N2 Wild Coast Biodiversity Offset Project

Offset Implementation Management Series

Report 1

Project Overview

ADVENTURE PROVINCE
Eastern Cape
PARKS & TOURISM AGENCY

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SUBMISSION

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Contents

INTRODUCTION

This report is the first in a series that provides the implementation management plans for the N2 Wild Coast Biodiversity Offsets. The background to the project and the processes leading up to this series is described in the Covering Report to the series and so will not be repeated here.

The purpose of this report is to provide an updated Site Analysis for the sites as there have been significant changes to the sites described in the original Site Analysis report (Reference). Even at this late stage there are some sites that are not certain, either in the delineation of their boundaries or their existence at all. Such lack of clarity makes it difficult to provide the detail needed for confident implementation planning, but it can't be helped. There is considerable duplication between the reports, particularly for sections that are specific to any one site, but rather describing the bigger context.

Importantly, the sections in this report pertaining to socio-economic context have not been updated for all sites, as there just is not scope within the project timeframes and budget to return to the villages to conduct further interviews and other such assessments. This unfortunate gap needs to be filled in the future by ECPTA staff prior to implementation to ensure that the communities remain engaged in the process.

PLANNING DOMAIN

Due to human land use requirements, land tenure restrictions and scattered settlements along the Wild Coast, there are limited areas of continuously large tracts of land that can be set aside as potential offset sites. The offset sites were thus clustered around three areas that are already under conservation or those that are ideal for stewardship programmes (Figure 1).

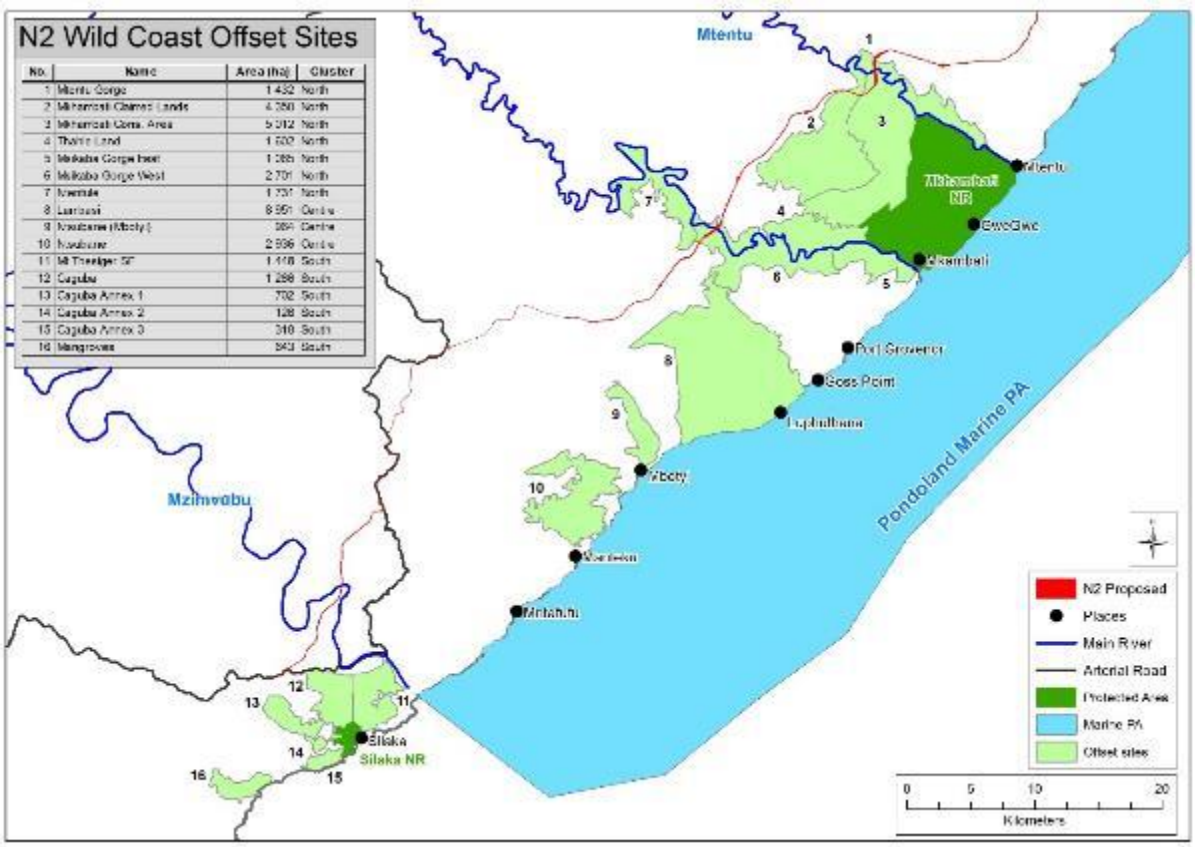

Figure 1 The current configuration of sites

- The **Northern Cluster** includes six sites slightly inland from the coast, mostly focused on the existing Mkambathi Nature Reserve. Of these, Msikaba Gorge, Mtentu Gorge, Ntentule, Cele Land, Thahle Land, Mkambati Claimed Land, and Mkambati Conservation Area are all immediately adjacent to each other and the Mkhambati Nature Reserve – leading to a very significant increase to the existing Nature Reserve.
- The **Central Cluster** is focused around the proposed Lambasi Community Reserve, which has unfortunately been hampered by a lack of resources and human capital; yet, it remains an ideal focal point for a cluster. It is a large portion of mostly pristine coastal grassland of outstanding conservation and tourism value. The cluster includes two related Ntsubane sites to the south.
- The **Southern Cluster** is focused around the existing Silaka Wildlife Reserve, incorporating the Mt Thesiger State Forest and then three heavily forested sites associated with the Caguba area. Further south is the outstandingly unique Mangroves site which has been included due to the very significant mangroves around the core estuary.

The sites have all been identified for their outstanding value for biodiversity conservation and their strategic potential to act as catalyst areas to improve the tourism industry of the Wild Coast. ECPTA can use leverage that they already have for tourism on the protected areas for potential growth to these annexed areas. Should these opportunities be taken up, tourism industry has the potential

to attract infrastructure investment and ultimately the livelihoods of local people will be extensively improved.

HISTORICAL CONTEXT

South Africa is a country with a wealth of natural resources, including land, water, and good soils, but most of the population, lives in poverty. Most people experiencing this poverty are those that had been previously marginalised from participating in the mainstream economy of the country, most of whom live in rural areas. Although rural parts of South Africa have a rich diversity of resources, many areas remain underdeveloped. This is especially true of the former Transkei area of the Eastern Cape Province. This area is in urgent need of economic growth and development.

Since the pre-historic times when the when the San people acquired livestock from further north, the economic activities in South Africa shifted from hunting and gathering food to pastoral operations (herding of cattle). This behavioural change was not embraced by all San people, and those who still maintained hunting and gathering were referred to as Bushmen, while livestock holders were known as Khoikhoi. The introduction of livestock introduced wealth and property ownership (Barnad 1992, Nigel 2005). Archaeological artefacts and historians trace the arrival of Bantu people since around 2500 years ago. They too were pastoralists but supplemented their livelihoods by arable agriculture with sorghum being the main crop. People in this historical period were self-sufficient in their lifestyle and lived in small settlements. This lifestyle was drastically changed with the advent of colonisation, which began in 1652 (Wilmot 1819). The majority of socio-economic dynamics in South Africa are linked or can be traced to this colonialism. After the many frontier wars and repatriation of people from lands they used, colonialism introduced labour-based economy. In the recent past, colonialism gave rise to a policy of separate development where certain groups of people were not allowed to live in particular areas. This 'Bantustan' policy, Apartheid, sought to assign Black African people into 'homelands' according to their ethnic identity. These homelands were assigned a status of being different 'states' within South Africa. These 'states' served as labour reservoirs, housing the unemployed and releasing them when labour was needed in the "proper South Africa". The Transkei, in which this biodiversity offset project is being undertaken, became the first of the four homelands to be granted "independence" from South Africa. The leaders of these homelands were unable to develop proper local economies. The homelands were therefore dependent on South Africa for funding and running the economy of these "countries".

After the 1994 transition the African National Congress (ANC) introduced the Reconstruction and Development Program (RDP), a framework which was intended at redressing the issues of the past, especially poverty and inequality. The greatest challenge of implementing this program was unavailability of job opportunities, poor infrastructure, and poor levels of education. These challenges were predominant in rural communities such as those in Transkei. Due to the failure of the RDP, a Growth, Employment and Redistribution Strategy (GEAR) was conceptualised. This strategy mainly focused on the strategic economic issues of the country, and for South Africa to

become an economic player in the global scene. Coupled with the RDP and GEAR was the inclusion of rural communities to municipal demarcation system. The submersion of rural communities to municipal regions was hoped to lead to better infrastructure development and improvement of service delivery. However, this good intention could not be achieved due to the capacity with which the municipalities needed to deal with. In 2006, the government initiated an Accelerated and Shared Growth Initiative for South Africa (AsgiSA), a program that was not devised and implemented by government alone. This development path also did not yield the desirable results. Considering the failure of all these initiatives, in 2013 the South African government came up with a long-term coordinated strategy of attaining desired country's destination with identified the roles that can be played by different sectors of society in reaching that goal. This National Development Plan 2030 deals with economic and developmental issues of the country.

After 1994, the South African government has tried to come up with programs that can mitigate against this poverty, and enable the wider majority of the population to participate in the South African economy. Some of these programs have not yielded to any observed differences in poverty eradication. Ultimately, after 18 years into democracy, the Eastern Cape Province still remains trapped in structural poverty.

Early settlement and archaeological findings

Fishert et al. (2013) explored the area occupied by amaMpondo between Goso Fault in the south and Mtamvuna River in the north. In this Pondoland area the amaMpondo people arrived between A.D. 1100-1300 (Feely 1986). Fisher et al. (2013) discovered many artefacts in the Pondoland area which imply human habitation in this area that is more than 2000 years ago, before the Iron Age.

Pondoland Origins

The Mpondo people (also called AmaMpondo and Pondo) are an ethnic group coming from this Pondoland area. The land area is colloquially named after this ethnic group. The Mpondos are a "nation" on their own living alongside other "nations" such as Xhosas. The word "nation" is used in the context that was used prior to colonisation by white settlers.

The origin of the majority of the people in the Pondoland can be traced from Chief Sibiside who was a once powerful leader abaMbo nation. Chief Sibiside's son Njanya had two twins Mpondomise (the first twin) and Mpondo (the second twin). The amaMpondo people come from Mpondo and amaMpondomise came from Mpondomise.

The rise of king Shaka and the Zulu state was accompanied by intense wars with other Bantu people who were ultimately pushed southwards from KwaZulu Natal. In the 1700's the Xhosas fought wars with the British from the south to the extent that in the early 1850's the relations between the Cape Colony and the so called "territories", one of which were the Pondos, settled down to an uneasy peace. The Pondos did not take part in the cattle killings of 1856 (subsequent

to Nongqawuse prophecy) and were exempt from the poll tax of 1857 (Janet Hayward). The Pondos were however, affected by the Mfecane which were the wars set off by the rise of king Shaka. In 1828 many of king Shaka's impis (warriors) invaded the area east of Mzimvubu River, which was under the reign of Chief Faku. However, by 1943 Chief Faku had re-gained his people's wealth and had replaced the herds of cattle that have been lost previously. In this period, most Pondos had been effected by the Mfecane - the wars and migrations set off by the rise of Shaka and his Zulu empire. In 1828, during the reign of Faku (paramount chief of the Pondos), they lost their land and cattle east of the Mzimvubu (river) to many hundreds of people who were fleeing Shaka's impis (warriors). It is during this retreat that Faku reorganised his military forces and intensified raiding, hunting, agricultural and trade enterprises. By 1843 the Pondos had replaced their herds of cattle and Faku represented many people living south of the Zulu kingdom, commanding tremendous power. Through various political, economic and religious pressures the Pondos were forced to accept the annexing of Pondoland to the Cape Colony in 1894. For 70 years Pondoland fell the under the Cape Provincial Administration - first under British colonial government and then from 1948 under the Nationalist party government. This existed till the "awarding" of self-government of the area known as Transkei in 1963.

The Magwa area has a rich history of conflict between rural people, traditional authorities and the state over the last 50 years or so. A sketchy but useful history of development- related land conflict in the Magwa area is found in an unpublished manuscript by Harrison (1988), tracing the history of tea growing in the former Transkei, with a special focus on the early years of Magwa Tea. Although not the main focus of the manuscript, the history of land dispossession and resistance during the early 1960s emerges in the text which identifies conflict over land in Magwa as the result of two interventions by the state. The first of these was betterment planning for Lambasi Administrative Area.

Land Tenure After 1994 Political Change

Subsequent to the new democratic order, the policy governing land in South Africa was placed under the department currently known as the Department of Rural Development and Land Reform. Policy frameworks on land reform were implemented as per the guidance of the South African Constitution (Act 108 of 1996, Section 25). They included a *land redistribution* programme (aimed at broadening access to land among the country's black majority), the *land restitution* programme (aimed at restoring land or provide alternative compensation to those dispossessed as a result of racially discriminatory laws and practices since 1913), and a *tenure reform* programme (aimed at securing the rights of people living under insecure arrangements on land owned by others, including the state (in communal areas and the former 'Coloured' rural reserves) and private landowners (farmworkers, farm dwellers and labour tenants) (DLA, 1997).

Often, the beneficiaries of restitution and redistribution desire to hold land as a group. This led to legal innovation where legislation has provided for a new form of land-holding entity, the Communal Property Association (CPAs) as per the Communal Property Association Act, 1996 (Act 28 of 1996). This is in addition to the option of forming a trust. Many CPAs that were formed at

this stage were formed with the help of consultants, with little support thereafter. There was also little oversight by government.

In the public interest, in the early years of democracy (1994-1999) the key focus was on the development of policy framework. Under the then Land Affairs Minister Derek Hanekom, the land reforms that favour the poor majority were subjected to a great deal of experimentation and learning-by-doing which led to revision and refinement of policy. These included among others the Restitution of Land Rights Act (Act No 22 of 1994), the Extension of Security of Tenure Act (No 60 of 1997) and the Restitution of Land Rights Amendment Act (No 15 of 2014). Communal tenure reform was highly politicized as a result of the lobbying power of chiefs, and progress in developing a policy framework was slow and incomplete, with no new legislation adopted by mid-1999 (Cousins 2009).

From 1999 to 2009 priorities shifted from meeting the land needs of the poor to servicing groups of aspirant black commercial farmers, and market efficiency and de-racialization of commercial farming. In relation to the thorny issue of communal tenure reform, Minister Didiza oversaw the passage of the Communal Land Rights Act (CLARA) (No 11 of 2004), which was premised on transferring ownership of land from the state to traditional councils under chiefs, within the boundaries of existing tribal authorities as determined by the apartheid state. Communities and civil society groupings objected vociferously to the law in parliamentary hearings, and launched a litigation challenge to CLARA in 2005. They asserted that CLARA undermined rather than secured land tenure rights, and that the procedure followed did not involve sufficient consultation. The Act was never implemented, and in 2010 it was struck down by the Constitutional Court on procedural grounds.

In 2009 the Comprehensive Rural Development Programme (CRDP), aimed at creating 'vibrant and sustainable rural communities' was launched. However, there has been long delay in offering tenure reform options to secure the land rights of people in communal areas, and this means that to date CPAs or trusts have been the only option available for collective land holding. CPAs have suffered from the lack of any substantive programme of support from government, which is one reason that many have become dysfunctional institutions. This has been the case in both Mkhambati and Caguba areas which are the two major land claims in the project domain. In both these areas the Department of Rural Development and Land Reform is facilitating the formulation of new CPAs, subsequent to the redundant structures that were formulated in the past. Although the notion of land reform being embedded within a wider *agrarian* reform has gained currency over time, no programme to give effect to this vision has been developed and debated as yet. The greatest focus to date is about access to land.

Unlike land access, land tenure is important to secure the rights to use a portion of land, but also to offer viable tenure options to those occupying restored and redistributed land. Addressing the legacy of the past, as per the South African Constitution (Act 108 of 1996, Section 25), is pertinent to the communal people that have been removed to cater for land parcels identified for developmental or conservation objectives in the Wild Coast. The 'property clause' (section 25) in

the final constitution (see Box 1) provides protection for the holders of property rights (such as in communal lands), but allows compulsory acquisition to take place for both public purposes and in the public interest.

In government's current draft Communal Land Tenure Bill, a governance structure (either a traditional council or a CPA) will become a title-holder '*only in respect of the communally owned portions of land… reserved for collective and individual enterprise and industrial sector activities, including, but not limited to grazing, cropping, forestry, mining, tourism, infrastructure and manufacturing*'. However, it is clear that the governance structure will be the 'title-holder to the entire cadastral unit'. These owners will be empowered to enter into business arrangements with external investors through 'investment and development entities' and joint ventures. Critics have argued that this approach to communal tenure reform runs the risk of encouraging unaccountable traditional leaders and councils to agree to business deals that privilege local and external elites and provide few benefits to ordinary community members, as is often the case at present in relation to mining. As a result, to date land tenure in communal areas is still an elusive phenomenon that spark rivalries and social unrest. The end result is an atmosphere of confusion and doubt as to exactly what can be done where, and who to approach to get permission. Without this clarity, any rural reform or conservation projects are unlikely to succeed.

Although the communities have property rights on the communal lands as per the Constitution, these rights should be balanced with restrictions in terms of environmental rights. This need for balancing act is clearly demonstrated by the happenings in the Xolobeni community of the Amadiba village in Mbizana. The main contention in this village is that the community has property rights while government (specifically the Department of Minerals and Energy) has mineral rights. Environmental rights are an extension of the basic human rights that mankind requires and deserves. In addition to having the right to food, clean water, suitable shelter, and education, having a safe and sustainable environment is paramount as all other rights are dependent upon it. Using this approach the Xolobeni community has prevail against the government's desire of mining in their village.

Box 1. The property clause in the Constitution (Section 25)
(1) No one may be deprived of property except in terms of law of general application, and no law may permit arbitrary deprivation of property.
(2) Property may be expropriated only in terms of law of general application— (a) for a public purpose or in the public interest; and (b) subject to compensation, the amount of which and the time and manner of payment of which have either been agreed to by those affected or decided or approved by a court.
(3) The amount of the compensation and the time and manner of payment must be just and equitable, reflecting an equitable balance between the public interest and the interests of those affected, having regard to all relevant circumstances, including—
(a) the current use of the property;
(b) the history of the acquisition and use of the property;
(c) the market value of the property;
(d) the extent of direct state investment and subsidy in the acquisition and beneficial capital improvement of the property; and
(e) the purpose of the expropriation.
(4) For the purposes of this section—
(a) the public interest includes the nation's commitment to land reform, and to reforms to bring about equitable access to all South Africa's natural resources; and
(b) property is not limited to land.
(5) The state must take reasonable legislative and other measures, within its available resources, to foster conditions which enable citizens to gain access to land on an equitable basis.
(6) A person or community whose tenure of land is legally insecure as a result of past racially discriminatory laws or practices is entitled, to the extent provided by an Act of Parliament, either to tenure which is legally secure or to comparable redress.
(7) A person or community dispossessed of property after 19 June 1913 as a result of past racially discriminatory laws or practices is entitled, to the extent provided by an Act of Parliament, either to restitution of that property or to equitable redress.
(8) No provision of this section may impede the state from taking legislative and other measures to achieve land, water and related reform, in order to redress the results Chapter 2: Bill of Rights 11 of past racial discrimination, provided that any departure from the provisions of this section is in accordance with the provisions of section 36(1).
(9) Parliament must enact the legislation referred to in subsection (6).

Tenure Management in Forested Areas

The Department of Environment, Forestry and Fisheries (DEFF) is the custodian of South Africa's forest resources. To this end, the National Forest Act, 1998 (Act 84 of 1998) and the Forestry Laws Amendment Act, 2005 (Act 35 of 2005) emphasise sustainable forest management, and explain how people and communities can use forest without destroying them. DEFF (previously Department of Agriculture Forestry and Fisheries) uses the participatory forest management as an approach of managing all forest types, including those that occur in the project domain. The intention of this is to encourage communities to manage forests in a sustainable manner in fulfilling their requirements in terms of wood, fruits, and medicines, amongst others. In the Pondoland area there are two types of State forests, namely Trust Forests or Headman's Forests and those that were declared by Government Gazette Notices during the past 130 years. To both

types of State forests there are restrictions applicable under Section 23 of the National Forests Act, namely that a list of activities may not be conducted without a licence from the Minister (of Environment, Forestry and Fisheries). These powers have been delegated by the Minister to regional office. Therefore, even in Headman's Forests, the chiefs or headmen cannot make rulings that are not as per legislation on these forests even though they fall under communal control. Therefore, unlicensed harvesting or cutting of trees is illegal. Forests in communal areas fall under an Estate Manager of the Forestry Branch, who is tasked with monitoring and enforcement. This enforcement is a huge challenge as there are too few forest guards covering too large areas.

Development

The Agricultural Landholding Policy Framework of 2013, which is not yet law, proposes that the government designate maximum and minimum landholding sizes in every district. District land reform committees are expected to determine minimum and maximum cadastral sizes by assessing a wide range of variables. Holdings in excess of the maximum would need to be trimmed down through 'necessary legislative and other measures', possibly through giving the state the right of first refusal on land offered for sale or expropriation.

Since 1994, through the legislation that was introduced to secure legal tenure, communal land is no longer owned by the State but by their respective communities. However, due to the applicability of the legislation and the constraints discussed above, most land parcels in communal areas are not yet transferred to communities. Although this land is still State Land, legally no development can take place on the land without the consent of the occupiers of the land as per the prescripts of the Interim Protection of Informal Land Rights Act (No 31 of 1996) and the Land Affairs General Amendment Act (No 61 of 1998). These pieces of legislation were introduced to ensure that occupiers of land even though they hold no legal title to the land cannot be deprived of the use of the land without compensation or consultation.

It is in this rather murky context that the biodiversity offset project operates in. The development of the biodiversity offsets cannot take place without the consent of the communities residing in the vicinity of the targeted land parcels.

A major constraint to any development, especially in communal areas, are the overlapping institutional mandates. Since 1994 the Eastern Cape has been demarcated into six district municipalities and several local municipalities. Superimposed with this are various government departments responsible for the development of this area. Within that framework are the responsibilities of chiefs and their respective tribal authority system.

Such uncertain governance structures makes development options in the project area very difficult as the complex dynamics and often conflicting interests of various leaders confound even the best intentions. However, there are small amounts of land around Port St Johns and Lusikisiki towns that are held in freehold title. Most of this land is on the outskirts of the town while land in the town was owned by the municipality. There are other land parcels sparsely distributed such as

those of Mbotyi coastal resorts that seem unique in their land holding status. Against the backdrop of the discussion in 2.2.1 and the fact that the delineation of these land parcels falls within the communal lands, no clearly defined holding title can be expressed in this report. Even in such a context, a safe work approach for the ECPTA is to request permission of communities for the development of the biodiversity offset project.

Although the notion of land reform being embedded within a wider *agrarian* reform has gained currency over time, no programme to give effect to this vision has been developed and debated as yet.

From the brief historical assessment above, it is clear that the “outsider’s” appropriation of Pondoland has been quite intrusive in terms of land and resource use. However, geographical isolation, historical and political dynamics (*The Pondo Revolt*, Homeland politics) and white peoples’ perceptions of a "no go" zone, did not stimulate strong colonisation; so there were few European settlements in this region (Beinart & Hughes 2007). The traces of this trend can still be felt in the current times as has been reflected and referenced to during interactions with the communities in the PRAs. Most appropriation of land and resources was through trading stations, church-based missions, permanent white settlements (such as coastal tourism resorts), and through natural resources conservation (such as creation of nature reserves and protection of forests). The modern lodging of multiple land claims in Pondoland reflects the extent of land that was appropriated from the amaMpondo.

The branding of the coastal section of the Pondoland area as the “Wild Coast” reflects a major euro-centric ecotourism interest that may not be congruent with the manner in which the amaMpondo view their land. However, they may derive benefits from the ecotourism ventures. The “Wild Coast” brand may unintentionally lead to a desegregation of the “coastal” strip that is ideal for ecotourism to the hinterland that is not so attractive to tourism activities. It is therefore necessary to understand the relationship between the local people and their land.

Farming trends

Global climate change together with modern economic, social and globalisation trends has seriously stressed traditional agricultural systems in many areas in Africa (Morton 2007). This has resulted in significant changes on how people use their land, and is especially true to many rural areas in South Africa. This has not only affected the producers of food but also the whole value chain including the consumers and traders (Pimbert *et al.* 2003). The primary trends have been a move from small-scale traditional subsistence farming, characterised by low-inputs and low returns, towards intensive commercial farming of larger portions of land using mechanisation and high inputs.

The amaMpondo, who were historically agricultural and pastoral society and have subsisted the region for more than 500 years (Beinart 1982), have not been immune from these global trends. Moreover, modernisation coupled with increased welfare that is intended at poverty reduction

(Scoones 1998) may also have a contribution to the agricultural production in the Pondoland. This is against the backdrop of a long history of the Pondoland being annexed to the British Government (De Wet 2013), and the still relatively unchanged Pondoland context in terms of pressure to develop economically even after the fall of apartheid (Bank & Minkley 2005).

In attempting to understand this context, a survey that looked into the dependency of communities on agriculture for sustenance and socio-economic issues was undertaken as part of this Situational Analysis. Food systems are made up of a set of activities from production to consumption and the interviews were aligned with this systematic view; with the intention of understanding the context of food security (Ericksen & Ingram 2004) in the project area.

According to Ziervogel and Ericksen (2010) food security is achieved when four outcomes are realised: availability, accessibility, stability and utilisation. Availability of food is production and distribution including culturally significant foods. Accessibility refers to ability to attain food through socially acceptable means. Stability is invulnerability to food production and supply to fluctuations. Utilisation is the quality of food intake coupled with individual's ability to ingest and digest food. The assessment for the current study only focused on availability. Further, this study looked at the contribution of farming at household level. This is in the context of the observed trends of de-agrarianising in South Africa (Bryceson 2000, 2002).

There have been innovative mechanisms of farming that have been introduced in the project area. An example is Is'Baya; a high value crop production programme undertaken under the auspices of the Agricultural Research Council (ARC). The programme empowers rural communities in 45 villages (for an example Ntlavukazi Village in the Ingquza Hill Local Municipality and SD Village in the Port St Johns Local Municipality) with the skills to grow fruit, vegetables and herbs using conservation agriculture methods. The ARC has been involved in the area for more than a decade resulting in many positive outcomes. Most of the farmers in the Is'Baya programme have adopted conservation agriculture resulting in an increase in crop production, both in intensity and diversity (see **Error! Reference source not found.**) (Bezuidenhout, 2015).

Although farming activities in the project area remains largely subsistence, the national government has provided considerable resources to support local communities. Subsistence farming comprises mainly maize, vegetables poultry and livestock (mainly cattle). In the Port St Johns area, there is limited commercial agriculture focusing on cabbage, green maize and spinach. There is a high involvement of households in livestock production as well as poultry production (See Table 2).

Table 1: Increase in crop production in response to the Is'Baya programme (Bezuidenhout, 2015)

Growth in the number of fruit trees cultivated by the initial 45 farmers			
	Before intervention	After intervention	% Growth
Banana	534	1 293	142%
Orange	273	524	92%
Naartjie	34	126	270%
Guava	74	172	132%
Mango	145	216	50%
Avocado	28	47	68%
Litchi	16	35	119%
Pawpaw	8	36	350%
Macadamia	0	150	0%
Peach	68	87	28%
Pineapple	72	92	28%
Deciduous	19	18	-5%
Pecan nut	0	0	0%
Lemon	0	6	100%
Average % growth			98%

Table 2: Distribution of households involved in agricultural activities by type of agricultural activities and municipalities, CS 2016)

Municipalty	Livestock	Poultry	Grain and food crops	Industrial crops	Fruits	Vegetables	Other
Ngquza Hill	17604	23797	25103	304	5188	8607	745
Port St Johns	8979	11203	8057	55	2137	2867	360
Nyandeni	22245	22668	21476	234	3916	13343	341
Mhlontlo	12197	12582	6413	38	1300	4521	56
King Sabata	24773	26055	18078	416	2251	12766	273

In the financial year of 2017/2018, the Department of Rural Development and Agrarian Reforms embarked on the following programmes in supporting agricultural development:

- Cropping Programme: Planting of maize in arable lands.
- Homestead Food Gardens: Indigent people, clinics, schools and churches are assisted with production inputs for their gardens and poultry projects.
- Comprehensive Agricultural Support Programme (CASP): The aim of this programme is to provide post-settlement support to the targeted beneficiaries of land reform and to other producers who have acquired land through private means.
- Land care: Ascertains that natural resources are sustainable utilised through application of soil conservation measures and soil rehabilitation interventions.

- Livestock Improvement Scheme: Aim to improve the condition of local cattle so that they can be competitive in their commodity markets.

Table 3. Projects in selected wards

Project Name	Ward	Area (ha)	Activity
Lumayeni	13	261	Fencing of arable lands
Nxanxadi	29	119	Fencing of arable lands
Lujecweni	30	120	Fencing of arable lands
Mzenge	10	450	Fencing of arable lands
Qhogho	29	230	Fencing of arable lands
Twazi Dip Tank	30	0	Renovation of cattle dip tank
Bumazi Dip tank	10	0	Renovation of cattle dip tank
Nkosibomvi Dip Tank	6	0	Renovation of cattle dip tank
Nkunzimbini Dip tank	16	0	Renovation of cattle dip tank
Hombe Dip Tank	20	0	Renovation of cattle dip tank
Thembukazi Dip Tank	1	0	Renovation of cattle dip tank

The Departments' implementation plan for the financial year 2018/2019 included:

- Cropping Programme: Planting of maize in 2750ha in all wards.
- Homestead Food garden: Assist 100projects with production inputs.
- Comprehensive Agricultural Support Programme (CASP):
- Land Care: Conservation Agriculture will continue at Nkozo for planting of maize in 30ha.
- Livestock Improvement Scheme

The planned livestock improvement program in Lambasi has not yet been implemented. The local political dynamics have an influence to this delay.

THE BIOPHYSICAL ENVIRONMENT

The biophysical environment (climate, topography, geology and soils) is best described for the whole area as there are no major gradients between the clusters, as they are relatively close together.

Climate

Considering that there are limited weather stations in the Wild Coast, the climate will be described using data from Lusikisiki (inland near the Central cluster Figure 11) and Port St Johns (coastal near the Southern cluster Figure 12)[2]. The climate of around Lusikisiki and Port St Johns can be described as warm temperate, with the warm Indian Ocean current balancing the southern latitude. The average midday temperatures ranges from 20°C in July to 25.5°C in February – a very narrow seasonal range within the context of South Africa. The region is the coldest during June-August months, but the entire region is frost free. There is a gradient of increasing rainfall from

Lusikisiki (annual average 874mm) to Port St John (annual average 1096mm of rain). Rainfall shows a distinctly bi-modal pattern, with peaks in spring and autumn, with winter being the lowest. However, there is some rain in every month of the year. Much of the summer rainfall is associated with storms, and the remainder with frontal systems that move up the coast from the south.

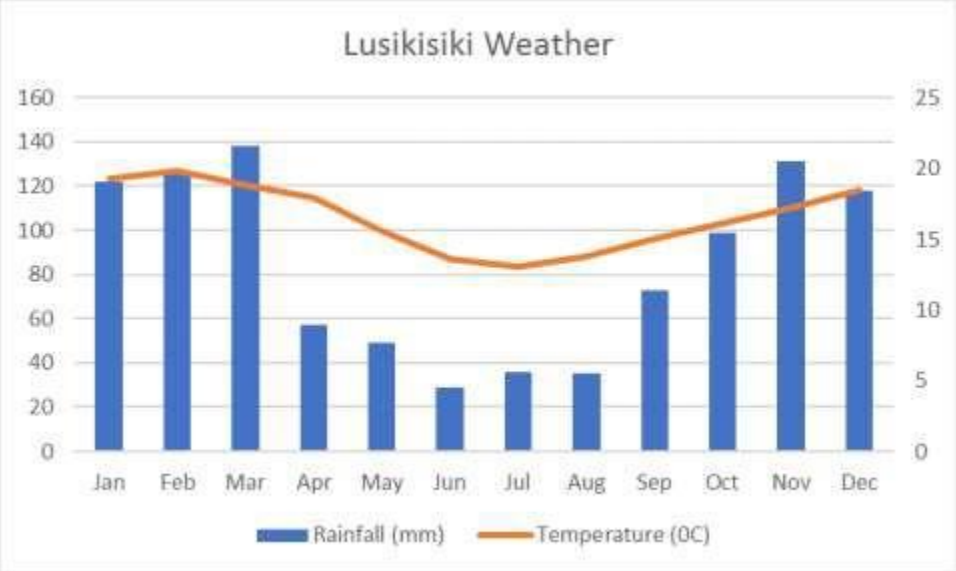

Figure 2 Average temperature and rainfall data for Lusikisiki area.

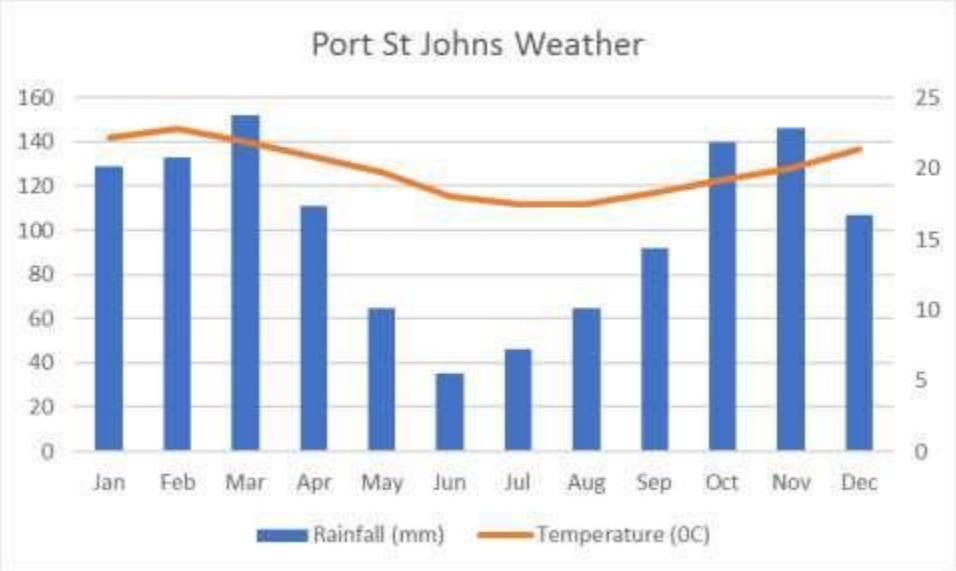

Figure 3 Average temperature and rainfall data for Port St Johns area.

Topography

The topography of the area around the sites is characteristic of South Africa's east coast (Figure 4). There is a relatively narrow coastal plain that rises inland to elevations above 500m within 10km of the coast. This elevation gradient results in a relatively significant climatic gradient, with decreasing temperatures and rainfall.

The undulating coastal plan is dissected by several large east-flowing rivers that have cut through the rising topography, resulting in very steep gorges and rugged terrain in their valleys. The general east-facing aspect of the coast plain changes to very distinct north- south aspects in these valleys, with resulting increases in habitat diversity and associated biodiversity.

The topography becomes more fragmented to the south, with many isolated hills and small mountains. The Ntsubane State Forest area has a very variable topography with steep and mountainous terrain. The area south of Mbotyi is distinctly different to that north of it. The Port St Johns area is mainly characterised by mountainous terrain with hills, cliffs, beaches and sandy dunes. The slopes can be as steep as 1:3. Dramatic landforms such as the Waterfall Bluff and the Cathedral Rock in Lambasi are an outcome of these unique topographical features.

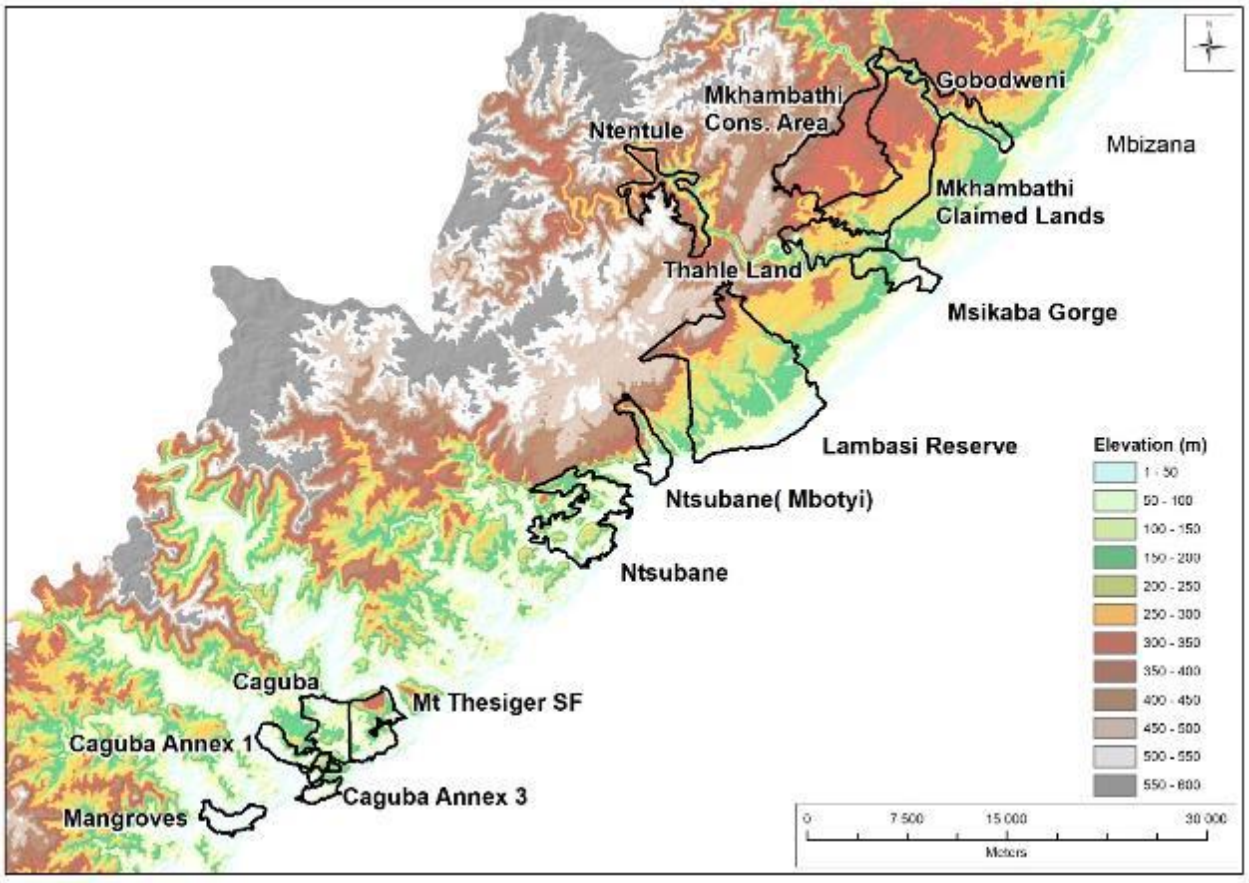

Figure 4 The topography associated with the offset sites

Geology & Soils

The northern and central clusters fall are within an area dominated by the Msikaba Formation (Figure 5) (although they were formally known as the Table Mountain Series and Natal Group Sandstones). The Msikaba Formation comprises pale grey quartzitic sandstones that are marine in origin with tiny fossils. The soils that arise from this sandstone rock are generally permeable, acidic and dystrophic sands that have a high aluminium content and low structure. The relatively high rainfall and temperatures have resulted in further leaching and weathering, so clay content is very low.

Geology is reflected in more complex soil patterns that result from the interaction of geology, climate and elevation gradients. In general, the soils are more heavy, acidic, highly leached and shallow, and are prone to seasonal wetness. There a relatively few doleritic intrusions in the area, but they result in very different soil and biodiversity features where they do occur.

The shallow and rocky Glenrosa and Mispah soil formations are common and where they are deeper, the soils are dominated by Cartref soil formation. This soil type consists of an orthic A horizon overlying an E horizon on litho-cutanic B horizon. In general the formation of an E horizon above the litho-cutanic B horizon indicates that the litho-cutanic B horizon is not permeable and promotes the temporary saturation and discharge in a predominantly lateral direction. These soils are generally shallow and tend to saturate quickly after rain storms due to limited storability and they are highly sensitive to erosion.

In summary, the soils along the Wild Coast of the Pondoland area are generally not good for arable agriculture of any sort. It is only the localised lowlands associated with depressions and valley floors, where sediments accumulate and organic matter has built up, that can be used for agriculture. The vast tracts of old arable lands that characterise the areas around the northern cluster demonstrate this poor potential. These lands were abandoned soon after being plowed (at great financial and biodiversity cost) due to poor crop returns. The arable potential of much of the area is limited for the most part good to grazing only.

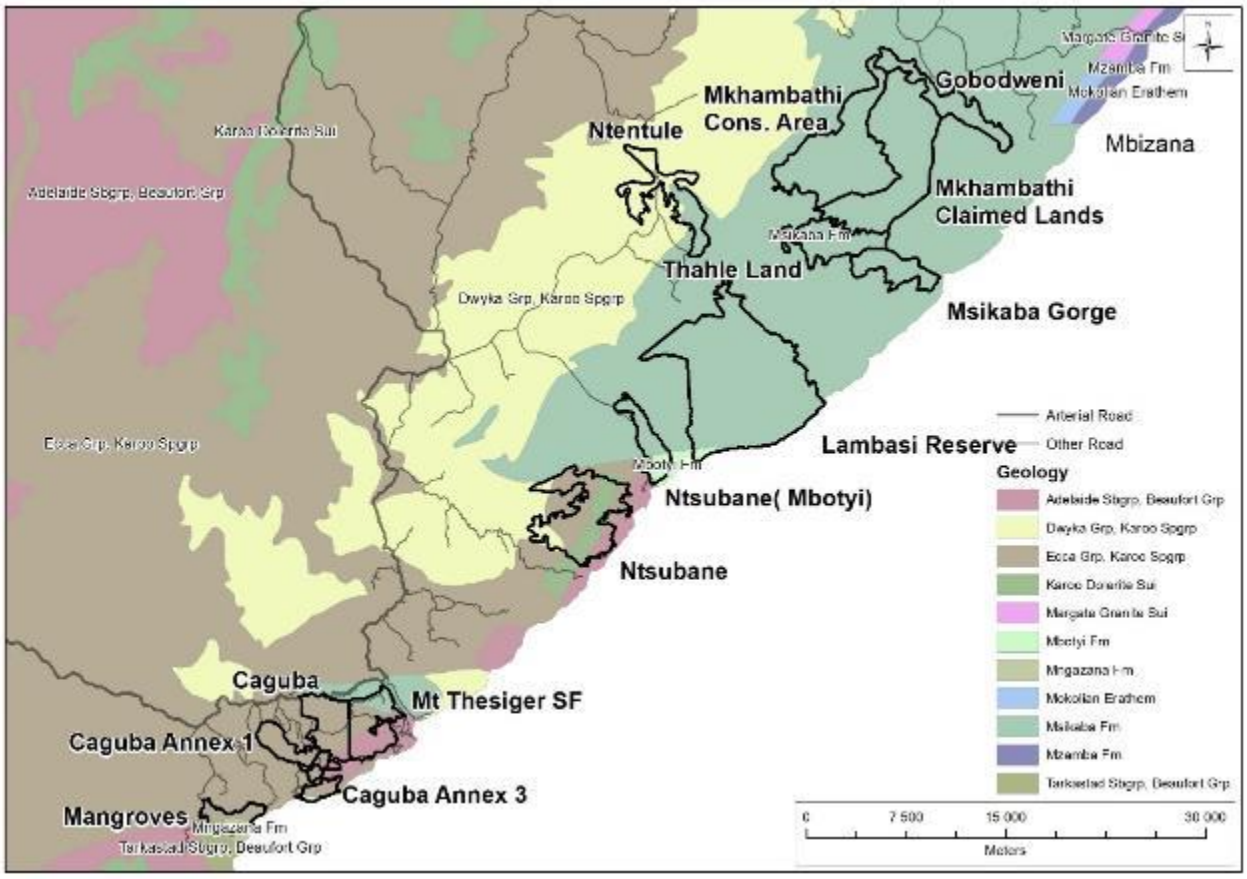

Figure 5 The geology associated with the offset sites

BIODIVERSITY

Wild Coast Biodiversity

The Wild Coast is renowned for its biodiversity value and has been prioritised as a biodiversity hotspot in various regional, national and international plans, such as the Wild Coast Project (Reyers & Ginsberg 2005, Berliner 2010), the National Biodiversity Strategy and Action Plan (NBSAP 2008, 2016), National Protected Areas Expansion Strategy (NPAES 2016) and the CEPF Maputaland-Pondoland-Albany Hotspot analysis (CEPF 2000). All these analyses conclude that the broader area around the offsets is a 'biodiversity hotspot' due to its high levels of diversity, endemism, ecosystem functioning, scenic beauty and threat status.

Considering that the environment is a complex inter-related system that does not conform to human-made boundaries, it is not always easy to measure or model the biodiversity of a targeted area. Yet, adequate management of environment requires a good understanding of biodiversity condition and functioning in each offset area, and the land between them. For an example, connectedness between various patches of biodiversity elements might facilitate movement and migration of certain species. This means not only biodiversity elements are important, but also their functioning.

This centre of endemism has a unique feature forests or forest patches that are protected within riverine gorges interspersing a mosaic of grasslands (van Wyk & Smith 2001). The Pondoland-Natal Sandstone Coastal Sourveld is the dominant grassland although Ngongoni veld is also widely distributed. The Ngongoni veld is a tall grassland dominated by unpalatable *Aristida junciformis* (Ngongoni grass). Wooded areas are found at lower altitudes in river valleys. Ngongoni veld lies between the high altitude mistbelt grasslands associated with higher altitudes and the Thornvelds and Coastal sourvelds associated with lower altitudes (le Roux). Ngongoni veld is highly utilized for shifting agriculture and livestock grazing and is in a degraded state. Less than 60% of the original extent of the vegetation type remains intact and less than 0.01% is formally protected; resulting in its listing as a Vulnerable ecosystem according to NEMBA 2008.

In terms of Eastern Cape Protected Areas Expansion Strategy (ECPAES), the Northern & Central Clusters lie within the Pondoland priority area, and the Southern Cluster is within the Silaka Expansion area.

The CEPF Maputaland-Pondoland-Albany Hotspot analysis highlighted almost all the Wild Coast as important, and the offset sites are found in their Pondoland North Coast and Lower Mzimvubu areas.

Considering that the Biodiversity Offset Project is to be implemented in a "like" environment to that which the green fields section of N2 Wild Coast road are likely to compromise, the offset sites should include the following ecosystem types[1]:

- Pondoland Ugu Sandstone Coastal Sourveld (Vulnerable),
- Pondoland Scarp Forest (Least Threatened),
- Transkei Coastal Scarp Forest (Least Threatened),
- Successional Thicket (Least Threatened), Transkei Coastal Belt Dolorite
- Shale Grassland (Vulnerable).

The Eastern Cape Biodiversity Conservation Plan (2007) identified various biodiversity important areas in the Eastern Cape. This work is under review. The area planned for this biodiversity offset project was identified under the ECBCP (2007) process to be a priority area for meeting biodiversity targets Transkei Coastal Scarp Forest.

Separate to the terrestrial biodiversity priorities, the area has a large number of rivers that drain into the sea via an incredibly important array of estuaries (Figure 5). The 30 estuaries in the area are not just important from their inherent biodiversity in that they present a gradient from fresh to saline water ecosystems, but they also are the primary breeding and nursery areas for many marine fish species that are important aspects of the local economy and food supply. Together the 30 estuaries occupy over 2,200 ha of floodplain ecosystems, ranging in size from 1.3 ha to 750 ha (Table 1).

[1] The conservation status of these vegetation types reflected in brackets is as per Reyers & Ginsbert (2005).

Table 4 The estuaries within the Project area

Name	Area (ha)	Name	Area (ha)	Name	Area (ha)
Butsha	1.27	Mkweni	5.01	Mtentwana	10.31
Bulolo	7.06	Mzamba	80.12	Mtolane	20.00
Gxwaleni	1.36	Mngazi	370.99	Myekane	3.25
Kwa-Nyambalala	5.16	Ntafufu	238.44	Mzimpunzi	22.36
Kwanyana	35.84	Mpahlane	17.62	Mzimvubu	750.14
Lupatana	5.95	Mpahlanyana	16.27	Mzintlava	88.10
Mbotyi	42.13	Msikaba	61.57	Nkodusweni	82.22
Mgwegwe	5.61	Mtambane	7.01	Ntlupeni	5.92
Mgwetyana	7.62	Mtamvuna	95.14	Sikombe	73.50
Mkozi	13.02	Mtentu	68.56	Sitasha	1.40

Many of these estuaries are theoretically protected under the Pondoland Marine PA (van Niekerk & Turpie 2012), although there is little or no management of the estuaries other than those in Mkambathi Nature Reserve. Most of the estuaries in the area are recommended for full or partial protection based on their biodiversity and ecosystem services value (van Niekerk & Turpie 2012).

The Pondoland Marine Protected Area is approximately 90km long and runs between the Mzamba River in the north and the Umzimvubu River in the south, extending 10km out to sea. It has restricted zones (No take) as well as open areas. No fishing from a vessel is allowed in the large offshore restricted zone between the Sikombe and Mbotyi Rivers, primarily to enable the recovery and rebuilding of depleted line fish stocks. The coastline is home to dozens of species endemic to this MPA and a host of marine and coastal habitats as well as pristine estuaries.

The marine biodiversity within this bioregion forms a unique transition zone with elements of sub-tropical and warm temperate ecosystems. It forms the core distribution area for many over-exploited line fish species e.g. seventy-four, red steenbras, black mussel cracker, some of which spawn in the region. The MPA is also important area for several intertidal invertebrates e.g. brown mussels, oysters, limpets, many of which have been subjected to extensive harvesting in the past.

The Pondoland Expansion area falls within the northern extreme of the Pondoland expansion zone identified in the National PA Expansion Strategy (NPAES 2016). The following is an extract from the report (2007):

The Pondoland focus area in the Eastern Cape represents the last opportunity for a large coastal protected area in South Africa, with the attendant opportunities for local and regional economic development linked to coastal ecotourism. It has a remarkable spread of vegetation types across five biomes, including some unique mosaics of coastal grassland and forest, and provides opportunities to maintain large catchment-scale ecological processes in the form of free-flowing rivers (of which few remain in South Africa) and intact rivers linked to priority estuaries.

Although more detail is provided later in the report about the biodiversity values specific to the sites themselves, there can be no doubt that there is a long-history of recommendations, based

on the best available scientific data, that the offset sites represent very important biodiversity, and the success of the project will be a very significant conservation achievement for South Africa.

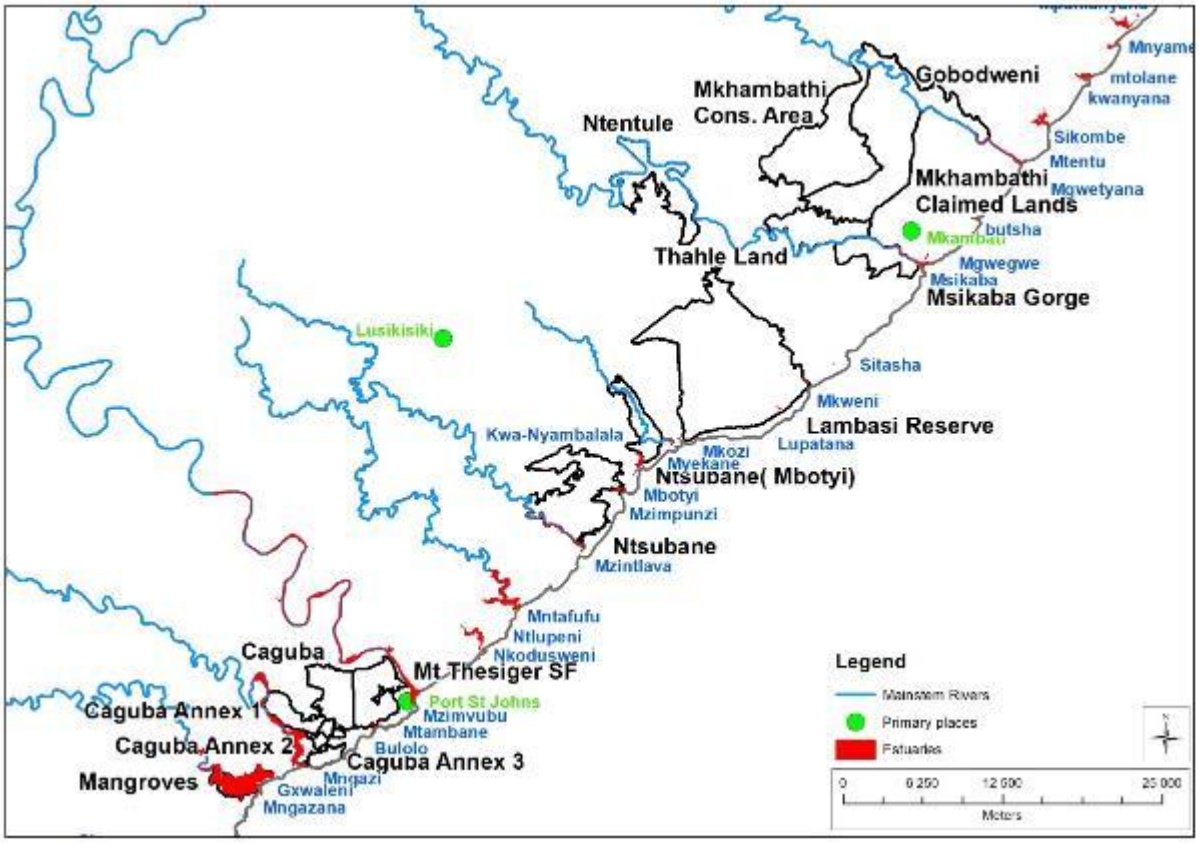

Figure 6 Map of the estuaries of the offset area

The biodiversity descriptions here take an 'ecosystems' approach, and there is not much mention of wildlife or individual species. This is because the majority of Pondoland areas are depauperate of wildlife, primarily due to hunting. According to the Wild Coast Project (GEF 5, 2010) animals are hunted in this area by mend from local communities for sport, consumption of meat, traditional medicine or to control 'pests'. The sites are described in the three clusters.

Northern Cluster

Terrestrial ecosystems

Vegetation in the northern cluster is dominated by Pondoland-Natal Sandstone Coastal Sourveld (Figure 7). This matrix of grassland is penetrated by islands and linear extensions of Eastern Valley Bushveld and Pondoland Forest (Scarp Forest), often associated with the river valleys and depressions where water accumulates in the soil. Clearly, the northern cluster forms an integral part of reserve expansion strategies at a national and provincial level and has very good biological reasons for being proclaimed as a nature reserve.

Fauna & Flora

The Kwa-Dlamba river gorge and catchment contains many endemic species (Berliner 2010), and there are several other areas of high biodiversity importance including the Pondoland scarp forest long the Msikaba river gorge, in particular around the 'super bowl' area and those within the Msikaba river gorge. The Kwa-Dlambu valley contains a very large community of *Leucospermum innovans*, a rare Pondoland Centre endemic that was discovered in 1999 (Prinsloo 2000). Further exploration in the KwaDlambu valley by the late Tony Abbott has led to the discovery, of what are thought to be new species of *Agothosma* and *Erica*, which are awaiting description. Such new discoveries are thus still being made and highlight the importance of a better understanding of the Pondoland Centre.

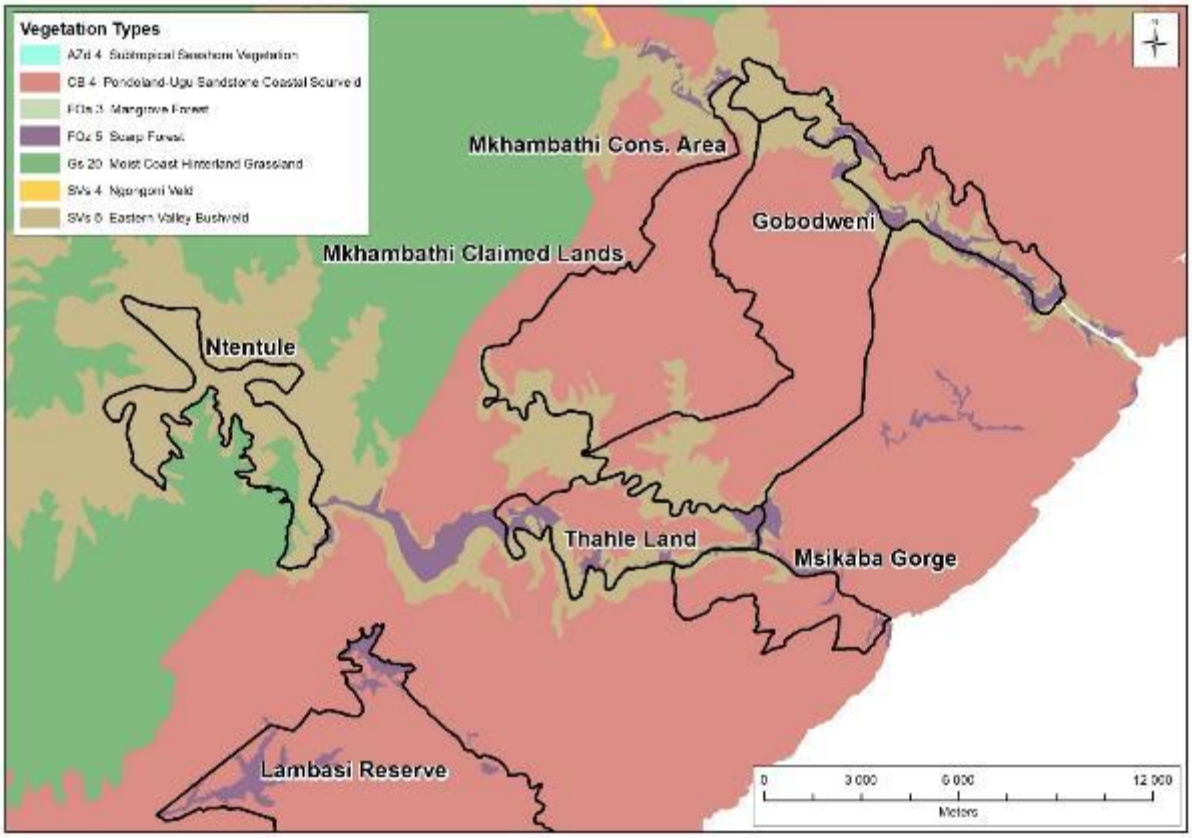

Figure 7 Map reflecting the vegetation types of the northern cluster of the project area

A field assessment of the area (Lechmere-Oertel 2011) revealed that the natural grasslands of the AOI are generally in good condition. They have suffered some species loss due to prolonged grazing pressure and there has been a slight shift in species composition towards more weedy indigenous species. However, there are clear signs that these grasslands are still representative of their vegetation type:

- The forb component of the grasslands is still high (c. 50% of the richness is forbs).
- There are almost no exotic weeds that typically invade degraded grasslands.

- Ecological indicators such as bioturbation, basal cover and erosion indicate a healthy ecosystem.

The Msikaba gorge is home to a significant colony of Cape Vultures (Figure 8), with 170 to 190 pairs regularly nesting on the cliffs. Human activities and road construction might have an impact on these birds and thus SANRAL has appointed specialists to monitor the Cape Vultures for the period of the road construction.

Figure 8 Photo of Cape Vultures nesting in the Msikaba gorge

Wetlands and Estuaries

The grasslands within the northern cluster have a very high incidence of wetlands; primarily due to the slightly undulating topography and impermeable sandstone geology. The result is a matrix of grassland with many islands of wetter grassland and swampy forest. This pattern is key to the biodiversity in the area, providing a range of habitats for many different species.

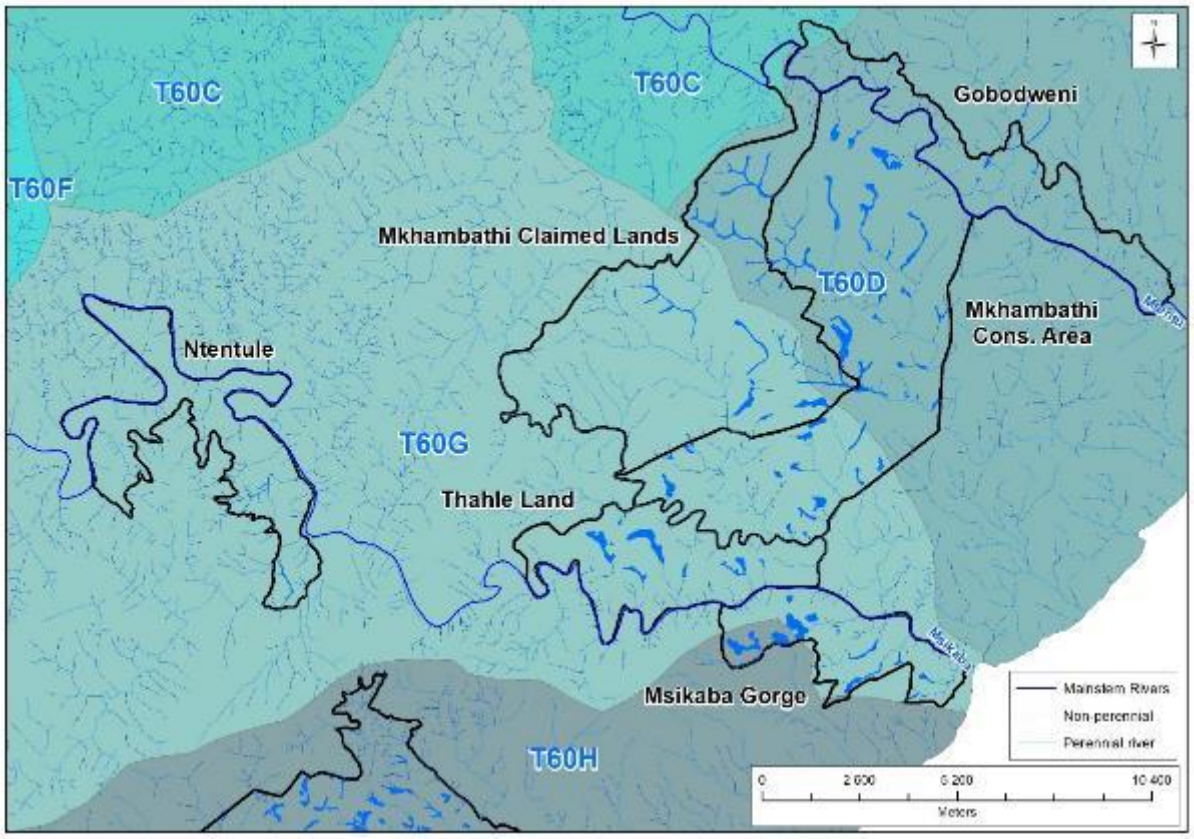

Figure 9 Map showing the quaternary catchments, rivers and wetlands of the northern cluster

Central Cluster

Terrestrial ecosystems

Similar to the northern cluster, the vegetation in the central cluster is dominated by Pondoland-Natal Sandstone Coastal Sourveld Figure 10) with some large patches of Pondoland Scarp Forest. The forested gorges are important for maintaining ecological connectivity in Pondoland. By allowing species movements across altitudinal gradients, they may afford some resilience to climate change (Berliner 2010).

The Central area stands out as one of outstanding scenic beauty underpinned by extra-ordinary biodiversity value as one of South Africa's last large portions of coastal grasslands.

The Lambasi area in the central cluster has several large gorges that incide deeply into the coastal plain and penetrate deep into the hinterland (e.g. Lupitana Gorge, Figure 11). Such areas may act as very significant corridors for biodiversity between the coast and the inland ecosystems, especially in the light of predicted climate change.

Although often recognised as a biodiversity hotspot, the Ntusbane forests are severely degraded and in need of urgent management intervention. A case study that was conducted at Ntsubane Forest describes this forest as "complex and the largest remaining indigenous forest in the Wild Coast. It is identified as the key biodiversity within the area of Maputaland Pondoland Albany Hotspot. The disparate patches that make up this cluster include Pondoland and Scarp Forest, Coastal Forest Thornveld, Coastal Bushveld Savannah, Scarp Forest, and sourveld grassland.

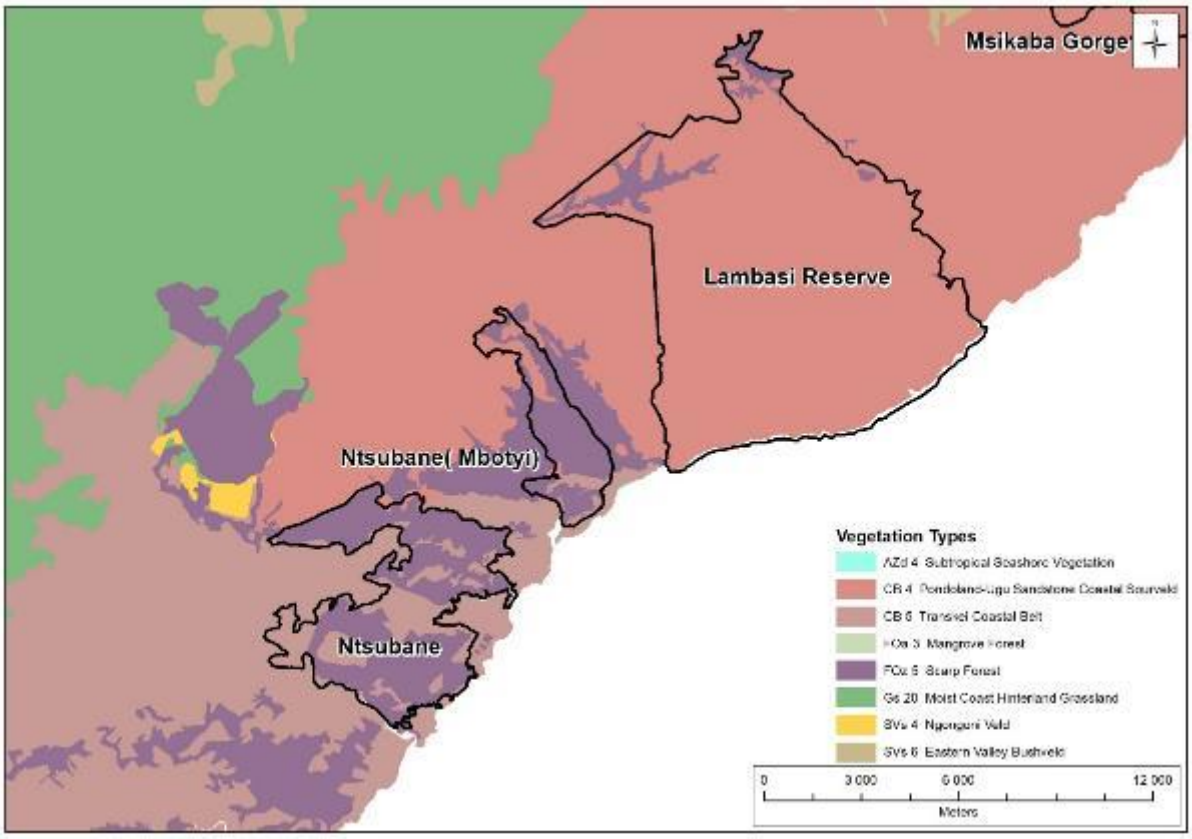

Figure 10 Map of the vegetation types of the Central cluster

Figure 11 Aerial photo of Lupitana Gorge

Fauna & Flora

Although no detailed work has been done in the central areas, it is likely to have similar biodiversity features to the northern cluster. Indeed, Berliner (2010) recommended that this area apply for UNESCO World Heritage Site status (the Pondoland World Heritage Site), on grounds of its exceptional endemic flora, land, sea and cultural landscapes.

The Ntsubane State Forest complex is the largest remaining indigenous forest complex on the Pondoland section of the Wild Coast. These forests fall within the Maputaland– Pondoland–Albany Hotspot in the Pondoland Centre of Endemism. The area is made up of several increasingly fragmented forest clusters. This forest complex has high levels of tree diversity and endemism. The rural communities who inhabit the forests rely directly on the forests for a number of ecosystem services and natural resources, including for medicinal plants, building materials, crafts and hunting. Ntsubane is a highly diverse and vulnerable forest with dominant clusters Goso, Kaleni, Ndengane and Mbotyi. The Ntsubane State Forest is being invaded by alien species and commercial plantation.

Wetlands and Estuaries

The central cluster also has a very high proportion of wetlands and rivers within its grassland matrix (Figure 12). As with the northern cluster, the repeated gradient from terrestrial to aquatic ecosystems provides the habitat for the characteristically high biodiversity.

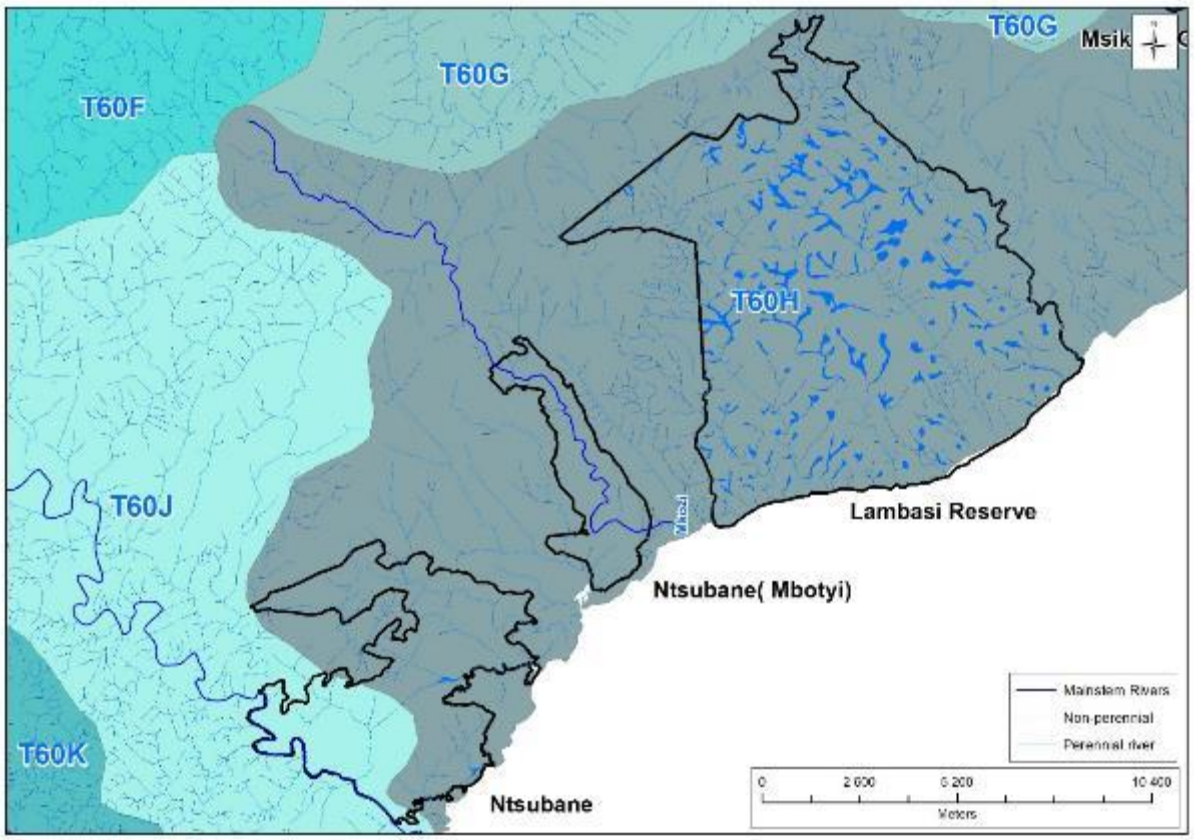

Figure 12 Map showing the quaternary catchments, rivers and wetlands of the central cluster

Southern Cluster

Terrestrial ecosystems

The southern cluster is probably the most diverse in terms of ecosystems and vegetation types compared to the other clusters. There is a relatively intricate arrangement of grasslands, forests types, coastal vegetation and aquatic ecosystems that is surely home to a stunning array of biodiversity (Figure 13). Both Pondoland Scarp forest and Transkei Coastal Scarp Forest are found in the area Botha & Brownlie, 2015).

Of particular importance in the southern cluster are the mangrove forests that abound in the Mangroves site. These mangroves are some of the largest in South Africa and are of significance from a conservation perspective.

Fauna & Flora

The forests in this area vary in their composition and condition, but the variation could be attributed to the physical substrate, location within the landscape, various degrees of resource use (historical and current), and status of recovery. Many forests are in poor condition with many large gaps and presence of invasive alien species (some are useful substitute resources). To this end, the DEA's Natural Resources Management program is undertaking intensive land rehabilitation in this area.

For some species the intact forest provides a better habitat. But particularly the intensively used species, such as *Milletia grandis* and *Pteroxylon obliquum*, requires more open conditions for good regeneration. In general, the stem diameter distributions (population status) of most species show a good balance between abundant regeneration and small stems with some more mature stems (sometimes the levels are relatively low). Such information, together with the information on species response to harvesting practices (sprouting and multi-stemmedness), provide a useful guide to develop sustainable resource management strategies for maintaining the forest distribution, structure and overall species composition but also the population dynamics and regeneration status of the species targeted for use. This information can be obtained from Cawe and Geldenhuis (2007).

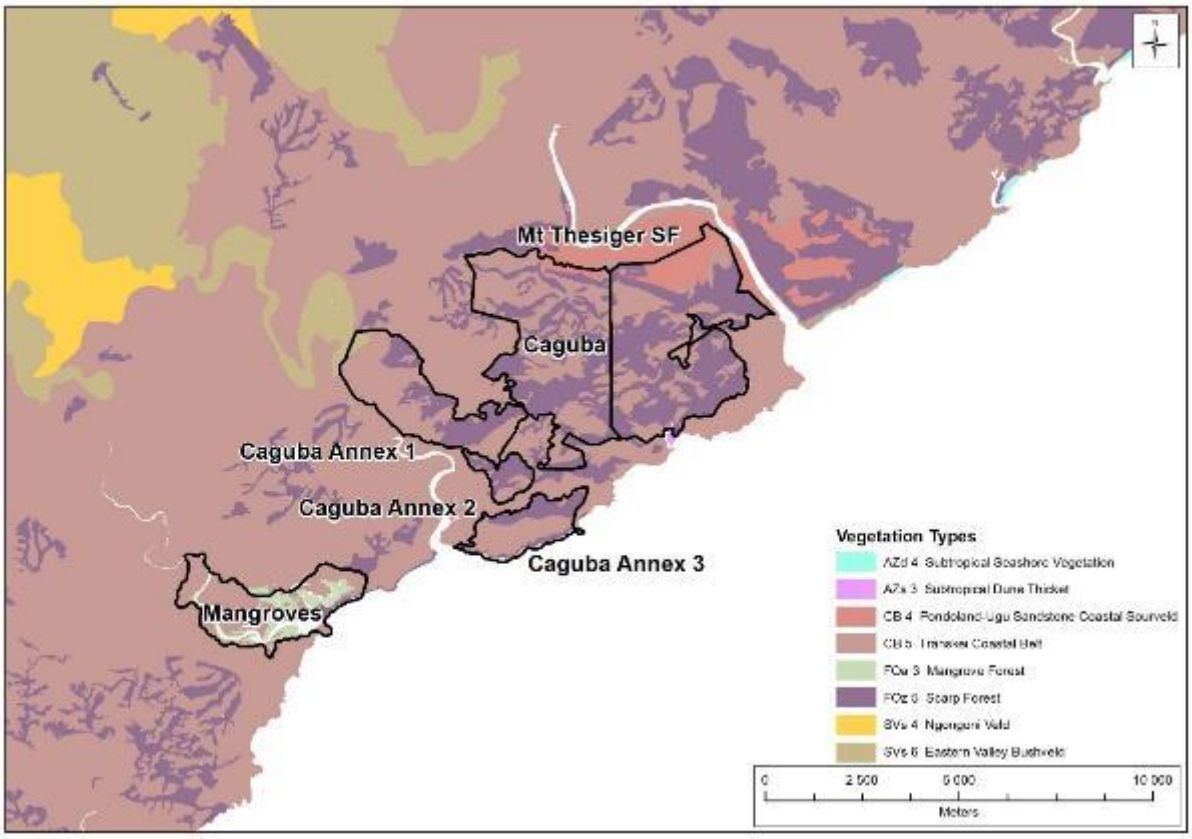

Figure 13 Map of the vegetation types of the Southern cluster

Wetlands and Estuaries

Interestingly, there is a relatively low incidence of wetlands in the southern area, primarily due to the better drained soils and more hilly topography. However, the presence of the large estuaries at Mangroves, Mngazi River mouth and Mzimvubu River mouth, indicates the high value of these systems in terms of coastal conservation.

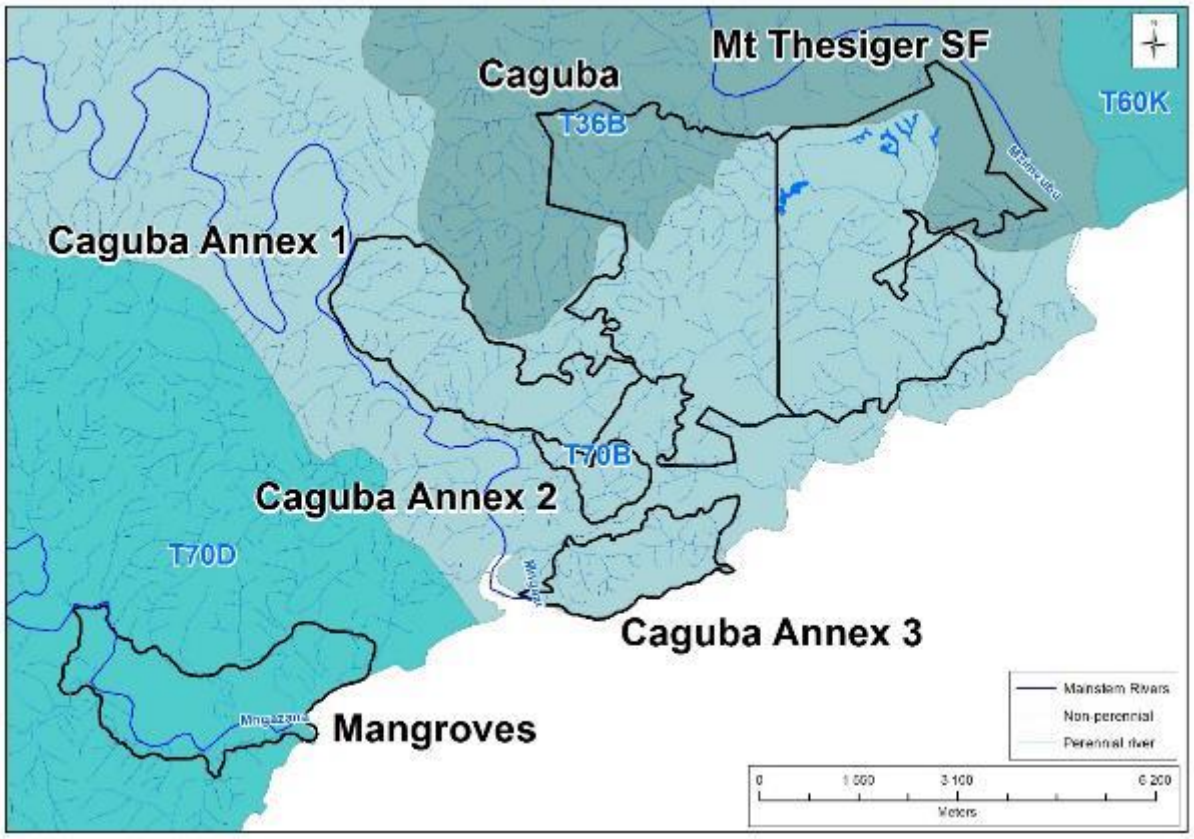

Figure 14 Map showing the quaternary catchments, rivers and wetlands of the southern cluster

LAND COVER

Appendix A shows landcover maps of all the sites based on aerial imagery interpretation.

This section of the report is presented as a spatial scope of the establishment of the biodiversity offset project. It highlights specific drivers that might contribute or influence this offset project. Further, it looks at opportunities for potential ecological restoration which is in-line with the mandate of a biodiversity offset project.

It should be acknowledged that in terms of the legislative framework, even rural areas are incorporated into the local municipality delineation. In terms of Integrated Development Planning (IDP) and Spatial Development Framework (SDF) processes, the local municipalities are supposed to plan future developments in their respective areas, including rural areas. IDPs and SDFs are designed to provide a framework for how land is planned to be used. Considering that these process requires other stakeholders in the area who can impact on and or benefit from development in the areas, it becomes necessary that the municipalities within the project planning domain interact with ECPTA to ensure that the project receives sufficient expression in the IDPs and SDFs. Currently, there is no reflection of the project in the respective IDPs. However, the SDFs are due for review, the municipalities are interacting with ECPTA to ensure that the biodiversity offset project is expressed in the SDFs.

The biodiversity offset project presents an opportunity of improving the ecological state of the project domain. Although most people see the Wild Coast as pristine and “untouched”, this is a relative perception. Without a detailed land use assessment it is difficult to confirm with confidence the ecological status of the area. Through land restoration, the areas that have compromised ecological state can be improved.

The mapping that was done for this section of the report was based on the use of aerial photographs. Ground truthing was done to confirm the delineated or identified “on the ground” attributes. However, it should be noted that the many areas in the project domain are inaccessible. There might therefore be limitations to the accuracy of what has been mapped in those inaccessible areas.

Land cover is a foundational dataset for understanding the opportunities and constraints for management. Landcover describes how much of an area is covered by various natural ecosystems, semi-natural agricultural activities, and man-made surfaces. Landcover has some overlap with the related concept of land use, which shows how people use the land. They may use the land for development, conservation, agriculture, or mixed uses. Land cover can give an indication of land use although it cannot describe all land use options practices. Land cover cannot tell “how people use the land”. For example, an area may have a landcover class of Grassland, but there is no knowing if it is used for grazing, tourism, recreation, or any combination.

There are strong patterns of landcover across all the sites (Table 5), with the majority being considered ‘Natural’. Within this class, the biggest pattern is that the northern sites are dominated by grasslands, with smaller forest and bush patches embedded within this matrix. The southern

sites are more woody, being dominated by forests and bush, with small grassland patches embedded with this matrix. The transition between these patterns occurs around Lambasi & Ntsubane in the central cluster.

Significant Sites

The WC has so many spectacular sites that it is very difficult to account for them all. Almost every valley has crystal clean rivers plunging through deep pools and deep sided gorges fringed with indigenous forests. There are rolling grassland vistas, sheer cliff lines, waterfalls that fall directly into the sea, hidden swamp forests, stunning coastal rock ledges and amazing beaches. Aside from the natural features, there are also fascinating cultural sites. All of these have incredible existence value and form the basis for all the tourist ventures in the area.

Table 5 The Landcover areas per class per offset site

LANDCOVER	Cag.	Cag. A1	Cag. A2	Cag. A3	Gobo-dweni	Man-groves	Nten-tule	Ntsu-bane	Ntsu-(Mbotyi)	Lambasi	Mkham. Claimed	Mkham. Cons.	Msikaba	Mt Thes.	Thahle	Total
NATURAL	**1322.1**	**682.2**	**115.4**	**301.1**	**1415.7**	**633.4**	**1697.8**	**2925.8**	**936.2**	**8758.9**	**3849.2**	**4457.3**	**1089.6**	**1380.0**	**1563.4**	**31128.2**
Bush		1.3	11.2	32.8	38.1	124.9	931.4	13.8	75.9	277.5	2.9	17.4	22.7		80.3	1630.1
Forest	1253.8	644.3	100.2	172.1	461.9	140.0	254.9	2678.4	813.7	418.5	83.8	187.6	40.7	1165.4	262.1	8677.5
Grassland	66.9	31.8	4.0	96.1	839.9	5.0	372.7	192.9	45.6	6492.3	2813.8	3023.4	883.5	172.1	1076.6	16116.7
Mangrove						151.4										151.4
Riverine					42.8	82.2	78.5	20.7			11.1	16.3	28.6	2.1	2.1	284.4
Sand Dunes						82.4		3.9								86.3
woodland	1.4					39.2	3.7	7.8						19.0		71.3
2º Grass.		4.9			28.6	8.2	55.1			888.5	900.8	971.5	19.8		72.3	2949.7
Swamp For.										40.8	1.1	14.9				56.8
Wetland					4.4		1.3	8.3	1.0	641.3	35.7	226.2	94.3	21.4	70.0	1103.9
SEMI-NAT.	**-**	**-**	**-**	**-**	**2.1**	**-**	**4.4**	**-**	**-**	**17.2**	**25.8**	**31.6**	**1.3**	**40.4**	**8.2**	**130.9**
AIPs					2.1					10.3	23.2	23.6	1.3	40.4	8.2	109.1
Erosion							4.4			6.8	2.7	8.0				21.8
MODIFIED	**26.1**	**15.5**	**9.9**	**1.5**	**15.9**	**4.1**	**26.6**	**5.7**	**25.8**	**40.3**	**474.3**	**440.8**	**2.3**	**55.1**	**7.0**	**1151.0**
Arable						4.1	25.4		6.0	29.8					2.6	67.9
Developed	14.2	7.0												25.9		47.0
Homesteads	11.0	8.6	9.9	1.5	15.3		1.2	5.7	19.8	10.4			2.3		4.4	90.1
Sand mine					0.6						16.7			0.9		18.2
Timber	1.0										457.6	440.8		28.4		927.8
Total	1354.1	697.7	125.4	302.6	1433.8	638.2	1728.7	2931.5	962.0	8816.3	4349.4	4929.7	1094.5	1478.6	1578.6	32421.1

THREATS TO BIODIVERSITY

The livelihood options and their impact in the Wild Coast (within Pondoland) are referenced at length in the Ingquza Hill Integrated Development Plan (IDP) (2017), which highlights that anthropogenic activities such as deforestation, illegal sand mining and invasion of alien plants are a potential threat to biodiversity. Mining sites are left unrehabilitated which exacerbates the impact through soil erosion and siltation into the rivers and estuaries: the latter being key breeding areas for many of our marine fish.

The primary threats to biodiversity in Pondoland are unsustainable harvesting, loss of habitat and degradation, and these are discussed in turn below.

Unsustainable harvesting of plants and animals

Rural amaMpondo are heavily dependent on their natural resource base and have a diverse range of land uses, including: intensive and extensive crop cultivation, extensive livestock grazing, hunting, extractive harvesting of natural resources and settlement. The natural resources are used for building materials, fuel wood, thatching grass, wild food plants, medicinal plants, and cultural species (Bews et al. 2008). However, local communities can negatively impact both indigenous forests and grazing lands through overuse (Conde 2014). It is clear that access to land, natural resources and protection of grave sites is a very important part of the amaMpondo culture. These cultural and symbolic values of land and natural resources need to considered in any biodiversity offset agreements.

Collection of natural resources is integral to daily life in the rural parts of the Wild Coast in general, where people derive some of their livelihood from the natural resources surrounding them. However, as the populations of villages and settlements increase, so the demand can surpass supply, leading to unsustainability and loss of diversity. Examples of plants being harvested include: for medicine (for example *Stangeria eriopus, Cassipourea flannagannii*), for horticulture (in particular *Encephalartos altensteinii*), pole or construction (for example *Pteroxylon inerme, Avicennia marina*) and firewood (anything woody).

Likewise, much of marine life associated with the rocky inter-tidal zone and estuaries is threatened by overuse (de Villiers & Costello, 2006).

Unfortunately, there is almost no existing data on the species, levels of harvesting or natural stocks the target species so it is very difficult to make any accurate statements about what is actually going on in the area. This is a key need for ECPTA to consider in the future of the project. However, during the household interviews, the communities were questioned on the natural resources they derive from their surroundings. These communities seem to use an even greater diversity of resources from their environment as reflected in Figure 15.

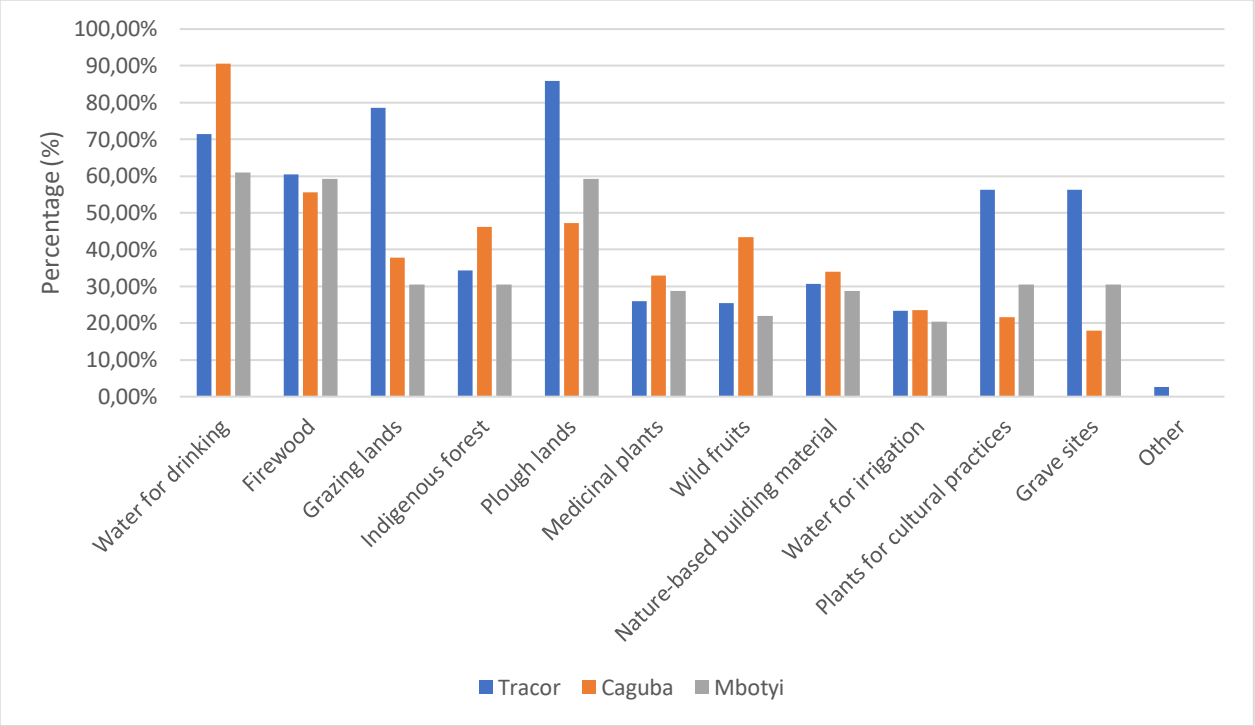

Figure 15. Diversity of natural resource use by different communities in the project area

The current study is in the process of assessing the extent to which these natural resources are used or contribute to household survival needs. The results are not yet ready and will be published in the next project milestone. This association with land and natural resources provides a context of what impact the biodiversity offset project may have to amaMpondo culture and livelihoods.

As indicated above, the amaMpondo have experienced much interference from historical governments, including land dispossession, and have demonstrated considerable resistance to this. Thus it is important that the local people are represented in decision-making of how the biodiversity offset areas are to be managed. The local people are the rightful landowners, and there should be a clear understanding of what the co-management agreements of such offset areas should look like (Thondhlana et al. 2016). These points need to be carefully factored into the biodiversity offset process that aims to establish co-management agreements with local communities to expand the network of protected areas.

Habitat Loss

Habitat loss in Pondoland is primarily due to uncontrolled or unplanned settlement (especially ribbon development along existing roads or at the various existing tourism nodes), deforestation of indigenous forests, afforestation with exotic species, clearing of areas for agricultural activities and sand mining.

The resulting habitat loss has resulted in several vegetation types being considered threatened: such as Pondoland Ugu Sandstone Sourveld and Pondoland scarp forest. The ecosystem threat in this area is often underestimated (Botha and Brownlie 2014), and the ecological status of the

vegetation types are often under-estimated. What this means is that an effort should be made to put most intact habitats of these two vegetation types should be put under conservation management (Berliner 2010).

Settlements

The settlement pattern in the project domain is as far back as human existence in the area. The majority of that information is not recorded. The documented information can only gleaned from historical records. As has been discussed under Land Tenure section, colonialism has had an influence in settlement patterns in the Wild Coast. A significant change in the settlement pattern was introduced by the colonial magistrates in 1947. This together with other attempts to re-shape and re-engineer the Pondoland led to a fierce revolt of 1959-1960 (Kepe & Ntsebeza 2011). The resistance showed the importance of land to the Pondo communities as the "betterment" areas of the Act set to concentrate settlements, demarcate arable land and divide grazing areas into fenced camps (Beinart and Bundy 1980). This scheme was about resettlement, stock control, rotation grazing, fencing of grazing land, culling, regular dipping and promotion of government-sponsored cattle sales. The protests were violently supressed and on the sixth of June 1960 where unarmed amaMpondo peasant rebels were massacred and many arrested by government troops at Ngquza Hill near Flagstaff. Thus, the naming of the local municipality in recognition of this massacre Ingquza Hill Local Municipality.

Settlement patterns were analysed together with homesteads. This is because it was not easy to separate an area occupied garden from that of a house. It therefore was feasible to combine both homesteads and arable land. The area under settlement seems not to be significant compared to the total project area investigated for biodiversity offsets potential (28 000 ha).

Although settlement does not display a significant threat in most grassland areas, the forested areas such as at Mount Thesiger, are subject to considerable informal an unplanned settlement growth that intrudes into forests. When this settlement growth adjoins forested areas, it poses a serious threat to spilling over into State forests. This calls onto enforcement and effective application of the Spatial Development Framework by the respective municipalities.

Timber Plantations

In the 2011 DAFF Strategic Plan afforestation was identified as a rural based activity that can contribute significantly to rural development, economic and employment opportunities of rural communities. Considering that the forestry sector contributes about R12 billion to the South African economy, the plan was to encourage rural communities to participate for the diversification of livelihoods. Over and above this, the increasing demand for fuel wood and building material in rural areas has caused widespread deforestation of natural woodlands, riverine zones, and water catchments. To reduce this problem woodlots have been established at a number of villages throughout the country to supply fuel wood and poles. It is therefore important that existing woodlots and plantations should be supported and maintained as they

reduce or deflect the demand for use of indigenous forests and contribute to the much needed jobs opportunities in the country.

The areas identified by DAFF as strategic for plantation are reflected in **Error! Reference source n ot found.**. As can be seen in **Error! Reference source not found.**, it is clear that there is a potential competition between the planned biodiversity offset project and the planned afforestation project. It should be accepted that prior to allocation of land for potential afforestation projects, such planned areas should be subjected an Environmental Impact Assessment and water use licence processes. Where environmental sensitivity is high or biodiversity concerns weigh more than the alternative land use of plantations, such plantations should not get authorisation. They have to be allocated to less sensitive land, provided the catchment can accommodate them in terms of water availability.

In some areas, especially around the existing plantations in Mkhambati, there is a growing move to plant exotic tree species such as gum and wattle for timber and fuel wood. As production is relatively low due to the climate not being very good for timber, and there is very little control of fire, many of these plantations are abandoned and the area becomes very eroded (e.g. Figure 16). Timber plantations represent a complete loss of biodiversity and have very significant impacts on the local ground water supplies, affecting both people and nature. Despite the biophysical limitations there are plans to expand this plantation further by 1250 hectares. The land falls under the ownership of Mkhambati Land Trust which is formed by representatives from seven villages. Each of the villages has a Communal Property Association which has seconded two members to the Mkhambati Land Trust. The Mkhambati Land Trust is functional and its representatives get their mandate from the villages which they represent. So, this on its own shows how cumbersome and dynamic decision making can be for the trust.

Figure 16 Photo of poor plantations due to fire, and the resulting soil erosion

Agriculture

The Pondoland ecosystem is under threat due to population pressures and unsustainable subsistence farming practices (Payn 2007). An unregulated shifting arable system seems to be in operation around the villages in the area. Grasslands, especially those near valley floors and wetlands, are cultivated until the soil becomes infertile, and then they are abandoned (e.g. Figure 17).

Of great significance in the Wild Coast are the huge areas of previously arable lands that were abandoned when the soil fertility declined, and have subsequently revegetated naturally with a depauperate form of grassland (**Error! Reference source not found.**). Although these grassland a reas superficially appear to be natural, they actually are a secondary grassland with a very different and much poorer species complement. They often also have very low levels of soil nutrients and are prone to infestation by alien plants.

There is not much that can be done to improve these secondary grasslands, other than to burn and graze them judiciously as part of the broader range management strategy. However, where they are present in large areas (e.g. at the Mkhambati area), the importance of the surrounding natural grasslands becomes very elevated as they are the repositories of species diversity from which all natural rehabilitation will occur.

Figure 17 Example of shifting arable lands adjacent to a wetland

Sand mining

A recent phenomenon that is growing and may put pressure on riparian and wetland ecosystems is illegal and uncontrolled sand mining (e.g. Figure 18). Sand mining is widely practiced within the Pondoland area of the Wild Coast as sand is an important resource for local human livelihoods. However, the problem of sand mining is escalating because mostly the land is communally-owned and it is difficult to obtain the required mining licenses. The damage done by sand mining is not restricted to the immediate site, but also includes the proliferation of tracks through the surrounding ecosystems, most of which become eroded and turn into gullies; at which point a new track is started nearby.

The damage to downstream riparian and wetland ecosystems is also significant as the eroded material causes sedimentation and smothers the unique vegetation that hold these fragile ecosystems together.

Figure 18 Example of sand mining along a river in the Mkhambati area

Habitat degradation

Over-grazing and poor rangeland management

Over-grazing and selective-grazing are both significant concerns in the grasslands of the sites. Although the grasslands are extensive, animals are often concentrated close to settlements, leading to localised over-grazing. Furthermore, there does not seem to be any mechanism of rotational grazing and animals are allowed to selectively graze large areas of garsslands, leading to species compositional changes, plant species loss, and dominance by unpalatable wire grasses.

It is important to note that one of the impacts of conversion of grasslands to alternative land use options such as afforestation results in decreased available grazing. When such afforestation activities take place, it is very unlikely that livestock numbers will be reduced to compensate for this, which will mean that grazing and burning pressure will increase proportionately on the remaining grasslands, leading to their degradation.

Fire appears to be applied in a haphazard way with many small summer burns being used to stimulate a green flush of grass. Although effective in the short-term to increase grazing potential, such practice is very concerning as it leads to rapid loss of veld condition accompanied by a massive loss in plant species diversity in the grasslands as they promote over-grazing and species loss.

Figure 19 Photo of small patch burns used to generate a green flush for grazing

Figure 20 Photo of cattle grazing in the Mkhambati area

Soil erosion

Considering that the Wild Coast has a relatively high rainfall, with periods of intense rain, there is a relatively high bioclimatic risk that soil erosion will be a significant concern. Along the Wild Coast in general, and in the offset sites, there are several types of erosion listed and illustrated in the photographs below:

Accelerated rates of erosion from rangelands occurs due to slow degradation of the grasslands and forests. Such degradation leads to a gradual loss of vegetation basal cover and exposure of the soil surface. Once exposed, the soil is subject to raindrop impacts and overland flow of water, leading to a marked increase in soil downslope. The loss of the topsoil greatly reduces the suitability of the area to seedling establishment, exacerbating the problem and hampering natural recovery.

Accelerated rates of erosion associated with old lands that were planted to crops and then abandoned after a few years. Such areas are left exposed to the elements and there is relatively rapid loss of the topsoil within a few years. Although such areas do become recolonised by grasses or woody plants (and even AIPs), the loss of soil severely reduces the productivity of the area and reduces the ability of the vegetation to recover. Such scars are easily seen from aerial imagery, even decades after the last activity. In some cases, particularly where there are steeper slopes, the loss of vegetation cover leads massive soil erosion and the formation of gulleys.

Erosion of drainage lines and riparian zones leading to the formation of gulleys. Such gulleys mostly form due to overgrazing and livestock accessing the river for drinking water. The repeated hoof action damages the banks and causes them to collapse into the river. In areas where wetlands have been damaged, there is also an increase in hydraulic energy in the river during peak flow events and this causes catastrophic erosion.

Erosion due to livestock paths. Livestock are habitual animals and will often walk single file over the same trail every day, especially in areas where they are moved regularly. Very quickly such trails become natural lines of drainage and become entrenched. Typically, the animals move to a new trail adjacent to the old one and soon there are multiple lane 'highways' that lead to massive dongas.

Erosion due to irresponsible and unmanaged vehicle tracks. Many areas have a plethora of human-caused trails and tracks as people drive 4x4s and tractors over the grasslands to reach fishing spots and outlier fields. Once a vehicle has driven over the grasslands even a few times it compacts the soil and creates a channel area for water to flow. This quickly leads to erosion dongas.

Erosion due to poorly designed and unmaintained roads. There are many roads that have been formally made but that have not been properly designed to shed water so they effectively become drainage lines that erode rapidly, especially on steep slopes. Most of these roads are associated with the tourism infrastructure along the WC. A particular problem arises where the outflow pipe from a road drain is not properly dispersed and a dongo forms from the massive discharge.

Erosion due to sand mining. There are a few areas along the WC where there is informal open-caste mining for building sand. The unplanned and haphazard nature of this activity leads to wide expanses of soil being exposed and left to erode into the nearest stream.

The implications of soil erosion fall into two main categories:

1) Damage to the area being eroded, with an accompanying loss of current and future productivity. Because the majority of local residents of the Wild Coast derive their livelihoods from the natural resource base, any loss of productivity (current or potential) has significant implications for the rural economy.
2) Damage to areas due to sedimentation by the eroded material. Considering the biodiversity value and socio-economic importance of the many rivers, wetlands and

estuaries along the Wild Coast, sedimentation has significant potential to impact these values. Rivers from which people derive their potable water, and estuaries that serve as breeding grounds for marine animals are of high concern.

 Catastrophic erosion in steep old fields	 Subtle sheet erosion from old fields
 Erosion from poor plantation management	 Erosion from a damaged wetland
 Erosion from poor road design and maintenance	 Erosion due to over-grazing of grasslands
 Erosion from multiple cattle paths to a river	 Erosion from unplanned 4x4 tracks
 Erosion due to sand mining	

Figure 21. Different types of soil erosion taking place in the project domain

Siltation and pollution

In areas where the catchments have elevated rates of soil erosion due to degradation of the grasslands and wetlands, afforestation, deforestation and invasive alien plants, the rivers can become very silted with sediment. This has a catastrophic effect on the health of the rivers and the estuaries, leading to significant biodiversity loss. Furthermore, should any local communities rely on this water for their use, it will significantly affect their quality of life.

Invasive alien plants

The Pondoland area is home to a vast array of invasive plants, some of which are very problematic. Alien invasive trees such as wattle, gums, bugweed and others are invading the indigenous forests and riparian areas, and any area within the grasslands that have been disturbed. The extent of the problem easily quantified as it requires considerable field work to verify the aerial photograph analyses. The issue of alien invasive plants is considered in much more detail in its own report in this series.

Figure 22 Photo of alien invasive wattle trees establishing outside Mkhambati NR

That said, most of the grassland areas being considered for the offsets project have relatively low levels of infestation in (**Error! Reference source not found.**) and it would be very achievable i n the short-term to deal with many of the infestations conclusively. The exception to this is probably the forests in the central and southern clusters as it is difficult to accurately identify AIPs in forests, and the situation may be much worse than can be seen from an aerial image.

Threats in the Northern Cluster

Within the Northern Cluster the primary threats include sand mining, afforestation, and, to a lesser degree, alien invasive plants (mostly green wattle *Acacia decurrens*). Although small in extent, sand mining has the potential to be a very influential problem in the northern areas. There is a strong move from various development programs to expand the currently afforested

areas outside the nature reserve despite repeated analyses showing the non-viability of such timber (e.g. Lechmere-Oertel 2011). If afforestation is seen as a viable land use, then there will be considerable pressure to convert grasslands to timber, even without permits. Unfortunately, if this happens, the damage to biodiversity is irreversible.

Threats in the Central Cluster

The primary threat in the central cluster is invasion by alien invasive woody plants, especially along the river systems. These trees are being seeded from plantation upstream in the hinterland, and if left unchecked, stand to become a very real problem in the future.

Ntsubane forest has been degraded over the years due to mismanagement including burn agriculture and slash, and over-exploitation of the natural resources by local communities who depend directly on the forest for ecological services and natural resources. The vulnerability of the Goso, Kaleni, Ndengane, and Mbotyi clusters were identified by the Ntsubane Living Forest project. Deforestation clusters within the Ntsubane forested were reported by Berliner (2014). Areas that have become degraded are now invaded with alien invasive plants, and are badly eroded.

Threats in the Southern Cluster

Demand for different forest products for subsistence and/or commercial purposes in the Port St Johns area may impact on the natural forest ecosystem, the conservation status of targeted species and the sustainable harvesting of particular tree and non-tree species, whether legal or illegal.

The primary threats to the biodiversity in these areas arise from habitat loss associated with human development and arable lands. There is a lot of evidence of fresh fields being cut into the indigenous woody vegetation, and other areas that were being cultivated being left to go back to secondary bush and grassland. Such human activities are very destructive for biodiversity.

The forest margins and riverine corridors are know to have a very incidence of alien invasive plants, although the extent and density of these is unknown and requires more detailed mapping.

Some indigenous tree species, such as *Milletia grandis* have important economic value in the surrounding rural areas. The exploitation of these species and other forest natural resources can cause fragmentation and deforestation (Baloyi & Reynolds 2004).

In the Mangroves site, there are specific issues associated with the unsustainable harvesting of mangrove trees for poles and firewood (Rajkaran & Adams, 2011). The mangroves are further threatened by changes to the estuary waters because of upstream landuse practices that are changing the rates of flow and sedimentation.

SOCIO-ECONOMIC AND POLITICAL CONTEXT

Please note that this section does not fully cover all the sites due to the late change in sites selected for the project. However, all the general trends described below will apply for all areas on the Wild Coast, although the specifics may change between sites.

Human Livelihoods

Although this area is a biodiversity hotspot (van Wyk 1990) its species diversity is threatened by anthropogenic activities. Most often humans focus on how much they can take from the environment without considering the consequence of their actions (White & Murray, 2000b). The relationship between land use and all associated activities, and the natural environment or ecological systems, is complex and continually changing. What complicates this relationship is the variable dependency of people on the natural environment for survival. The natural environment provides the basic elements such as food, water and shelter, which are important for human livelihoods. This is particularly true of a rural environment like the Pondoland area where people live 'close' to the land and rely on it to provide their basic needs to some degree.

Livelihood diversification is defined as "the process by which households construct increasingly diverse livelihood portfolios, making use of increasingly diverse combinations of resources and assets" (Niehof 2004). In a comparative study conducted in four African countries (Uganda, Kenya, Tanzania and Malawi) diversification involved owning diverse livestock, engaging in non-agricultural self-employment and a diversity of on-farm and off- farm income sources, which increased household livelihood options (Ellis & Freeman, 2004). Butler and Mazur (2007) suggest that interventions that "stimulate and support innovation in agricultural production technology, forms of social organization, and … markets are essential elements in promotion of sustainable rural livelihoods." The land-based alternatives such as livestock and agricultural production are bound to have an impact to the natural environment.

Livelihood diversification has been linked to livelihood sustainability (Scoones 1998). Livelihood sustainability is also supported by natural, social (human) and financial (built) capital (Scoones 1998). Collectively these three are defined as community capital (Hart 1998). Natural capital includes the natural resources available to people, as well as the ability of the natural environment to maintain its long-term health (Hart 1998). Human or social capital speaks to the connectedness of the residents of a community and the education, skills and health they possess (Hart, 1998). Built or financial capital includes the infrastructure available to communities as well as the credit and/or debt status within a community (Hart 1998).

As has been highlighted in literature, environmental degradation, low household income, high unemployment rates, limited diversification are factors that restrict sustainable livelihoods in the rural Eastern Cape (Butler & Mazur 2007; Shackleton *et al.*, 2007). It is worth noting that the Eastern Cape has the second lowest household income out of South Africa's nine provinces (Statistics South Africa, 2018).

Traditional Leadership in Project Area

One of the issues that characterized the political period of the former president Jacob G. Zuma was the disputes that existed in relation to traditional leadership in many areas of South Africa. This was undertaken under the Traditional Leadership and Governance Framework Act, 2003 (Act 41 of 2003) (Framework Act) and termed "Nhlapo Commission". The outcome of this Nhlapho Commission led to various court cases, one of which was in 2013 between *Justice Mpondombini Sigcau vs President of the Republic of South Africa and Others*. The judges in the Constitutional Court unanimously declared invalid a notice issued by President Jacob Zuma in 2010 purporting to remove the incumbent *ikumkani* or king (Justice Mpondombini Sigcau) of the amaPondo and to recognize Zanozuko Tyelovuyo Sigcau as King instead. This was done in accordance with recommendations of the Commission on Traditional Leadership Disputes and Claims.

The history of the dispute illustrates the complex role of traditional leaders in South Africa, especially in the Pondoland area. The original dispute stems from a split of the amaPondo kingdom into the amaMpondo aseQaukeni (referred to as the Eastern Pondo) and the amaMpondo aseNyandeni (referred to as the Western Pondo).

At the moment the following chiefs are listed under King Zwelonke Sigcau at Ndimakude Royal House/Great Place in Flagstaff are recognised and are listed as

- Chief Baleni (Ah! Dubul'indlovu): Mbizana (Mthentu Gorge),
- Chief Mgwili (Ah! Thandisizwe): Inqguza Hill (Mkhambathi, Mazizzini, Ntsubane, Mateko etc)
- Chief V. Ndabeni (Ah! Bazindlovu): Port St Johns (Caguba Corridor).

Perceived Socio-Political Future

It may be a mistake to overestimate the Wild Coast's ability to attract external investment. There is an inherent contradiction between the concept of a 'Wild Coast', implying pristine unoccupied spectacular scenery, and the conventional notions of 'development', suggesting middle-class buildings, roads, mines and resorts. Should the Wild Coast become an extension of the KZN South Coast? Every potential development site on the Wild Coast has already been occupied for decades. How can further development occur without destroying that which attracts?

Every coastal management plan since 1979 has adopted the fundamental concept of concentrated development nodes, with varying levels of protected (or conservation) areas between them. Unfortunately, while environmental laws exist and new ones have been enacted, land tenure and appropriate spatial planning laws have not. As an example, the national *Spatial Planning and Land Use Management Act, No. 16 of 2013*, in its Schedule 2 headed 'Scheduled Land Use Purposes', makes no provision for the typical set of mixed land uses which exist across this area. Thus, development cannot legally take place and there is a lack of infrastructure and investment.

Land tenure issues are a major inhibitor of development. The string of coastal hotels under the management of the parastatal Eastern Cape Development Corporation has changed little in thirty years, without clear ownership: the proposed Mdumbi Lodge development was a fiasco which took years to go nowhere; the Dwesa-Cwebe and Mkhambati communities still have no land transfer despite the nationally celebrated restitution settlement agreements of 2001 and 2004 regarding these conservation areas; Coffee Bay remains community land, or land nominally held in trust by the state, in spite of plans from 1983 onwards to proclaim a town with secure tenure; more than a hundred coastal cottages remain in limbo, and are sometimes described as 'legal illegals'. In contrast, Port St Johns, the only formally established town on the Wild Coast, saw a flurry of post-1994 developments in terms of accommodation. The reason: registered and freehold tenure was available, which provided some legal certainty despite some constraints with regard to infrastructure and local government.

This is not to say that the absence of what is commonly referred to as freehold tenure is *the* problem and that the provision of such tenure will resolve any and all development challenges. In fact, the provision of this tenure may amount to the dispossession of the land rights of the long-established local residents, may encourage speculation – and is likely to be thoroughly if not forcefully rejected by local communities. Rather; the problem is the absence of any form of legal certainty in any suitable form of land tenure – of which registered leasehold is one example – combined with a general absence of land governance.

Socio-Economic Assessment per Municipality and Ward

The offset sites are distributed across three local municipalities: Mbizana, Ingquza Hill and Port St Johns, but mainly within the Ingquza Hill Local Municipality and Port St Johns Local Municipality. Only one site, Ngobodweni, is in Ward 25 of Mbizana (Figure 23). The following section gives a Socio-Economic Assessment of each municipality and then per ward within each of these municipalities.

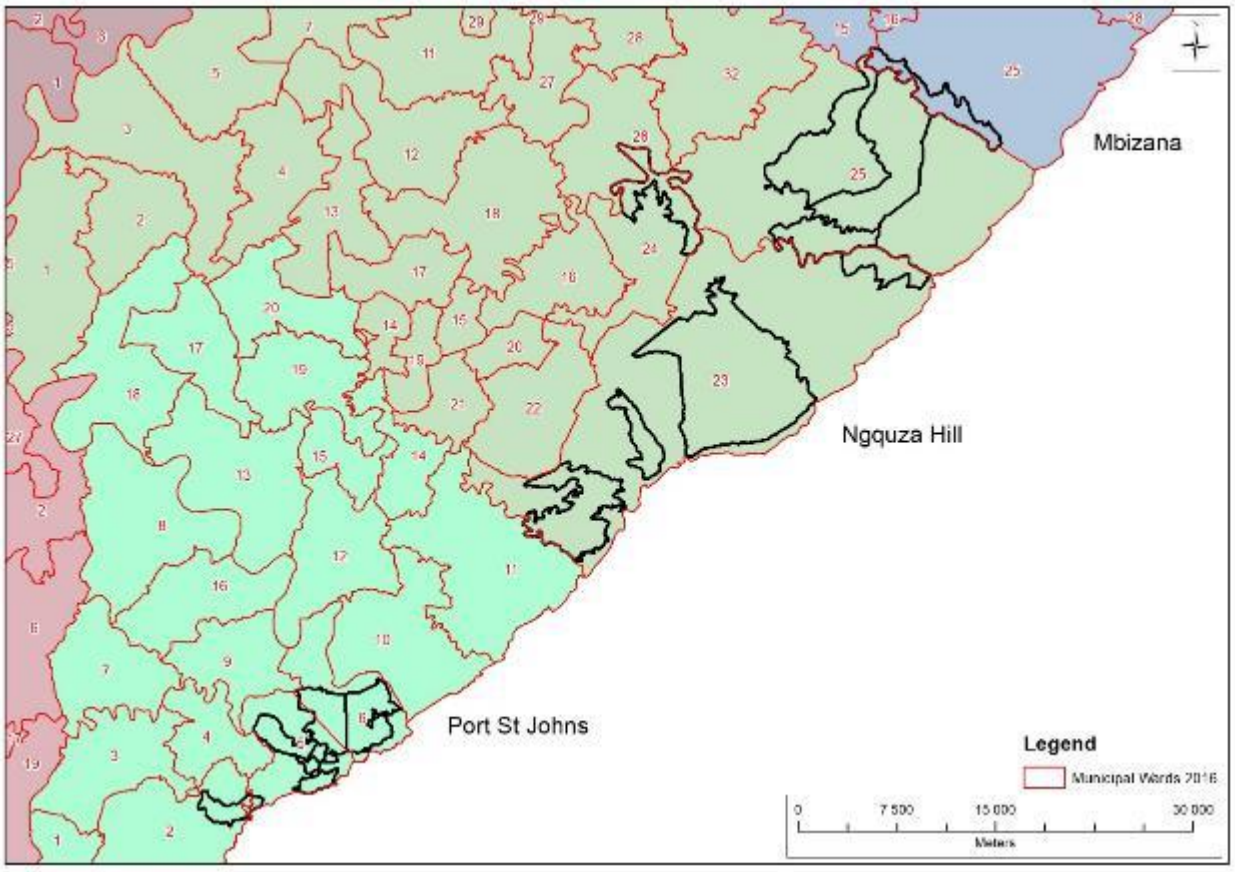

Figure 23 The local municipalities and wards in which the offset sites are located

The area is characterised by a very high percentage of population increase and very low GDP growth, labour force participation, and employment relative to other areas in the province. The result is that a very high percentage of population is living below the poverty level (32%). Many people in the area (especially those living in rural areas) do not yet have access to basic services such as water, electricity, and education (StatSA 2016). It is into this context of high levels of poverty and lack of development that the project is being implemented, and clearly the project must address these socio-economic ills to stay relevant and sustainable.

Ingquza Hill Local Municipality

Ingquza Hill Local Municipality is bordered by the Bizana Local Municipality to the north, the Port St John's Local Municipality to the south and the Ntabankulu Local Municipality to the northwest. It comprises the magisterial areas of Lusikisiki and Flagstaff. The surface area is 2 477km2 and the population density was 112,4 people per square kilometre. Economic activity is largely subsistence farming, although the Magwa Tea Plantation provides limited commercial productivity as well as job opportunities.

Population

In 2001, the population of the municipality was 254 480, which constituted 19,6% of the district population. In 2011, the population rose to 278 481 which is 20,4% of the O.R. Tambo District population. The number of households within this municipality is 56 312 with a household average number of 4,7 people, most of which are headed by females. The service delivery within

the municipality is minimal with only 62,8% households that use electricity for lighting and very few households with piped water, refuse removal and flush toilets.

The population comprises 128 974 males, which constitutes 46%. The female population constitutes 54% at 149 507. There is a net outflow of male persons from teenager stage due to schooling and job-seeking opportunities. On average the municipality has a high dependency ratio of 91,6%, high unemployment rate of 51,6%, most of which is youth which constitute 60,9% of the unemployed.

According to the Socio-Economic Review and Outlook conducted by ECSECC in 2016 and published in 2017, Ingquza Hill Local Municipality had 304 000 people. Between 2006 and 2016 the population growth averaged 1.34% per annum which is very similar than the growth rate of South Africa as a whole (1.54%) but higher compared to O.R. Tambo's average annual growth rate (0.94%). Within the O.R. Tambo District Municipality the Ingquza Hill Local Municipality accounts for 20.7% of the total population ranking as the most populous local municipality in 2016. This ranking is the same as it was since 2006 even though compared to itself the Ingquza Hill Local Municipality population was slightly higher in 2016 (20.7%) than what it was in 2006 (19.9%) with an average annual growth rate of 1.3%.

The ECSECC report concluded that by comparing the population pyramid of the Ingquza Hill Local Municipality with the national age structure, the most significant differences are:

- There is a significant smaller share of young working age people - aged 20 to 34 (26.1%) - in Ingquza Hill, compared to the national picture (28.6%).
- The area seems to be a migrant sending area, with many people leaving the area to find work in the bigger cities.
- Fertility in Ingquza Hill is significantly higher compared to South Africa as a whole.
- Spatial policies changed since 1994.
- The share of children between the ages of 0 to 14 years is significantly larger (41.1%) in Ingquza Hill compared to South Africa (29.2%). Demand for expenditure on schooling as percentage of total budget within municipality will therefore be higher than that of South Africa.

Households

In 2016, the Ingquza Hill Local Municipality comprised of 60 700 households. This equates to an average annual growth rate of 1.63% in the number of households from 2006 to 2016. With an average annual growth rate of 1.34% in the total population, the average household size in the Ingquza Hill Local Municipality is by implication decreasing. This is confirmed by the data where the average household size in 2006 decreased from approximately 5.2 individuals per household to 5 persons per household in 2016. Relative to the district municipality, the Ngquza Hill Local Municipality had a higher average annual growth rate of 1.63% from 2006 to 2016. In contrast, the province had a higher average annual growth rate of 1.32% from 2006. South Africa as a

whole had a total of 15.8 million households, with a growth rate of 1.97%, thus growing at a higher rate than the Ngquza Hill.

Economy

With a GDP of R 4.33 billion in 2016 (up from R 1.86 billion in 2006), Ingquza Hill Local Municipality contributed 11.42% to the O.R.Tambo District Municipality GDP of R 37.9 billion in 2016 increasing in the share of the O.R.Tambo from 11.40% in 2006. Ingquza Hill Local Municipality contributes 1.28% to the GDP of Eastern Cape Province and 0.10% the GDP of South Africa which had a total GDP of R 4.34 trillion in 2016 (as measured in nominal or current prices). It's contribution to the national economy stayed similar in importance from 2006 when it contributed 0.10% to South Africa, but it is lower than the peak of 0.11% in 2007. In 2016, the Ingquza Hill Local Municipality achieved an annual growth rate of 0.19% which is a very similar GDP growth than the Eastern Cape Province's 0.25%, but is lower than that of South Africa, where the 2016 GDP growth rate was 0.28%. Contrary to the short-term growth rate of 2016, the longer-term average growth rate for Ingquza Hill (0.95%) is significant lower than that of South Africa (2.12%). The economic growth in Ingquza Hill peaked in 2006 at 6.08%.

The Ingquza Hill Local Municipality's economy is made up of various industries. The Gross Value Added by Region (GVA-R) variable provides a sector breakdown, where each sector is measured in terms of its *value added* produced in the local economy. In 2016, the community services sector is the largest within Ingquza Hill Local Municipality accounting for R 1.37 billion or 35.5% of the total Gross Value (GVA) in the local municipality's economy. The sector that contributes the second most to the GVA of the Ingquza Hill Local Municipality is the trade sector at 28.7%, followed by the finance sector with 15.7%. The sector that contributes the least to the economy of Ingquza Hill Local Municipality is the mining sector with a contribution of R 11 million or 0.28% of the total GVA.

The community sector, which includes the government services, is generally a large contributor towards GVA. The region within O.R.Tambo District Municipality that contributes the most to the GVA of the O.R.Tambo District Municipality was the Ingquza Hill with a total of R 3.86 billion or 11.13%.

Labour

The working age population in Ingquza Hill Local Municipality in 2016 was 164 000, increasing at an average annual rate of 1.87% since 2006. For the same period the working age population for O.R. Tambo District Municipality increased at 1.57% annually, while that of Eastern Cape Province increased at 1.04% annually. South Africa's working age population has increased annually by 1.55% from 31.1 million in 2006 to 36.2 million in 2016.

The economically active population (EAP) is a good indicator of how many of the total working age population are in reality participating in the labour market of a region. If a person is economically active, he or she forms part of the labour force. Ingquza Hill Local Municipality's EAP was 51 200 in 2016, which was 16,83% of its total population of 304 000, and roughly 17.74%

of the total EAP of OR Tambo District Municipality. From 2006-2016, the average annual increase in the EAP in Ingquza Hill Local Municipality was 0.24%, which is 0.939 percentage points lower than the growth in the EAP of O.R. Tambo's for the same period. Ingquza Hill Local Municipality's labour force participation rate decreased from 36.76% to 31.29% which is a decrease of -5.5 percentage points. Ingquza Hill Local Municipality had a lower labour force participation rate when compared to South Africa in 2016.

In 2016 the labour force participation rate for Ingquza Hill was at 31.3% which is slightly lower when compared to the 36.8% in 2006. The unemployment rate is an efficient indicator that measures the success rate of the labour force relative to employment. In 2006, the unemployment rate for Ingquza Hill was 30.9% and increased overtime to 41.9% in 2016.

Employment

In 2016, Ingquza Hill employed 24 500 people which is 13.31% of the total employment in O.R. Tambo District Municipality (184 000), 1.68% of total employment in Eastern Cape Province (1.46 million), and 0.16% of the total employment of 15.7 million in South Africa. Employment within Ingquza Hill decreased annually at an average rate of -1.30% from 2006 to 2016. The economic sectors that recorded the largest number of employment in 2016 were the community services sector with a total of 8 300 employed people or 33.9% of total employment in the local municipality. The trade sector with a total of 5 650 (23.1%) employs the second highest number of people relative to the rest of the sectors. The mining sector with 66.8 (0.3%) is the sector that employs the least number of people in Ingquza Hill Local Municipality, followed by the electricity sector with 87.3 (0.4%) people employed.

With respect to unemployment, in 2016, there were a total number of 21 500 people unemployed in Ingquza Hill, which is an increase of 6 060 from 15 400 in 2006. The total number of unemployed people within Ingquza Hill constitutes 20.98% of the total number of unemployed people in O.R. Tambo District Municipality. Ingquza Hill Local Municipality experienced an average annual increase of 3.37% in the number of unemployed people, which is worse than that of the O.R. Tambo District Municipality which had an average annual increase in unemployment of 2.41%.

In 2016, the unemployment rate in Ingquza Hill Local Municipality (based on the official definition of unemployment) was 41.95%, which is an increase of 11.1 percentage points. The unemployment rate in Ingquza Hill Local Municipality is higher than that of O.R. Tambo District Municipality, the province and the country, South Africa.

Poverty

In 2016, there were 239 000 people living in poverty, across Ingquza Hill Local Municipality. This number is 6.04% higher than 225 000 in 2006. The percentage of people living in poverty has decreased from 84.64% in 2006 to 78.57% in 2016, which indicates a decrease of 6.07 percentage points.

Education

Within Ingquza Hill Local Municipality, the number of people without any schooling decreased from 2006 to 2016 with an average annual rate of -4.68%, while the number of people within the 'matric only' category, increased from 9,510 to 17,600. The number of people with 'matric and a certificate/diploma' increased with an average annual rate of 3.86%, with the number of people with a 'matric and a Bachelor's' degree increasing with an average annual rate of 8.83%. Overall improvement in the level of education is visible with an increase in the number of people with 'matric' or higher education.

In 2016, the number of people in Ingquza Hill Local Municipality with a matric only was 17,600 which is a share of 15.31% of the district municipality's total number of people that has obtained a matric. The number of people with a matric and a Postgraduate degree constitutes 12.61% of the district municipality, 1.92% of the province and 0.16% of the national.

Population Density

In 2016, with an average of 123 people per square kilometer, Ingquza Hill Local Municipality had a higher population density than O.R. Tambo (121 people per square kilometer) and it ranked highest amongst its piers. Compared to Eastern Cape Province (41.5 per square kilometer) it can be seen that there are more people living per square kilometer in Ingquza Hill Local Municipality than in Eastern Cape Province.

Household Infrastructure

A household is considered serviced if it has access to basic services such as dwelling units, proper sanitation, running water, refuse removal and electricity. If not, the household is considered to be part of the backlog.

Household by dwelling type

Ingquza Hill Local Municipality had a total number of 717 (1.19% of total households) very formal dwelling units, a total of 23 500 (39.01% of total households) formal dwelling units and a total number of 753 (1.25% of total households) informal dwelling units. When looking at the formal dwelling unit backlog (number of households not living in a formal dwelling) in 2006 the number of households not living in a formal dwelling were 35 000 and this number increased annually at 0.27% to 36 000 in 2016. The total number of households within Ingquza Hill Local Municipality increased at an average annual rate of 1.63% from 2006 to 2016, which is higher than the annual increase of 1.97% in the number of households in South Africa.

Household by type of sanitation

In 2016, Ingquza Hill Local Municipality had a total number of 7 660 flush toilets (12.94% of total households), 31 600 Ventilation Improved Pit (VIP) (53.34% of total households) and 13 300 (22.40%) of total households pit toilets. When looking at the sanitation backlog (number of

households without hygienic toilets) in 2006 was 43 300, this decreased annually at a rate of -7.45% to 20 000 in 2016.

Households by access to water

Ingquza Hill Local Municipality had a total number of 4 950 (or 7.29%) households with piped water inside the dwelling, a total of 8 970 (13.22%) households had piped water inside the yard and a total number of 44 600 (65.65%) households had no formal piped water. No formal piped water includes households that obtain water via water carriers and tankers, rain water, boreholes, dams, rivers and springs. When looking at the water backlog (number of households below RDP-level) over time in 2006 were 47 400 within Ingquza Hill Local Municipality, this increased annually at 0.50% per annum to 49 800 in 2016.

Households by type of electricity

Ingquza Hill Local Municipality had a total number of 12 800 (21.73%) households with electricity for lighting only, a total of 32 200 (54.73%) households had electricity for lighting and other purposes and a total number of 13 900 (23.54%) households did not use electricity. When looking at the number of households with no electrical connection over time in 2006 the households was 31 900, this decreased annually at -7.99% per annum to 13 900 in 2016.

Households by access to refuse removal

Ingquza Hill Local Municipality had a total number of 2 060 (3.78%) households which had their refuse removed weekly by the authority, a total of 722 (1.32%) households had their refuse removed less often than weekly by the authority and a total number of 42 400 (77.53%) households which had to remove their refuse personally (own dump). When looking at the number of households with no formal refuse removal in 2006 was 50 500 and this increased annually at 0.28% per annum to 51 900 in 2016.

Port St Johns Local Municipality

The Port St Johns Local Municipality (Area: 1 291km) is a Category B municipality situated within the OR Tambo District on the coast of the Indian Ocean in the largely rural province of the Eastern Cape. It is bounded by Lusikisiki in the north, Mthatha in the south, and Libode in the west. It is the smallest of the five municipalities in the district, making up 11% of its geographical area. It comprises coastal and inland areas that fall under the jurisdiction of the former Transkei. The seat of the municipality is in the main town of Port St Johns, which is known for its beautiful beaches and mountainous terrain, with hills, cliffs and sandy dunes.

The municipality's beautiful scenery, its natural vegetation and the pristine beaches referred to above are the main attractions for tourism. It has land for commercial use and an environmentally-friendly residential area. The main town in Port St Johns Local Municipality is Port St Johns and the main economic sectors are tourism and agriculture. It is well known

nationally for its beautiful scenery, natural vegetation and pristine beaches which is the main attraction for tourism.

The following provides a snapshot of the socio-economic analysis of Port St Johns Local Municipality. The remainder of the green-fields which will be affected by the construction of the Wild Coast N2 toll road are within Port St Johns and thus biodiversity offset activities will need to be implemented here.

Population

With 168 000 people, the Port St Johns Local Municipality housed 0.3% of South Africa's total population in 2016. Between 2006 and 2016 the population growth averaged 1.09% per annum which is slightly lower than the growth rate of South Africa as a whole (1.54%). Compared to O.R. Tambo's average annual growth rate (0.94%), the growth rate in Port St Johns' population at 1.09% was very similar than that of the district municipality.

When compared to other regions, Port St Johns Local Municipality accounts for 11.4% of the total population in O.R. Tambo District Municipality ranking as the most populous local municipality in 2016. The ranking in terms of the size of Port St Johns compared to the other regions remained the same between 2006 and 2016. In terms of its share Port St Johns Local Municipality was slightly larger in 2016 (11.4%) compared to what it was in 2006 (11.2%). When looking at the average annual growth rate, it is noted that Port St Johns ranked third (relative to its peers in terms of growth) with an average annual growth rate of 1.1% between 2006 and 2016.

Port St Johns Local Municipality's male/female split in population was 86.1 males per 100 females in 2016. The Port St Johns Local Municipality has significantly more females (53.74%) than males, when compared to a typical stable population. This is most probably an area with high male out migration to look for work elsewhere. In total there were 90 100 (53.74%) females and 77 600 (46.26%) males.

The largest share of population is within the babies and children (0-14 years) age category with a total number of 68 900 or 41.1% of the total population. The age category with the second largest number of people is the teenagers and youth (15-24 years) age category with a total share of 22.2%, followed by the young working age (25-44 years) age category with 37 200 people. The age category with the least number of people is the retired / old age (65 years and older) age category with only 9 030 people, as reflected in the population pyramids below.

In 2016, the female population for the 20 to 34 years age group amounted to 11.1% of the total female population while the male population group for the same age amounted to 8.9% of the total male population. In 2006 the male working age population at 11.6% did not exceeds that of the female population working age population at 13.1%.

Households

In 2016, the Port St Johns Local Municipality comprised of 33 600 households. This equates to an average annual growth rate of 1.35% in the number of households from 2006 to 2016. With an

average annual growth rate of 1.09% in the total population, the average household size in the Port St Johns Local Municipality is by implication decreasing. This is confirmed by the data where the average household size in 2006 decreased from approximately 5.1 individuals per household to 5 persons per household in 2016.

Economy

With a GDP of R 2.41 billion in 2016 (up from R 1.15 billion in 2006), the Port St Johns Local Municipality contributed 6.35% to the O.R. Tambo District Municipality GDP of R 37.9 billion in 2016 increasing in the share of the O.R. Tambo from 7.04% in 2006. The Port St Johns Local Municipality contributes 0.71% to the GDP of Eastern Cape Province and 0.06% the GDP of South Africa which had a total GDP of R 4.34 trillion in 2016 (as measured in nominal or current prices). It's contribution to the national economy stayed similar in importance from 2006 when it contributed 0.06% to South Africa, but it is lower than the peak of 0.07% in 2007.

In 2016, the Port St Johns Local Municipality achieved an annual growth rate of -0.46% which is a significant lower GDP growth than the Eastern Cape Province's 0.25%, but is lower than that of South Africa, where the 2016 GDP growth rate was 0.28%.

In 2016, the community services sector is the largest within Port St Johns Local Municipality accounting for R 862 million or 40.6% of the total Gross Value Added (GVA) in the local municipality's economy. The sector that contributes the second most to the GVA of the Port St Johns Local Municipality is the trade sector at 20.6%, followed by the finance sector with 15.5%. The sector that contributes the least to the economy of Port St Johns Local Municipality is the mining sector with a contribution of R 38.9 million or 1.83% of the total GVA. The community sector, which includes the government services, is generally a large contributor towards GVA.

Labour

The working age population in Port St Johns in 2016 was 89 800, increasing at an average annual rate of 1.70% since 2006. Port St Johns Local Municipality's Economically Active Population (EAP) was 21 900 in 2016, which is 13.04% of its total population of 168 000, and roughly 7.59% of the total EAP of the O.R. Tambo District Municipality. From 2006 to 2016, the average annual decrease in the EAP in the Port St Johns Local Municipality was -0.20%, which is 1.39 percentage points lower than the growth in the EAP of O.R. Tambo's for the same period.

In 2016 the labour force participation rate for Port St Johns was at 24.4% which is slightly lower when compared to the 29.4% in 2006. The unemployment rate is an efficient indicator that measures the success rate of the labour force relative to employment. In 2006, the unemployment rate for Port St Johns was 30.8% and increased overtime to 40.7% in 2016. The gap between the labour force participation rate and the unemployment rate decreased which indicates a negative outlook for the employment within Port St Johns Local Municipality.

Employment

In 2016, Port St Johns employed 15 600 people which is 8.48% of the total employment in O.R. Tambo District Municipality (184 000), 1.07% of total employment in Eastern Cape Province (1.46 million), and 0.10% of the total employment of 15.7 million in South Africa. Employment within Port St Johns decreased annually at an average rate of -1.53% from 2006 to 2016. Port St Johns Local Municipality employs a total number of 15 600 people within its local municipality. In Port St Johns Local Municipality the economic sectors that recorded the largest number of employment in 2016 were the community services sector with a total of 5 460 employed people or 35.0% of total employment in the local municipality. The trade sector with a total of 3 610 (23.1%) employs the second highest number of people relative to the rest of the sectors. The mining sector with 38.1 (0.2%) is the sector that employs the least number of people in Port St Johns Local Municipality, followed by the electricity sector with 47 (0.3%) people employed.

The number of formally employed people in Port St Johns Local Municipality counted 11 300 in 2016, which is about 72.58% of total employment, while the number of people employed in the informal sector counted 4 280 or 27.42% of the total employment. Informal employment in Port St Johns decreased from 7 430 in 2006 to an estimated 4 280 in 2016.

In 2016 the Trade sector recorded the highest number of informally employed, with a total of 1 900 employees or 44.28% of the total informal employment. This can be expected as the barriers to enter the Trade sector in terms of capital and skills required is less than with most of the other sectors. The Manufacturing sector has the lowest informal employment with 117 and only contributes 2.74% to total informal employment.

In 2016, the unemployment rate in Port St Johns Local Municipality (based on the official definition of unemployment) was 40.74%, which is an increase of 9.9 percentage points. The unemployment rate in Port St Johns Local Municipality is higher than that of O.R.Tambo. Comparing to the Eastern Cape Province it can be seen that the unemployment rate for Port St Johns Local Municipality was higher than that of Eastern Cape which was 29.34%. The unemployment rate for South Africa was 26.33% in 2016, which is a increase of -0.563 percentage points from 25.77% in 2006.

Household Income

It was estimated that in 2016 24.54% of all the households in the Port St Johns Local Municipality, were living on R30,000 or less per annum. In comparison with 2006's 63.50%, the number is about half. The 30000-42000 income category has the highest number of households with a total number of 5 420, followed by the 18000-30000 income category with 5 350 households. Only 5.1 households fall within the 0-2400 income category. For the period 2006 to 2016 the number of households earning more than R30,000 per annum has increased from 36.50% to 75.46%. It can be seen that the number of households with income equal to or lower than R6,000 per year has decreased by a significant amount.

Poverty

In 2016, there were 137 000 people living in poverty, using the upper poverty line definition, across Port St Johns Local Municipality - this is 5.13% higher than the 130 000 in 2006. The percentage of people living in poverty has decreased from 86.56% in 2006 to 81.67% in 2016, which indicates a decrease of 4.88 percentage points.

Education

Within Port St Johns Local Municipality, the number of people without any schooling decreased from 2006 to 2016 with an average annual rate of -4.02%, while the number of people within the 'matric only' category, increased from 4,930 to 9,750. The number of people with 'matric and a certificate/diploma' increased with an average annual rate of 2.28%, with the number of people with a 'matric and a Bachelor's' degree increasing with an average annual rate of 9.01%. Overall improvement in the level of education is visible with an increase in the number of people with 'matric' or higher education.

The number of people without any schooling in Port St Johns Local Municipality accounts for 12.95% of the number of people without schooling in the district municipality, 3.99% of the province and 0.55% of the national. In 2016, the number of people in Port St Johns Local Municipality with a matric only was 9,750 which is a share of 8.50% of the district municipality's total number of people that has obtained a matric. The number of people with a matric and a Postgrad degree constitutes 5.05% of the district municipality, 0.77% of the province and 0.07% of the national.

Population Density

In 2016, with an average of 130 people per square kilometer, Port St Johns Local Municipality had a higher population density than O.R. Tambo (121 people per square kilometer). Compared to Eastern Cape Province (41.5 per square kilometer) it can be seen that there are more people living per square kilometer in Port St Johns Local Municipality than in Eastern Cape Province.

Household Infrastructure

Port St Johns Local Municipality had a total number of 491 (1.48% of total households) very formal dwelling units, a total of 9 760 (29.46% of total households) formal dwelling units and a total number of 311 (0.94% of total households) informal dwelling units. When looking at the formal dwelling unit backlog (number of households not living in a formal dwelling) over time, it can be seen that in 2006 the number of households not living in a formal dwelling were 23 300 within Port St Johns Local Municipality. From 2006 this number decreased annually at -0.17% to 22 900 in 2016.

Port St Johns Local Municipality had a total number of 9 020 flush toilets (28.79% of total households), 9 680 Ventilation Improved Pit (VIP) (30.93% of total households) and 5 840 (18.66%) of total households pit toilets. When looking at the sanitation backlog (number of households without hygienic toilets) over time, it can be seen that in 2006 the number of

Households without any hygienic toilets in Port St Johns Local Municipality was 23 800, this decreased annually at a rate of -6.17% to 12 600 in 2016.

Port St Johns Local Municipality had a total number of 4 260 (or 11.34%) households with piped water inside the dwelling, a total of 4 890 (13.03%) households had piped water inside the yard and a total number of 22 600 (60.09%) households had no formal piped water. When looking at the water backlog (number of households below RDP-level) over time, it can be seen that in 2006 the number of households below the RDP-level were 27 500 within Port St Johns Local Municipality, this decreased annually at -0.99% per annum to 24 900 in 2016.

Port St Johns Local Municipality had a total number of 9 040 (28.18%) households with electricity for lighting only, a total of 15 700 (48.99%) households had electricity for lighting and other purposes and a total number of 7 320 (22.83%) households did not use electricity. When looking at the number of households with no electrical connection over time, it can be seen that in 2006 the households without an electrical connection in Port St Johns Local Municipality was 17 600, this decreased annually at -8.41% per annum to 7 320 in 2016.

Port St Johns Local Municipality had a total number of 676 (2.26%) households which had their refuse removed weekly by the authority, a total of 110 (0.37%) households had their refuse removed less often than weekly by the authority and a total number of 21 800 (72.60%) households which had to remove their refuse personally (own dump). When looking at the number of households with no formal refuse removal, it can be seen that in 2006 the households with no formal refuse removal in Port St Johns Local Municipality was 28 800, this increased annually at 0.14% per annum to 29 200 in 2016.

The Project from the Community's Perspective

It is a great challenge to investigate a complex socio-ecological system such as is found along the Wild Coast, with people living in, and off, an ecologically sensitive landscape. Case studies are often used as a mechanism to understand something of such complexity as they allow for fine-grained, context-specific explorations of theoretical concepts (Stake 1995). Although case study results are not generalizable, Burawoy (1998) demonstrates that the case study method can be applied to society in general if "reflective understanding" is factored in. This is done through the examination of small-scale patterns which are linked to broader societal processes. Intensity, time scale, sample size and spatial distribution of respondents can provide sufficient context for extrapolation to societal scale.

This study links household-level dynamics to community level dynamics and then with the broader trends of regional context. It partially mimics the methodology used in social-ecological systems (SES). Human-environment systems are complex, making it challenging to understand correlations between actions and outcomes (Walker et al. 2002). SES allows for perspectives that look beyond uncertainties (Folke et al. 1998) as itis a system that includes human and biophysical subsystems in mutual interaction (Gallopin 1991). Although these two sub-systems are non-decomposable, it is possible to single out components which can be understood within the

greater SES (Gallopin 2006). As the current study is analysing the situation, the assessment only looked at the descriptive side of SES and the adaptive component was not explored at all.

Household interviews

Eleven villages across the project area (three in Caguba, three in Mbotyi and five in Mkhambati) where assessed with household interviews, with a minimum of 100 households being visited in each village. In applying the questionnaires field workers from the local community were employed and trained in administering the questionnaires. Subsequent to the training, "trial runs" were undertaken. The questionnaire examined the following aspects:

- Household demographics
- Household economic activity
- Household expenditure patterns
- Household asset ownership and housing
- Health, food and nutrition security
- Borrowing, savings and credit
- Micro-enterprise
- Children and education
- Employment history and work experience
- Training and skills profile
- Extended Public Works Program (EPWP) context
- Local understanding of environmental programs

Although this questionnaire was comprehensive, not all aspects of this questionnaire are reported in this report but will be used at different phases of the project. For an example, the data that is obtained under EPWP context will be used when profiling the community for land rehabilitation programs. The extensive collection of information during the interview was done to mitigate against field worker and respondent "fatigue". Sometimes, multiple questionnaires lead to respondents being tired of being interviewed (what we term respondent fatigue). It was therefore important to do an extensive interview at once.

Land-related Assessment Results

During the household interviews the communities were quizzed on access to communal land. It seems like most people in Caguba do not have access to communal lands, whereas most people in Mbotyi and Mkhambati area have access to these communal areas.

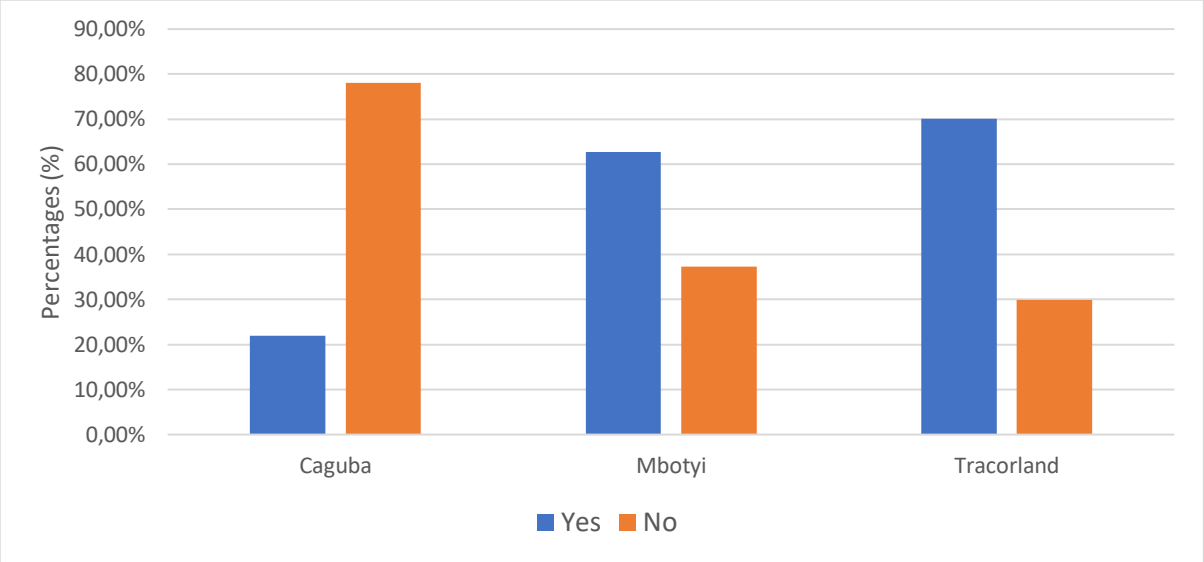

Figure 24. Percentage of people that have access to communal land in all three polygons assessed

For those people that have access to communal lands, there seems to be a diversity of land use alternatives (). These land use options seem to be dominated by agriculture and housing.

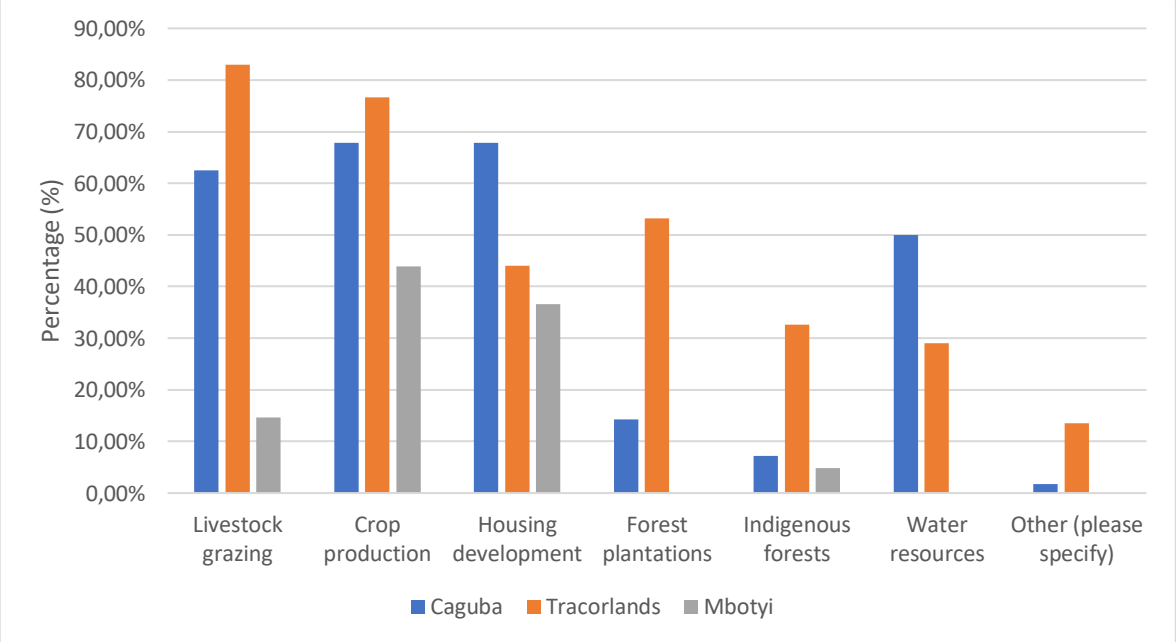

Figure 25. Alternative land uses enjoyed by communities that have access to communal land

These responses from the community should be understood against the backdrop of land tenure issues that have operated in their societies for many years.

Participatory Rural Appraisal

To gather the data on communities' perspectives about the biodiversity offset project, we used a Participatory Rural Appraisal (PRA) approach. This approach lends itself in obtaining contextual data (situation) from the community's point of view. The PRA is an activity of allowing the participants to be actively involved in the decision-making aspect of a project using visual aids. It

enables rural people to partake in the micro-planning and development of a project. It allows them to evaluate and analyse their constraints and opportunities by presenting the opportunities and investigating the limitations in a guided method. According to Prakulsari (2014) the participatory rural appraisal is not only for facilitation of project planning but also for the establishment of rapport with communities. This further facilitates identification and prioritization of problems by the communities themselves. In the Pondoland area, this is against the backdrop of "eco-conquest" concept advocated by Guyot (2011). This concept is based on the notion that conservation does not accommodate the needs of the local people. It may be interpreted as "colonisation project not to have been fully achieved in the past" and "ecological appropriation may be intended at accessing the area". Therefore, the PRA becomes pertinent in such scenarios, and can assist in ensuring that at conceptualisation stage, the project is mainstreamed into the community.

In this study, the PRA looked at issues that relate to land management and agricultural activities subsequent to "agreements on the biodiversity offset project". The PRA investigated whether communities would still desire to practice their current natural resource use approach, or whether they are open to alternative approaches. In understanding these land-related issues the PRA was mixed with a questionnaire that dealt with land tenure-related issues. This was done to understand issues pertaining to land access; an issue that outworks at an individual scale. For example, one member of the community may have access to land whereas the other member may not and it would not have been wise to obtain a collective view of the community on an attribute that expresses itself on an individual level.

The method followed was structured to suite the uniqueness of the social context. The biodiversity offset sites are Mkhambati area (which encompass 7 villages), Caguba (which has 7 villages), Mbotyi (with 7 villages), and Ntentule (with 4 villages currently) (currently is emphasised because there is another area that the Ntentule community would like to be incorporated into the biodiversity offset project). Each of the targeted areas had its uniqueness as a result although there was common methodology between all areas, the uniqueness or dynamics of each area were factored in. With the assistance from the outreach team, the dates upon which the PRAs were to be conducted were announced/advertised in each village weekly meetings, to encourage attendance. The meetings were called at the house of the chief of the area where "imbizo" matters are generally discussed. The alignment of the PRAs with village weekly meetings ensured maximum attendance as this did not take the community out of their normal routine.

In each PRA meeting the participants were divided into 3 groups: senior males, senior females and youth. This enabled the participants to actively participate without the possibility of being muted by authoritative individuals in the communities. Upon approval by the chief present, all proceedings were recorded on video and photographs were taken. The discussions were facilitated by a representative from Sigwela and Associates assisted by EPTA's outreach facilitators. The discussion points were according to the following format/approach:

A. Ensuring that people have a clear understanding of what it means to be involved in a biodiversity offset project. This was done by providing context of the:
    - N2 Road RoD and how does this link with ECPTA's intention of establishing biodiversity offset areas
    - Definition of "Biodiversity Offset Areas".

B. Confirmation of the physical boundaries that the community has agreed for setting aside for the project. This was done through group discussions where the group was provided with an A0 map of the site and the participants were given opportunity to agree with the boundaries or to draw on the map where they thought they should be. Boundary adjustments could either be minor alterations or major additions or deletions. Confirmation of their understanding on Land ownership (land tenure) was done by the group confirming on the A0 maps:
    - Who owns that land within and outside the delineated polygons.
    - The current management arrangements that are on these land portions.
    - The current institutional arrangements on the land portions.
    - Proposed management options that they would desire if the biodiversity offset project takes off.

C. Confirmation of stewardship options that are preferred by the community, by:
    - Explaining to people various stewardship alternatives .
    - By use of colour coded stickers, each individual was handed different colours (green-support, red-totally opposed, and grey-partially support). Each person pasted a relevant colour on a stewardship option that he/she supports, totally opposed or partially supports.
    - The numbers of stickers in each alternative were counted.

D. Confirmation of management options of biodiversity areas.
    - The members of each group were led to discussions amongst themselves on how they desire that the areas be managed. Options:
        i. By the Community
        ii. By the Community + ECPTA
        iii. By ECPTA
    - Further, they were led to discuss amongst themselves the management alternatives in relation to
        i. Grazing management (what do they want to be done?)
        ii. Fire management (what do they want to be done)
    - How should these management options be enforced

E. Confirmation of tourism options/products
    - Members of each group discussed amongst themselves what tourisms products or options do they want in their respective polygons
        i. There may be more than one option in the same area or in different areas,
    - Members of each group discussed amongst themselves their preferred managed alternatives for these opportunities, the Participatory Rural Appraisal Approach.

During the public participation phase of the project the project team interacted with communities to foster lasting partnerships and, more importantly, for various communities to have a chance of providing input into the planning process of the project. The public participation process was also intended to secure land for the biodiversity offsets project. Although there seemed to have been a great support for the project, the stakeholder mapping process highlighted contradicting messages.

It is in this context that during the Situational Analysis process, a better understanding of land-related issues for the biodiversity offset project was attempted. This was done through the Participatory Rural Appraisal (PRA) mechanism. The PRA is a system that is designed to obtain new information and to formulate new hypotheses about rural life. PRA exercises are considered an important Participatory Planning Process tool that encourages households to identify, plan, implement and evaluate activities. For this project, it was designed to obtain a deeper understanding of the local land tenure (rules invented by the community to regulate issues around land management and land behaviour) issues in relation to the biodiversity offset project. It was also designed to obtain information of how can we be sure that the land that has been allocated for offsets will not be used for other means after the project (i.e. project security). It basically provides context of ensuring that responsibilities and restraints that are applied on land management are adhered to.

As has been discussed above, land-related issues in South Africa are very complicated. This matter is not simpler in communal areas. For any large-scale project such as the project, there is a need of detailed assessment of issues prior to investment of resources. Thorough investigation is therefore necessary to ensure that whatever investment ECPTA will put on the ground is not a wasted venture.

The biodiversity offset project is one such project that involves the participation of villages in the use of their land. It is then important to ascertain the value of knowledge the communities have on this project and thus give input on the direction of the activities that will affect their lives. This includes finding out their perception of land ownership, current land uses, understanding of the protected area or stewardship options that might be effective on their land if it is included in the biodiversity offset project. The importance of the PRA improves the ongoing efforts that will be done on the sites.

Participatory Rural Appraisal Outcomes

In the Mkhambati area lands, five villages participated in the PRA (Vlei, Rhamzini, Mtshayelo, Khanyayo, and Ingquza). Due to logistical problems Cele and Thahle could not be completed by the time of the production of this report. With the assistance of the ECPTA's outreach officer Miss Nyameka Dubedube, a total of 327 participants were recorded in the PRAs of these five villages. These participants were dominated by senior citizens and unemployed youth.

In Ntentule there are disputes that relate to the rightful chief of the area. This offers a pretext to the PRA context. Although the outreach officer, Mr Lumko Mboyi, was concerned about the

effectiveness of the PRA, the project had been previously accepted by Chief Bheki Sigcau. The attendees to the PRA meeting were 26 including the chief and his committee, residents and the CCC members.

Mbotyi is a coastal village under Ntsubane polygon. It is composed of seven villages that are led by seven traditional leaders who all account to the Chieftess Xoliswa Malindi "Gcinilizwe". The area is a "tourism hive" attracting national and international visitors for various tourism products. With the assistance of the outreach officer Mr Siphiwo Mhatu, the Mbotyi PRA was well advertised. It was attended by 46 participants including the Chieftess.

Confirmation of polygons

In all PRAs the participants were supportive of the biodiversity offset project and emphasised the willingness and active contribution (to the project) of community members who are not part of the CCCs and traditional administration in the area. Using the printed maps, they personally confirmed the areas that have been identified as biodiversity offset areas.

In Ntentule and Mbotyi, there are additional areas that the communities expressed their desire that they be included in the project, over and above those that had been delineated initially. The Ntentule participants indicated that one section of the polygon that is attributed to them actually belongs to the Lambasi community. This means, considering that there are still political problems with the Lambasi community, it may not be possible to conclusively confirm the Ntentule polygon as currently delineated. This confirmation will only be done once the Lambasi community is onboard.

Land Tenure

The Mkhambati area lands people are led by 7 different chiefs. They view the authoritative figure over the lands to be the chief, not the king. In terms of land tenure, they view themselves through the chief to be the rightful owners of the land. This means for any decisions, they are the people (through the chief) that need to make decisions about what happens on the ground in relation to the planned biodiversity offset project. This is same view that has been expressed in both Ntentule and in Mbotyi. Therefore, in all these sites, there seems to be no inclination or indication of individual land ownership by people. The ownership is viewed to be of a collective.

Within the framework of land reform, the area that falls under the Mkhambati area lands polygon was under a land claim. In the settlement agreement, all the seven villages in which the PRA was done are the beneficiaries reflected. These beneficiaries are legally represented by a land trust. This trust has various stakeholders. Considering that various departments have been changed in South Africa, it is not known exactly who in terms of government departments are the exact trustees. For an example, the settlement was awarded in 2004 and one of the signatories is the Department of Water Affairs and Forestry (DWAF). Up to the beginning of 2019 water was under the Department of Water and Sanitation, forestry was under the Department of Agriculture Forestry and Fisheries. Currently water is under the Department of Human Settlements, Water and Sanitation. Forestry is under the Department of Environment Forestry

and Fisheries. These changes in signatories has not only been in the government side, but also in the community's side. For each village two elected delegates formed members of the Communal Property Association (CPA). These members represented the community in the trust.

Figure 26. Member of the community discussing site delineation with other community members in Rhamzini

Land management

In terms of land management arrangements there was varied responses from different villages, but there was commonality of ideas within each village. The participants expressed their interest on continued use of the land for grazing their livestock, harvesting of wood, sand mining activities (where this is done) and harvesting resources for medicinal usage. There was a great concern about losing the access to the land.

The views expressed in these PRA initiatives will require a paradigm shift in conservation management of the offset areas. For a long time, goals of poverty alleviation and biodiversity conservation have been pursued separately from each other. Conservation management has been seen as tool to be applied in fenced-off areas, and protected from use by human beings. Considering that the results of the PRA indicate a desire of the communities to have access to resource use, strategies sought to conserve biodiversity, while at the same time meeting the livelihoods and the needs of local people need to be the new focus. It should not be forgotten that the mandate of this project is establishing biodiversity offsets. By definition, this means the project needs to ensure the improvement of biodiversity in areas where it seems compromised. In the Wild Coast, this should be done against the backdrop that land management by humans is increasingly resulting in environmental degradation. This is why biodiversity conservation is becoming a prominent feature in environmental policies and legislation globally. Rural people in

particular are often seen as both agents and victims of environmental degradation (de Villiers & Costello 2006).

Alternatives that ECPTA needs to come with to address these contrasting needs may include the creation of buffer zones. Over the years management of buffer zones has been particularly difficult. This will require a common understanding by all interested parties in terms of goals, plans and how to measure their success. More importantly, how to enforce compliance.

During the PRA process the communities were quizzed on the issues of enforcing compliance to any alternative management options. The majority of participants attributed the responsibility of enforcing compliance to the chief. However, in Rhamzini there was a different view of the CCCs being the entities that should be tasked with this responsibility. Considering that the CCCs are entities that have been elected by the communities themselves, and in some areas the chiefs seem not to be capacitated enough to enforce compliance. This alternatives seems to be a viable/possible alternative. However, in terms of institutional arrangements, this matter might still need to be explored further.

It is a concern that the responsible departments in terms of environmental legislation have not been highlighted as the potential enforcers of compliance. For an example, in terms of the National Forests Act the chiefs are not allowed to give permission for cutting natural forest or protected trees. Licences for this can only be issued by the Department of Environment, Forestry and Fisheries. This matter will become pertinent once the planned areas are declared in terms of Protected Areas Act, 2004. If these matters are not attended to, they may lead to court cases as has been seen in various areas in the Eastern Cape. To mitigate against any confusions, especially in forested areas, communities might need to draw up Community Forestry Agreements, where communities then become involved in forest management.

Enforcement in this biodiversity offset project might provide opportunities of establishing field rangers and forest guards. This can open extra employment opportunities for the much needed jobs in the community.

The issue that deals with access to land should be effectively dealt with. Considering that various communities have expressed their desire of use of natural resources even after the potential areas have been declared as biodiversity offset sites, there is a need of undertaking a study that looks at various resource use in villages. Which villages, communities, number of households or outsiders that use these resources? Also, what would constitute sustainable use levels? Without answering some of these questions, it would be difficult to get a clear understanding limitations and opportunities to natural resource use once these planned polygons are declared as either protected environments or protected areas.

Stewardship Alternatives

In terms of biodiversity stewardship alternatives that will be undertaken once the site is under the project the PRA did not come up with any conclusive results. It is important to note, the outreach facilitation team has not yet completed the capacitation of the communities on

stewardship alternatives. However, the PRA team explained these alternatives to the communities. Due to concerns about information overload to these communities, the explanations were only limited to Protected environment, Nature Reserve and National Park. In line with this concern of "information overload" the Rhamzini community requested that the team should discuss these "technical aspects" with their Community Conservation Committee (CCC) as they are not knowledgeable enough to be able to make a decision on this matter. Their understanding was that the CCC will in turn inform them of the appropriate biodiversity offset option. Therefore, although there is a fair reflection of what stewardship alternative the majority of the communities prefer, there is average to low confidence on their respective understanding of the implications of the alternatives selected. Therefore it is recommended that these selected options should be treated as a guide to their respective preference. Once the outreach team finishes the capacity building on this subject, a second assessment of community preference should be done.

Most of the participants selected the Protected Area. Interestingly preference for Ntentule and that of Mbotyi differed to that of Mkhambati area (Table 6). Both Ntentule and Mbotyi communities voted to opt for two types, the protected environments and the nature reserve. The reason for this is that they wish to maintain the access to their communal lands and forest that have historical significance to their livelihoods. They indicated to having plants that are have medicinal value to them since pharmacies are far away and in terms of their financial standing, it is hard to gain access to medicine. The Mbotyi community raised a concern on possible limitation to access use of natural sources and communal land for grazing purposes.

Table 6. Selection of stewardship alternatives by different villages

Site	Village	Protected Environment		Nature Reserve		National Park		Both (PE & NR)
		Yes	No	Yes	No	Yes	No	
Mbotyi		13	27	38	0	30	15	0
	Vlei	10	33	33	7	0	0	0
	Mtshayelo	22	0	73	0	2	0	95
	KwaKhanyayo	53	0	0	0	1	0	0
Tracoland	Ngquza	23	1	38	2	24	12	0
Ntentule		15	0	15	0	1	0	26

Tourism products

It was clear during the PRA that the communities would like to derive maximum benefit from the planned biodiversity offset project. One of such benefits is to establish tourism products that will be advantageous to the communities. The experience and knowledge of tourism alternatives is very limited within the communities. In the Mkhambati area lands the main tourist attraction that they are mostly exposed to is Mkhambati Nature Reserve. However, there are few accommodations facilities in the villages. Each village proposed the potential tourism products that could be initiated in their respective area.

The Mkhambati area people had a variety of interest that will reduce unemployment and improve their socio-economic status (

Table 7). These included a hotel, bed and breakfasts, tared road, fuel stations, shopping mall, camping site, cultural village, horse riding and a diversity of introduced game for establishment of a game reserve. The Ntentule community also had multiple interests such as zip lines over the falls, a game reserve with chalets or camping sites for visitors, horse riding features, cable cart to show off the view from the falls to the river, and a botanical garden. Some of the beneficiation outputs that they would like to be gained by the community are, but not limited to, hospital or clinic, schools, hotels, tared roads and a dam. The Mbotyi community were interested in a snake park, an eco-lodge, recreational or cultural centre, a conservatory for the diverse number of insects, the use of waterfalls as sources of attraction, and hiking trails through their unique forests and landscapes.

The Wild Coast is an eco-tourism attraction. Various government departments have invested resources into the Wild Cost to improve or sustain tourism. To date very little benefit from tourism activities has been accrued to these communities. This perceived or real exclusion can be a potential source of community dissatisfaction. The example of Xholobeni is classic in reflecting what the community can do if they perceive development not to be to their advantage.

Table 7. Tourism, business and beneficiation options selected by various communities

Tourism Options		
Mkhambati area	**Mbotyi**	**Ntentule**
Shopping mall	Sea-related	Hotel
Bed and breakfast	Forest hiking trails	Zip-lining
Garage	Viewing of Waterfall	Viewing deck
Hotels	Bird watching	Cableway
Camping sites	Butterflies/ Insect watching	Botanical Garden
Cultural village	Snake park	Game
Horse riding	Hiking trails	
Game park	Estuary related activities	
Swimming pool	Game viewing	
	Mountain view	
Beneficiation options		
Old Age Home		Sport ground
Private Hospital		Community hall
University		Pre-school
Tar Road		Portable Water/taps
Maximum security		Dam
Sport Ground		Clinic
		Tar Road

Biodiversity Offset Management

During the PRAs the Mkhambati area lands community members proposed various management alternatives of the biodiversity offset sites. These ranged from Community managed; Community + NGO/Government/ECPTA; Government/NGO/ECPTA. The participants differed in their selected options. Some raised concerns about Mkhambati Nature Reserve's historical methods of management. The Ntentule and Mbotyi community a co-management agreement between the community and ECPTA.

The mistrust that seems to be displayed by the Mkhambati area lands community is influenced by the fact that land management for conservation is not an easy subject. In the settlement agreement for Mkhambati Nature Reserve the settlement indicated that the land must be managed with a participative approach. Currently, its management is Mkhambati Co-management Committee (CMC). The CMC is composed of two members from each of the seven villages, two members of the Land Trust, a staff member from ECPTA, a staff member from the Department of Rural Development and Land Reform, and one person from the OR Tambo District Municipality. The CMC aims to promote participative management of the nature reserve to reach conservation and community life improvement goals. This arrangement has proved not to be simple. This biodiversity offset project needs to learn from such cases.

From these PRA activities it seem as if the communities are not aware of legal arrangements for forest areas. Looking at the outcomes of the PRAs, it might be necessary that areas that have been under the management jurisdiction of DAFF are not the sole mandate of DEDEAT or ECPTA.

Any development in these areas generally requires two authorizations, one from DAFF and one from DEDEAT. In the current government arrangements where departments have been re-aligned, forestry is now in the Department Environment Forestry and Fisheries. If ECPTA ends up being the managing entity of the forest patches that will be under the biodiversity offset project, there might be a need of transferring these forest patches to DEDEAT to align with the legal responsibility framework. In the interim these forests have been included in the B&LMA and Protected Area Expansion categories.

CONCLUSION

By making use of both qualitative and quantitative data from both field work and secondary sources, this study highlights a fair context that can be used as a situational environment of the rural communities in whose land the biodiversity offset projects will be implemented. It can be concluded that the Pondoland is diverse not only in terms of biodiversity context but also in human and socio-economic context. The macro-economic context of Pondoland can be extrapolated from household (micro) level assessment. The researchers postulate that this point is crucial to note although it is not within the scope of this situational analysis to test the significance levels. The researchers further, argue that no two communities are the same regardless of the similarities they might have. On this premise, the specific key challenges that were identified in this study include; increasing family size (population growth) against constant income levels, low economic productivity, unemployment and inadequate supply of food from own produce. Based on a detailed secondary analysis the socio-economic dynamics in the municipalities are not yet able to favour the local populace. The implementation of projects such as the biodiversity offset projects, act as stepping stones to the much-needed economic growth, employment creation and poverty alleviation.

An in-depth primary study of the discussed areas should be conducted in order to get perceived environmental needs of the communities, the exact number of projects taking place in the area as well as the extent thereof and finally the actual flora and fauna found in and around the areas in discussion. Against this backdrop, this research concludes that concerted efforts to discover and sufficiently respond to the needs expressed by the communities in order to achieve sustainable livelihoods and rural development based the biodiversity offset projects are of paramount importance. Moreover, community campaigns on environmental awareness will play a significant role. In addition, stakeholder's engagement within the vicinity of the Pondoland could also play a vital role on capacity building, policies and laws to prevent overexploitation of natural resources. This youth capacity building/training programme should be on issues that are in-line with the biodiversity offset project. This will potentially increase the pool of potential SMMEs that can participate in the project. If this capacity building program takes off, youth must be recruited from targeted and affected communities. For the project to be successful partnerships must be forged with selected institutions of higher learning, natural environmental groups, and private and government institutions.

It might be necessary to have consultative meetings with communities, their leaders, and all relevant stakeholders for their input on this matter. Sensitization workshops for students, parents and teachers might also be necessary. There is also a potential of establishing or initiating environmental clubs for awareness and education on environmental conservation. If this initiative takes off, all youth must be selected through an open and transparent advertisement and selection process.

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Appendix A: Landcover maps of each site

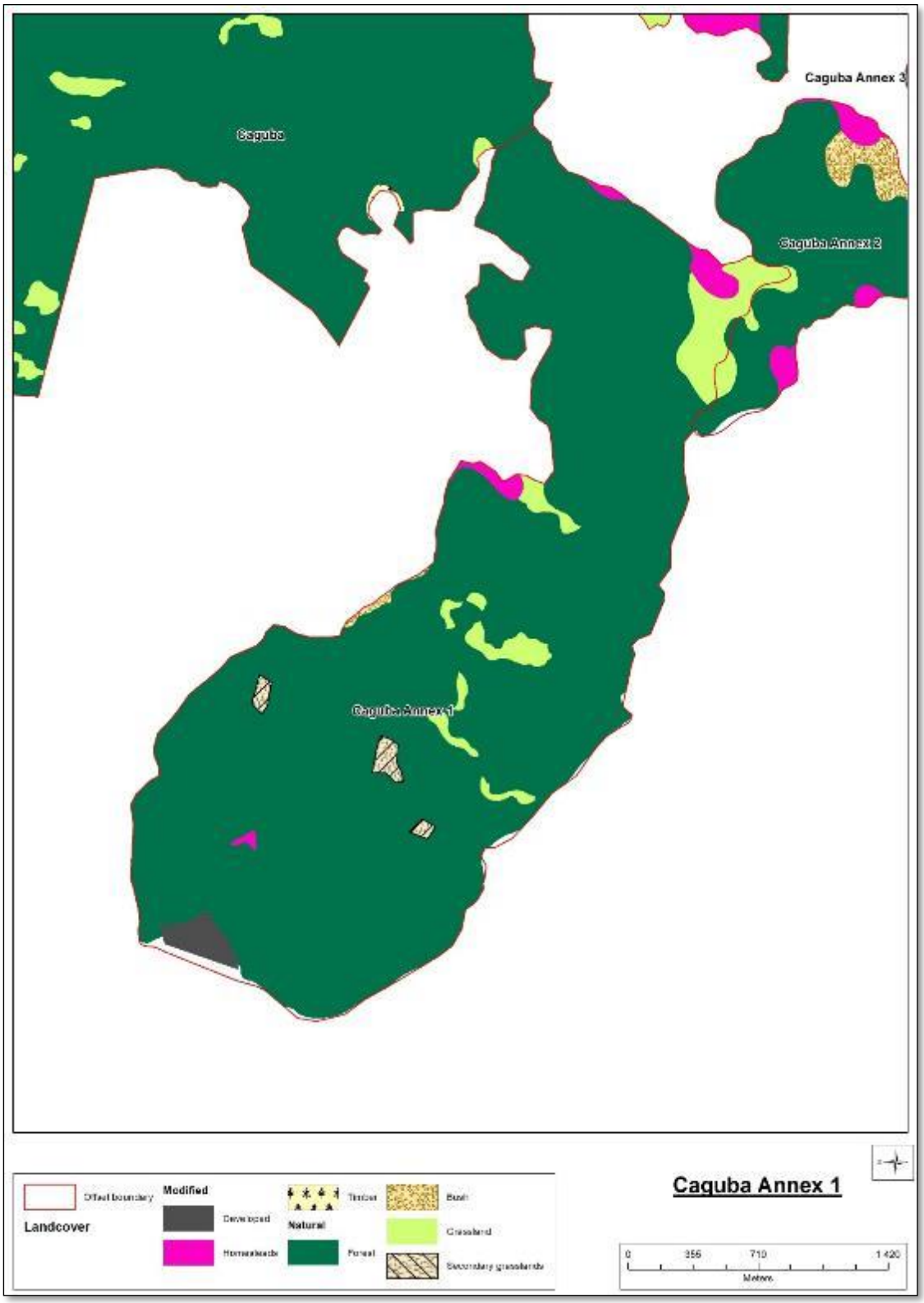

Figure 27 The landcover of Caguba Annex 1

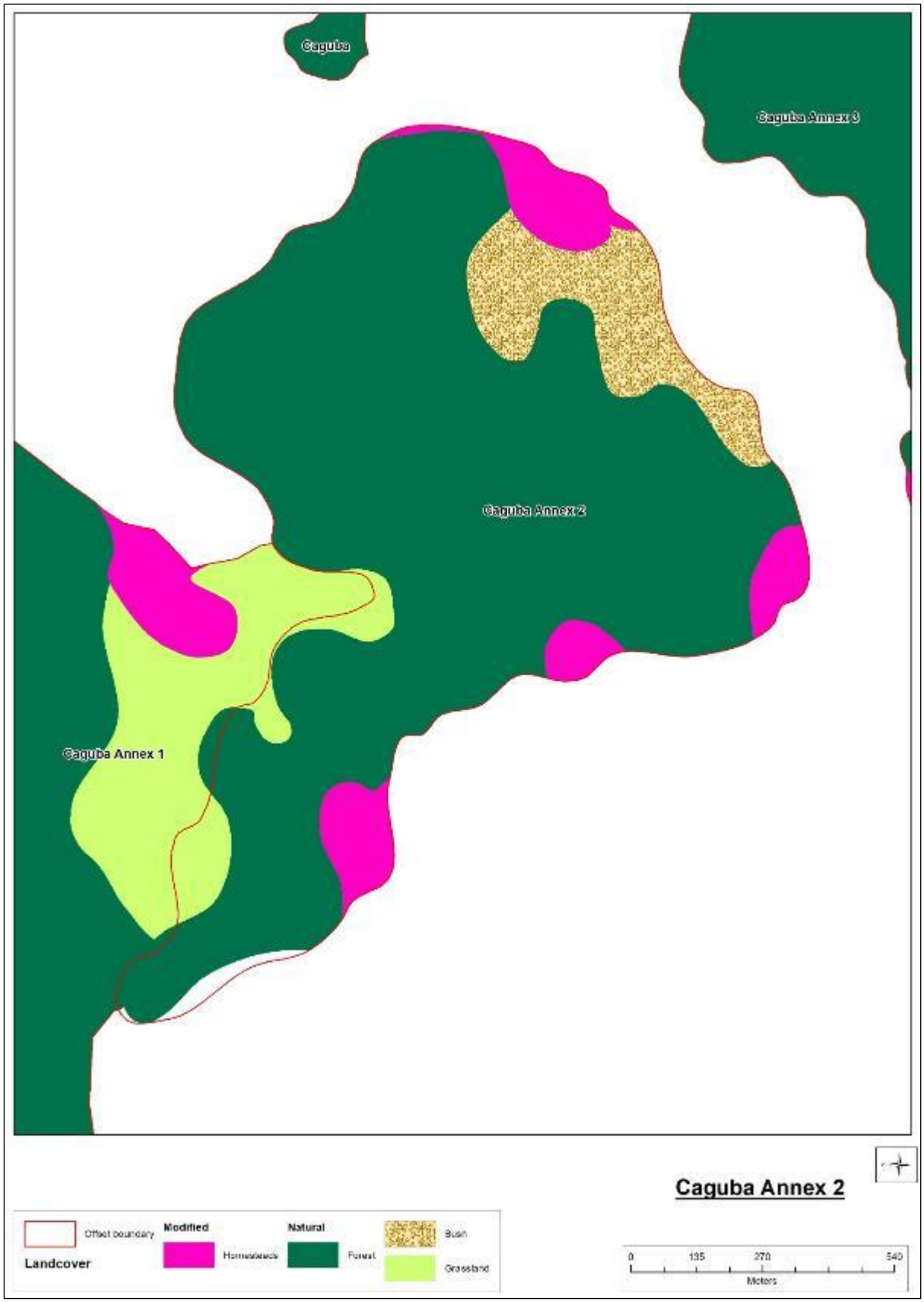

Figure 28 The landcover of Caguba Annex 2

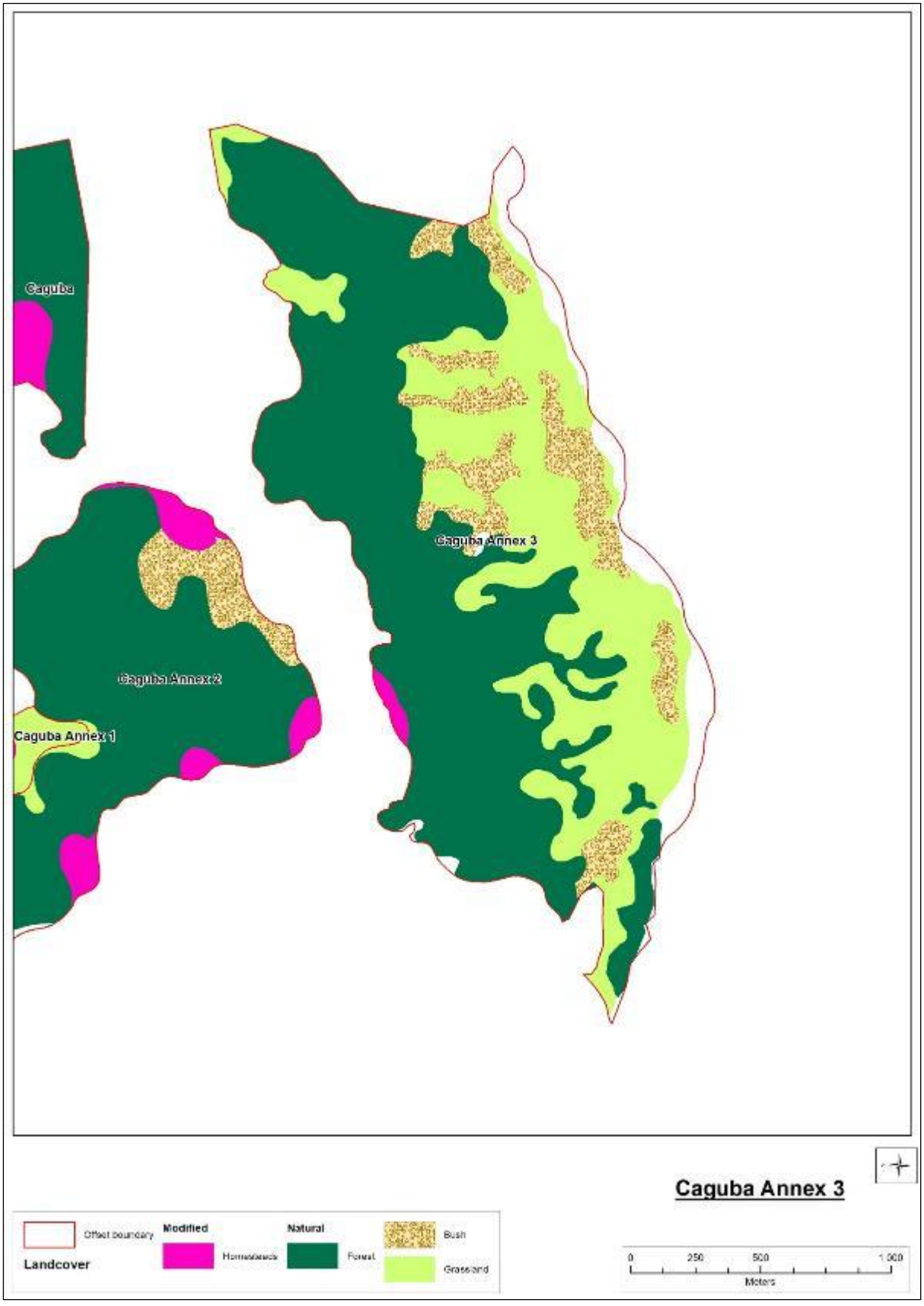

Figure 29 The landcover of Caguba Annex 3

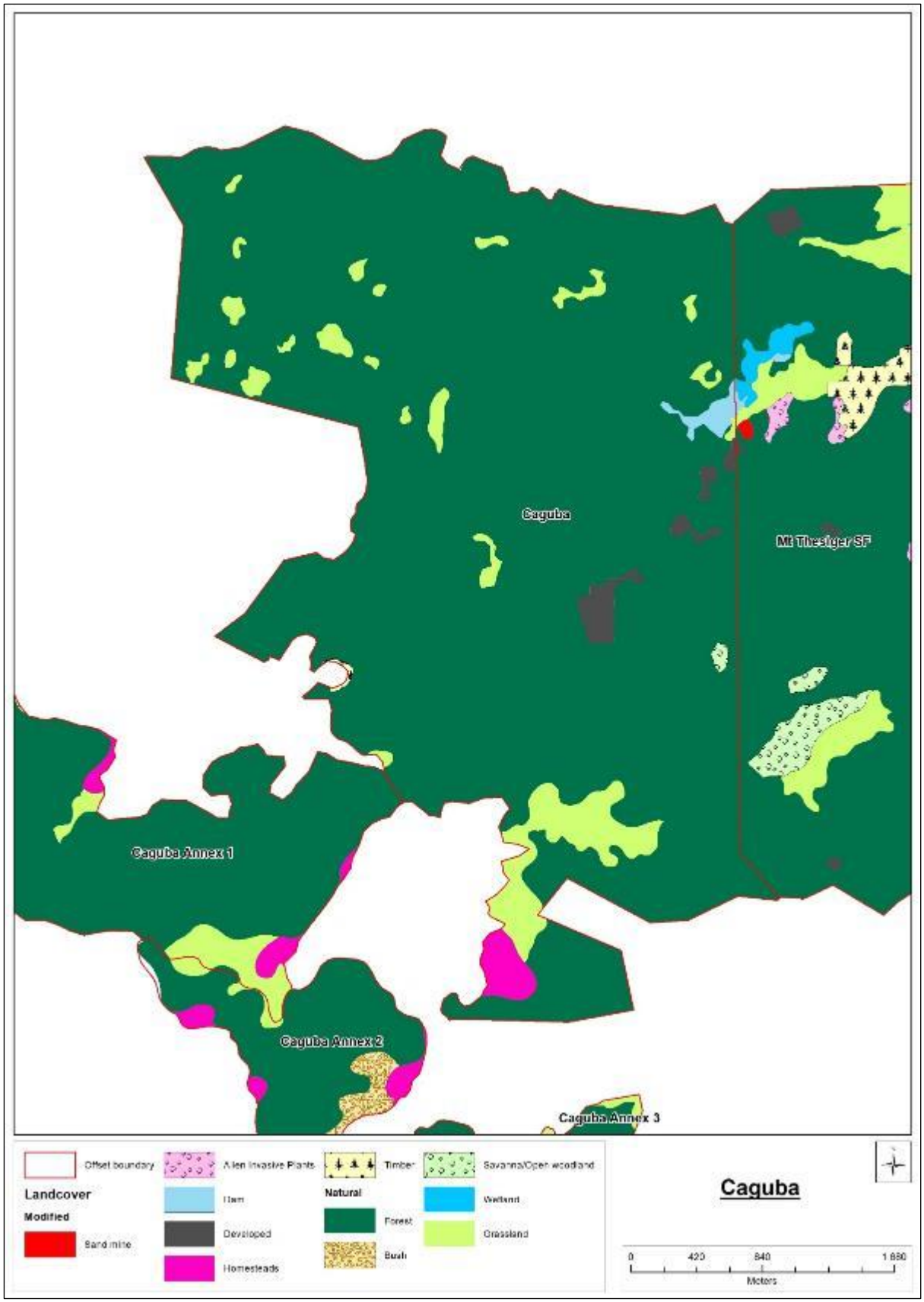

Figure 30 The landcover of Caguba

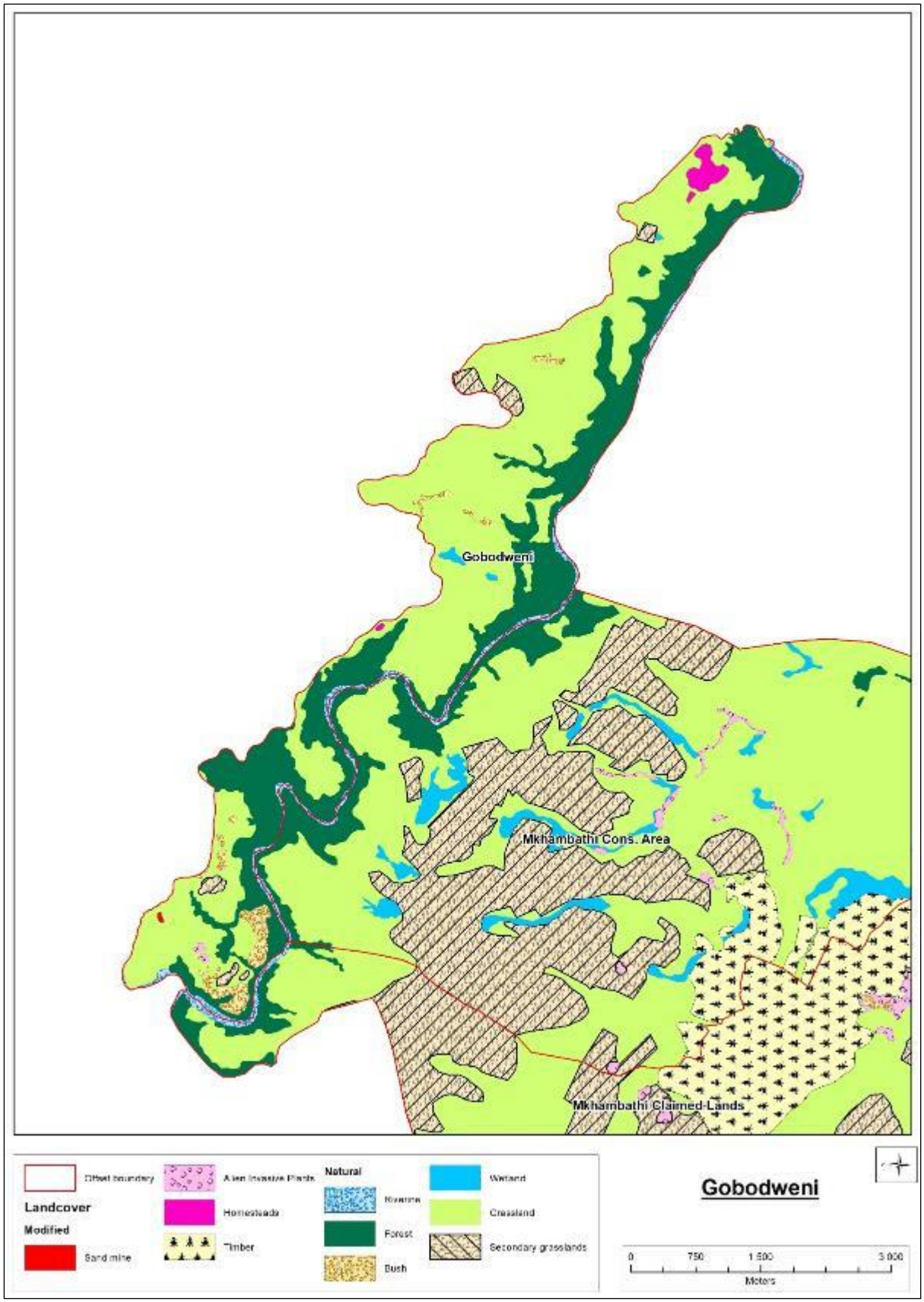

Figure 31 The landcover of Gobodweni

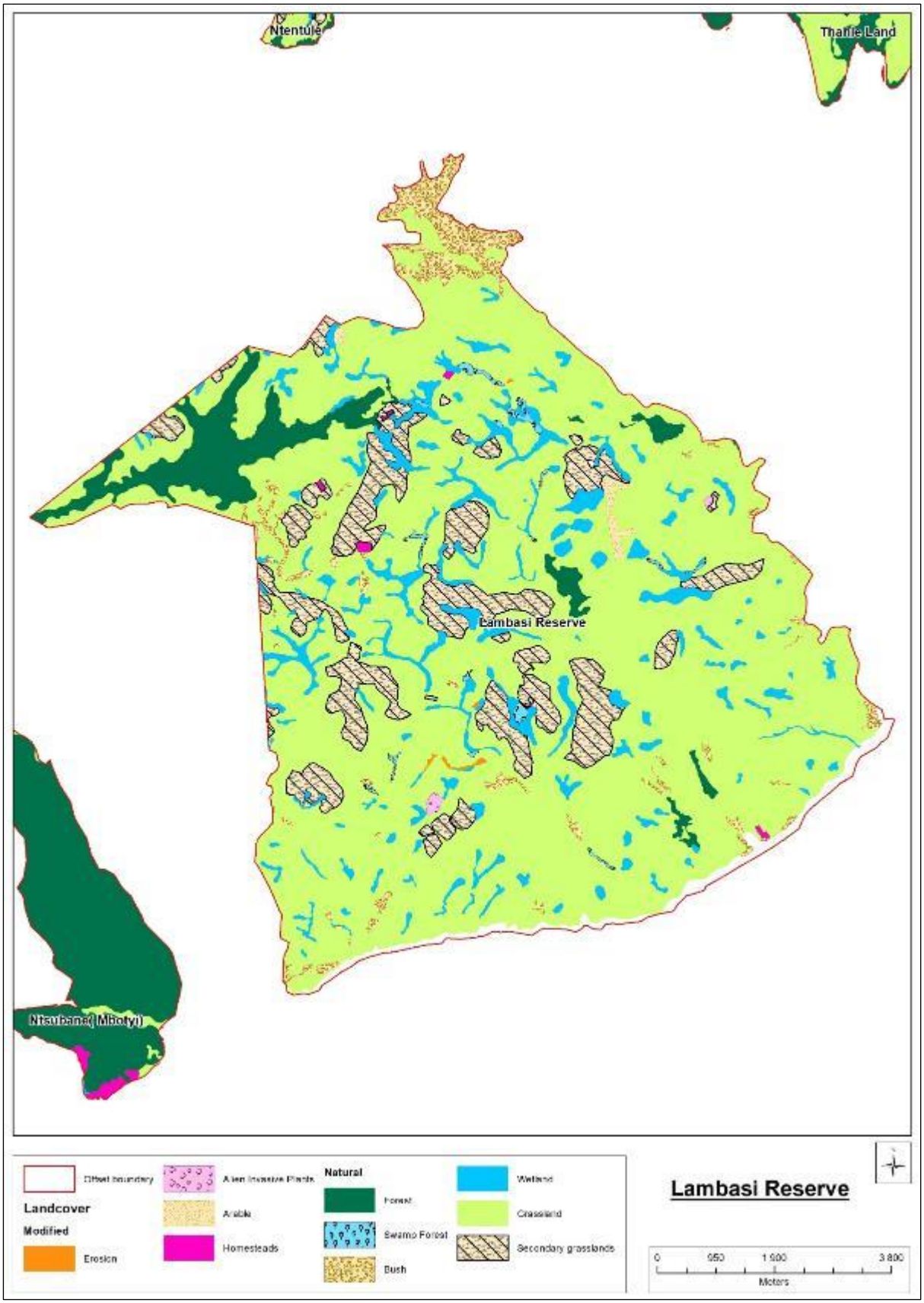

Figure 32 The landcover of Lambasi Reserve

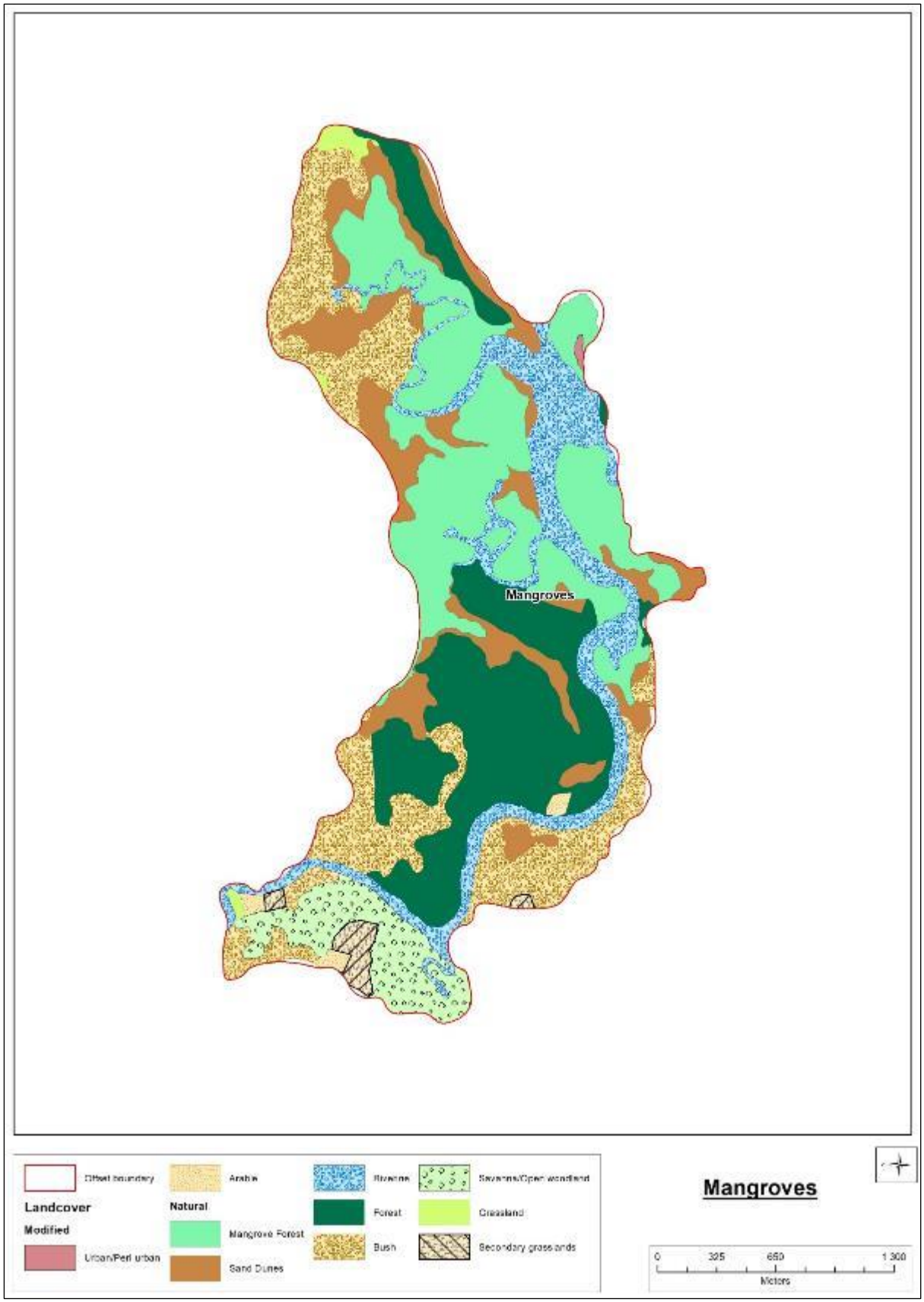

Figure 33 The landcover of Mangroves

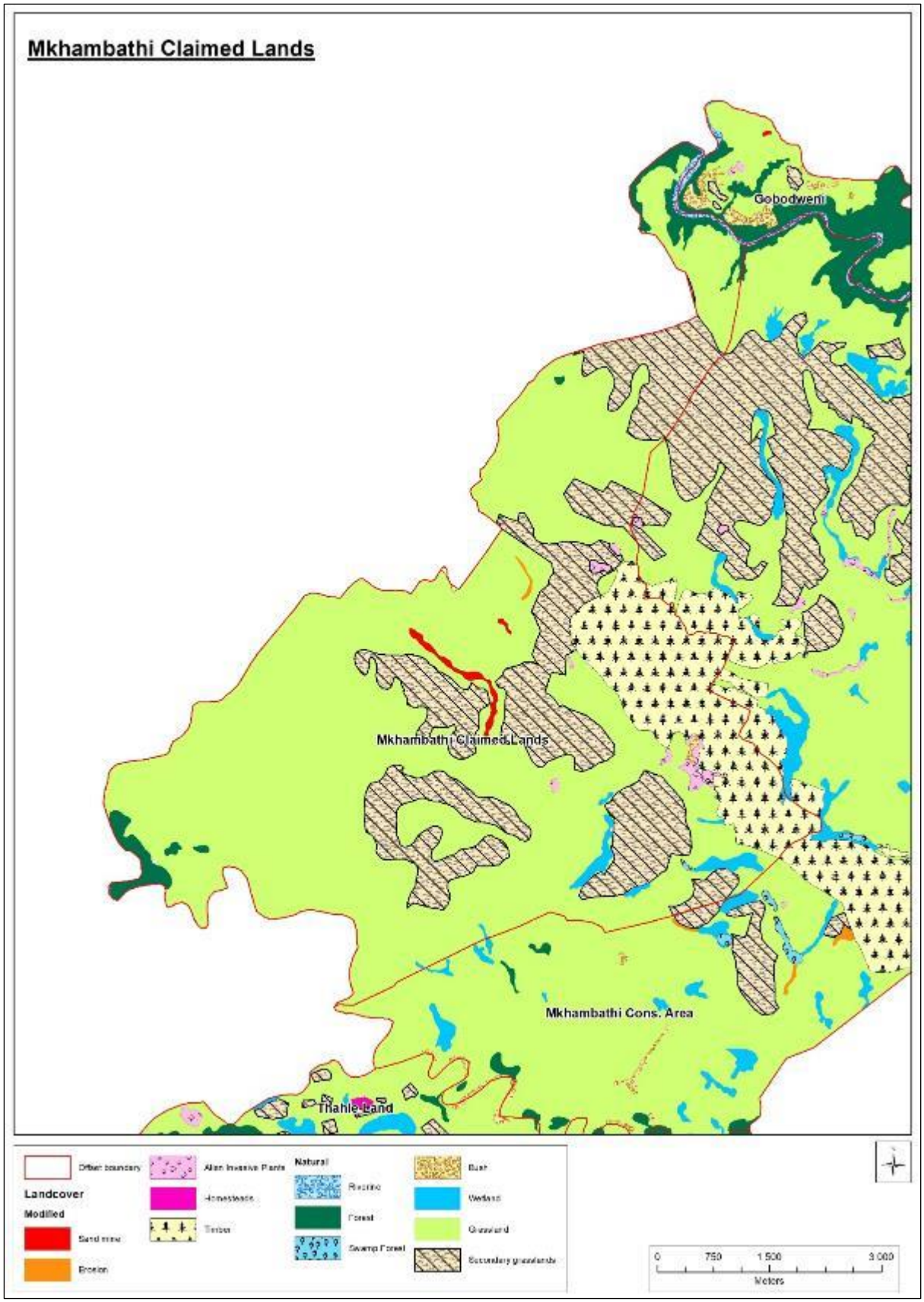

Figure 34 The landcover of Mkhambati Claimed Lands

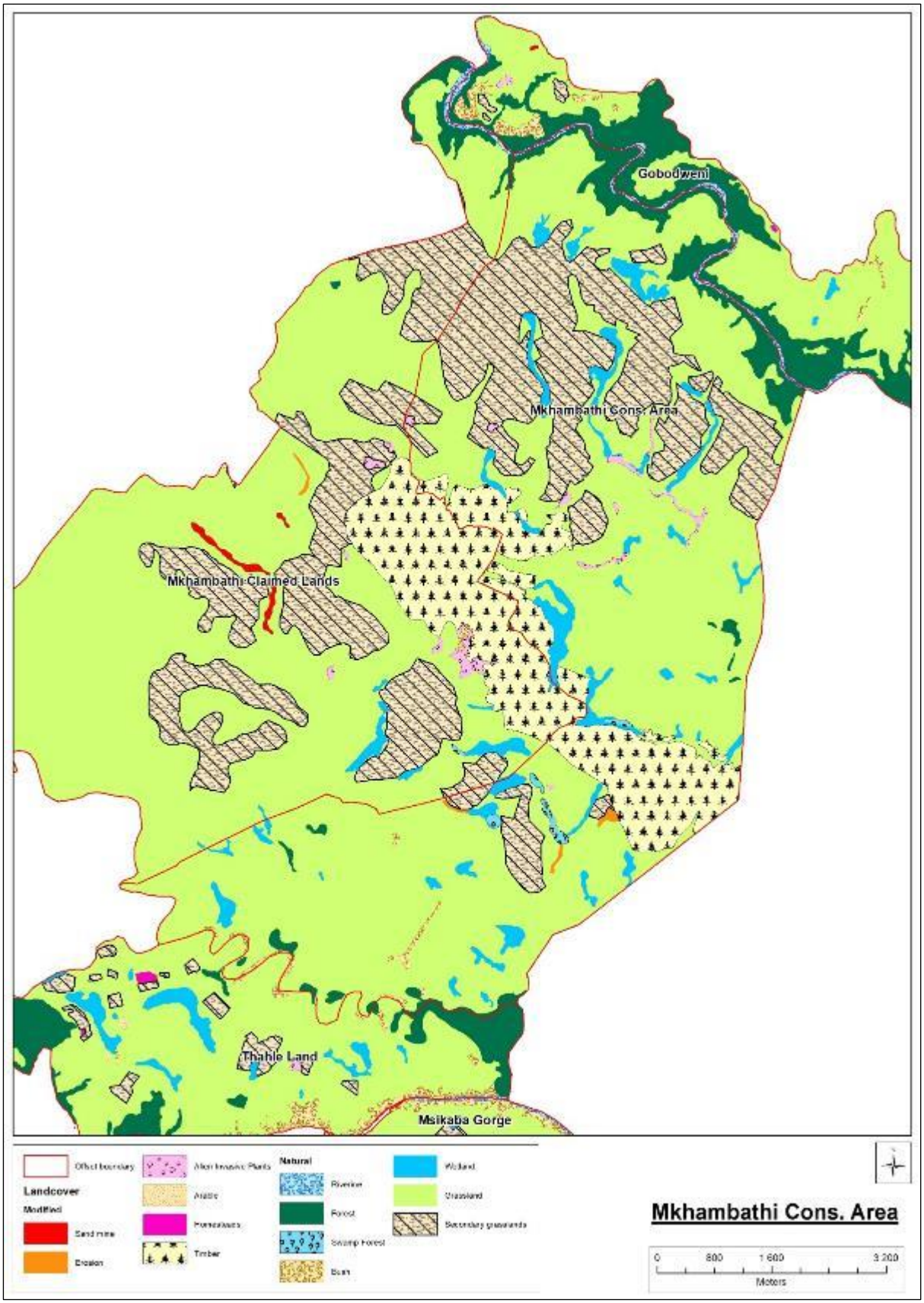

Figure 35 The landcover of Mkhambati Conservation Area

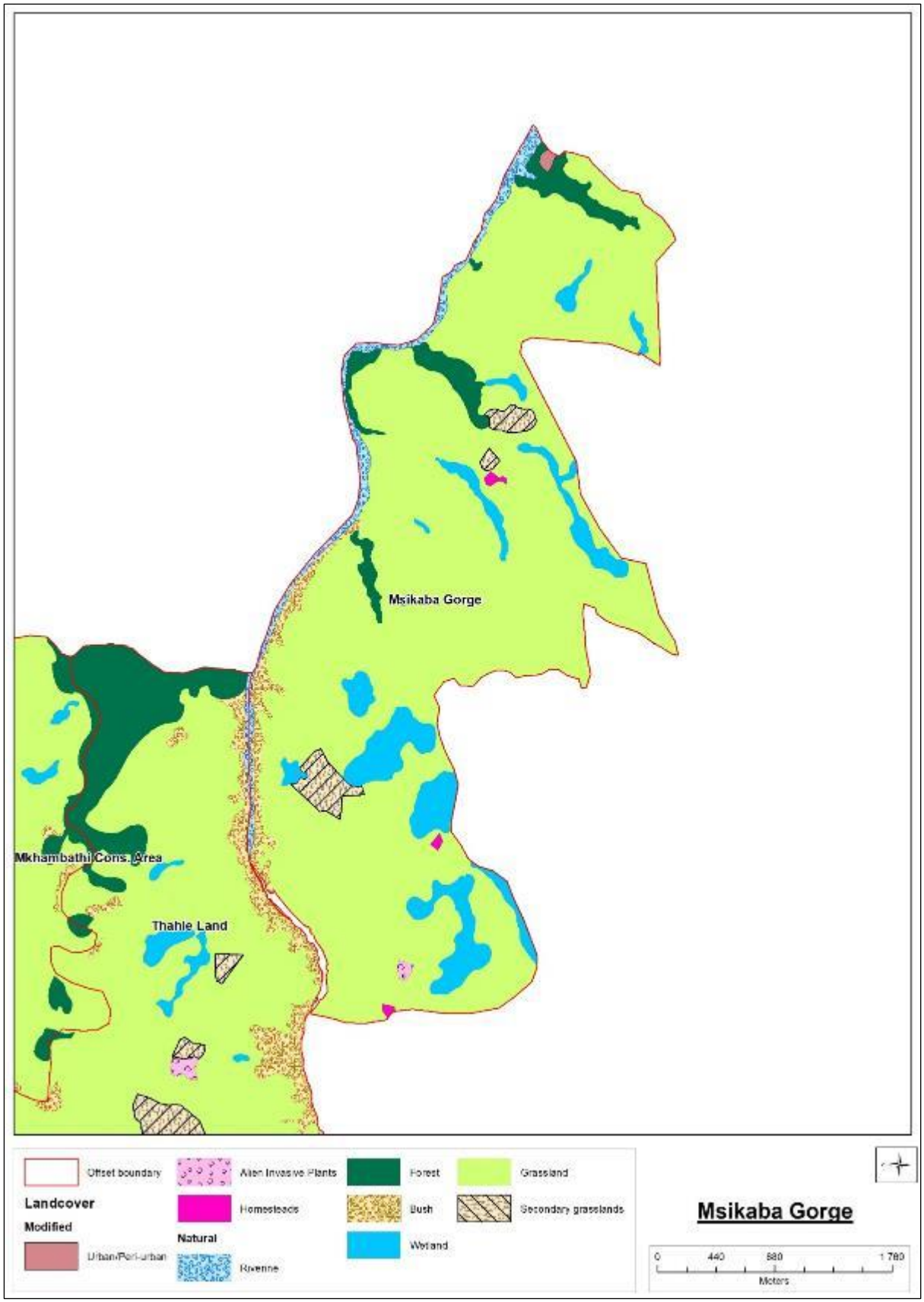

Figure 36 The landcover of Msikaba Gorge

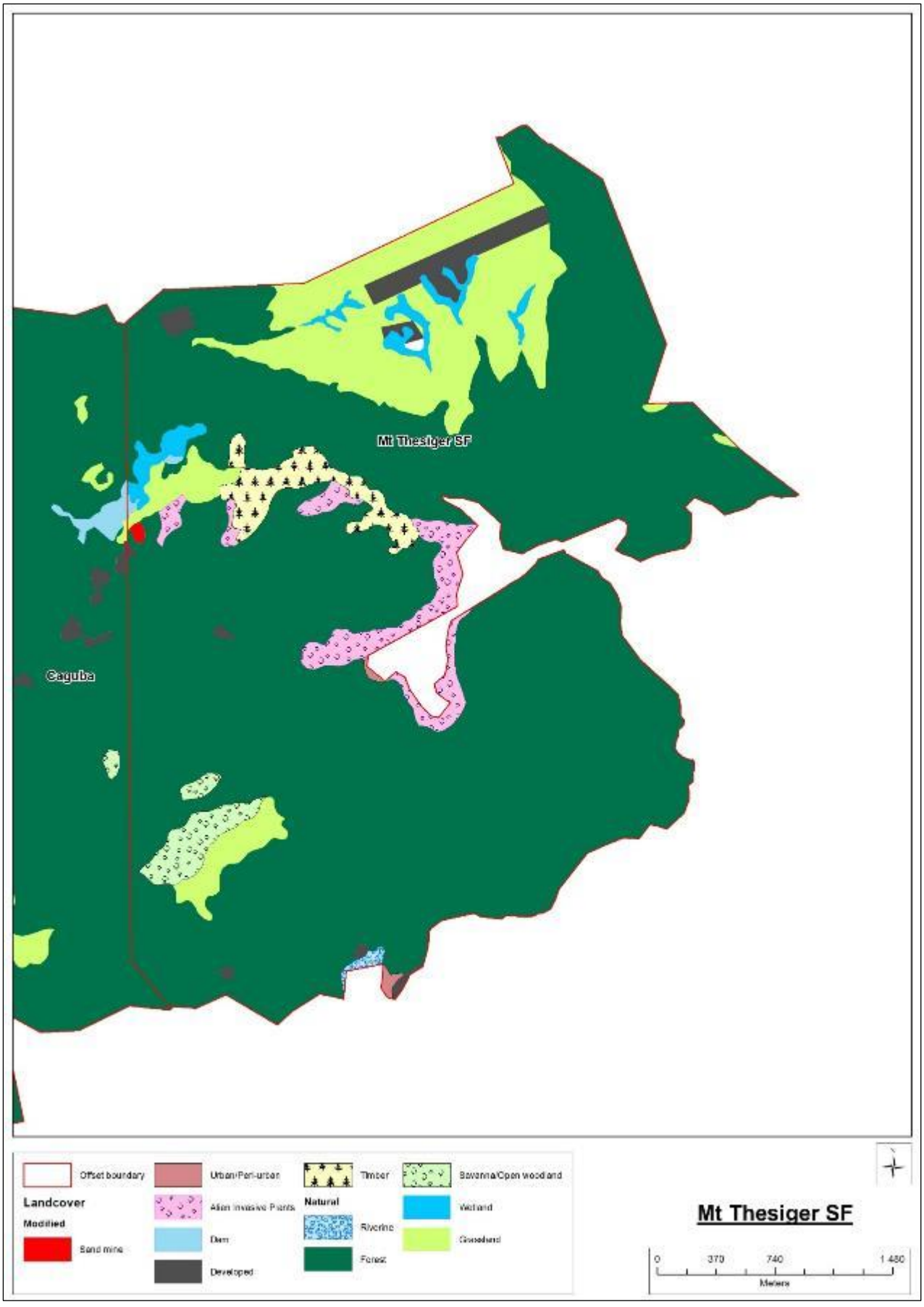

Figure 37 The landcover of Mount Thesiger SF

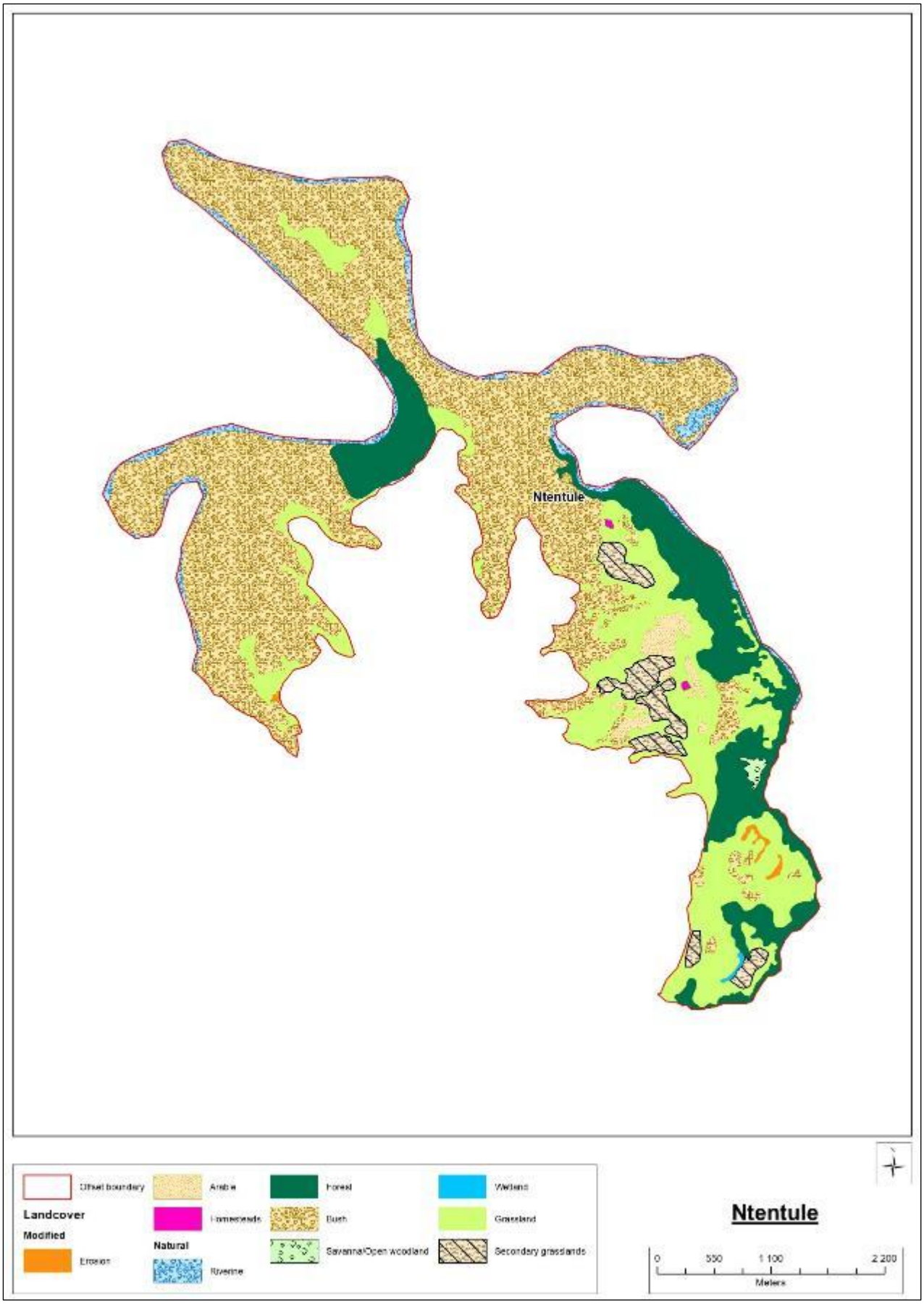

Figure 38 The landcover of Ntentule

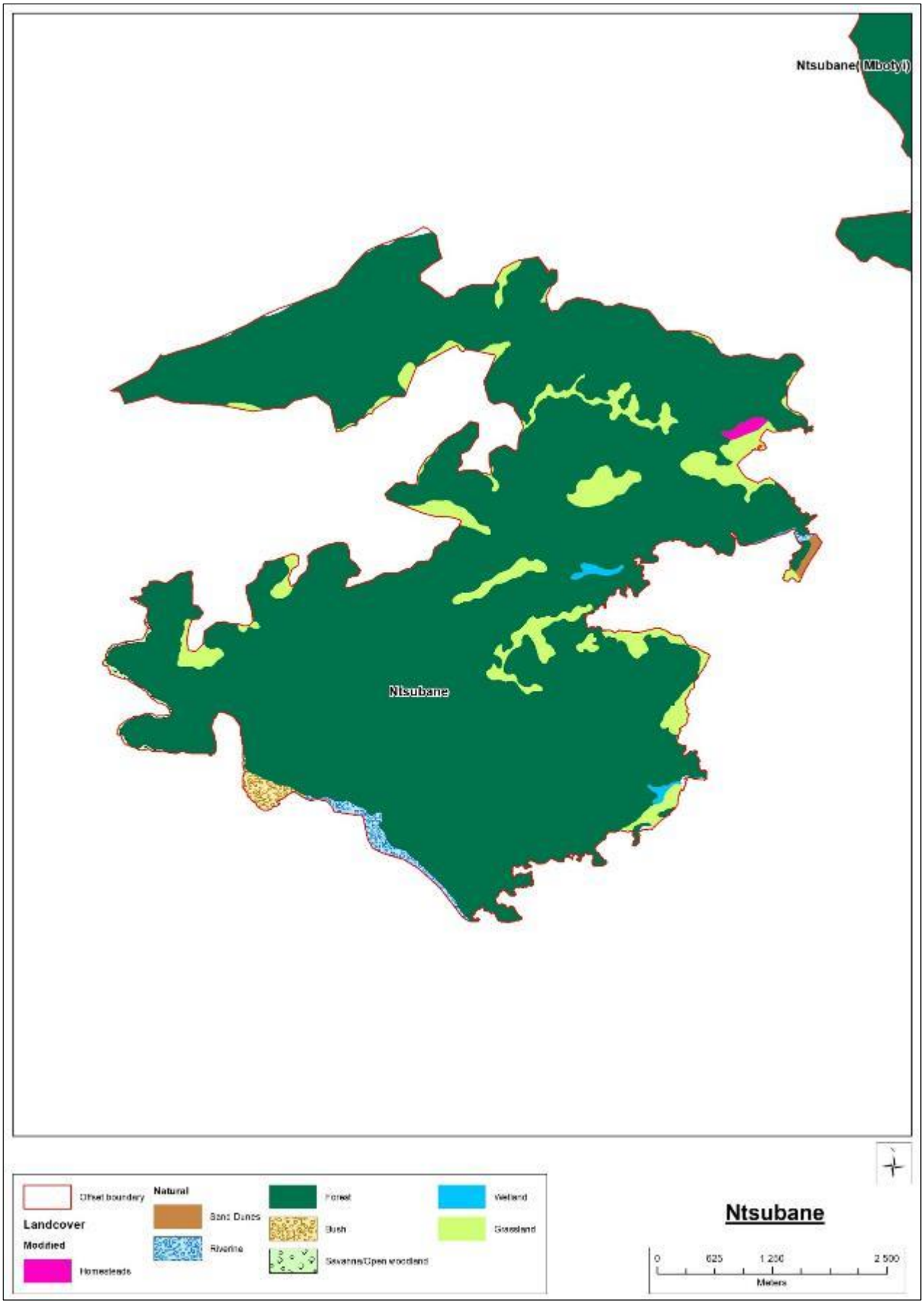

Figure 39 The landcover of Ntsubane

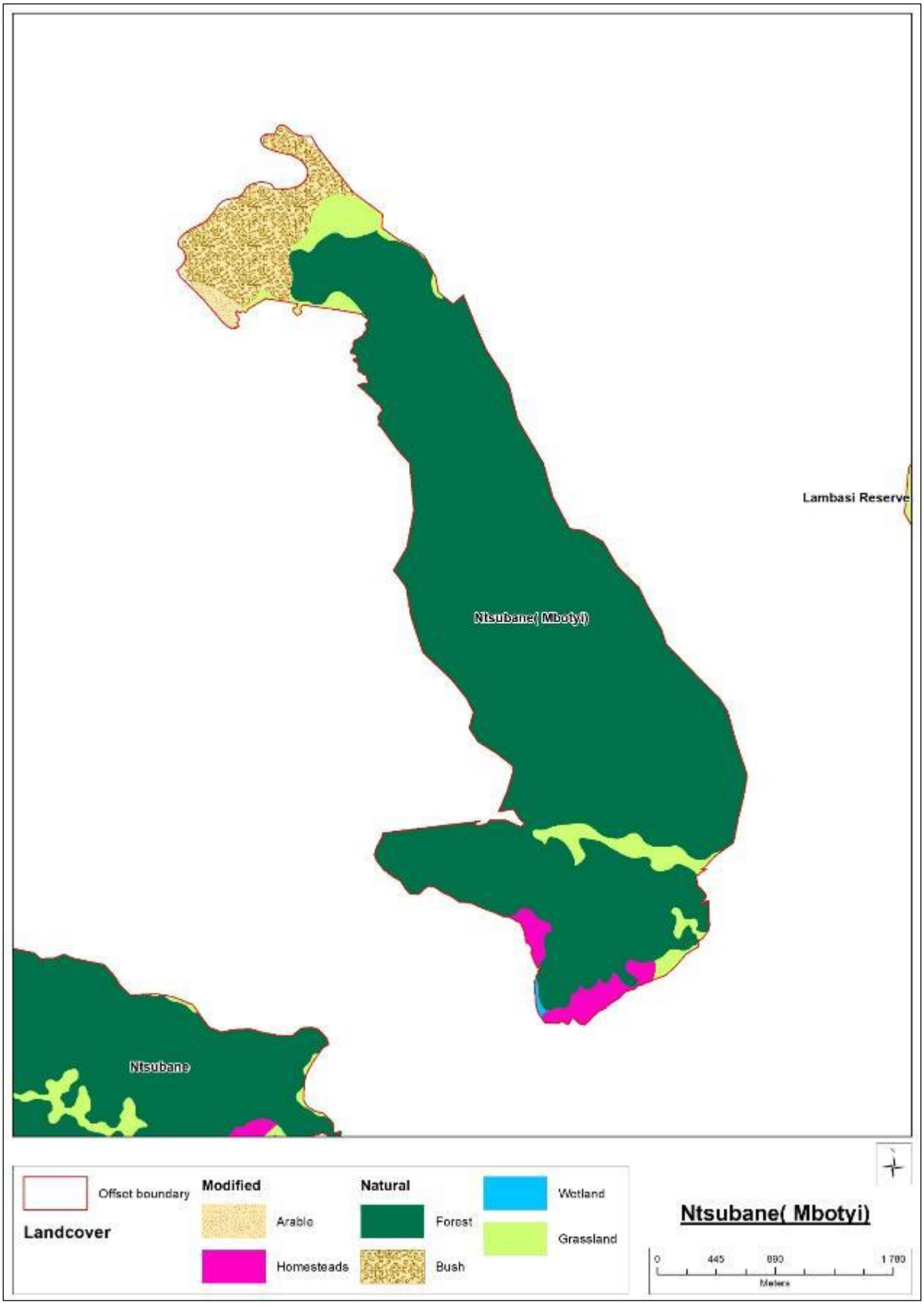

Figure 40 The landcover of Ntsubane (Mbotyi)

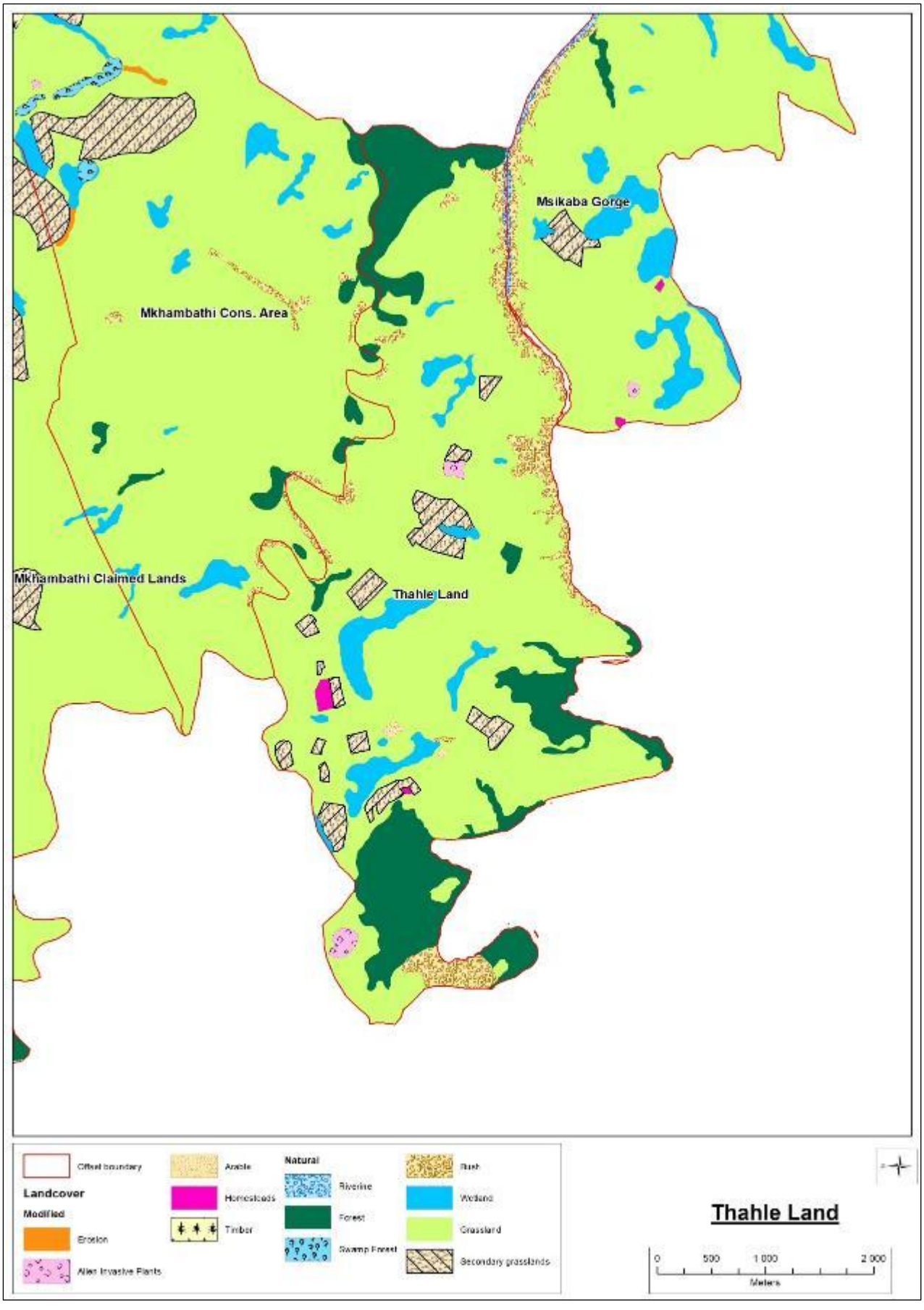

Figure 41 The landcover of Thale Land