المركز الوطني
لتنمية الحياة الفطرية
National Center for Wildlife
المملكة العربية السعودية

Zoning Plan

Raydah Protected Area (RPA)

1. Introduction

This report describes the approach used to arrive at a zonation plan for the RPA. In particular, the document aims to:

- Describe the methodology that was used.
- List the input data.
- Portray the resulting zonation map.
- Provide data on the extent and other characteristics of the delineated zone units.

The zoning plan is a tool that assists in dealing with the effects of land use decisions on the ecological and social environment and allows for the realization of potential use while protecting sensitive resources and elements. Put more, it involves the delineation of the Protected Area into specific areas that are each best suited for a different range of activities at certain levels of intensity. In protected areas, zoning refers to what can and cannot occur in different areas in terms of natural resources management, cultural resource management, human use and benefit, visitor use and experience, access, facilities development, maintenance, and operations.

In particular, zoning promotes:

- Communication and understanding between planners, managers, tourism operators, visitors, and local communities.
- Order and organization and the general welfare of visitors.
- A reduction in conflict between different users seeking different recreational experiences and activities.

2. Detailed Zoning Plan

2.1. Alignment to IUCN guidelines

There is no set formula for identifying different zones in a Protected Area[1]. A number of zoning schemes have been proposed for different countries and organizations. In spite of their differences, they were all developed around a common interest, i.e. to provide a framework within which the essential qualities and intrinsic values of a conservation area can be protected and perpetuated, and for any development to take place within specified limits.

The IUCN approaches the definition of zonation categories as follows:

Types of management zones in IUCN Protected Area Categories I–IV. Many different kinds and names of management zones are used in protected area planning. However, it is possible to identify several common types of zones used in the more strictly protected categories of protected area (I-IV) (Dudley 2013):

Special and/or unique values zone

This zone should contain outstanding, special, or unique values – e.g. historic sites; important natural areas such as wetlands, salt marshes, estuaries, or key marine areas such as spawning aggregations, which should be given priority for protection. Those parts of protected areas that are inhabited by local peoples, or which are important as anthropological or unique cultural niches, should also be recognized. The

[1] See e.g. IUCN - https://portals.iucn.org/library/efiles/documents/pag-010.pdf

management planning process protected by zoning recognizes these special values and limits or excludes unwanted visitation.

Primitive/wilderness zone

In this zone, roads and infrastructure development should be excluded, and manipulative management techniques normally prohibited. Natural processes dominate. Under normal circumstances, trails and perhaps a few, basic camping sites would be permitted – but their nature, number and extent should be strictly controlled. Sometimes these areas are called "core zones", since they are likely to have the best-preserved natural values.

Limited development zone

Limited development would be permitted in this zone but must not be detrimental to the special or unique values of the park. An important purpose of this zone is to cater to certain types of recreational use, thereby relieving pressures on primitive or wilderness areas. In all cases, the development should have minimal impact and serve only the immediate users of the designated area.

Intensive development/services zone

In many more strictly protected areas, this zone would be inappropriate. Its purpose is to accommodate major roads, hotels, accommodation, and service facilities. The goal should be to avoid creating zones of this kind in or near areas containing special or unique values or that exemplify an ecosystem type etc. In many protected areas, the current trend is to move more intensive development to areas outside the boundary altogether. While this may increase servicing costs in the protected area, experience has found that it:

- Frees management of time and resources.
- Is usually less detrimental to the protected area's natural values.
- Avoids the creation and siting of secondary service industries or activities within the protected area.
- Arguments supporting more intensive development in large, protected areas can be well-founded. These include:
    - Having stronger control over the design, use, and siting of the facilities and their impacts.
    - Allowing visitors to maximize their time in the protected area; enabling a better spread of visitor and recreational uses; and
    - Benefits from increased user and visitor fees.

Zoning for traditional and local users

Many protected areas provide zones for use by local and traditional users. Many other protected areas around the globe, including Kakadu National Park and the Great Barrier Reef Marine Park, make provision within zones allocated for this purpose. Where appropriate, limited development may occur to provide basic amenities for the traditional users.

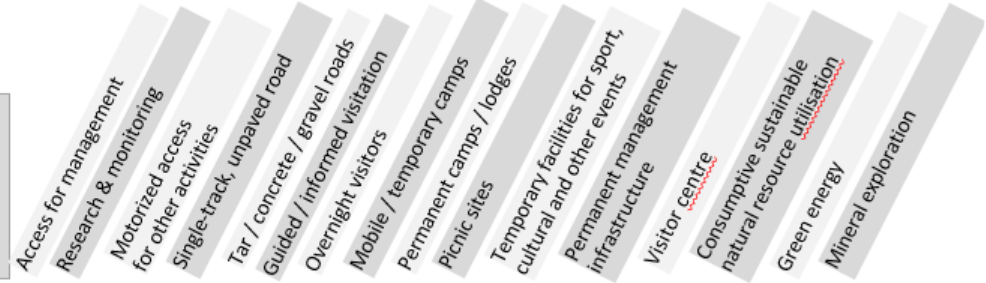
2.3 Proposed zonation categories

The table below presents the proposed zonation categories for the NCW Protected Areas with a general description of the zone 'content' and permissible or non-permissible activities and developments. Additionally, the second table details those activities that are specifically permissible within each zone of the RPA.

Table 1: Proposed zonation categories

Permissible or suitable activity and/or development in each zone

YES
MAYBE (conditional)
NO



	Special Value	Areas of very high conservation, biodiversity, connectivity, cultural heritage, or scientific value that warrant the highest level of protection. However, these areas are mostly not large enough to be physically or visually buffered to provide a true wilderness experience.
Wilderness	**Wilderness (pristine)**	True wilderness, highest conservation value. Provides a "Wilderness" experience and complies with the IUCN designation / definition of Wilderness. Focus on ensuring ecological functionality and biodiversity conservation with (ideally) minimal management intervention.
Wilderness	**Wilderness (remote)**	Provides a "Wilderness" experience but does not comply with the IUCN designation / definition of Wilderness. Visible evidence of outside human development and use. Management actions to restore / conserve biodiversity.
	Wildlands	Slightly modified natural landscape. Provides facilities and access to Wilderness zones. Views of human activities and development outside of the PA may be visible from this zone. Active management actions to restore / conserve biodiversity
	Managed Resource Use	Accessible, natural areas for leisure, recreation and sustainable natural resource utilisation. Landscapes that can absorb larger concentrations of people. Infrastructure for accessibility and overnight stays.
	Development & Infrastructure	Placed ideally on the periphery of the PA. Accessible by motorised transport (car/bus) on high volume transport routes. More concentrated activities than Managed Resource Use Zone. Range of infrastructure and facilities.

Activity	Development and Infrastructure Zone	Managed Resource Use Zone	Wildlands Zone
Livestock grazing (within temporal and other limits to ensure sustainability)			
Medicinal plant collection			
Herb collection (for cooking)			
Mushroom harvesting			
Beekeeping and honey collection			
Harvesting of *Opuntia* fruit and cladodes			
Hiking (unguided)			
Hiking (guided or under permit conditions)			
Mountain biking (unguided)			
Mountain biking (guided or under permit conditions)			
Horse riding			
Horse riding (guided groups)			
Bouldering/rock climbing			
e-Quadbikes			
e-Quad bikes (guided groups)			
Self-drive tourism	Limited to the public road		
4x4 off-roading (in designated areas – not confined to specific tracks or corridors)	Not permitted on account of steep terrain		

Guided safari drives			
Picnicking in demarcated spots			
Camping in demarcated areas			
Stargazing			
Stargazing (guided)			
Wildlife tracking (guided)			
Ecological and other research and monitoring			
Green Energy			
Exploration and Mining	Not permitted on account of steep terrain and small size		

Table 1b: Permitted activities within the RPA per zone.

2.4 Key informants to the proposed zoning plan

Zonation is a spatial exercise that benefits from numerous data inputs that can be superimposed as layers to assist with the definition of desirable or undesirable zone options (see figure below). Several such data layers are already available for the Protected Area or have been derived as secondary products during the current zonation process.

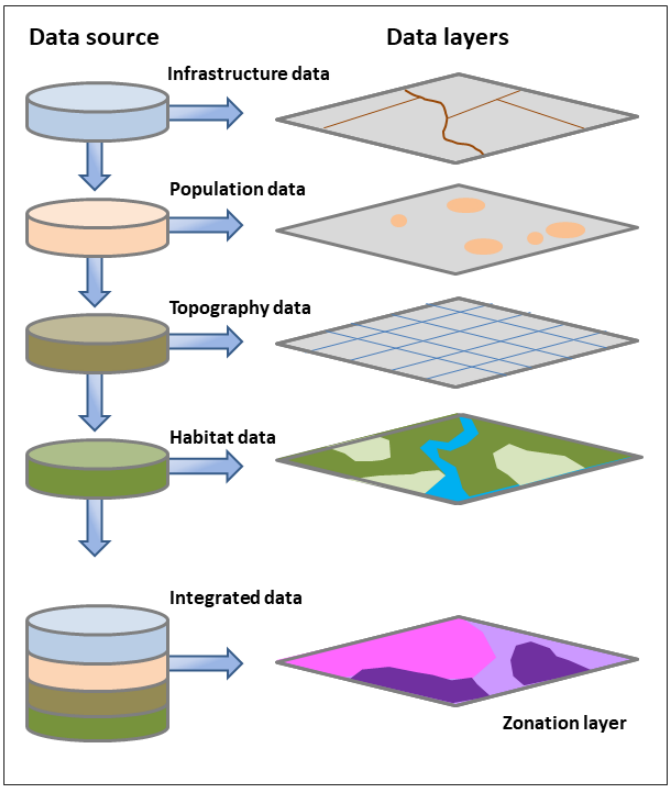


Figure 1 : Schematic representation of data layers

The key informants to the zoning plan include the following:

- Topography and gradient.
- Areas of biodiversity importance.
- Habitats and land cover.
- Existing anthropogenic impacts, including infrastructural development (HQ complex, ranger stations, agricultural lands, and other deforested areas), and linear utilities such as roads and powerlines);
- The presence of high-intensity human activity in very close proximity to the protected area.
- Existing high-value visitor areas.

The figure overleaf presents a graphic snapshot of various information used to ultimately inform the development of the proposed 2024 zoning plan.

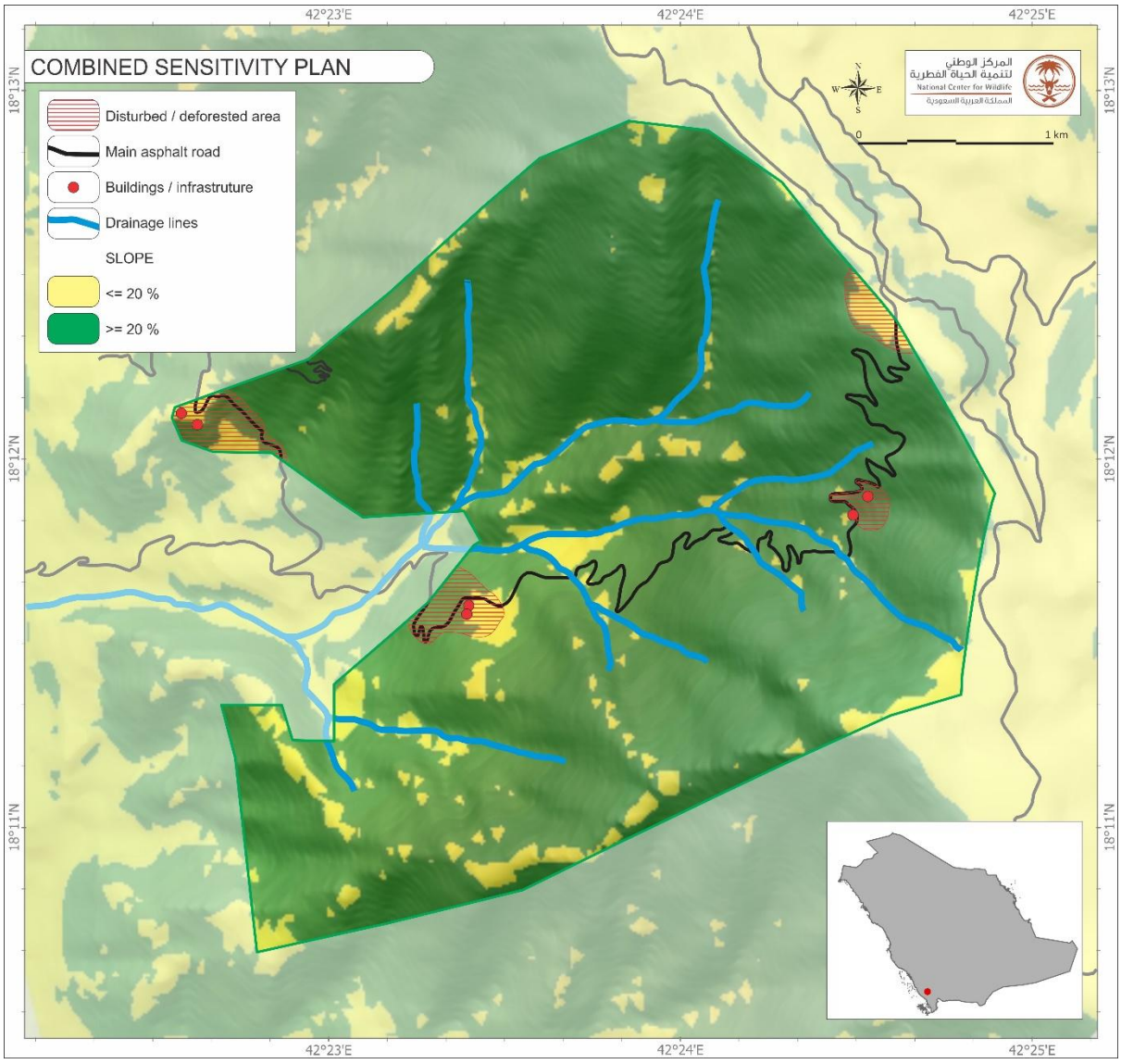


Figure 2 : Combined sensitivity

2.5 Application of zonation categories to the PROTECTED AREA

Guiding principles

Experience and expertise in similar Protected Area contexts and similar arid mountainous environments were applied with cognizance to the current limitations in data availability. The zonation is future-orientated with the expectation of the planned restoration being successful, rather than taking the current degraded state of the environment as a given.

The following guidance was considered:

- Rooted in the capacity of the Protected Area to support different types of desired uses and development.
- Focus on type and level of impact rather than on who is responsible for that impact – a specific impact by staff or by researchers has a similar influence on the natural system as the equivalent impact by a visitor.
- Eliminating or minimizing uses and activities that either damage the Protected Area or that create an undue burden on Protected Area management.
- Use of the minimum number of zones required to achieve the conservation and development objectives.
- Avoidance of a complicated patchwork of zones that require delimitation and that could become unsightly and costly.
- As far as practicable, avoidance of sudden transitions from highly protected zones to areas with little protection. Ideally, there should be a gradual transition from less to more protected zones.
- Where possible, use zoning boundaries that can be easily defined by prominent geographical features or roads to aid with easy identification by the user, thus lessening the need for potentially unsightly signage.
- Transform consolidated GIS data into input layers and combine through overlays into constraints and opportunities concerning conservation and development.
- Use this input to trace options for an initial zoning map. Develop the spatial expression of options at a high level to assess the conservation, development, and management implications of each.
- Feedback loop – can the management objectives be realized through the proposed zonation scheme? Repeatedly refer to, and check options against objectives, to ensure that any option does contribute to achieving what was originally intended; and look forward and work out the interaction of options – and the design and management implications of possible solutions.

Zonation should also be considered with the management authority and capacity of the relevant responsible management body for the area. Where monitoring and enforcement capacity is weak, a stricter zonation will as a priority set aside certain areas from development. Where the responsible management body has more capacity, it is possible to use strict construction supervision and operational management of activities rather than applying an a priori precautionary principle.

Application of the zonation in descending order of impact

The defined zoning categories are as follows (described from least intensive to most intensive use):

Wildlands Zone (9.3 km² or 92.11%)

This zone almost exclusively includes the steeper gradients and undisturbed areas of the Protected Area.

Managed Resource Use Zone (0.22 km or 2.2%)

The LIUZ covers areas that are moderately disturbed, are easily accessible by vehicle, and in most cases include man-made structures and utilities.

Development and Infrastructure Zone (0.57 km or 5.7%)

The HIUZ covers areas that are heavily disturbed, are easily accessible by vehicle, and in most cases include man-made structures and utilities. Importantly, this includes an area in very close proximity to the main entrance to the Protected Area and the Protected Area HQ.

Buffer Zone

A dedicated buffer zone is an important component of the zonation for Raydah to secure protected integrity and enable close collaboration between protected area staff and neighbouring communities. Conceptually it is envisaged as a 500m buffer, but on ground hard barriers as well as natural catchment boundaries will modify its location as agreements are secured.

The figure overleaf below presents the proposed zoning plan.

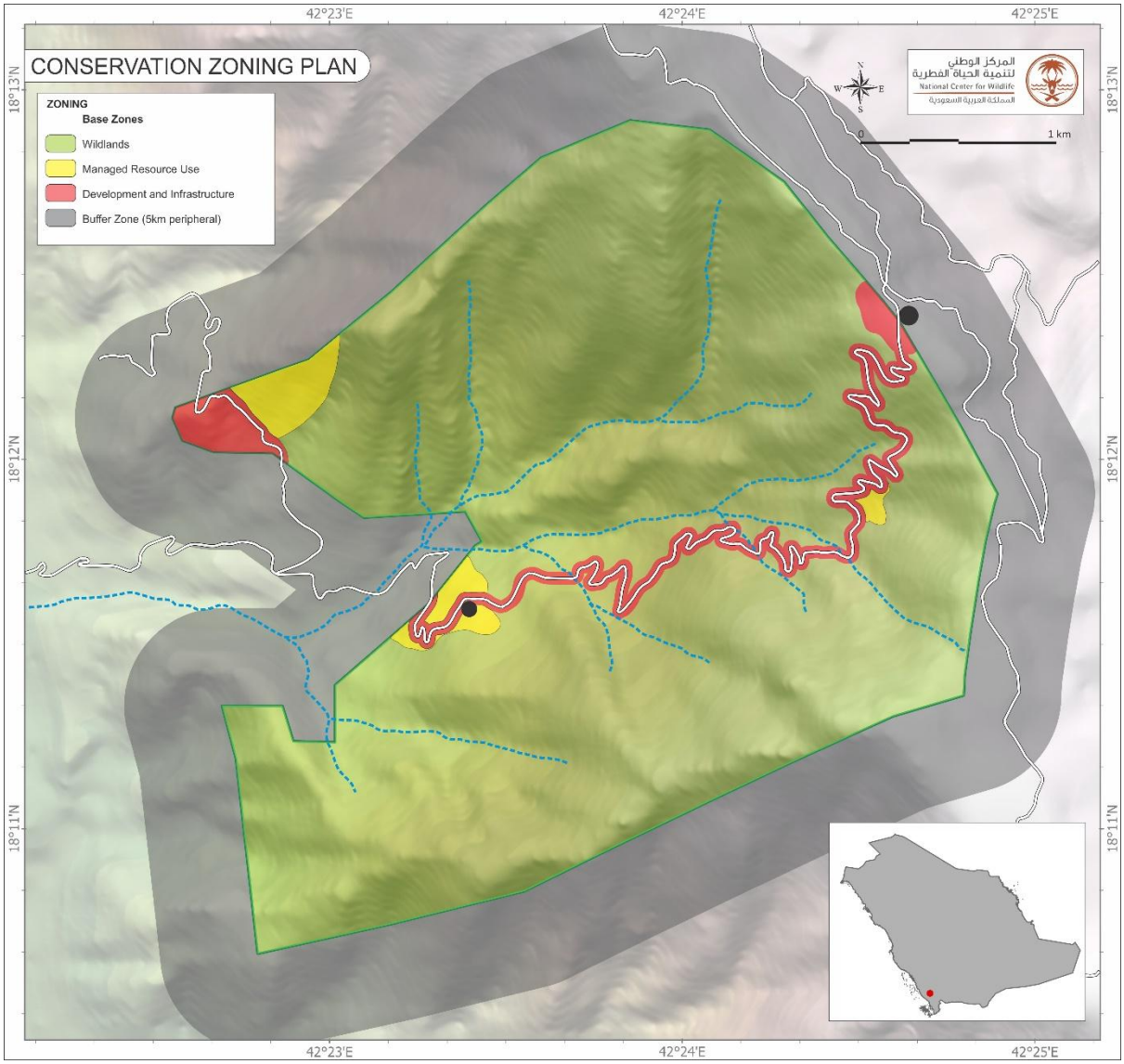


Figure 3: Proposed 2024 Zoning Plan for the Raydah Protected Area.

3. Environmental Protection Framework

3.1 Focus Areas

The focus areas for the environmental protection framework related to the zoning are as follows:

- Development control including the application of the mitigation hierarchy.
- Resource sourcing (e.g. borrow pits for new roads, water abstraction from the scarce natural resources).
- Associated infrastructure – although a zone may have no developments planned it could be impacted by new access roads or powerlines if no proper planning and control is exercised);
- Awareness building amongst staff and relevant stakeholders as to the boundaries of the zones and the associated restrictions.
- Monitoring.
- Feedback and adjustment (if necessary).

3.2 Objectives

The objectives of each zone are as follows:

- Wildlands Zone: aligned with equivalent IUCN II objectives and therefore focused on conservation.
- Managed Resource Use Zone: aligned with equivalent IUCN IV / V objectives, thus aimed at providing opportunities for the development of amenities and for nature-based activities with a low impact.
- Development and Infrastructure Zone: aligned with equivalent IUCN IV / V objectives, aimed at providing extensive facilities and recreational activities to moderate to high-density visitor streams.

3.3 KPIs

The KPIs about zoning are as follows:

- Extent of each zone in km^2.
- Number of keys / beds in each zone.
- Track density (length per unit area) and vehicle density in each zone with particular emphasis on limitation in the Restricted Wilderness zones.

3.4 Tools and Methods

The methods include the following:

- Share the zoning typology with staff to ensure they understand the dos and don'ts associated with each zone.
- Notify relevant external stakeholders, particularly tourism operators, about the boundaries of the zones and their corresponding regulations.
- Build in-house capacity to comprehend zoning maps, zoning typology, and the potential or actual impacts of developments and activities.

4. Program Development and Roadmap

The implementation of the zoning plan will be aided by the following:

- Discuss proposed zoning within NCW (conservation specialists and management staff) as to applicability and detailed boundary alignment.
- Revise zoning based on feedback (including fine-scale adjustment to make it easier to recognize zone boundaries in the field (alignment with roads or track or with natural features);
- Demarcate zone boundaries where necessary (this only to avoid conflict or unintended impacts where zone boundaries are difficult to visualize).
- Ensure in-house capacity (new appointment or training).
- Develop an 'overlay' for sustainable livestock grazing in consultation with the local communities.
- Investigate the need for 'micro zonation' of ecologically sensitive hotspots, where a higher level of protection may be required.