAGEMENT AND LIVELIHOODS	
<p>3.1. Include communities in the protection of the PA through establishing a leadership advisory forum that advises the PA Board.</p> <p>3.2. Promoting eco-tourism and providing opportunities for sustainable income generation.</p> <p>3.3. Increased local formal employment and contracts.</p>	<ul style="list-style-type: none"> ✓ <i>Leadership advisory forum established and functional (meeting quarterly and preparing minutes of meetings).</i> ✓ <i>Ecotourism opportunities established (guiding, community visits).</i> ✓ <i>Service contracts and (ranger) recruitment are decentralized to the reserve level. A preferential procurement system (which means local community members and entrepreneurs are favored above others regionally, nationally and internationally) in place</i>
4. EFFECTIVE PARK MANAGEMENT	
4.1. ZONING:	
<p>4.1.1. Establish revised zoning categories responsive to World Heritage Site requirements.</p> <p>4.1.2. Describe zoning categories in terms of character, use, and management priorities.</p> <p>4.1.3. Apply this revised zoning approach to the PA.</p> <p>4.1.4. Establish LACs for each zone.</p> <p>4.1.5. Revise staffing positions and numbers to allow for the management of the zones</p>	<ul style="list-style-type: none"> ✓ <i>Standardized zoning approach across all NCW PA's.</i> ✓ <i>Zoning plan and descriptive tables with realistic LACs for natural resource use, visitor types and numbers, and infrastructure implemented.</i> ✓ <i>Monitoring and adaptive management improves zoning and establishes LACs for each zone.</i> ✓ <i>Staffing as per the management plan requirements.</i>
4.2. ENERGY EFFICIENCY:	



STRATEGIC OBJECTIVES	OPERATIONAL KPIs
4.2.1. Commission energy audit on PA infrastructure and management activities 4.2.2. Establish changes required to meet the 2030 NDC carbon reduction targets. 4.2.3. Greening of facilities and tourism establishments	✓ <i>Full audit undertaken and plan to halve energy use in the PA agreed</i> ✓ <i>Greening of facilities and operations implemented. All ranger outposts (apart from the HQ, and all tourist facilities operating on Solar PV.</i>
4.3. POLLUTION AND WASTE MANAGEMENT	
4.3.1. Waste management plan. 4.3.2. Pollution risk identification and mitigation plan.	✓ <i>Waste management plan implemented. Waste streams monitored and waste reduction actions in place.</i> ✓ <i>The PA is ready to start introducing recycling when it is available in the adjacent municipalities.</i> ✓ <i>Annual review of recycling options available in adjacent urban areas.</i> ✓ <i>All private tourism businesses operating in the PA have approved waste management strategies.</i>
4.4. AREA INTEGRITY AND PROTECTION	
4.4.1. Develop and implement a Strategic Security Plan tailored to address site-specific threats and challenges effectively. 4.4.2. Achieve a substantial reduction in illegal activities, particularly hunting and trespassing, throughout the natural range of PA ungulate populations. 4.4.3. Completely eliminate armed and violent confrontations and threats to staff and visitors. 4.4.4. Establish and consistently maintain Reserve-Wide Area integrity and protection. 4.4.5. Build ranger capacity and provide specialized training to ensure their effectiveness. 4.4.6. Increased and Effective patrol coverage and surveillance of the entire reserve. 4.4.7. Implement comprehensive and robust monitoring systems. 4.4.8. Establish control of the PA by developing and enforcing policies and regulations that safeguard the protected area and its finite grazing resources. 4.4.9. Collaborate with governmental bodies and stakeholders, including the SFES and local law enforcement, to ensure adherence to PA regulations and laws.	✓ <i>Establishment and maintenance of territorial integrity.</i> ✓ <i>Creation of stable and conducive conditions for Uruq's wildlife population growth, along with expanded ranges</i> ✓ <i>Establishment of a safe and secure environment conducive to tourism development, wildlife research, and collaborative conservation efforts, leading to a 75% reduction in illegal hunting and trespassing incidents</i> ✓ <i>Achieve 100% coverage of high-risk zones, ensuring comprehensive protection.</i> ✓ <i>Enforce a Zero Tolerance policy against illegal and incompatible activities.</i> ✓ <i>Strategic recruitment, training, and deployment of additional rangers, team leaders, managers, and support staff based on the strategic security plan.</i> ✓ <i>Full functionality of a domain awareness system.</i>



STRATEGIC OBJECTIVES	OPERATIONAL KPIs
<p>4.4.10. Signage, boundary and zone markers.</p>	<ul style="list-style-type: none"> ✓ <i>Complete operational deployment of a high-tech surveillance network, detection, and communication system</i> ✓ <i>A supportive and proud community that accepts and understands the benefits of protection and area Integrity.</i> ✓ <i>Specific Rules and Regulations developed and implemented – Awareness, Encourage Compliance and then Enforcement.</i> ✓ <i>Close and cohesive collaboration with SFES and LE stakeholders.</i> ✓ <i>Signage requirements and content design completed for each management zone (end of year 1).</i> ✓ <i>Contract for signage manufacturing and installation issued (end of year 2) and fully implemented by end of year 3.</i>
4.5. RESEARCH AND MONITORING	
<p>4.5.1. Establish a PA-specific research officer to guide activities and monitor results. Establish baselines and document the movement patterns of mobile ungulate species, numbers and location of all incidents, to build up a good understanding of where and how to focus management resources.</p> <p>4.5.2. Conducting scientific research to understand the unique challenges and dynamics of the hyper-arid PA.</p> <p>4.5.3. Regular monitoring of key indicators such as species populations, invasive species, livestock presence, and habitat recovery/health.</p> <p>4.5.4. Establish effective and simple mechanisms to obtain visitor and community feedback on the PA, services and experiences.</p> <p>4.5.5. Identify sustainable grazing management practices in zones identified for resource use.</p>	<ul style="list-style-type: none"> ✓ <i>Qualified research officer permanently stationed in the PA by end of year 1.</i> ✓ <i>Research undertaken into wildlife movement patterns, sustainable grazing (time or density based) and Rewilding.</i> ✓ <i>Key species populations (numbers and distribution within the reserve), including endangered and vulnerable species (Lapped-faced vultures, Oryx and Idmi) established annually.</i> ✓ <i>Community and visitor feedback mechanisms in place and reviewed daily. Monthly incident report prepared for management. Community and visitor feedback mechanisms in place and reviewed daily. Monthly incident report prepared for management.</i>
4.6. EDUCATION AND AWARENESS	
<p>4.6.1. Educating visitors, tourists, and local communities about their rights and responsibilities in preserving arid ecosystems.</p> <p>4.6.2. Conducting outreach programs with the area's youth to raise awareness about conservation and sustainable living practices.</p>	<ul style="list-style-type: none"> ✓ <i>At least one substantial visitor center designed and established.</i> ✓ <i>An online visitor (livestock owners and herders) responsibilities and awareness program developed.</i>



STRATEGIC OBJECTIVES

OPERATIONAL KPIs

- ✓ *An online tourist responsibilities and awareness program developed that is linked to the booking system.*
- ✓ *An online, local community specific awareness program developed.*
- ✓ *At least 5 x outreach programs undertaken with youth per annum.*



المركز الوطني
لتنمية الحياة الفطرية
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