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PART 1:

BACKGROUND

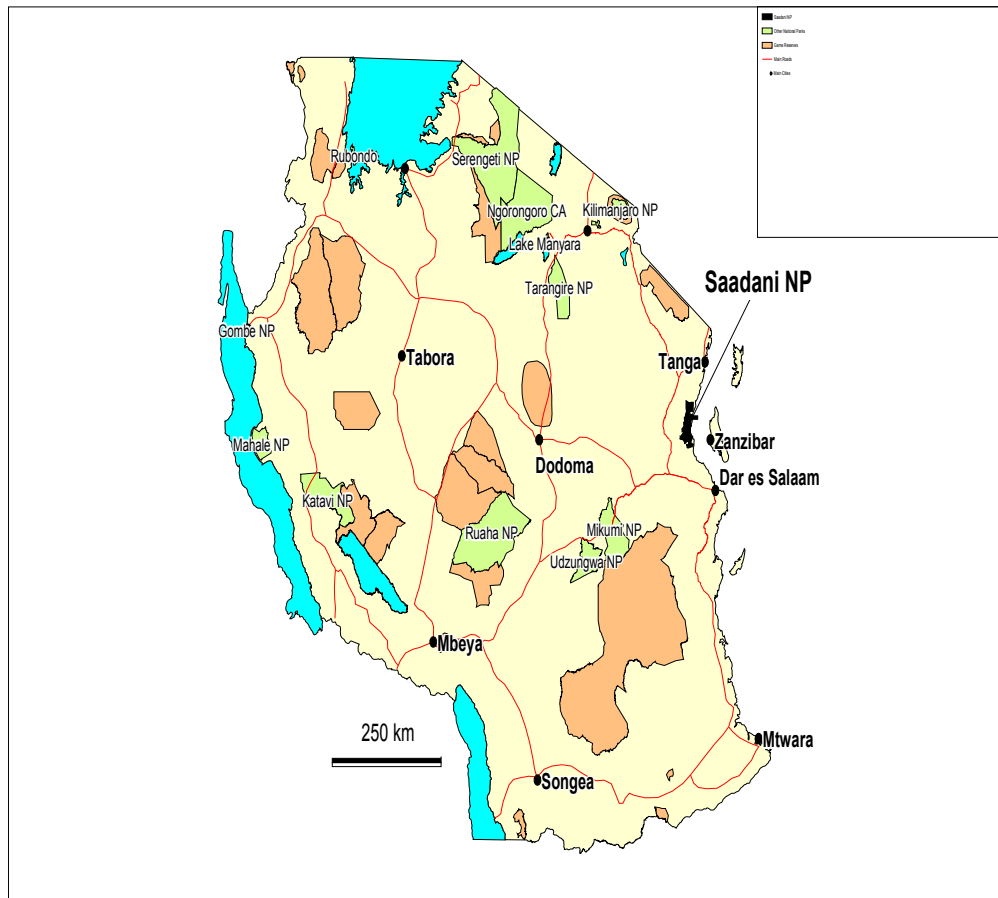
1 PHYSICAL AND BIOLOGICAL ENVIRONMENT

This section summarises information pertaining to the physical and biological environment of the Saadani National Park and “ecosystem”.

1.1 LOCATION

The proposed Saadani National Park (approx. 1 100 km²) is located 80 kilometres north of Dar es Salaam on the Tanzanian coast (Figure 1). The park headquarters are almost directly opposite the town of Zanzibar on Unguja island.

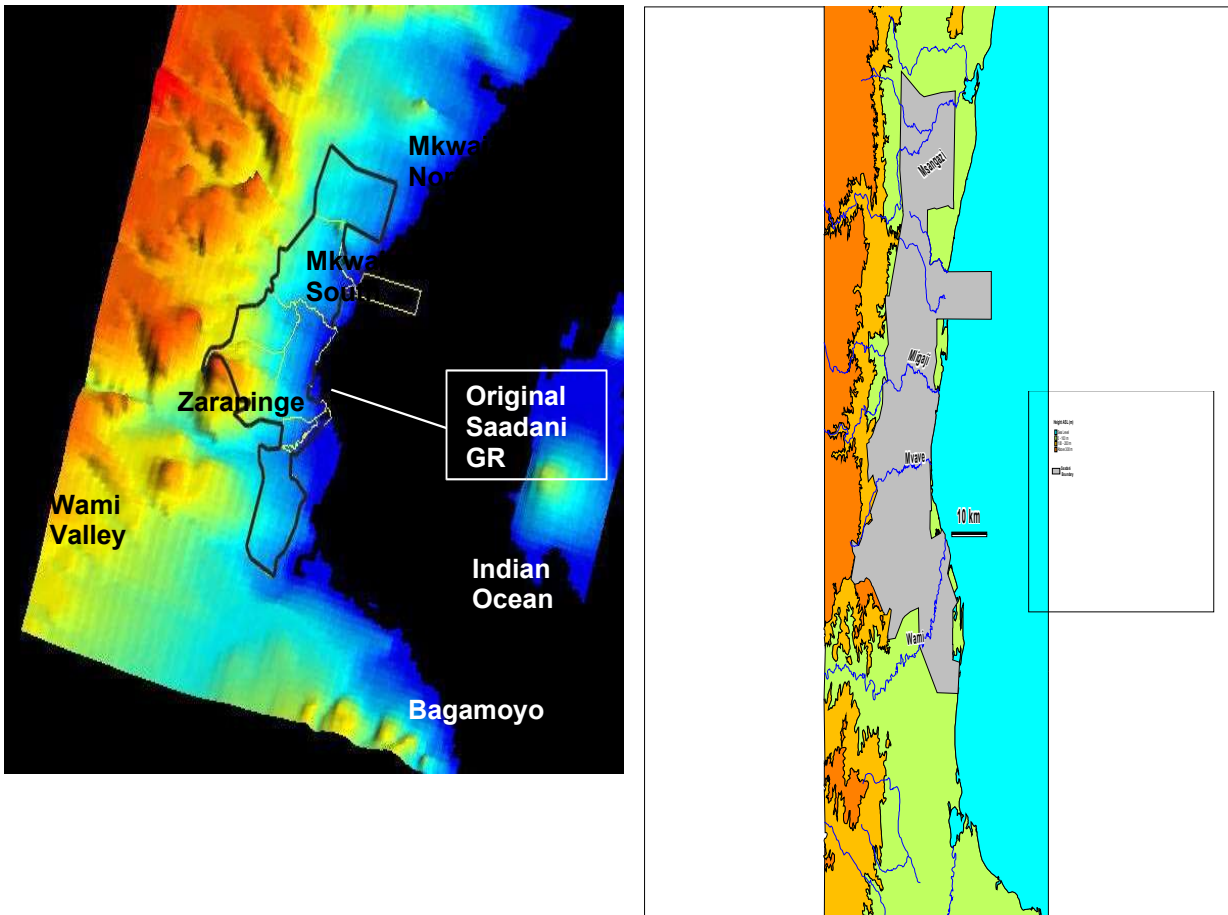
Figure 1: Location of the Saadani National Park



1.2 PHYSICAL FEATURES

Most of the national park lies below 100 m. asl, with higher ground to the south-west (Figure 2). Generally the park comprises coastal plains and low hills. The basic relief of the area runs north-south and this has a bearing on the current use of the park with the higher more broken ground to the west of the railway line being relatively undeveloped.

Figure 2: Relief of the Saadani NP
(Left image from 1 km DTM, Right image from 100 m contour lines)



The Kiono plateau in the south-west supports the Zaraninge forest. The northern part of the park (Mkwaja North) is more broken and rolling hill country than the south eastern areas which are on flatter ground. The Wami valley is not a major topographical feature where it runs through the park.

1.3 GEOLOGY AND SOILS

The geology of the area is characterised by imbedded sediments of sandy clays and clayey sands with a few isolated layers of pure sands or clay material. Gravel, mostly quartz and feldspar are found scattered in the clay matrix.

The south east of the area is dominated by quaternary sediments due to alluvial and coastal depositions. This includes the Wami river basin.

Soils generally have a poor to moderate nutrient content and are poorly drained due to high clay content. Three main types occur in the area:

1. "Black cotton" soils in the lowlands of Mkwaja south and the original Saadani Game Reserve

2. Stony or sandy loams over clayish subsoil on slopes and higher ground
3. Reddish loamy sands with a thin dark humus layer on hilltops and the ridges of escarpments (this includes the Zaraninge forest).

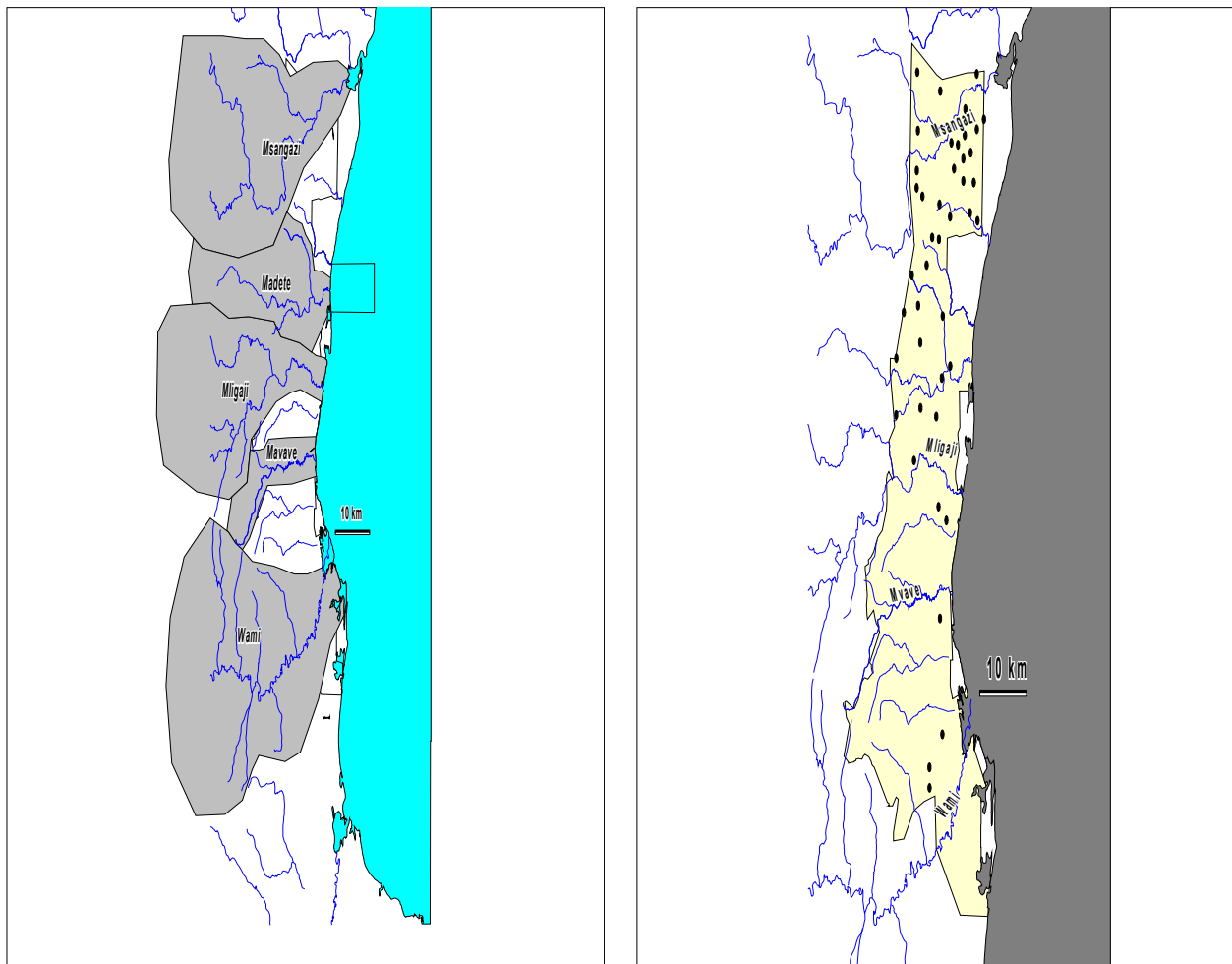
1.4 HYDROLOGY

There is only one perennial river in the area – the Wami. Other substantial, but annual rivers, are the Msangazi, Madete, Mligazi and Mavave (Figure 3). Some of these rivers can flow for up to two months on the surface during the rains.

Generally drainage in the park is poor, especially as the topography below 20 m. asl is very gently sloping. Most rivers form swamps in the area adjacent to the sea and the tides can flow inland for up to 1.5 kilometres.

Owing to the poor drainage and lack of surface water a number of dams have been constructed inside the park (Figure x). These are more numerous on the old Mkwaja ranch (north and south) as they were used to water livestock in past. A number of these dams were damaged or completely destroyed during the 1997 *el nino*.

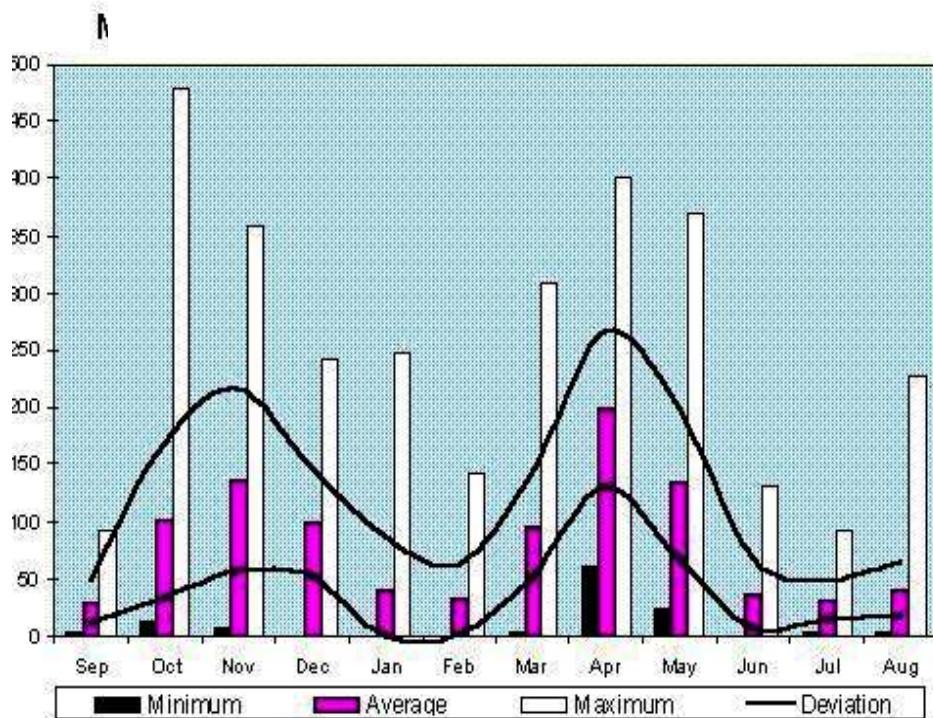
Figure 3: Drainage basins and artificial water points in Saadani National Park



1.5 CLIMATE

Rainfall in the area follows a bi-modal pattern with rainfall peaks between March and May and a smaller peak between October – December (Figure 4). The rainfall varies from 820 mm (Wami area) to 1000 mm (Mkwaja Ranch). Higher rainfall is experienced at higher altitudes. As it is on the coast local rainfall is experienced throughout the year. The very high levels recorded for October maximum are due to the *El Nino* phenomenon in 1997 (Winnege, 1999).

Figure 4: Rainfall from Mkwaja north ranch
 (from Winnege, 1996)



Temperatures are typical of the equatorial coastal region of east Africa with an annual maximum temperature of 29.7°C while the minimum is 21.9°C (Minja *et.al.*, 1999). July and August are the coolest months while January is the hottest.

Relative humidity is high ranging from 79% in October to 91% in April. The annual average is 85%.

Evaporation (measured at Pangani and Handeni) is thought to be between 1 800 to 2 000 mm per annum (Winnege, 1999).

1.6 VEGETATION

The Saadani ecosystem supports four main vegetation types

1. Forest savannah mosaic
2. Mangroves
3. Coastal Forest
4. Orchards

These are briefly described below (after Cauldwell, 2000; Bloesh and Kloetzli, 2002)).

1.6.1 Forest and Savannah Mosaic

The forest savanna mosaic encompasses the majority of the vegetation within the ecosystem. Within this broad heading, groups can be further separated into the following distinctive vegetation units:

- *Acacia zanzibarica*/sejal woodland;
- Palm-dominated grassland;
- Evergreen thicket/savanna mosaic;
- Riverine forest;
- Open grassland.

Acacia zanzibarica almost entirely dominates the *acacia* woodland. This type of vegetation supports limited biodiversity and is widespread in the coastal regions. Much of the area in central Saadani was previously cleared for sisal plantations and *A. zanzibarica* (classified as a weed by some authors) may well be a result of re-growth into these areas.

Mkwaja ranch has a high encroachment ratio (at least 3 times that of Saadani "proper") and most of this encroachment is by *A. zanzibarica* followed by *Hyphanae compressa*, *A. nilotica*, *A. mellifera* and *Dicrostachys cinerea*. It is believed (based on old aerial photography) that this area was much more like the area close to Saadani prior to being utilised as a cattle ranch. This is probably a result of management practices for cattle ranching (enclosures for over-nighting), overgrazing of sensitive areas, successful control of fires *etc.*

The palm-dominated grasslands within the ecosystem are well developed and attractive. *Hyphanae* palms, interspersed with grasslands, dominate. The soils are usually poorly drained, sandy clay. This type of vegetation is widespread in coastal areas of Tanzania.

Evergreen thicket/savanna mosaic is comprised of small patches of evergreen thicket interspersed by tall *Terminalia* savanna grassland. The small thicket patches (usually less than a hectare in size) consist of dense woody vegetation with a high species diversity. The vegetation supports a wide variety of animals, the most notable being bushbuck.

Riverine forest occurs along the courses of all rivers in the park, the most conspicuous being on the Mligaji, Mvavi, Sima and Wami. This vegetation supports a wide diversity of plant and animals species with the black-and-white colobus monkey being especially prominent. The Sima forest was disturbed by wood cutters for the firewood needed during "artisanal" salt extraction procedures in the past.

The large open grassland areas contain "black cotton" soil that renders the roads impassable during the rains. These areas are virtually devoid of trees but support a very productive grass layer. They are well utilized by grazing game and are particularly favoured by concentrations of Bohor reedbeek.

1.6.2 Lowland Coastal Forest

The coastal forests of Tanzania are small geographically isolated islands of evergreen or semi-evergreen closed-canopy forest up to 50 kilometres inland from the Indian Ocean and generally on the tops of hills. There are 13 known examples of this type of forest in Tanzania which cover approximately 200 km² in total. The largest of these (approximately 50 km²) is the Zaraninge (or Kiono) forest found inside the proposed Saadani National Park.

This is a homogeneous forest with changes in vegetation structure occurring when it passes off the plateau. The forest can be subdivided into six main vegetation groupings (Zaranninge Draft Management Plan, 1999). These are

1. *Manilkara sulkata* dominating the canopy in undisturbed forest on the ridge tops
2. *Scorodophloeus fischeri* dominating the canopy in undisturbed forest on the valley sides
3. *Haplocoelopsis africana*, *Brachylaena huillensis*, *Bombax rhodognaphalon* and *Tarenna drummondii* in the disturbed canopy
4. *Cynometra webberi*, *Angylocalyx braunii* and *Diospyros verrucosa* in undisturbed canopy on the plateau
5. *Baphia kirkii* and *Manilkara sansibarensis* in undisturbed areas
6. *Cynometra sudheliensis*, *Garcinia burchananii* and *Drypetes arguta* in steeply sloping areas where there have been considerable disturbances in the past.

The forest inventory is still ongoing but there are reports of a new species of *Kalanchoe* and new genus of trees is suspected. Doubtless future studies may reveal more.

Other vegetation types associated with the forest include a woodland/wooded grassland area on the coastal plain surrounding the forest. This includes *Terminalia boivinii*, *Diospyros consolatae*, *Albizia petersiana*, *Mallotus oppositifolius*, *Grewia microcarpa*, *Sterculia africana* and *Menya tetraphylla*.

A small wetland is present in the forest which contains a diverse sedge and grass flora.

1.6.3 Mangroves

Mangroves are a loosely defined range of vegetation found on saline ground within one kilometre of the shore. There are several species of mangroves which include *Avicennia marina*, *Rhizophora mucronata*, *Bruguiera gymnorrhiza* and *Ceriops tasgal*.

Given the importance of mangroves to prawn fishing communities along the Saadani coastline, protecting the trees from the short-term gains of charcoal producers is of critical importance to the park.

The Wami estuary in particular provides an abundance of nutrients that sustain the prawn population along the verge of the nearby tidal zone. The mangrove swamps are also important for biodiversity. Broadly, the mangrove vegetation can be superficially separated into two types:

Wet mangroves: Growing between the high and low water marks in deep black clay that is saturated by salt water twice a day, these taller trees are better protected because of the muddy conditions and the density of their aerial roots.

Dry mangroves: These are less developed and, because they are based on higher ground that is only flooded under extreme conditions, they are more vulnerable to "timber poachers" who fell them for charcoal and poles.

1.6.4 Plantations

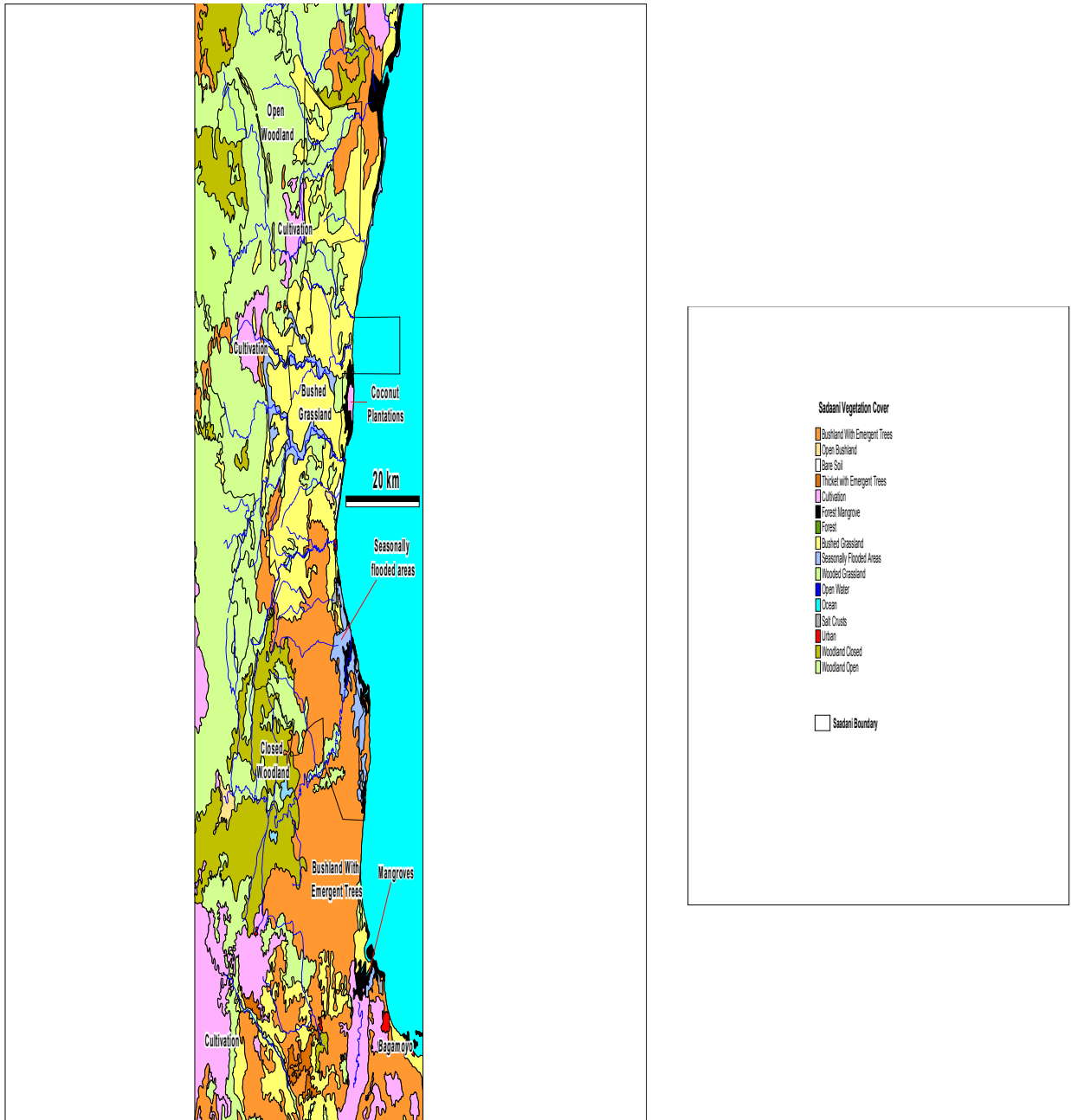
This type of vegetation encompasses non-indigenous (known as "exotics") such as coconut plantations, mango trees, eucalyptus, *Mvinge* trees and *Opuntia*, a weedy cactus. The large coconut plantation at Uvinje settlement is one example of "exotic" orchards that are generally sparsely dispersed but are most noticeable along the coastline.

1.6.5 Others

To the above four categories should be added the significant patches of "bare soil" that are also a feature of Saadani. Salt in the soil inhibits the growth of all but the most tolerant species such as small and unusual succulents as well as some small bushy islands.

Interpretation of 1997 Landsat imagery determined a number of different vegetation cover types (Figure 5). These classifications are based on ground-truthing of pixel colouration on the images and the exercise was carried out for the whole of Tanzania.

Figure 5: Land cover of the Saadani "Ecosystem" based on 1997 Landsat imagery



This analysis shows that a little over 50% of the park is covered with unmodified bushed grassland and bushland with emergent trees (Table 1). However, 22 % of the park is covered by modified vegetation. Most of this is on the old cattle ranching areas of Mkwaja north and south.

Open woodland (presumably a miombo derivative) covers 10% and closed woodland (riverine and coastal lowland forest covers 3% of the park. Seasonally inundated areas account for 5% and mangroves for 1%. A further 5% is unassigned in this analysis and includes patches of bare soil salt crusts.

Table 1: Vegetation cover of the Saadani NP

Vegetation Cover Type	Area km²	%
Grassland (Bushed)	307	27%
Bushland With Emergent Trees	267	24%
Woodland Open	106	10%
Woodland Closed	32	3%
Wooded Grassland	34	3%
Seasonally inundated	52	5%
Mangroves Total	8	1%
Grassland (Modified)	139	12%
Woodland (Modified)	78	7%
Bushland (Modified)	29	3%
	1130	

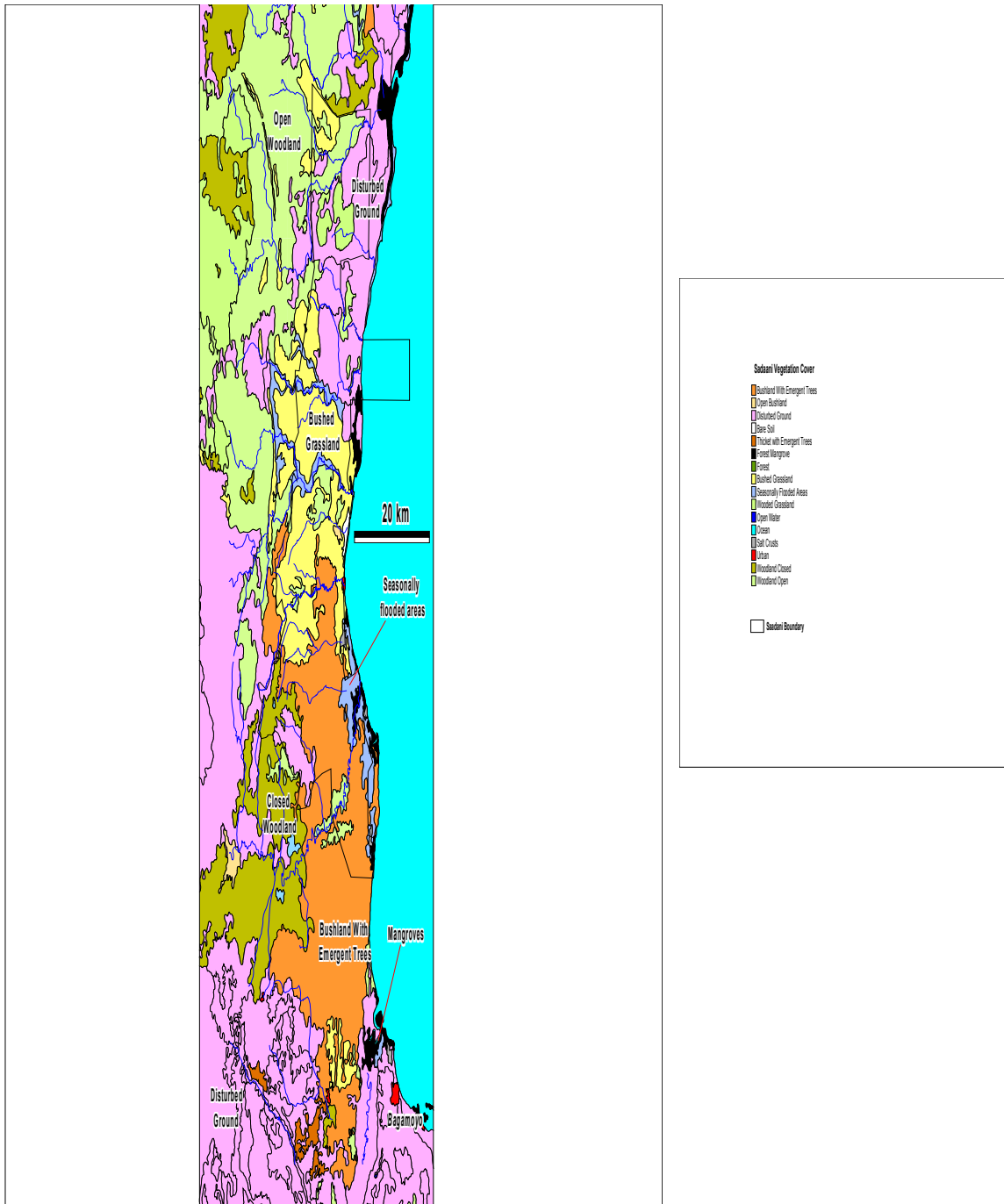
One of the interesting things about this classification is that it separated out “disturbed” ground. This was land that was classified as cultivated in some way or another. It also picks up “disturbed” ground in Mkwaja North which is likely to have been habitat modified for cattle or tsetse fly control (Figure 6).

The vegetation re-growth on the old lands cleared for sisal production are not evident from this analysis and more work would need to be carried out with the imagery to determine the extent of this modified habitat cover.

1.6.6 Fire Policy

As much of the habitat in the Saadani NP has been modified in the past it is important that management is clear about its policy on fire. Considerable work has been carried out on the vegetation in Mkwaja North and this should be accessed prior to the formulation of an appropriate fire management plan. A relevant section from the Bloesh and Kloetzli (2002) paper is reproduced in Appendix x.

Figure 6: Land cover of the Saadani ecosystem showing the extent of disturbed ground



1.7 WILDLIFE

1.7.1 Large Mammals

The large mammals found in the Saadani ecosystem are mainly those associated with savanna systems, but also with a combination of species found between miombo woodland and Acacia savanna. The most common large mammals in the area are giraffe, kongoni, waterbuck, wildebeest, warthog, zebra, bushbuck and reedbuck.

Aerial survey data indicates that good populations are found in many parts of the Saadani area (Figure 7). Ground counts (Robinson, 1997 – excluding Mkwaja North) indicate higher population estimates for most species and a wider distribution (Table 2). Visibility is better in the flatter ground and more open country around Saadani village and the Wami estuary than in the north, especially Mkwaja North.

Notable species include the following:

Elephant: Thought to be one remaining herd numbering around 50 animals. Seldom seen at present they cause problems to villagers in surrounding areas.

Buffalo: Possibly two herds found usually on the higher ground. Some sources estimate that there may be several hundred in the Saadani area.

Sable: Identified as the Roosevelt sub-species. Near the northern limit of its range and found on the higher ground, especially in the west.

Liechtenstein's Hartebeest: (Kongoni). The most north-easterly population of this antelope.

Hippopotamus: Found in the Wami river but have also been recorded in some dams and in wetlands to the south of the Wami. Unique population in the Wami estuary area.

Lions: Not common but were a considerable problem in the cattle ranching days on Mkwaja.

Impala are noticeable by their absence. Their ecological niche is probably occupied by a combination of the Bohor reedbuck and the bushbuck.

Introduced species include the fringe-eared oryx (in 1968), the white-bearded gnu and the eland. The oryx which is now thought to be extinct in the area but the gnu has fared relatively well given that it is a dry land species and probably not suited to the coastal environment. A better candidate would have been Johnston's gnu which is found in the Selous GR.

Figure 7: Large mammal distribution – 1998

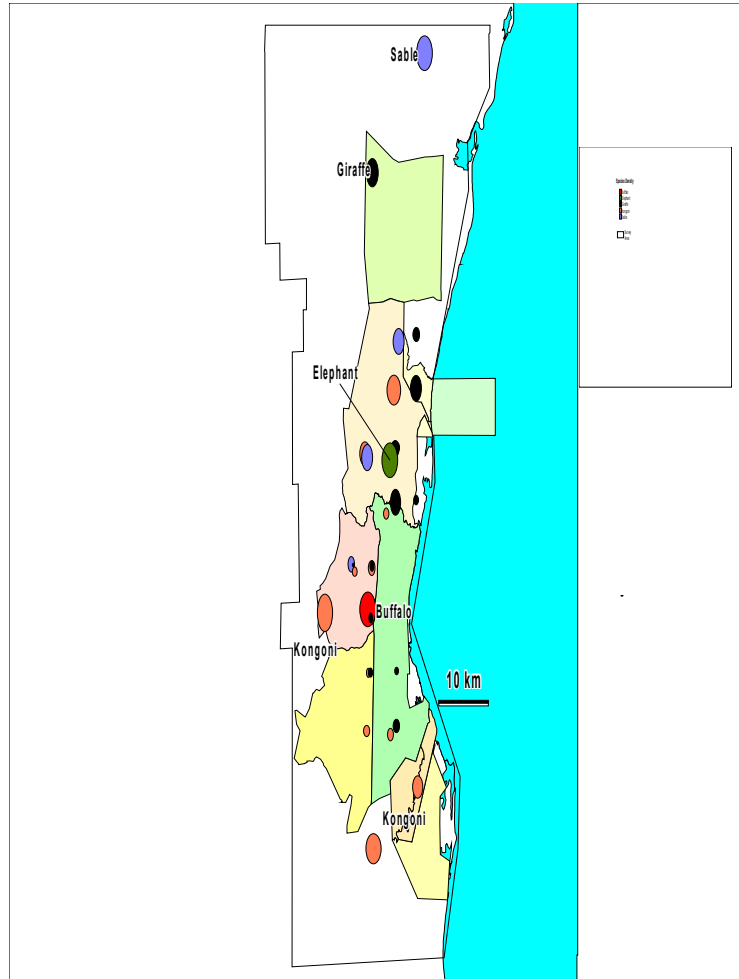


Table 2: Large mammal counts in Saadani area 1991 to 1999
(Survey areas are different for all counts and so are not directly comparable)

Species	Oct, 1991	May, 1992	April, 1997	Oct, 1998	Ground, 1999
Elephant				55 seen	129
Buffalo				74	397
Kongoni	1454	874	992	314	1050
Giraffe	151	410	611	226	276
Wildebeest	170	455	568	1313	532
Waterbuck	86	136	287	308	991
Sable	25	146	251	40	-
Zebra	34	7	272		
Reedbuck	7	24	511	-	5100
Warthog	254	92	645	947	4749

1.7.2 Other Wildlife

The bird life in Saadani is not as spectacular as in some other parts of Tanzania. Common birds include the lilac breasted roller, hornbills, dove and bee-eaters. Flamingoes are often seen on the salt extraction pans which are currently outside the park. They are attracted by algal growth on these pans.

Crocodiles occur in the Wami river and estuary and are found mostly between the ferry site and the coast. They are also found in some of the dams on Mkwaja North.

1.7.3 Zaraninge Forest

This unique forest is considered separately in this introduction as it is so different to the rest of the Saadani NP. A brief synopsis is presented in Table 3.

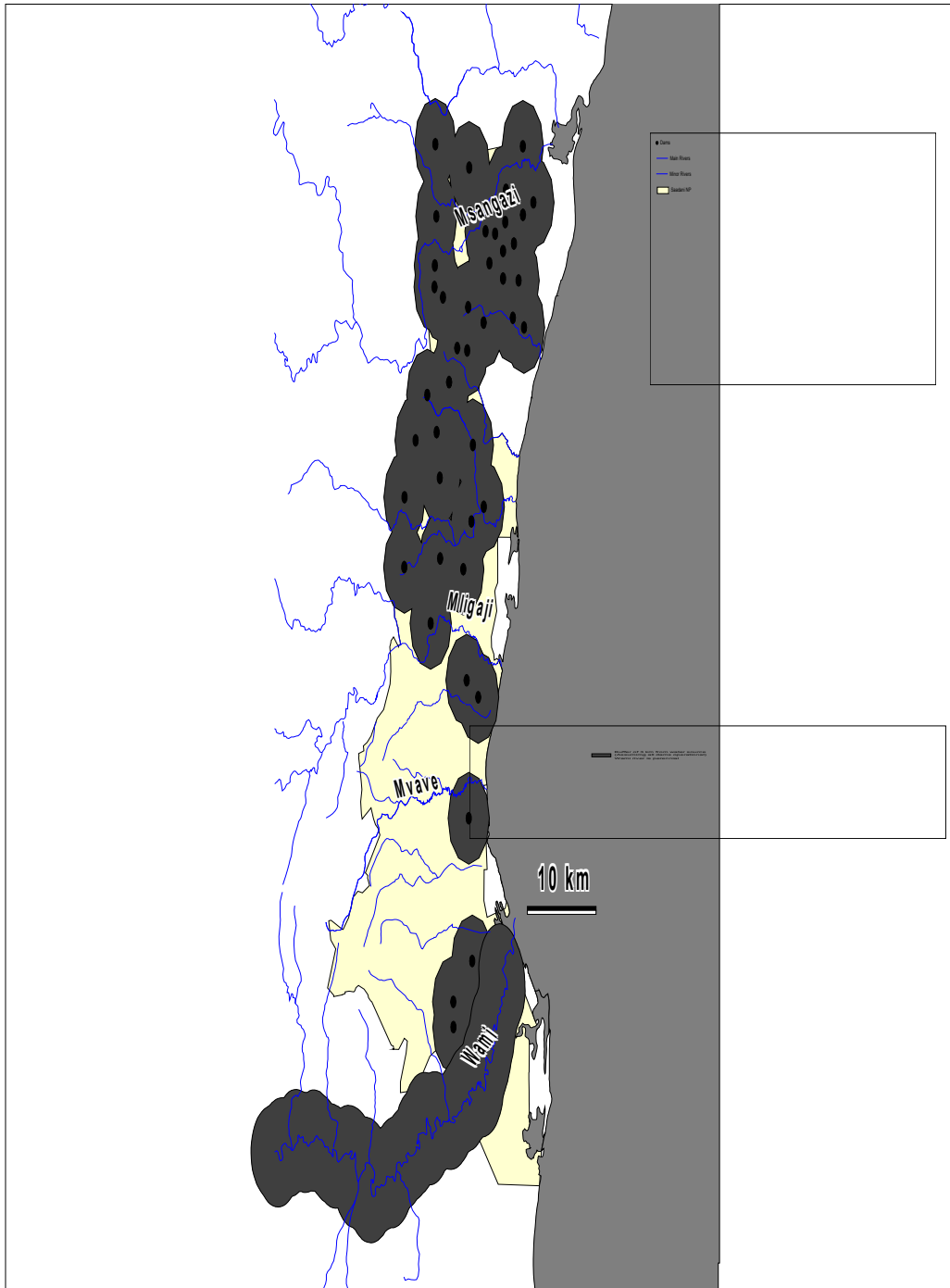
Table 3: Wildlife of the Zaraninge forest
(Zaraninge draft General Management Plan, 1999)

Group	Comments
Fish and Invertebrates	An unidentified kilifish has been found in the Kiwandi wetland. The forest is thought to harbour a number of endemic invertebrates.
Amphibians	Kiwandi and other wetlands in and around the forest have yielded 20 species of amphibians, a high number given the size of the area.
Reptiles	Twenty seven species of reptiles have been recorded which include the dwarf gekko, the tropical girdled lizard, the leaf chameleon and the gabon viper.
Birds	Over 70 species of birds have been identified in the forest, ten of which are globally scarce. These include the Sokoke pipet, the southern banded snake eagle, the uluguru violet-backed sunbird and the tiny greenbul
Mammals	At least 40 species have been recorded including buffalo, hartebeest, forest pigs, leopard, black and white colobus and the Sykes monkey

1.7.4 Water and Wildlife

As there is very little surface water in the Saadani NP for most of the year the artificial dams will obviously be a major feature for the management of wildlife. Figure 8 shows a three kilometre buffer around the existing dams and the Wami river (which is perennial). Given that the area receives rain throughout the year water availability may not be as much of a problem as at first glance, especially for the smaller species.

Figure 8: Water availability in the Saadani NP



1.8 MARINE RESOURCES

Apart from approximately 70 km² of ocean in the proposed national park there is no special protection of the marine resources. This area includes an offshore reef area (approximately seven kilometres from the shore) but no information is available about this.

1.8.1 Green Turtle (*Chelonia midas*)

There are seven surviving species of marine turtle in the world and all of these are endangered. Five of these, including the green turtle (*Chelonia midas*) breed in the Indian Ocean. The green turtle is known to nest at only one other site on the Tanzanian coast – Madete beach in the proposed Saadani NP and close to Mafia Island. Turtles migrate thousands of kilometres from their feeding grounds to specific breeding sites and these are the sites at which they were born.

The main turtle breeding site in the area used to be Maziwi Island close to Pangani, where approximately 200 turtles were known to nest, but this disappeared in the early 1990s. Therefore the importance of the remaining site at Madete cannot be understated.

At present the Madete site is on village land and a turtle breeding centre has been established close to the beach. This will be taken over by TANAPA once the park has been formally declared. The centre was established as observations showed that there was complete mortality of the eggs caused by natural predators and disturbance from humans. All eggs laid on the Madete beach are taken to the centre and reburied (with attention to the depth and orientation of the egg). The resultant hatchlings are released into the ocean once they have hatched. Current records show that nearly 100% of the eggs taken from the beach will hatch and the programme appears to be remarkably successful.

1.8.2 Other Marine Resources

Dolphins have been seen offshore at Saadani and whales are known to pass in August and September. Prawns and approximately 40 species of fish are taken from the nutrient rich waters near the river estuaries by fishermen. Commercial trawlers operate off the Saadani coast (often illegally) but their catches are unknown. Their presence is often associated with fish or turtle kills which are washed up on the beach (see photographs).

1.8.3 Coral Reef

Coral reefs are one of the most diverse ecosystems on the planet. They are three dimensional living structures composed of bottom-dwelling plants and animals. They include hard and soft corals, algae, sponges, molluscs and worms but the bulk of the structure is composed of hard corals. A diverse range of free-living animals are also associated with reefs including fish, gastropods and echinoderms.

There is a small reef approximately seven kilometres off the Madete beach which rings a sand island only exposed at low tide. This type of ecosystem is a first for TANAPA and it is recommended that a complete inventory of the resources on this reef be completed as soon as possible. This study should tie in with those underway under the auspices of the Coastal Zone Management Project and the University of Dar es Salaam.

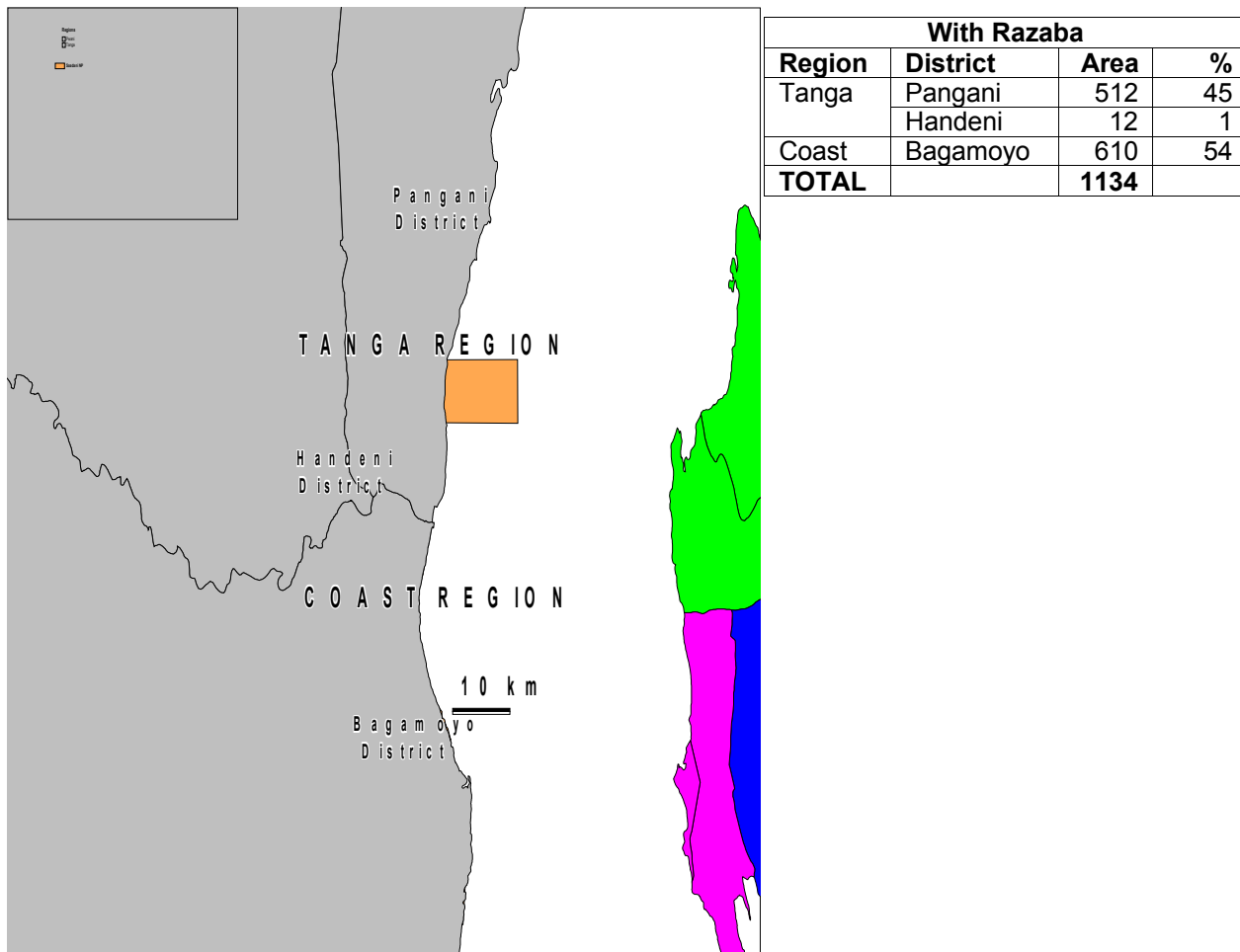
2 MANAGEMENT AND VISITOR ENVIRONMENT

This section deals with the administrative, social and operational environment in which the park is located.

2.1 ADMINISTRATION

Saadani National Park falls into three districts and two regions (Figure 9). Bagamoyo and Pangani District have 51 and 48 % respectively while Handeni has only 1%.

Figure 9: Administrative Districts associated with the Saadani NP:



2.2 SURROUNDING COMMUNITIES

The Saadani “ecosystem” is home to around 35 000 people with a little more than 20 000 being close enough to the park to warrant special attention. A PRA study (Roettcher and Mdoe 2000) indicated that the communities have a positive attitude towards conservation, provided they stand to benefit in some way. They would like to participate in the management of wildlife on the land. They have a fear of losing land to outside bodies. There are 10 main villages around the national park (Table 4; Figure 10).

Table 4: Main villages adjacent to the Saadani NP

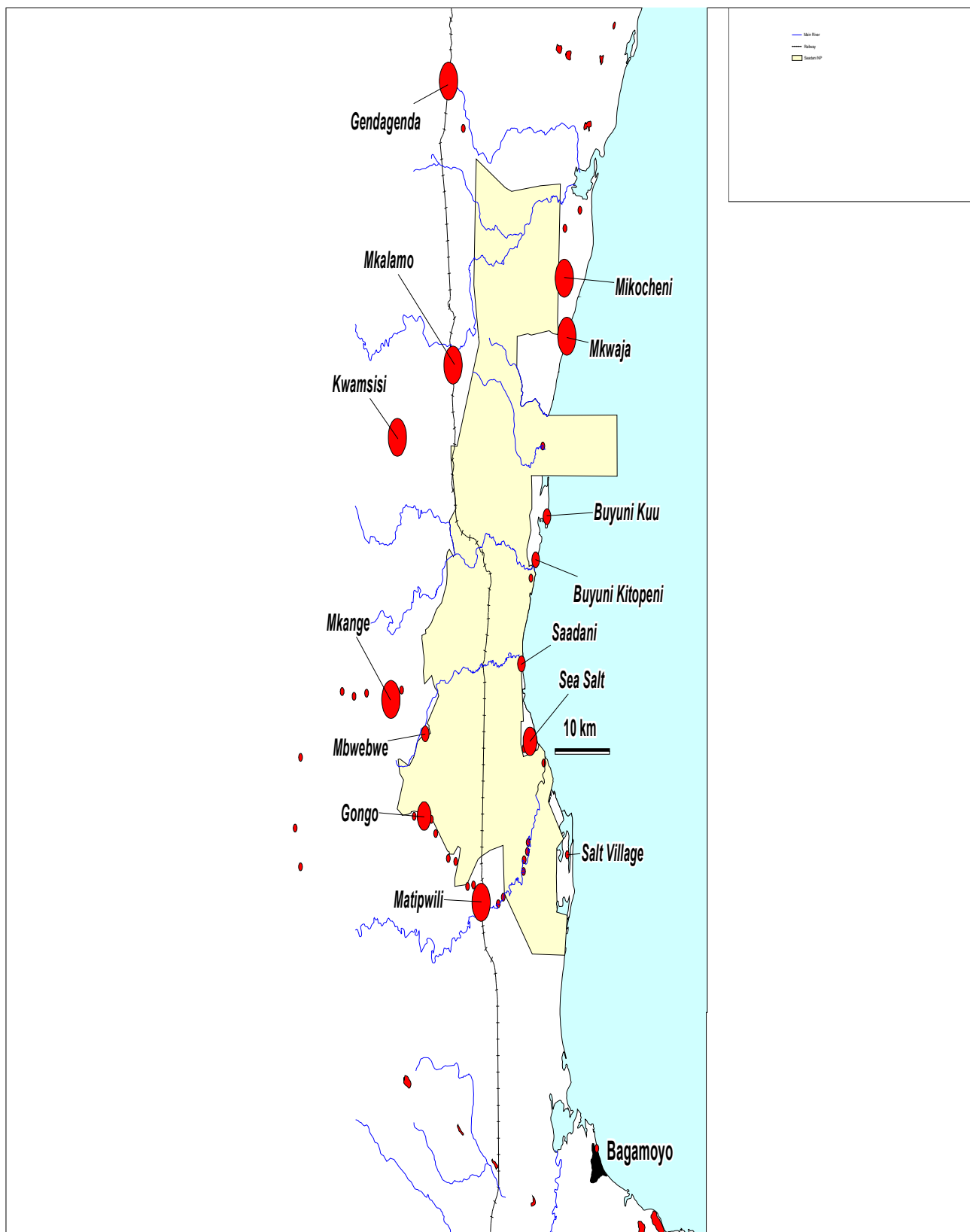
District	Village	Approx Size	Comments
Pangani	Genda Genda	2 500	
	Mikocheni	1 500	
	Mkwaja	2 000	Located on the coast
	Buyuni (Kuu and Kitope)	200	Two small villages located within a prime “tourism enclave”. The future use of this land is of prime importance to the park
Handeni	Mkalamo	3 000	
	Kwamsisi	5 000	
Bagamoyo	Mkange	3 200	Mkange is located on the main access road into Saadani
	Saadani/ Mbwebwe	800	Saadani is a small village completely surrounded by the NP. Mbwebwe is located in the fringes of the Zaraninge forest
	Gongo	1 000	Gongo is a relatively new village located on the southern edge of the Zaraninge forest. It includes the sub-village of Tumbilini.
	Matipwili	3 000	Matipwili is on the railway line to the south of the NP
	Sea Salt	500	Not an official village but its residents are a concern for park management

Villagers grow a wide range of fruit and staples such as potatoes, cassava, millet and rice. Closer to the coast coconuts and cashews are very important. Cattle are almost non-existent in the southern villages but become more important in the north (e.g. Kwamsisi and Mkalamo) where there are periodic incidents with lions. Water is a problem in many places and in the dry season villagers resort to accessing water from inside the park boundaries (e.g. Gongo and Kwamsisi).

All villages have wildlife on their land and crop damage is widely reported. Elephants are perceived to be a big problem but bushpigs, baboons and vervet monkeys probably cause more frequent damage. Crocodiles and hippos are reported to be a problem near the Wami river.

Poaching is known to occur inside the protected area but its extent is difficult to gauge. Hunters are mainly from the inland western villages (Kwamsisi, Mkalamo and Mkange) and also Genda Genda and Matipwili. Snaring and the use of muzzle – loaders is common. Illegal hunting was prevalent in the area up to 1998 but has decreased in recent years. This is due to improved anti-poaching, a re-organisation of the management of the reserve, and better dialogue with communities. The future of the area will depend on TANAPA’s patrolling effort and its relationships with the surrounding communities.

Figure 10: Location of settlements adjacent to the Saadani NP and their relative sizes



2.3 ACCESS

Access to the Saadani NP is via three district roads. These are the coastal road between Bagamoyo and Pangani (currently cut in the south by the Wami ferry being non-operational), the road between Mbwebwe and Saadani and the road between Mkala and Mkwaja. All roads are transit routes that cut through the national park.

Currently access is one of the major limiting factors for the development of the Saadani NP. All roads mentioned above are unsurfaced and become impassable during the rains, especially once they traverse the flat coastal plain with its notorious "black cotton soil". In addition the ferry crossing on the Wami has been out of commission for several years now meaning that access from Bagamoyo and Dar es Salaam is difficult.

Two airstrips are located within the park – at Saadani and near the Mkwaja North HQ. Both have problems in the rainy season and become unusable.

Zanzibar town is less than 50 kilometres across the Zanzibar channel. As no customs or immigration clearance is needed for travellers between Zanzibar and the mainland (but it is in the other direction) then access by boat is a real possibility.

The main Dar es Salaam to Tanga railway line passes through the park. Stations are located at Matipwili, Mvave and Mkalamo

2.4 PARK INFRASTRUCTURE

The infrastructure of the Saadani NP is generally in poor condition. This is especially true of the road system. Once it rains heavily most of the park is inaccessible. The airstrips also become unusable.

TANAPA has recently moved its HQ into the old ranching buildings in Mkwaja North. The Wildlife Division still has people stationed at Saadani, some on village land and others within the park. There are some abandoned ranger stations at Mligazi, Matipwili and Kisauke (Table 5). The road network and current locations of buildings and infrastructure is shown in Figure 11.

Figure 11: Infrastructure in the Saadani NP

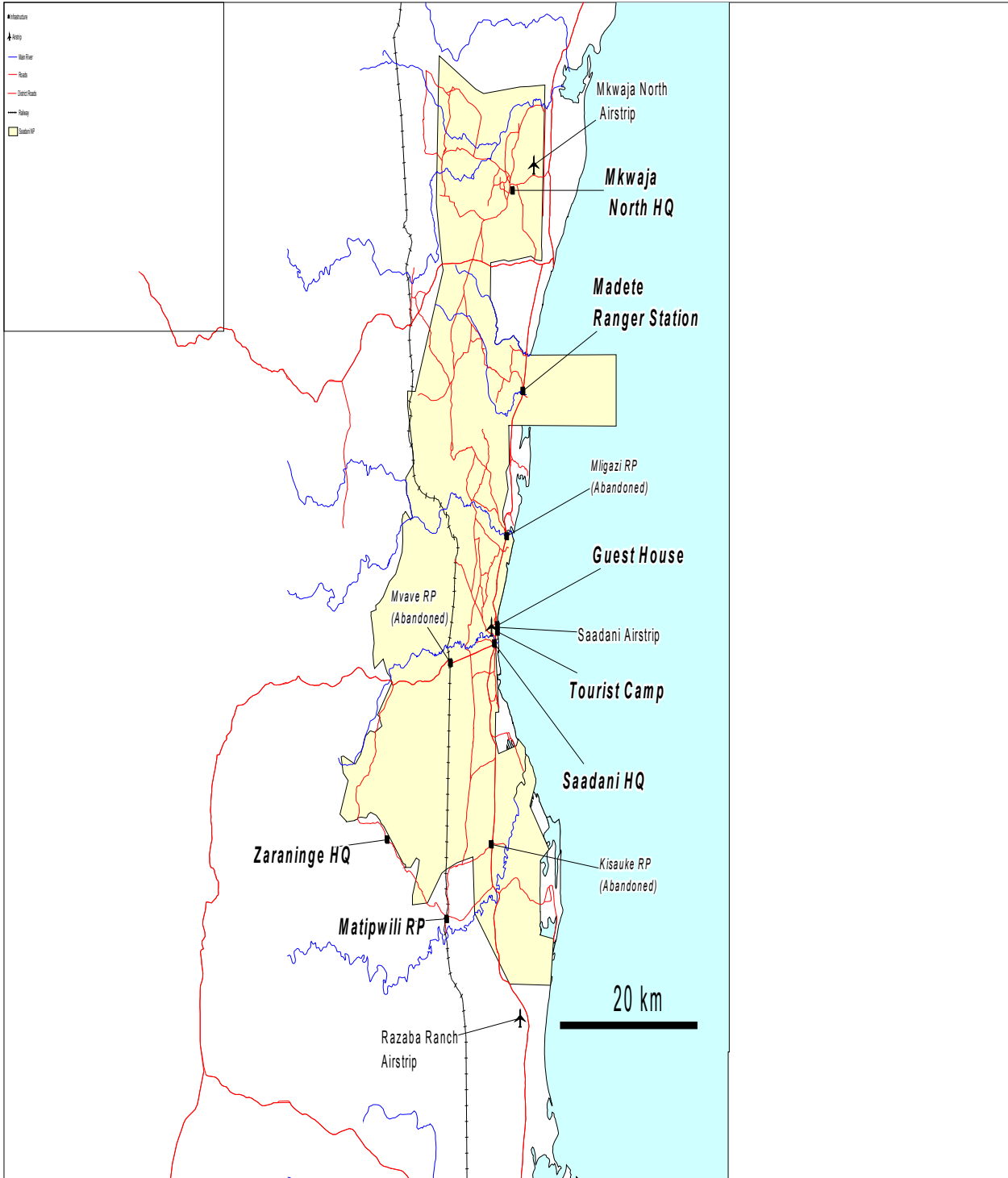


Table 5: List of buildings and equipment in the Saadani NP

Saadani		Mkwaja North	
Building	Current Status	Building	Current Status
Staff housing	2 buildings good 7 buildings poor	Staff Housing	8 buildings adequate 10 building poor
Manager House	Good	Rest House	Needs rehabilitation
Guest House	Refurbished	Social Hall	Needs major rehabilitation
Office	Good	Store and Garage	Needs major rehabilitation
Stores, garage etc	Adequate	Gate House	Needs major rehabilitation
Matipwili RP	1 ranger in occupation		
Kisauke RP	Unoccupied		
Mligazi RP	Unoccupied		
Madete RP	3 families in occupation		
Mvave RP/Gate	Unoccupied		

Equipment - Saadani	Equipment – Mkwaja North
Tip Loader (Isusu)	Landcruiser (Hardtop)
Landcruiser pickups (2)	Hilux Doublecab
Boat (Metal 8m)	Mercedes Benz 4x4 Tipper (7t)
Outboard Motor (Yamaha 40hp)	Motorbikes (2)
Outboard Motor (Yamaha 10hp)	
Welding Machine	
Generator	
Solar systems	<i>Note: All equipment was donated by the SCDP but will be handed over to Tanapa in due course.</i>
Hand Pump	
Air compressor	
Tractor Valmet	
Trailer + grass cutter/plough	
Mountable grader for tractor	
Roller	
Diesel tank (10 000 litres)	

2.5 VISITOR EXPERIENCE

Saadani NP is the sum of its component parts. Each attraction is generally not the best example of that type of attraction. For example, much of the coast within the park is not regarded as being particularly attractive to tourists and the game viewing does not compare to other parks in Tanzania. However, when they are taken as a whole its “saleability” for tourism increases considerably.

Its major attraction is the fact that it is one of the few places in Africa, and the only place in Tanzania, where it is possible to mix the “classical” game viewing experience with a beach holiday. In addition, it provides a diversity of environments which can attract visitors. These include beaches, dense forests, wildlife, miombo etc.

2.6 TOURISM

2.6.1 Current Use of the Park

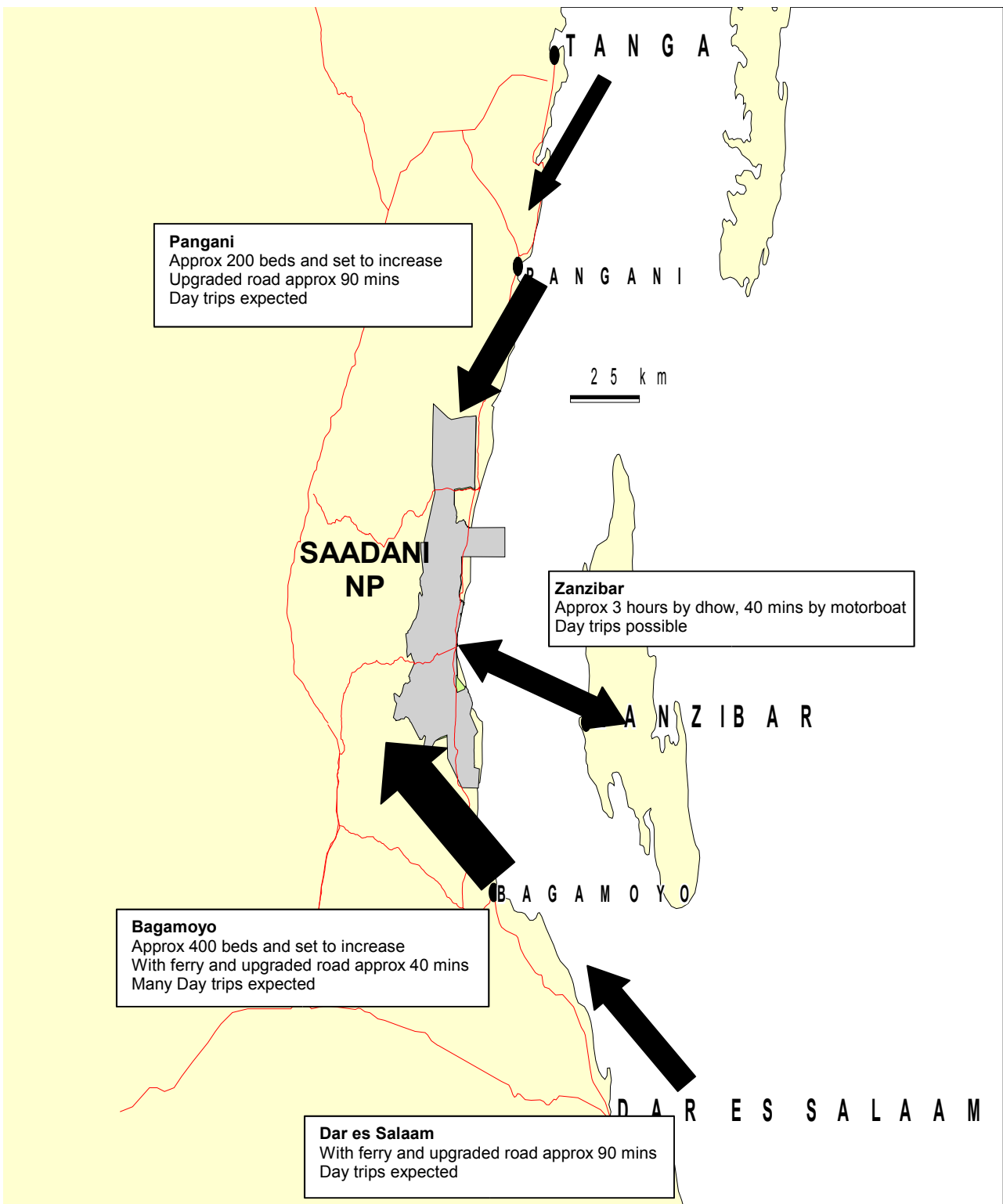
There is one tourist operation within the Saadani NP. A 20 bed tented camp is located at the mouth of the Mvavi river, just north of Saadani village. The park maintains a guest house also in the same area.

Tourist numbers are low and initial statistics indicate that a little over 400 people visit the area annually and usually stay between two and three nights – or around 1000 bed nights annually. However, there is considerable interest in the area and it seems that there will be substantial increases in the future.

2.6.2 Expected Use of the Park

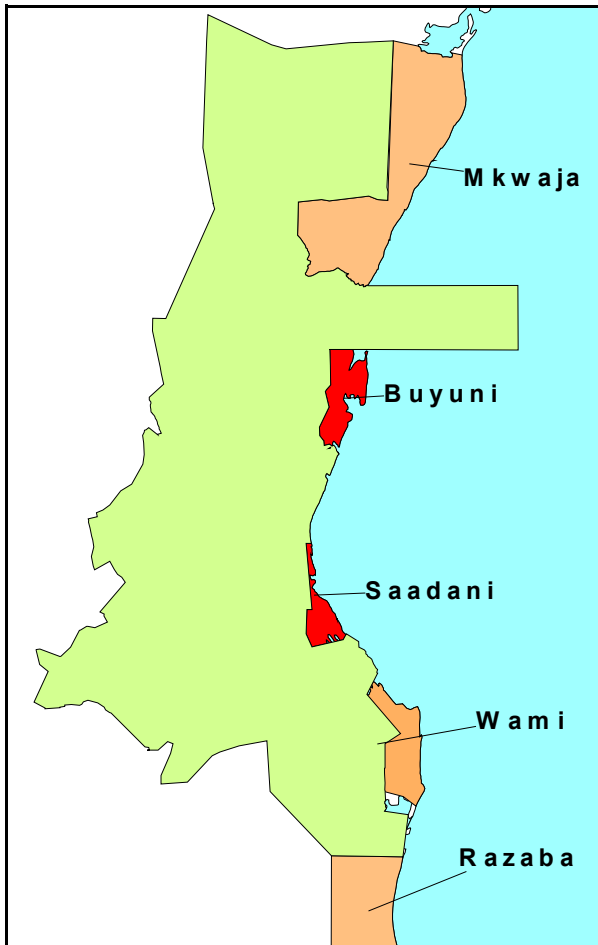
Tourism demands on the national park are expected to high, especially once the access becomes better. If the roads are upgraded to all-weather standards and the ferry on the Wami is operational then it is expected that there will be a significant number of day visitors to the park (Figure 12). Currently some operators bypass the ferry by collecting clients from the Wami south bank using a small motorboat.

Figure 12: Tourist pressure on the Saadani NP



Additional tourist pressure on the park is expected to come from new developments established outside the park. TANAPA will have very little control over these and the prime sites are expected to be in Buyuni and Saadani (Figure 13).

Figure 13: Areas on the coast which are outside the park and have tourism potential



Area	Comments
Buyuni	Area in high demand with good beach. Plots apparently already sold to developers. Completely surrounded by the park.
Saadani	Some good beaches near Saadani village. Not very attractive close to salt works.
Mkwaja	Good beaches especially near Madete
Wami	?? Unattractive near salt works
Razaba	Razaba Ranch has indicated an interest in using some beaches on the property for tourism

3 ESTABLISHMENT HISTORY

The formal concept of a protected area along the Tanzanian coast was first suggested by the Director of Wildlife in 1966 (Mr. Mahinda who passed away in early 2003). It was officially gazetted in on the 24th January 1969 after consultation with the Saadani village elders. Compensation was awarded for the loss of cultivated land.

Mkwaja South was acquired by the Wildlife Division with financial assistance from the European Union in 1996 and annexed to the Reserve and Mkwaja North was added in 2000.

The current status of the protected area is that the original Saadani game reserve has been formally declared while Mkwaja North and South are owned by the Government of Tanzania. All other areas in the proposed Saadani NP are currently unassigned. They are briefly discussed below.

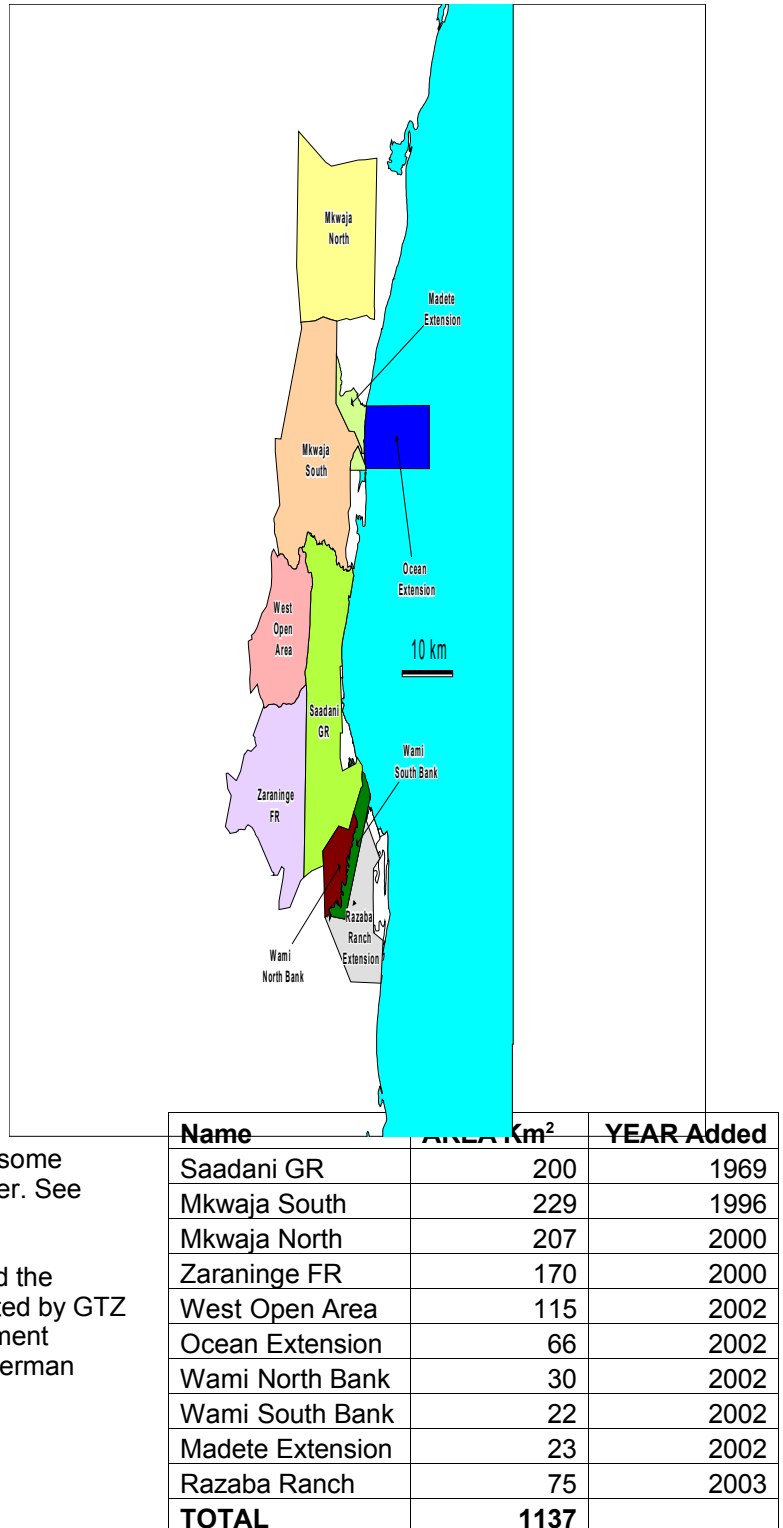
The Zaraninge Forest Reserve was proposed in 1990 and formally gazetted in 2000 (Government Notice 127, 7/4/2002). The forest was part of a WWF project since 1995 and it will be included into the proposed Saadani NP.

Discussions with village elders led to the boundaries of the areas adjacent to the Wami and Sima/Madete rivers, as well as the “west open area” being established.

The extension of the NP into the Indian Ocean is to afford protection to a reef found offshore. Razaba Ranch is currently managed by the Zanzibar Government and discussions are underway for a part of this land to be ceded to the Saadani NP to protect some important water sources south of the Wami river. See Figure 14 for more detail.

Since 1986 the rehabilitation of the reserve and the establishment of the national park was supported by GTZ under the Saadani Conservation and Development Programme as part of the official Tanzanian-German development co-operation.

Figure 14: History of establishment



4 PLANNING PERSPECTIVES AND CONSTRAINTS

4.1 PLANNING PERSPECTIVES

The primary direction for the planning process was provided by the following legislation

- Tanzania National Parks Ordinance
- National Policies for National Parks
- Wildlife Conservation Act.

The Tanapa Strategic Planning Process (SPP) requires that management zone plans are prepared through a participatory approach with major stakeholders. The process is guided through consultation and information flow between TANAPA and stakeholders and that much of the planning is done in a workshop forum with key stakeholders. The people involved need to cut across disciplines and should include managers, planners, conservationists, scientists, the business community and local inhabitants. Preparation of the management zone plan requires the following steps

- Identification of the problems and issues facing the national park
- Identification of purpose and significance of the area
- Exceptional resource values
- Management objectives
- Development of a management zone plan
- Permitted activities and limits of acceptable use in these zones
- Environmental assessment of the zoning scheme and the activities permitted to ensure that the MZP does not degrade the resources

4.2 PLANNING CONSTRAINTS

Constraints to the planning of the Saadani National Park take two major forms. These are the national legislation – including guiding policies and other, more specific, constraints which are unique to Saadani NP. Constraints were partially identified through a consensus of the problems and issues facing the national park.

4.2.1 Guiding Legislation

Developments in Tanzania, and especially in National Parks are guided by a set of Acts, Policies and Regulations defined by law. Planning is therefore constrained by this legislation. The most important of these are the National Parks Ordinance, the National Policies for National Parks in Tanzania and the Wildlife Policy. In addition there are a number of other pieces of legislation that will impact on any planning process. These are also briefly mentioned in the text.

National Parks Ordinance

The National Parks Ordinance provides for the establishment, control and management of National Parks. Once an area is declared a national park all former claims on the land cease and all rights are vested in the President. The national parks are controlled and managed by the National Parks Board. Many types of activity are prohibited inside national parks and these include consumptive use of resources, human settlement, grazing by domestic stock, hunting and trapping. Any planning process needs to ensure that these restrictions are observed.

National Policies For National Parks

The TANAPA Policy (National Policies for National Parks in Tanzania, 1994) aims primarily to preserve areas of exceptional value or quality which illustrate the natural or cultural resources of Tanzania's heritage. In addition it also seeks to preserve areas possessing outstanding examples of a particular type of resource, water and soil resources that are necessary to maintain ecological integrity and support the needs of people outside the park boundaries. Finally it seeks to preserve areas which offer opportunities for public benefits, enjoyment or scientific studies.

In order to achieve the above purpose the goals of the policy are to ensure:

1. that national parks retain a high degree of integrity as true, accurate and unspoiled examples of a resource
2. that management plans for parks are developed with the best available information so as to achieve a balance between preservation and use which does not adversely affect the park resources and values.
3. that the emphasis is on quality visitor experience rather than “mass-tourism” in order to maintain park resources and values and
4. that optimal levels of revenues and benefits accrue to the national economy, the parks themselves and the adjacent communities without impairing park resources.

The policy details procedures and actions for a wide range of park management and use activities. These include park systems planning, natural resources management, cultural resources management, wilderness preservation and management, public information interpretation and education, outreach, extension and benefit sharing, the use of parks, park facilities, tourism and concessions, ethics, law enforcement and human resources.

All management plans need to take cognisance of these policies during their formulation.

The Wildlife Policy

The Wildlife Policy (1998) states that wildlife is a natural resource of great biological, environmental cleaning, climate ameliorating, water and soil conservation, nutritional, and economic values. The existence of wildlife will be achieved through system plan of PA network, whose overall objectives are to enhance conservation and promote socio-economic development of the peoples of Tanzania. The Policy lays down a vision for the next 25 years which is as follows:

- Promote conservation of biological diversity
- Administer, regulate and develop wildlife resources
- Involve all stakeholders in wildlife conservation and sustainable utilisation, as well as fair and equitable sharing of benefits
- Promote sustainable utilisation of wildlife resources
- Raise the contribution of the wildlife sector in the country’s gross domestic product (GDP) from about 2% to 5%.
- Contribute to poverty alleviation and improve the quality of life of the people of Tanzania; and
- Promote the exchange of relevant information and expertise nationally, regionally and internationally.

Other Important Legislation

Other important policies which will guide the management and use of national parks include the National Land Policy, the Agriculture and Livestock Policy, the National Tourism Policy, the National Environment Policy and the Mineral Policy.

Day-to-day management principles and regulations are afforded through the Wildlife Conservation Act and the National Parks Ordinance

4.2.2 Problems And Issues Facing Saadani NP

This section includes those aspects of the social and development framework in which the Saadani NP finds itself which will have an effect on the park. The planning workshops identified a number of problems and issues which face the park. These are summarised in Table 6 and the most important of these (in planning terms) are briefly discussed in the following section.

Table 6: Main problems and issues facing the Saadani NP

CONSERVATION	USE <i>Visitor + Local Communities</i>	ADMINISTRATION
<ul style="list-style-type: none"> - Poaching (illegal resource use, both inside and outside) - Water shortages - Wild fires - Green turtle threats - Lack of biological information - Extinctions of some species - Salt mining - Mineral prospecting in Kwamsisi area - Problem animals - Coastal road alignment - Wami water extraction - Illegal fishing by commercial trawlers 	<p>Tourism</p> <ul style="list-style-type: none"> - Poor communications - Few tourism facilities - Delays in tourism permissions - Low wildlife numbers - Tourism “enclaves” <p>Communities</p> <ul style="list-style-type: none"> - Poverty - Low level of understanding - Use restrictions on resources (incl. Water) - Poor social services - Lack land for settlement and farming 	<ul style="list-style-type: none"> - Villager resettlement - Inadequate, manpower equipment and facilities - Poor communications (roads) - Poor communication with villagers (esp. on boundaries) - Boundary not acceptable in some cases - Problem animals - Falls into 3 different districts

4.2.3 Practical Constraints

The following discussion relates to the problems and issues which constitute constraints to the planning of the Saadani NP. However, they also consider other issues which were not specifically identified as problems for the protected areas but nevertheless impact on planning.

Boundaries Not Yet Finalised

At the time of this planning exercise the Saadani National Park had not been formally declared.

Salt Extraction Enclave

Salt extraction has been taking place on the coast for many years. Previously an government enterprise the operation has been privatised. In an ideal situation this activity would not be happening almost in the centre of the protected area and any planning process needs to be aware of the implications of having a major settlement in the centre of the ecosystem. A further, albeit considerably smaller, salt extraction area has been included into the park south of the Wami river after the addition of the Chanyuki area.

Tourism Development Enclaves

The coastline adjacent to the Buyuni settlements is a prime site for tourism developers. As this coastline is excluded from the park TANAPA has little control over the type of developments that will occur here. As planners, TANAPA needs to be aware of the potential for inappropriate development in this (and other areas) and the potential demand on the park’s resources.

For the purpose of this planning exercise the known tourism developments along the coast were considered to be a part of the park.

Poor Infrastructure

One of the main problems with respect to management and visitor use of the Saadani NP is the current state of the road network, both to and inside the park. Once it rains for any length of time the roads become impassable. In addition, the ferry across the Wami river has been out of service for some years. Anyone wishing to access the park from the south needs to travel via the main Morogoro to Tanga road. This planning exercise assumes that these problems will be resolved in the near future as they will have a considerable impact on the use of the park.

The two airstrips at Saadani and Mkwaja have not been registered and they are closed during the rains.

Proximity to Dar es Salaam and Zanzibar

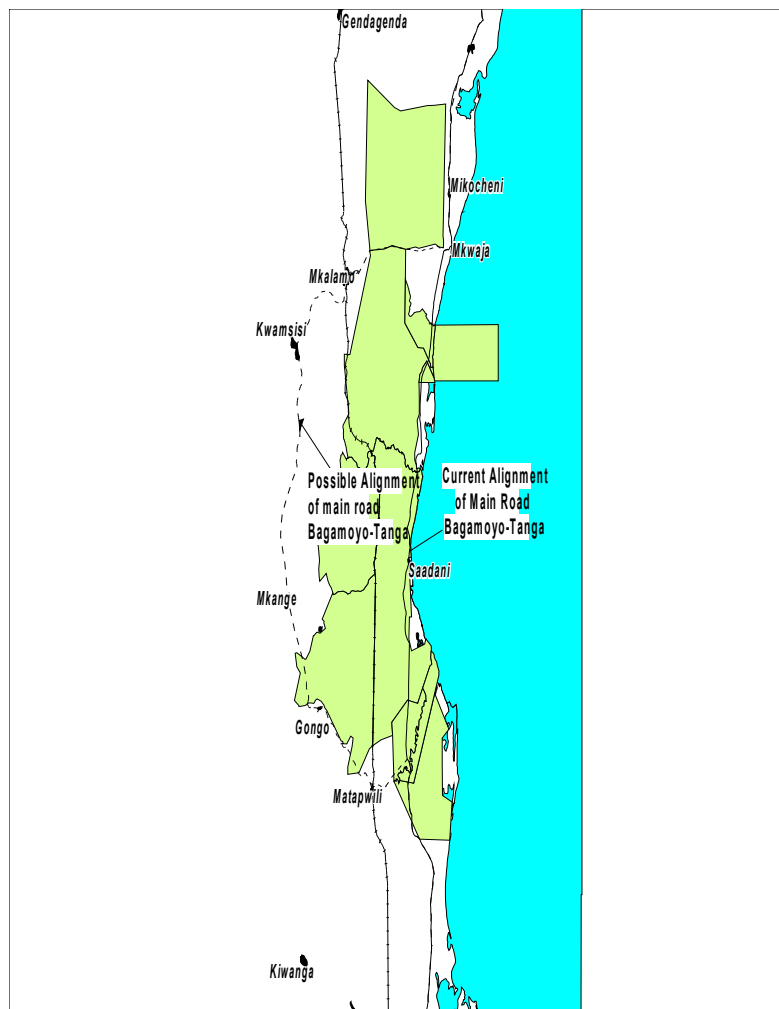
The proximity of the park to the main centres of Dar es Salaam and Zanzibar is a double-edged sword. Once access has been improved it is likely that the park will experience considerable pressure from casual, day visitors.

Other External Issues

The alignment of the coastal road between Bagamoyo and Pangani currently follows the road in existence in through the park. If the Government uses this alignment for an improved road (perhaps even surfaced) this will cause many problems for the administration and management of the park. This planning exercise assumes that this road will follow a new alignment outside the park (Figure 15). This would also benefit the larger villages of Mkange, Kwamsisi and Mkalamo.

A pumping station is under construction on the Wami river at Mandra (main Dar es Salaam to Mombasa road). This scheme is expected to remove a considerable amount of water from the Wami river. The effects of this on the estuary are not known and it does not appear that any environmental impact assessment has been carried out. This planning exercise has assumed that there will not be any major environmental effects from this activity.

Figure 15: Possible new road alignment



5 PARK PURPOSE AND SIGNIFICANCE

Park purpose is the reason (or reasons) that the area was considered for protected status. It will underlie all other assumptions about the protected area and the way in which it is used.

Park significance summarises the protected area's significance to the natural and/or cultural heritage of Tanzania. It identifies those resources and values that must be protected in order to accomplish the areas purpose.

5.1 PURPOSE

The purpose of the Saadani National Park is to protect and conserve:

1. The coastal zone and its diverse resources and range of activities (including the beach)
2. The green turtle and its habitat
3. The lowland forests, especially Zaraninge
4. Endemic, rare and endangered species
5. The estuaries and mangroves, especially the Wami
6. Historical and cultural sites (both inside and outside the Park)
7. The interesting mix of scenery in Saadani

In addition it should also to provide a vehicle for the promotion of economic activities in the adjacent communities.

5.2 SIGNIFICANCE

The significance of the Saadani National Park is that it is:

1. It is the only protected area in Tanzania with a mix of terrestrial, littoral and marine resources
2. It is one of the few areas on the east African coast that is protected and contains species more normally associated with inland areas
3. It is the only protected area in mainland Tanzania with marine resources (including dolphins)
4. Apart from having its own historical sites it is close to the historical towns of Bagamoyo, Zanzibar and Pangani. In addition, the "Swahili culture" still can be found in Saadani village.
5. It protects part of the east African lowland coastal forest system (Zaraninge) with its rare and endemic species
6. It provides protection for the green turtle
7. It provides protection for estuaries and mangroves which is rare in east Africa
8. It has the potential to provide a diverse mix of tourism activities, and it is the only place in Tanzania where this is possible. This can conceivably benefit adjacent settlements.

6 EXCEPTIONAL RESOURCES

The known exceptional resources were identified based on the following criteria:

- Outstanding examples of natural, scenic, geological, ecological, floral, faunal or recreational values within the park
- Populations of sensitive, rare, endemic, threatened or endangered plants and animals that are particularly vulnerable because of their small population sizes and/or genetic isolation
- Habitat necessary for the continued survival of a globally threatened and endangered species of flora or fauna
- Resources that are unusually sensitive to human use or activity
- Major known archaeological or important cultural resource values

A wide range of exceptional resources were identified during the planning process but these were distilled into the following six groups.

1. Adjacent marine and terrestrial environments
2. Nesting site of the green turtle (*Chelonia midas*)
3. Lowland coastal forests
4. Mangrove forests
5. The Wami river and Estuary
6. Proximity of the area to historical and cultural sites along the Tanzanian mainland and Unguja Island

6.1 ADJACENT MARINE AND TERRESTRIAL ENVIRONMENTS

Saadani NP is one of the few sites along the entire African coastline and the only one in east Africa where marine and terrestrial (with wildlife) environments are found next to each other. Human population pressure along the coast is severe and this makes it even more distinctive. The wildlife in the area, although not in spectacular numbers could recover and be present in much greater densities. In addition the sable antelope (rare outside the miombo forest areas) is found here.

6.2 NESTING SITE OF THE GREEN TURTLE

The green turtle (*Chelonia midas*) nests on the beach between the Madete and Sima rivers. This is one of the few sites along the Tanzanian coastline where this happens. Now that it has been afforded national park status it is the only protected area for the nesting turtles along the entire Tanzanian coastline.

6.3 LOWLAND COASTAL FORESTS

The lowland coastal forests are small geographically isolated islands of evergreen or semi-evergreen closed canopy forest, usually on the tops of hill. There are an estimated 200 km² of these forests in Tanzania, the largest of which is Zaraninge (approx 25% of the total). Most of the Zaraninge forest has been included into the Saadani NP. In addition there are other small patches within the NP and three good examples just north of the park (Genda Genda, Msubugwe and Garafuno). These forests have not been studied extensively but are already known to be home to some endemic, rare and threatened species of plant and animal life. Elephants are also known to use these forests, especially in the dry season.

6.4 MANGROVE FORESTS

Mangroves are endangered all along the east African coastline and there are several good stands remaining under the protection of the Saadani NP, especially in the Wami estuary (see next section). This mangrove ecosystem is fed by the nutrient rich waters of the Wami river.

6.5 THE WAMI RIVER AND ESTUARY

There are few places on the African coast where large wildlife is still present in an estuarine situation. The presence of crocodiles, hippos and other wildlife, which can be seen after a boat ride in the sea is indeed rare. The estuary is also an important area for birds, mangroves and the associated inter-tidal wildlife.

6.6 PROXIMITY OF THE AREA TO HISTORICAL AND CULTURAL SITES ALONG THE TANZANIAN MAINLAND AND UNGUJA ISLAND

Although not an “exceptional resource” of the park itself this aspect of the location of Saadani is something that will attract visitors to the area and hence is an important facet. The historical and cultural sites along the coast at Bagamoyo, Kaole, Pangani, Tanga, and indeed Saadani itself, are well known. In addition, the island of Unguja (Zanzibar) has a wealth of such sites and all of these will contribute to the importance of Saadani as a tourism destination.

It should also be noted that there are the ruins of a very old (and un-researched) mosque on the village land near Mkwaja.

6.7 TOURISM DIVERSITY

Saadani has a number of different activities and habitats to offer visitors. In addition they are able to use road, rail, air and sea transport to access the park. This is an extra marketing tool for tourism.