

GUIDELINES FOR THE DESIGNATION OF OFF-ROAD VEHICLE RECREATIONAL USE AREAS IN THE COASTAL ZONE OF KWAZULU-NATAL: A PROVINCIAL STRATEGY.



**Department of Agriculture
and Environmental Affairs
(Coastal Management Unit)**



Coastal Zone Research

12 September 2002

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DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998)

**REGULATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT,
1998:
CONTROL OF VEHICLES IN THE COASTAL ZONE**

The Minister of Environmental Affairs and Tourism has under section 44 of the National Environmental

Management Act, 1998 (Act No. 107 of 1998) made the regulations in the Schedule.

To provide for a general prohibition on the recreational use of vehicles in the coastal zone, to provide procedures for approving the use of vehicles in the coastal zone under specific circumstances, to provide measures for the enforcement of these regulations and to prescribe penalties in respect of contravention.

RECREATIONAL USE AREAS

- (1) The Director-General may by notice in the Gazette designate areas of the coastal zone as recreational use areas within which vehicles may be used for recreational purposes in terms of a permit granted under regulation 6.
- (2) A local authority or a manager of a coastal protected area may apply to the Director-General to designate an area under its jurisdiction as a recreational use area if such local authority or manager has fulfilled the requirements of section 24(7) of the Act in respect of the investigation, assessment and communication of the potential impacts of the activities associated with recreational vehicle use in the proposed recreational use area.
- (3) The Director-General must not designate a recreational use area unless he or she has consulted with each provincial authority, local authority, manager of a coastal protected area and other organ of state that has jurisdiction over any part of the proposed recreational use area.
- (4) The Director-General must not designate a recreational use area unless he or she is satisfied on basis of assessments undertaken in accordance with section 24(7) of the Act that doing so -
 - (a) will not result in significant harm to the environment; and
 - (b) will not seriously affect any rights of the general public to enjoy the coastal zone.
- (5) The Director-General may designate a recreational use area subject to terms or conditions that must be complied with by the authority empowered to issue permits in terms of regulation 6 for the use of vehicles within that area.
- (6) An applicant for a permit to use a vehicle for recreational purposes within a recreational use area need not provide evidence that the requirements of section 24(7) of the Act relating to the investigation assessment and communication of the potential impact of that activity have been complied with.
- (7) The Director-General may by notice in the Gazette revoke the designation of an area as a recreational use area, or change the terms and conditions imposed when it was designated, if the Director-General is satisfied after consultation with each provincial authority, local authority manager of a coastal protected area and other organ of state that has jurisdiction over any part of that recreational use area and on the basis of information that was not considered when the recreational se area was designated, that it is necessary or desirable to do so in order or to protect the quality of the environment within the coastal zone.

1. Introduction

Permit applications for recreational use areas (RUAs) for off-road vehicles (ORVs) on the coast of KwaZulu-Natal (KZN), South Africa should be evaluated within a regulatory framework that must balance human use and habitat protection. People have an inalienable right to the opportunity to escape from the artificial impositions of others, and certain areas must be guaranteed to be free from motor vehicles [1]. Beaches are important open-air recreation sources for most coastal town-dwellers and are regarded as healthy, open places [2]. Consequently, designating RUAs, where ORVs may be used, affects a number of users and user groups and a careful, inclusive approach is needed to accommodate all users when designating these areas. This follows the principles of integrated coastal zone management that dictates that coastal use be defined according to a spectrum of variables.

Scientific studies elucidating the effects of ORVs in the diverse environments of the coastal zone have been scant [3-6]. However, existing studies show that off-road vehicles influence the fauna and flora of beaches negatively, while also contributing to the destabilisation of coastal dunes (see review by [7]). A survey of the perceptions and needs of beach managers with regards to sandy beach conservation concluded that ORVs, together with litter, were the most common problem experienced by beach managers [8]. In addition, 52% of the KZN beach managers that responded to this survey reported negative human impacts on adjoining dunes, mostly caused by ORVs. Physical effects of ORVs on beaches include changes in the density of soil bulk and erosion. Erosion can be substantial on slopes, as sand is forced downhill by vehicles, which can lead to lowering of the sand dunes. Above the high-water mark, vehicles can also break the salty crust on the surface leading to a loss of sand to the sea [9]. ORVs disturb the flora and fauna on beaches by inhibiting the growth of new plants, disturb nesting and resting birds in the 'berm' area above the spring high-water mark and crush ghost crabs along the foreshore. Ghost crabs have been shown to be particularly susceptible to crushing at night as they become disorientated by vehicle headlights, often freezing or running towards the source of light [9].

1.1 *The 1994 policy controlling recreational driving*

A national General Policy was introduced in 1994 to control recreational driving on South Africa's beaches and dunes. Under this policy, vehicular access and use has generally been allowed in less sensitive areas but disallowed in more sensitive areas. Although vehicular access has been controlled by permit systems, administered by regional and/or local authorities in some areas, many municipal authorities simply do not have the capacity to implement the 1994 policy. This resulted in a number of sensitive coastal environments not being adequately protected from the effects of the recreational use of ORVs. Implementation of the 1994 policy in marine protected areas (MPA) was the responsibility of the MPA managers. In the province of KZN, that responsibility has historically been vested in the parastatal conservation body, Ezemvelo KwaZulu-Natal Wildlife (EKZNW), which regulated vehicles on the beaches by the issue of annual permits in KZN, and closed sensitive areas to beach driving. However, the lack of implementation of the General Policy in areas not under the control of EKZNW highlighted the need for national legislation, which has uniform application along the entire coastline of South Africa.

1.2 *The new regulations*

The Minister of Environmental Affairs and Tourism, acting in compliance with his mandate, drafted, debated and passed new regulations to protect the interest of civil society and the environment of the coastal zone. The control of vehicles in the coastal zone of South Africa (Regulation No. 1399 of 2001) became effective on 20 January 2002 in terms of section 44 of the National Environmental Management Act (NEMA; No. 1-7 of 1998). The new regulations make provision for the declaration, by the Director-General of Marine and Coastal Management (MCM), of RUAs in the coastal zone within which vehicles may be used for recreational purposes. Local authorities or the managers of protected coastal areas may apply to the Director-General to designate an area under their jurisdiction as a RUA, if they have fulfilled certain requirements. These requirements (section 27(7) of NEMA) include the investigation, assessment and communication of the potential impacts of the activities associated with recreational vehicle use in the proposed RUAs (i.e. in a comprehensive

environmental impact assessment). The Director-General may not designate RUAs unless there has been consultation with the provincial authorities, local authorities, and managers of the protected area and other organs of state that have jurisdiction over any part of the proposed RUA. The Director-General also has the power to revoke a RUA if necessary (for example if driving is causing significant harm to the environment in this area). Once a RUA has been designated, members of the public have to apply to the governing local authority for a permit to drive in this area. Furthermore, the 2002 regulations will prevail if there is a conflict between any of the provisions stated in them, and either the General Policy, or any other regulations, by-laws or other subordinate legislation relating to the use of vehicles in the coastal zone made under any Act, prior to the 2002 regulations.

1.3 ORVs in KZN

Dealing with such matters in KwaZulu-Natal (KZN), a coastal province of South Africa, is the Department of Agricultural and Environmental Affairs (DAEA), and more specifically the Coastal Management Unit (CMU), the provincial government authority. Although DAEA would issue a record of decision following an environmental impact assessment, this department can only comment on the proposed RUA as an interested and affected party. The final decision remains that of the Director-General of the Department of Environmental Affairs and Tourism, the national counterpart of DAEA. Herein lies the weakness of the regulations. The 2002 regulations do not require applications for RUAs to be motivated in terms of a cohesive provincial or national strategy of coastal use. Such a strategy for coastal use would have to be devised under the auspices of the relevant and existing provincial authority, i.e. the DAEA and more specifically the Coastal Management Unit. The coastal use strategy would need to be compiled using appropriate scientific and conservation expertise and would need to include relevant socio-economic considerations. Such a cohesive strategy for coastal use would exclude the possibility of the *ad hoc* designation of RUAs and would improve the capacity of conservation agencies to monitor and regulate extractive use of coastal resources such as rock and surf fishing and spear fishing.

For this reason, the CMU in KZN approached the Oceanographic Research Institute, a Durban-based non-governmental organisation with good capacity in applied marine and coastal research, to develop an appropriate strategy for coastal use in KZN. The objectives of this study were to collate and map information relevant to the designation of ORV recreational use areas in the coastal zone of KZN as specified by the new regulation and to justify, both scientifically and socially, the siting of ORV recreational use areas. These RUAs were to be defined in terms of size, location and usage and formed part of a provincial strategy for the management of ORVs in the coastal zone of KZN.

2. Rationale

The establishment of a provincial strategy for the siting of RUAs, assisted by the decision support model described in this paper, allows for effective coastal zone management with relation to ORVs. The guidelines for the designation of RUAs in the coastal zone of KZN are governed by the following rationale:

- *The new regulations on control of vehicles in the coastal zone impose a general prohibition on the recreational use of vehicles in the coastal zone (Regulation No. 1399 of 2001).*
- *Off-road vehicle (ORV) use in the coastal zone is not compatible with the natural processes and adaptations of organisms to this environment.*
- *However, under certain conditions, recreational vehicles will again be allowed onto the beach but their use will be restricted to remain within the premise of the new legislation.*
- *Furthermore, it is preferable to establish fewer, well-managed "heavy use" recreational use areas, rather than many "low-use".*
- *Launch sites for watercraft are NOT considered recreational use areas and will be dealt with as a separate issue altogether.*

3. Methods

3.1 Study area

This study was executed within the province of KwaZulu-Natal (KZN), one of four coastal provinces of South Africa (Fig. 1).

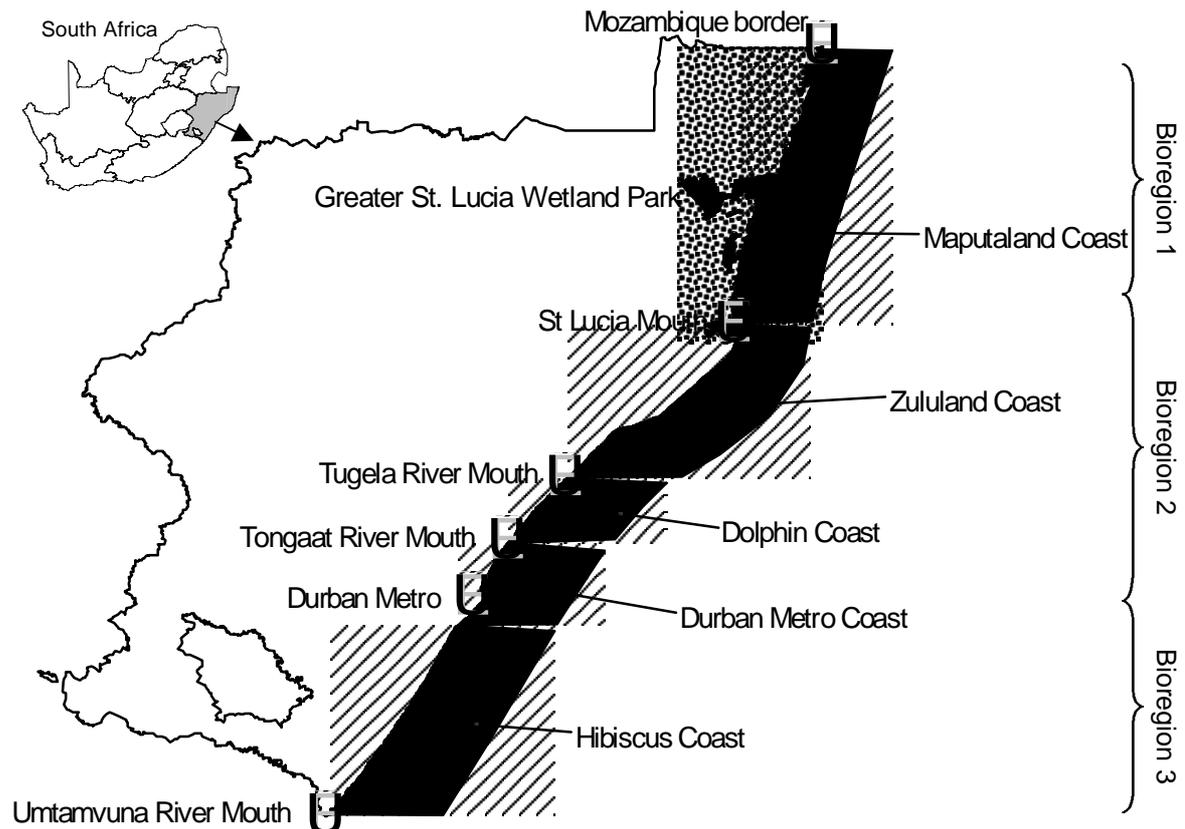


Figure 1. Location of KwaZulu-Natal in South Africa and the boundaries of the five coastal regions and the three biogeographic sub-provinces within KZN).

The province of KZN consists of the Hibiscus, Durban, Dolphin, Zululand and Maputaland coastal regions as defined by the Coastal Policy Green Paper [10]:

- Maputaland is the longest coastal region in KwaZulu-Natal, covering 179 km from the border between Mozambique and South Africa to the St Lucia Estuary. The coast is characterised by interconnected freshwater and estuarine lake systems, forested dunes and wide sandy beaches [10]. Although the region only has three estuaries, more than 80 % of the KZN estuarine area in KZN is made up by the St Lucia and Kosi lake systems [11]. The majority of this coastal region falls within the Greater St Lucia Wetland Park (GSLWP) which was recently declared a World Heritage Site (November 2000). Most of the coastal area in the GSLWP have been proclaimed Marine Protected Areas and the park extends from the border with Mozambique to Cape Vidal in the south. This area was previously zoned for different levels of human use (i.e. sanctuary, restricted and controlled zones) by EKZNW. ORV use in sanctuary and restricted zones has generally been restricted to management and scientific use, while controlled zones were subjected to considerable ORV use before the implementation of the 2002 regulations.
- Zululand is the second longest coastal region in KZN, covering 134 km from the the St Lucia Estuary to the Tugela River[10]. Despite the length of the coastline, only seven estuaries enter the sea along this stretch of coast, which consists primarily of long, uninterrupted sandy beaches, backed by high, forested dunes and broad coastal plains[10]. The area to the north of the Tugela River extending to the Mlalazi River consists of the only major prograding dune system along the KZN coast [12].
- The Dolphin Coast, 70 km from the Tugela River Mouth to the Tongaat River, is characterised by coarse sandy beaches enclosed between rocky outcrops[10].
- Durban Metro is the smallest coastal region, that stretches for 52 km from the Tongaat River in the north to the Umkomaas River in the south[10]. Nine estuaries are found in

this region and the coastline consists of fairly long, coarse sandy beaches, which are interrupted by occasional rocky outcrops and backed by low dunes[10].

- Finally, the Hibiscus Coast, 127 km from the Ilovo River to the Umtamvuna River, contains forty-six estuaries, the highest number and density in KZN [13]. The beaches are predominantly coarse and sandy and are interrupted by estuaries, occasional rocky headlands and wave-cut platforms[10].

Historical use of ORVs in the coastal zone of KZN has mostly been limited to the extensive sandy beaches north of Durban Metro and more specifically on the Zululand and Maputaland coastal regions (Table 1). Ironically, many of the beaches in the latter areas are located within the boundaries of the Greater St. Lucia Wetland Park. ORV use on the Hibiscus Coast has historically been low, mainly because of the unsuitable physical attributes of the coastline in that region (i.e. numerous estuaries and rocky headlands).

Table 1.

Historical use of ORV (1995-2001) in the five coastal regions of KwaZulu-Natal captured from daily Ezemvelo KwaZulu-Natal Wildlife patrols for the National Marine Linefish System (Pradervand and Mann unpublished data).

Coastal region	Total ORV count (1995-2001)	Average annual ORV count
Maputaland Coast	247 317.4	35 331.1
Zululand Coast	129 516.0	18 502.3
Dolphin Coast	10 924.4	1 560.6
Durban Metro Coast	4 932.0	704.6
Hibiscus Coast	19 646.6	2 806.7

3.2 Decision support system

A panel of experts comprising scientists and coastal zone managers was convened as a RUA Task Team. This panel identified seven coastal attributes or characteristics with spatial dimensions that immediately disqualified an area from being considered for a RUA (Table 2). Spatial data relating to the seven exclusions were either extracted from existing data sources or were created as new overlays for the GIS project depicting the KZN coast (Table 3).

Table 2.

Seven attributes or characteristics of the coastal zone of KwaZulu-Natal that would immediately disqualify such an area from being considered as a potential RUA.

Exclusion	Description /Motivation
1. Any area outside the hard sand of the intertidal zone.	The intertidal zone of beaches is washed twice a day by tides. Neap tides reach above midway on the shore and spring tides reach up to the driftline bordering the frontal dunes. Vigorous swash and wave action mobilises large volumes of sand that regularly reshape the beach face. Beaches are malleable and resilient and can readily withstand moderate levels of human and vehicular activity [14]. However, human activity that removes or damages the frontal dune system and its vegetation cover is potentially the most destructive as these dunes represent the natural protective buffer of the coast [14-16]. Furthermore, the drift lines are the precursors of new sand dunes and accreting beaches and can also moderate the rate of erosion when new vegetation is established at the base of the dune scarp (for complete reference and discussion see Van der Merwe, 1988). Driving should therefore not be allowed in the upper backshore area, particularly in the areas of drift and only during daylight hours [5, 7].
2. Fragile, rare, relict or vanishing vegetation	Fragile, rare, relict or vanishing vegetation such as mangrove forests, wetlands, saltmarshes and other ecologically sensitive areas such as estuaries and river mouths [3, 4, 11, 13, 17]. This sensitivity is measured in relation to the geomorphology and sedimentology, hydrodynamics, chemistry, zooplankton, macroinvertebrates, ichthyofauna and estuarine birds [17]. However, these are all integral parts of the estuarine ecosystem and hence overall sensitivity must be measured as a combination of all the separate sensitivities. Boon et al. (1999)

	concluded that vehicles should be completely banned from the estuarine environment by virtue of its extreme biological importance. Estuaries were graded as exclusion zones regardless of their current health status as determined by [13]. Exclusion of estuaries and river mouths also safeguards the maintenance of key ecological processes associated with such environments.
3. Wildlife sanctuaries and reserves	Wildlife sanctuaries and reserves managed by an existing integrated management plan (IMP) were excluded based on specific zonation and conservation status within such a management plan (e.g. the sanctuary and restricted zones in the GSLWP). As far as practicable, the pattern of zones within a multiple-use marine protected area should avoid sudden transition from highly protected areas to areas of relatively little protection. "Buffer" zones should be considered wherever possible [18].
4. Unsuitable physical attributes of beaches or natural barriers	Unsuitable physical attributes of beaches or natural barriers such as rocky headlands, ledges and wavecut rocky platforms were considered exclusion zones as these require ORVs to pass between the rocky areas and the dunes. Although vehicles can sometimes cross these structures under favourable conditions during low tide, it remains a function of the waves, currents, tide and wind that cannot be predicted and these areas were therefore not considered. ORVs may not venture out of the intertidal zone of a beach, and crossing or bypassing a rocky headland or wave cut platform will necessitate driving on the backshore (see exclusion 1). Vehicles attempting to cross these structures increase the likelihood of erosion along the dune line while also damaging dune vegetation.
5. Areas of fragile natural features or scientific interest	Areas of fragile natural features or scientific interest such as turtle nesting sites during nesting season (October-February) and threatened bird roosting and nesting sites were excluded [19]. South Africa is a signatory to the Memorandum of understanding on the conservation and management of marine turtles and their habitats of the Indian Ocean and South-East Asia and is committed to a number of principles regarding turtle conservation [20]. In this memorandum it was noted that marine turtles have a priority for conservation action through their listing in the respective texts or appendices of a number of international protocols [20]. Signatories also acknowledged that human activity such as tourism, destruction or modification of habitats and coastal development might threaten marine turtle populations directly or indirectly.
6. Areas of potential beach user conflict	Areas where vehicular activity would adversely affect other users of natural areas such as established swimming beaches (e.g. shark netted beaches) to avoid possible beach user conflict. Studies have shown that a large proportion of beach users, both local and international, enjoys the sun and beach as well as the experience of nature and landscape. Vehicle use on beaches adjoining areas of outstanding public interest or scenic areas may also be restricted. The public's recreational interests and priorities at each beach and region of the coast should be considered before an ORV RUA is considered. A survey of ORV use in the Eastern Cape reported that beach users found ORVs disturbing because they jeopardised their safety, ORVs are noisy, churn up sand, make the beach look untidy and destroy its pristine atmosphere [6]. The protection of public safety is the primary concern although well-managed beach access points that can accommodate both pedestrian and ORV traffic need to be examined independently. Where there is conflict between passive beach users and ORV users, passive areas should have priority of consideration as they cause the lesser environmental and social impacts.
7. Unidentified or unexplored key ecological processes	Cognisance must be taken of possible ecosystem-wide changes caused by ORVs in RUAs. The protection of biodiversity in the three biogeographic zones of KZN has absolute priority and any activities that could potentially induce negative ecosystem effects should not be considered. The lack of information on such systems prevented the effective application of this exclusion and thus it played no role in the identification of RUAs. However, ecosystem changes due to ORV use cannot be discounted and these may be included following additional studies. Long-term monitoring needs to be an integral part of an integrated management plan for a declared RUA.

A model of potential RUAs in KwaZulu-Natal was created with a GIS, using a 100 m grid cell along the coast and the data relating to the seven exclusions (Table 2). Each 100 m cell was assigned a value of 0 or greater in the GIS project depending on whether it intercepted with, or was within 100 m of exclusions (e.g. An estuary mouth). A zero value was designated if there were no underlying exclusions. The cumulative effect of multiple exclusions in one coastal block was not considered and once a cell was designated a value greater than zero it was considered to be exempt from being considered for a RUA (see Fig. 2).

Table 3.
Spatial data used as overlays on a GIS map of the KZN coast.

Dataset name	Description	Source
KZN boundary	Boundary of KwaZulu-Natal	Department of Traditional and Local Government Affairs
KZN beaches	Attributes and amenities of the beaches of KZN	KwaZulu-Natal Tourism Authority
Existing provincial wildlife reserves	Network of existing wildlife reserves, including the 2 existing MPAs in KZN	Ezemvelo KwaZulu-Natal Wildlife
Coastal sensitivity atlas	Coastal sensitivity	[21]
Mangrove distribution	Mangrove locations, species and area as attributes	[22]
Estuary location and attributes	Attributes such as estuary class, mouth status, size, water quality etc. are included	[23]
Biogeographic zones	Biogeographic zones based on intertidal ecosystems	[24]

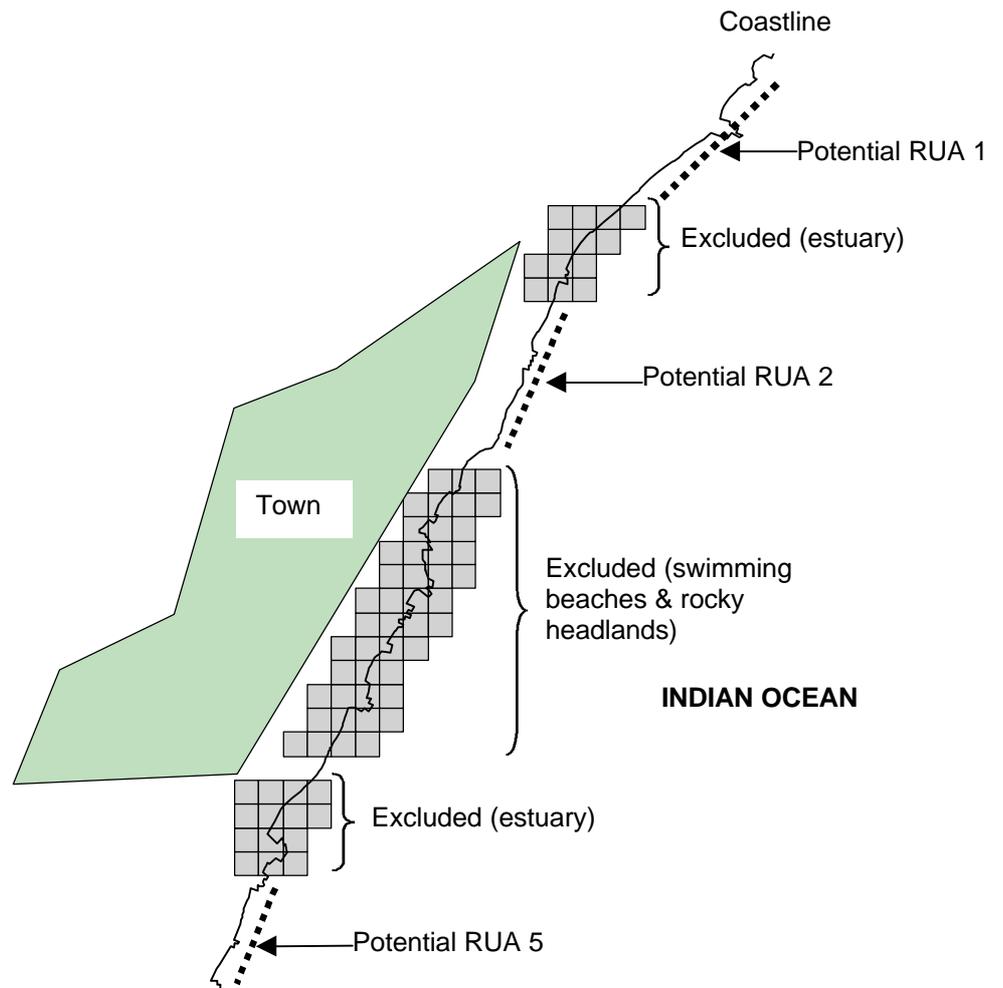


Figure 2. Example of the decision support model for the designation of recreational use areas. The areas depicted are on the KZN south coast (Hibberdene). The squares represent the coastal blocks (100m x 100m) with intercepting exclusions.

Once areas exempt from RUAs were identified, the remainder of the coast was divided into coastal segments (≥ 2 km) which were considered potential RUAs. The percentage of total coastline protected from ORVs was then calculated. The coast was analysed according to biogeographic regions (see discussion) and the five coastal regions outlined in the Coastal Policy Green Paper[10]. The size and number of segments in each region was determined.

3.3 Further evaluation of potential RUAs

Coastal areas (> 2 km) not disqualified by the seven exclusions, may be considered for RUAs. However, a number of other considerations have been identified to ensure the maintenance of conservation and user logic. Thus, in addition to the seven immediate exclusions, there might be other considerations precluding an area from being declared a RUA. The other considerations are not part of the “up-front” exclusion assessment but are all issues that needs to be addressed by the environmental impact assessment that follows the application for a RUA.

3.3.1 Proposed and desired Marine Protected Areas (MPAs)

Coastal areas that have been identified as possible future MPAs should not be considered for RUAs until the conservation status of the area has been declared by the relevant government body and an integrated management plan has been developed. Some areas along the KZN coast have previously been identified as potential MPAs (Table 4;[25-27]).

Table 4.
Proposed MPAs along the coast of KZN [25-27].

Name	Southern Border	Northern Border
KZN South Coast		
Southern Park	Isipingo Estuary	Brighton Beach
Umdoni Park Reserve	Mkumbane River	Umdoni Point
Aliwal Shoal MPA	Mzimayi River	Ngane River
KZN North Coast		
Umhlanga Nature Reserve	Breakers Hotel	Umhlanga Estuary
Amatikulu & Umlalazi Nature Reserve	1 km north of Tugela River Mouth	Umlalazi Estuary
Dolphin Coast MPA	Mhlali River	Mvoti River

3.3.2 Subsistence fishing

Designation of RUAs should be avoided in areas where inshore resources are being accessed by subsistence fishers. Proposed subsistence areas, as well as proposed “mussel sanctuaries” which are part of the subsistence implementation process and the mussel management plan respectively, could potentially lead to user conflict in a proposed RUA.

3.3.3 Biodiversity targets

Furthermore, it is essential that protection is afforded to an acceptable proportion of each representative shoreline habitat, and that conservation targets are achieved using a biogeographic approach. Areas in which biodiversity are perceived to be diminishing should not be considered for RUAs.

The effective conservation of biodiversity of KwaZulu-Natal, is dependent on adequate protection within each biogeographic province along our coast (see Sink 2001 for review). Furthermore, protection should not only be extended to biogeographic regions but should also be extended to cover the physical heterogeneity and the variety of biological communities. An international standard to ensure that adequate biodiversity protection is achieved is the need to give at least 20% of each biogeographic province protection status [28]. The contiguous St Lucia and Maputaland Marine Reserves fall within the sub tropical East coast province which extends down the east coast of Southern Africa from North of Maputo to East London [29]. Three biogeographic sub-provinces have been identified as contributing towards the biodiversity of KZN. These are from north of the Mozambican border to Cape Vidal, Cape Vidal to Durban and from Durban to south of the Transkei border [24](see Fig. 1).

3.3.4 *Other considerations*

Other factors that need to be considered before an area can be declared an RUA are:

- Only areas that were subjected to significant historical ORV usage at the time of the implementation of the 2002 regulations should be considered for RUAs. Data-sources for ORV use in KZN include the NMLS and EKZWN beach permit sales (where applicable). The historical use information should be considered the “ceiling” value for ORV in any area sufficiently covered by the NMLS data. However, the carrying capacity of each proposed RUA needs to be independently assessed.
- RUAs and beach access points should in no way interfere with, negatively affect or detract from the conservation value of existing Admiralty Reserves and Coastal Green Wedges as identified in the relevant reports [30, 31]. Areas of indigenous coastal vegetation have to be noted and alternative sites must be considered.
- Where sensitive areas or sites exist within a designated RUA, a buffer protection zone should be declared. This buffer zone must be between the normal high water mark and the edge of the sea or 20 m from the nearest dune vegetation, and 100 m from the nearest bank of an estuary.
- Beach areas with hazardous conditions for ORV use should not be considered for RUAs. Environmental impact assessments should comment on beach slope, grain size, beach width and length, and beach access points.
- Small beaches that are limited in space for both pedestrian and vehicular use (<1 km from nearest car park) should not be considered for RUAs.
- Specific areas of archaeological interest and cultural significance should not be considered for RUAs. Areas of interest were identified by Amafa/Heritage KwaZulu-Natal but no exact locations were provided. Applications for RUAs must address the issue of archaeological/cultural sites, and an endorsement from Amafa is advisable.
- Cognisance must be taken of the impact of the beach vehicle ban on past beach users. Where possible user groups with a history of ORV beach use should be consulted and accommodated within the premise of the 2002 regulations.
- Equitable access to all user groups must be considered when proposing a RUA and its management.

3.3.5 *Beach access considerations.*

- No new ORV access points to the beach should be considered.
- Areas where erosion or other soil or resource damage will occur as a result of ORV accessing the beach should not be considered for RUAs.
- The availability, convenience, conservation logic and safety of existing vehicle parking and pedestrian access and facilities must be taken into consideration when determining the need for ORV parking and recreational travel on the beach itself.
- Only existing, appropriate beach access ramps should be considered for vehicular traffic.

3.3.6 *Beach management considerations*

- RUAs should not be established where enforcement and monitoring of ORV use on beaches are inadequate.
- The public services involved in the management of beaches must be considered but service access onto the beach should not necessarily be opened for public vehicle access.
- Adequate vehicular access for shore patrols, law enforcement, search and rescue, property protection and control of litter and sanitation will be required at beaches.

4. **Discussion**

The establishment of RUAs along the KZN coastline relies primarily on the disqualification of areas according to seven measurable exclusion parameters. Thus the initial phase, or “first cut”, disqualifies areas along the coast that would be unsuitable or unjustifiable for ORV use. More than 50 % of the coastline was disqualified from being considered for RUAs following the first step of the decision support system. This already provides a number of important guidelines for managers and decision-makers to follow when considering applications for RUAs. The seven exclusions might not always, in all cases, be the deciding factor in the siting of RUAs but serves as a guide for the areas that would probably be disqualified by an EIA. The identification of “no-go” areas is followed by a careful consideration of potential

RUAs according to other important factors. These other considerations need to be addressed by the EIA process that accompanies the application for a proposed RUA. A negative response to individual considerations does not necessarily imply immediate disqualification, however, a number of negative responses will likely cause an area not to be considered for a RUA.

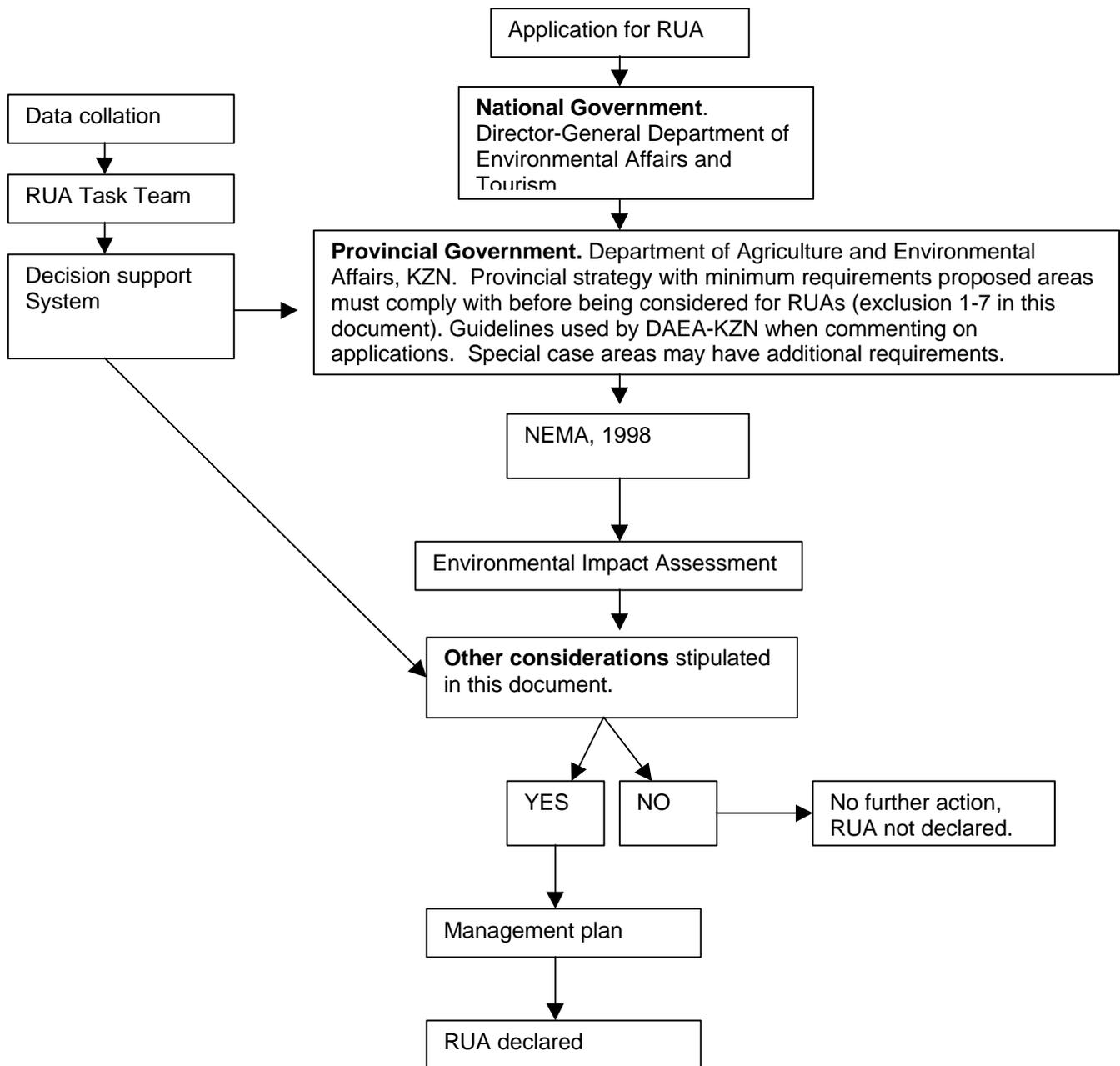


Figure 4. Flowchart of decision support system following a RUA application.

The promulgation of the new legislation proved to be well received by a large section of the population in South Africa, although there has been strong criticism from ORV users, particularly the recreational and competitive fishing community. The expeditious promulgation of these regulations has caught most of the provincial governments unprepared and has placed a considerable amount of social and political pressure on these government departments to establish RUAs as specified by the regulations. However, with the conception of the 2002 regulations arise an unique opportunity for coastal governments, conservation managers and local authorities to contribute towards a strategy of integrated coastal management with a strong grounding in conservation logic.

One of the major concerns when proposing RUAs along the coast is that due to a lack of scientific and social research it is nearly impossible to motivate why certain areas should or should not be considered for RUAs. Very few studies elaborate on the complexities of ORV impacts in the coastal zone. Primarily, the decision support model attempts to identify

portions of the coastline where RUAs would be inappropriate with regards to conservation principles and other obvious conflicts.

Although this decision support system can still be manipulated, it provides a logical decision support system that will prevent *ad hoc* applications from being considered. An important aspect of the model is the need for good quality spatial data and sufficient human capacity to manipulate data in the GIS. This model, by virtue of the seven exclusions, can be criticised for being inflexible and in some cases being unreasonably stringent. However, it does not allow for subjectivity, biases, and provides a socially and scientifically justifiable motivation for not considering certain coastal areas suitable for ORV use. Integrated coastal zone management dictates that coastal use be defined according to a spectrum of variables. Similarly, RUAs influence a diverse number of users and user groups and a careful inclusive approach in their designation is needed to address all the concerns.

5. Acknowledgements

The Recreational Use Areas Task Team and the organisations they represent are gratefully acknowledged for the time spent discussing and reviewing the many drafts of this document. The Task Team, in addition to the authors was, Michael Schleyer (Oceanographic Research Institute), Ian Patrick (Ezemvelo KwaZulu-Natal Wildlife), Rob Broker (Ezemvelo KwaZulu-Natal Wildlife), Ken Breetzke (Urban Strategy, Durban Metro Council), Rudy van der Elst (Oceanographic Research Institute). Additional comments relating to the Greater St. Lucia Wetland Park were provided by Jean Harris and Ken Morty (Ezemvelo KwaZulu-Natal Wildlife), Andrew Zaloumis (Greater St. Lucia Wetland Park Authority), Mike Bouwer (Greater St. Lucia Wetland Park Authority) and Ashleigh McKenzie (Acer Africa).

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