

**Environmental Impact Assessment for the
proposed Banna Ba Pifhu Wind Energy Project
near Humansdorp, Eastern Cape:
Draft Environmental Impact Assessment Report**

Chapter 3:

Description of the Affected Environment



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CHAPTER 3. AFFECTED ENVIRONMENT

This chapter provides an overview of the affected environment and local planning context (including surrounding land uses) for the proposed Banna Ba Pifhu Wind Energy Project. A broad understanding is given to the term 'environment', which includes the biophysical, socio-economic and heritage environment. This chapter, therefore, assists the reader in identifying potential impacts on the environment (positive or negative); and opportunities or constraints which the affected environment may present to the development.

3.1 SITE LOCALITY

The Banna Ba Pifhu Wind Energy Project is located on the Broadlands and Saragossa Farms in the Kouga Municipal Area, approximately 3.5 km south of the town of Humansdorp at an elevation of approximately 50 m to 90 m. It will be located on the following farms:

- Remainder of Farm 688
- Portion 2 and 15 of Farm 689
- Portion 1 of Farm 868.

The Banna Ba Pifhu wind energy project will have a total capacity of up to 50 MW. Current cattle farming activities would continue beneath and around the turbines.

3.2 BIOPHYSICAL ENVIRONMENT

3.2.1 *Climate*

Rainfall in the Kouga region is bimodal where both summer and winter rainfall occurs, a feature typical of the south-east coastal region of the country. The mean annual rainfall is approximately 400 mm. The weather is mild without extreme conditions with an average summer temperature of 24°C and a winter temperature of 17°C. During winter the prevailing wind is from a westerly to south westerly direction and during summer the wind is predominantly easterly. A high frequency of wind occurs daily in the area.

3.2.2 *Geology and Landscape*

The wind farm will be located on a relatively flat coastal plain. Foothills of Cape Fold Mountains rise towards the west and north of the wind farm site. Palaeo-dunes of up to 100m high can be seen south of the wind farm site near Thyspunt and Oyster Bay. The geology of the region is dominated by rocks of the Cape Supergroup which consist mainly of quartzite layers. These rocks tend to be erosion resistant, forming ridges and mountains, as well as rocky promontories

which jut out into the sea such as at Seal Point and Shark Shack Point near Cape St Francis. Palaeo-dunes of the Nanaga Formation and current dune fields are found along the coast.

The wind farm will be introduced into an agricultural landscape with dairy farming as the main land use type. Fynbos on the hills with thicket along deeper river valleys (and among palaeo-dunes) cover areas which are not cultivated. Humansdorp is the largest in-land settlement in the region and an important service centre for the agricultural community. The coastline contains numerous towns and resorts which cater for seasonal visitors and tourists, such as St Francis Bay, Cape St Francis and Oyster Bay.

There are various power line and road networks covering the area. A 66 kV power line crosses the site, linking to the Melkhoutbosch substation (Figure 3.1) located north of the N2-R330 interchange. The electricity generated at the Banna Ba Pifhu wind energy project is planned to feed into the 66 kV line and into the Melkhoutbosch substation. Should this option become unfeasible, a new 132 kV overhead powerline would connect the wind farm to the Melkhout substation.

The roads that may be affected will be the R330 between St Francis Bay and Humansdorp, the R102 between Humansdorp and Jeffrey's Bay and the N2. The R330 will be most affected since it passes very near the wind farm site.

3.2.3 Ecology, Biodiversity and Conservation Planning

Regional Planning - Mucina and Rutherford Vegetation of Southern Africa (2006)

The vegetation map of the study area is provided in Figure 3.2.

According to Mucina and Rutherford (2006), present vegetation consists of:

- **Humansdorp Shale Renosterveld**, which includes shrubby fynbos communities and low-lying seep and wetland/pan areas dominated by grasses and herbs with scattered thicket clumps, where not cultivated or transformed. Rocky outcrop communities also present on ridges with a mix of succulent and fynbos elements (**Endangered**).
- **Gamtoos Thicket** restricted to kloofs and valleys along drainage lines, of which the latter are dominated by trees (**Least Threatened**).

Regional Conservation Planning - Subtropical Thicket Ecosystem Planning

According to STEP vegetation classification, vegetation on site consists of:

- **Kromme Fynbos / Renosterveld Mosaic** - includes shrubby Renosterveld-Fynbos communities and low-lying seep and wetland/pan areas dominated by grasses and herbs with sporadic scattered thicket clumps, where not cultivated or transformed. Rocky outcrop communities also present on ridges with a mix of succulent and fynbos elements (**Vulnerable**).
- **Gamtoos Valley Thicket Mosaic** - restricted to kloofs and valleys along drainage lines, of which the latter are dominated by trees (**Vulnerable**).

Regional Conservation Planning - Garden Route Biodiversity Sector Plan

The present vegetation in within and directly adjacent to the site as per the Garden Route BSP, consists of:

Vegetation Variant	Conservation Status
Osbosch Thicket -Renosterveld	Vulnerable
Humansdorp Perennial Stream	Least Threatened
Soutvlei Inland Pans	Vulnerable
Kabeljous Valley Thicket	Vulnerable
Kromrivier Thicket Forest	Vulnerable
Tsitsikamma Perennial Stream	Critically Endangered

The Garden Route Biodiversity Sector Plan thus identifies the primary vegetation units that will be affected by the proposed wind farm as being Osbosch Thicket-Renosterveld, Humansdorp Perennial Stream **and Soutvlei Inland Pans**. These vegetation units have a low conservation status and the proposed development is thus unlikely to have any significant impact on conservation priorities. Furthermore, the majority of the site is in a transformed state, with remnant vegetation being in a degraded state. **Kabeljous Valley Thicket, Kromrivier Thicket Forest and Tsitsikamma River and Floodplain** although present in the vicinity, are mostly outside of the proposed development site and are unlikely to be affected.

This proposed land-use accommodates infrastructure installations serving both the urban and rural areas where such installations include nuclear power stations, **wind farms or other alternative energy technologies requiring large areas of undeveloped land**. The Garden Route BSP guidelines thus permit the use of areas for large-scale wind farms where they *'are associated with large areas of land left undeveloped thereby maintaining low transformation levels relative to the property size'; installations to be located on transformed, disturbed or low-value agricultural land, where possible' and 'avoidance of sensitive areas such as floodlines, river and wetland buffers and Special Habitats'*.

3.2.4 Vegetation and habitat

The current habitat is primarily dominated by transformed **agricultural pastures and lands** (both irrigated and fallow), with remnant pockets of **Osbosch Renosterveld - Thicket** on slopes and mostly degraded/transformed **Humansdorp Perennial Stream in low lying areas**. The majority of the land consists of cultivated fields, mainly producing fodder and grazing for livestock but may have been used historically for crop production.

Ecological barriers in the area consist of fences, gravel farm roads, culverts and power lines. Utility lines and roads are forming corridors for bird mediated seed dispersal as well as vehicle mediated dispersal, in the case of roads. Biotic interactions are concentrated around pollination, seed dispersal, herbivory and predation.

Dams, streams and drainage lines of natural or anthropogenic origin usually with typical associated aquatic and riparian flora in various states of ecological integrity and disturbance are

present. Numerous small to medium sized farm dams are present on the site, which may have been associated with historical seasonal/ephemeral wetlands in the rainy season.

A few scattered alien plants are present as individuals or in small clumps, although these do not occur in abundance anywhere within the site.

A number of protected and endemic flora species are likely to occur in intact areas of natural vegetation, which will be identified in the Specialist study.

Terrestrial Faunal species that are expected to occur within the study area mostly have a conservation status of Least Concern to Vulnerable and No Endangered or Critically Endangered terrestrial fauna. The site does not host any butterflies of special concern and does not fall within an area of any Endangered or Critically Endangered reptiles as presented in Branch (1988). Vulnerable Blue Duiker (*Philantomba monticola*) and Endangered Oribi (*Ourebia ourebi*) have distributions that overlap with the locations of the wind farm, but due to the absence of preferred habitat, are not expected to occur on the proposed site. Hewitt's Ghost Frog (*Heleophryne hewitti*), which is regarded as Critically Endangered (Branch, 1988) is known to be present within a limited number of catchments within the Elandsberg mountains and no individuals of this species are expected to be present at the proposed site. It is however not ruled out that they might occur as the presence of the species in the area has not been determined.



Figure 3.1: Melkhoutbosch substation, near the N2-R330 interchange north of Humansdorp

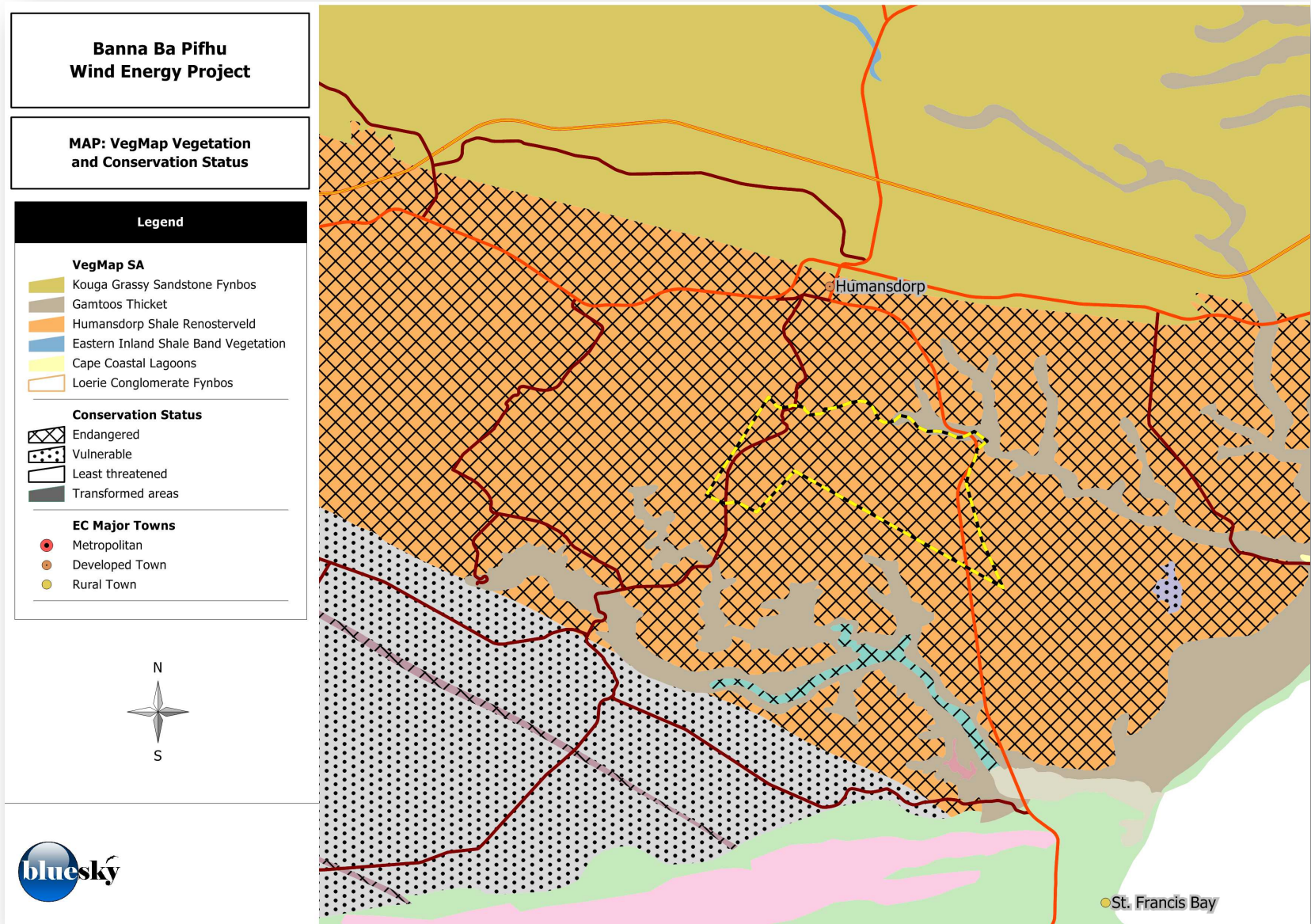


Figure 3.2: Vegetation map of the study area (including transformed land)

3.2.5 Birds

Vegetation structure is more critical in determining bird habitat than actual plant composition (Harrison *et al.* 1997). Therefore, the description of vegetation presented in this study concentrates on factors relevant to bird species, and does not give an exhaustive list of plant species which occur in the study area.

The description of the vegetation biome where the site is situated uses the information presented in the Atlas of southern African birds (SABAP1) (Harrison *et al.* 1997). The criteria used by the authors to amalgamate botanically defined vegetation units, or to keep them separate were (1) the existence of clear differences in vegetation structure, **likely to be relevant to birds**, and (2) the results of published community studies on **bird/vegetation associations**. It is important to note that no new vegetation unit boundaries were created, with use being made only of previously published data. The proposed development site is situated within the **fynbos biome** (Harrison *et al.* 1997). The fynbos biome is characterized by a high diversity in plant species composition and endemism. This diversity is not paralleled in its avifaunal composition, and fynbos is regarded as relatively poor in avifaunal diversity compared to other southern African biomes.

Whilst some of the distribution and abundance of the bird species in the study area are related to the occurrence of natural fynbos, it is more important to examine the micro habitats available to birds, most of which are the result of human induced transformation. These are generally evident at a smaller spatial scale than the natural vegetation patterns. In the study area, the majority of the habitat is transformed.

The micro habitats recorded in this study area are described below.

- **Scrub.** Most of the study area consists of transformed habitat, but there are a few areas of natural vegetation left, consisting of fynbos scrub. Priority species that are associated with the scrub areas are Amur Falcon, White-bellied Korhaan and Denham's Bustard (see Table 3.1).
- **Grassland.** The majority of the study area consists of short grassland, which is mostly cultivated pastures, including irrigated pivots. This constitutes habitat for Red listed Blue Crane, Denham's Bustard, White-bellied Korhaan, Jackal Buzzard and Secretarybird (see Table 3.1). White Storks are also attracted to these areas.
- **Wetlands and dams.** The area contains several dams and water bodies, mostly man made but some also natural and seasonal. These dams and pans, depending on the shape, can be important for some bird species. Dams with shallow sloping sides are suitable for a wider range of species. In the context of this study, shallow dams with sloping sides could potentially be roost sites for Blue Cranes and White Storks. African Marsh-harrier was recorded in a large wetland adjacent to the project site (see Table 3.1).
- **Thicket.** The project site has a few areas of thicket, mostly associated with a drainage line along the northern border of the project site. None of the priority species is associated with the thicket, with the possible exception of Secretarybirds that could potentially roost on trees along the drainage line.

The BLSA draft list of priority species was used to identify species that will require specific monitoring on the site. Table 3.1 below shows the list of priority species that have been recorded in the QDGC overlapping with the study area, namely 3424BB. **Only species that are likely to occur on site (to be confirmed by pre-construction surveys which commenced in March 2010) based on the identification of habitat and avifauna during the reconnaissance site visit has been included.**

The following abbreviations and acronyms are used to indicate conservation significance:

VU	=	Nationally vulnerable (Barnes 2000)
NT	=	Nationally near threatened (Barnes 2000)
AEWA	=	Listed in Annexure 2 of the African-Eurasian Waterbird Agreement

Table 3.1: Priority species (BLSA 2011) recorded in 3424BB QDGC
(Harrison *et al.* 1997; <http://sabap2.adu.org.za>, Young *et al.* 2003, Young 2008, Young 2009a, Young 2009b, Young 2010; pers. obs).

Common Name	Scientific Name	Conservation Status	Recorded on site since monitoring commenced in March 2011	Habitat requirements (Barnes 1998; Barnes 2000; Hockey <i>et al</i> 2005; Young <i>et al</i> 2003; Harrison <i>et al</i> 1997; personal observations)
Black Stork	<i>Ciconia nigra</i>	NT, AEWA	No	Cliffs for roosting and breeding, and rivers and dams for foraging.
Secretarybird	<i>Sagittarius serpentarius</i>	NT	No	Grassland, old lands, open woodland. Most likely to be encountered in fynbos and old agricultural areas.
African Marsh-Harrier	<i>Circus ranivorus</i>	VU	No but recorded on adjacent property	Large permanent wetlands with dense reed beds. Sometimes forages over smaller wetlands and grassland. Could be foraging at wetlands associated with dams in the study area.
Black Harrier	<i>Circus maurus</i>	NT	No	Highest expected densities in scrub.
Peregrine Falcon	<i>Falco peregrinus</i>	NT	No	A wide range of habitats, but cliffs (or tall buildings) are a prerequisite for breeding. May hunt over grassland and scrub. Immature birds are most likely to be encountered.
Lanner Falcon	<i>Falco biarmicus</i>	NT	No	Generally prefers open habitat, but exploits a wide range of habitats. May hunt over grassland and scrub.
Amur Falcon	<i>Falco amurensis</i>		Confirmed	Summer migrant recorded in over grassland and scrub.
Blue Crane	<i>Anthropoides paradiseus</i>	VU	Confirmed	Recorded in grassland.
Denham's Bustard	<i>Neotis denhami</i>	VU	Confirmed	Recorded in scrub and grassland
White Stork	<i>Ciconia ciconia</i>	AEWA	Confirmed	Old agricultural lands and water bodies.
African Fish-Eagle	<i>Haliaeetus vocifer</i>		No	Any of the water bodies.

Common Name	Scientific Name	Conservation Status	Recorded on site since monitoring commenced in March 2011	Habitat requirements (Barnes 1998; Barnes 2000; Hockey <i>et al</i> 2005; Young <i>et al</i> 2003; Harrison <i>et al</i> 1997; personal observations)
Jackal Buzzard	<i>Buteo rufofuscus</i>		Confirmed	Scrub and grassland
African Harrier-Hawk	<i>Polyboroides typus</i>		No	In thicket along drainage lines.
Rock Kestrel	<i>Falco rupicolus</i>		No	Scrub and grassland
Spotted Eagle-Owl	<i>Bubo africanus</i>		No	Scrub
Martial Eagle	<i>Polemaetus bellicosus</i>	VU	No	Scrub and thicket
White-bellied Korhaan	<i>Eupodotis senegalensis</i>	VU	Confirmed	Scrub and grassland

The potential effects of a wind farm on birds are highly variable and depend on a wide range of factors including the specification of the development, the topography of the surrounding land, the habitats affected and the number and species of birds present. With so many variables involved, the impacts of each wind farm must be assessed individually. Each of these potential effects can interact, either increasing the overall impact on birds or, in some cases, reducing a particular impact (for example where habitat loss causes a reduction in birds using an area which might then reduce the risk of collision).

The principal areas of concern which will require investigation are listed below:

- Collision mortality on the wind turbines
- Displacement due to disturbance
- Habitat change and loss.

3.2.6 Bats

Twelve bat species have a geographical distribution that includes the study area. Four of these species are listed as Near-Threatened (Friedmann & Daly 2004; Monadjem, *et al.* 2010) locally and one is Near-Threatened globally, while all other species are listed as Least Concern. There are no large caves on the property and thus maternity roosts on the property itself are not highly likely, although barns and unoccupied buildings are present and are possibly suited for seasonal colonization.

Table 3.2: Bat species that are likely to occur on the proposed Broadlands wind farm

Species	Common Name	SA conservation status	Global conservation status (IUCN)
<i>Epomophorus wahlbergi</i>	Wahlberg's epauletted fruit bat	Least Concern	Least Concern
<i>Eptesicus hottentotus</i>	Long-tailed serotine (endemic)	Least Concern	Least Concern
<i>Kerivoula lanosa</i>	Lesser woolly bat	Near Threatened	Least Concern
<i>Miniopterus natalensis</i>	Natal long-fingered bat	Near Threatened	Near Threatened
<i>Myotis tricolor</i>	Temminck's myotis	Near Threatened	Least Concern
<i>Neoromicia capensis</i>	Cape serotine	Least Concern	Least Concern
<i>Nycteris thebaica</i>	Egyptian slit-faced bat	Least Concern	Least Concern
<i>Rousettus aegyptiacus</i>	Egyptian Rousette (endemic)	Least Concern	Least Concern
<i>Rhinolophus capensis</i>	Cape horseshoe bat (endemic)	Near Threatened	Least Concern
<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe bat (endemic)	Near Threatened	Least Concern
<i>Taphozous mauritanus</i>	Mauritian tomb bat	Least Concern	Least Concern
<i>Tadarida aegyptiaca</i>	Egyptian free-tailed bat	Least Concern	Least Concern

Although there are not many large trees or dense vegetation on the site itself, there are river beds with riparian vegetation north as well as south of the site. Bats might reside in the riparian vegetation and rocky crevices along the river beds and are very likely to move over the proposed turbine site to forage or drink. The Broadlands site has high potential for species and population density.

The key issues regarding the potential impacts on bats include the following:

- Barotrauma
- Loss of foraging and habitat
- Direct collusion
- Indirect effects to human quality of life, which include agriculture and pest control.

Species most likely to be affected are the aerial insectivorous bats (e.g. Egyptian Free-tailed Bat) which forage quite high above the ground and are thus at risk of barotrauma from the turning turbine blades. The wind turbines could pose most hazardous to at least six of the 12 species, on account of their foraging habits. Furthermore some species are known to cover large distances when foraging at night or when moving between winter and summer roosts. There are no published migration patterns recorded for bats in South Africa, and the wind turbines will pose a risk to all bats whose migration route crosses the potential site.

3.2.7 Heritage

Heritage includes palaeontology (e.g. fossils), archaeology and historical or cultural features that may exist on or near the site. The site is more than five kilometres from the coast, and therefore shell middens are not expected to be found this far inland (Binneman 1996, 2001, 2005). The site might have had low cultural activity in the past, but it is unlikely that any archaeological or historical material would be located during development. Nonetheless, it must be recognised that there are several archaeological sites in the wider region that are of international significance and the developers should observe for any archeologically valuable features during the construction phase.

3.3 SOCIO-ECONOMIC

Note: More information on the socio-economy of the area can be obtained in the Economics chapter (Chapter 10 of this report).

The study area falls within the Kouga Municipal area in the Cacadu District. The Kouga Municipality has a population of 62 542 people (as indicated in the Kouga Municipality revised IDP 2005/2006), with a low proportion of young people, 38 % being between the ages of 0 and 20 years (census 2001). The Municipality is a top performer in the Eastern Cape with low rates of dependency (1.29), unemployment (25 %) and poverty (31 %). Some 47 % of households in Kouga have members who receive social grants. This is the lowest percentage of households in the District (Kouga Municipality Annual Report 2005-2006).

Agriculture is one of the major contributors to Geographical Value Add (GVA) and employment in the area. However, this lucrative market is adversely affected by high numbers of people (including farm workers) infected with HIV/AIDS within the municipal area. Considering the district average of 17 %, the Kouga municipality has an estimate of 12 000 persons living with HIV/AIDS. Kouga currently has 14 330 patients with Tuberculosis (TB), 20 % of the total local population. As a consequence of the linkages between TB and HIV/AIDS, this should raise concerns for the delivery of primary health care.

A district survey indicated that Kouga is performing above average in terms of access to good roads, clinic services and public schools. Unfortunately the municipal area is doing particularly poorly in terms of access to hospitals and ambulance services.

Kouga has among the highest Formal Economy Performance scores, with positive factors including the positive trade balance, a fairly diversified economy, low financial grant dependence, and strong GDP and employment growth performance. The local economy has experienced a positive shift increase in employment and GDP from 1996 to 2004, and is one of only two municipalities in the Province to emerge as leading economies in respect of both GDP and formal employment, provincially and nationally.

Kouga municipality is predominantly a rural area with seasonal influx of visitors to the popular coastal tourist destinations such as Jeffrey's Bay and Cape St Francis. It offers a wide range of tourist activities and attractions. These include historical and heritage sites, the Kouga Cultural Centre, surfing, fishing, hiking, biking, sand boarding, birding and game viewing, and various other outdoor and adventure activities (Kouga Municipality Annual Report 2005-2006).

3.3.1 Demographics

The 2007 Community Survey estimated that the total population in Kouga has grown slightly since 2001 to 73 274 and decreased slightly in the Cacadu District to 363 485 (StatsSA, 2008). Estimates in the Kouga IDP argue for a substantially higher population estimate of up to 86 000 people fuelled by a population growth rate of 2.4% per annum between 2000 to 2010 (Kouga Municipality, 2007).

The revised Kouga IDP (KLM, 2010) points out that Jeffrey's Bay is now reputed to be one of the fastest growing towns in South Africa and the current trend suggests a high growth rate at 2.5% per annum for the Jeffrey's Bay and 2% for Humansdorp. It predicts that the population of the municipality will reach 90,000 within four years

3.3.2 Employment

As with the rest of the country, unemployment is a major challenge in the area. The 2007 Community Survey indicates that unemployment in the Kouga Municipality has stayed at 27% for 2007 little changed from the 2001 estimate (StatsSA, 2008). For the individual towns in the municipal area, Table 10.2 shows that unemployment was highest in the smaller towns of Patensie (39.7%), Hankey (32.5%), Thornhill (32.5%) and Lorie (32.5%). Jeffrey's Bay, Humansdorp, St. Francis Bay and Cape St. Francis fared better at roughly 20% unemployment.

The dominant employment sectors in the Cacadu District and Kouga Municipal areas are agriculture, forestry and fishing (see Table 3.3). Other important sectors in the Kouga Municipality include wholesale and retail trade (15 % of employment) and community/social/personal services (14 % of employment). By comparison with the wider Kouga municipal area, Humansdorp and Jeffrey's Bay have particularly high portions of workers in the wholesale and retail trade as well as construction sectors reflecting their status as service centres with relatively high levels of construction at the time.

Table 3.3: Employment per industry in the wider study area (2001)

	Cacadu District	Kouga Municipality	Humansdorp	Jeffreys Bay	KwaNomzamo
Agric, hunting; forestry & fishing	36%	33%	6%	7%	24%
Mining and quarrying	0%	0%	0%	0%	0%
Manufacturing	5%	7%	7%	10%	10%
Electricity; gas and water supply	1%	0%	0%	0%	0%
Construction	6%	11%	23%	14%	11%
Wholesale and retail trade	13%	15%	24%	21%	14%
Transport; storage and comms	2%	2%	3%	2%	2%
Finl, insure, real est. & business serv.	4%	6%	8%	11%	5%
Community, social and personal serv.	18%	14%	18%	19%	18%
Other and not adequately defined	0%	0%	0%	0%	0%
Private Households	14%	11%	10%	16%	16%
Total	100%	100%	100%	100%	100%

Source: StatsSA, 2002

The number of jobs in the Kouga Municipality increased the most in the construction sector between 1996 and 2001 reflecting the rapid development of the area (see Figure 3.3). The agriculture, forestry and fisheries sectors lost the most jobs during the same period in keeping with trends such as increased mechanisation.

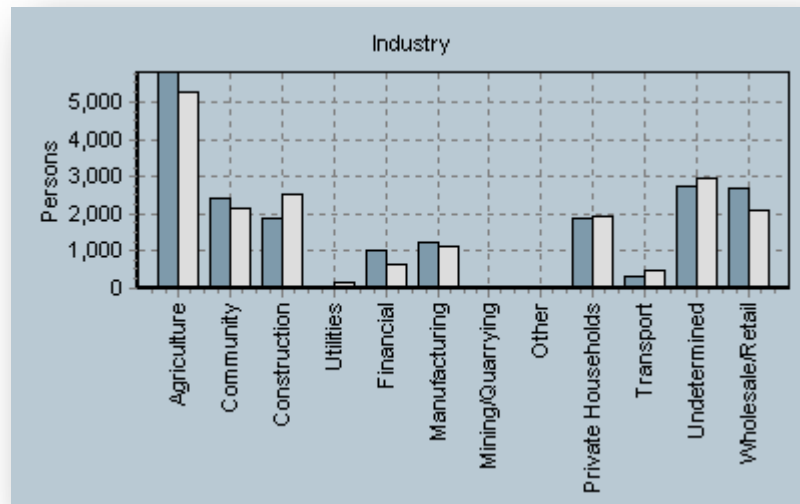


Figure 3.3: Jobs per sector for the Kouga Municipality (1996 – dark bars, 2001 – lighter bars)
Source: Demarcation Board using Census 2001 & 1996

3.3.3 Income levels

Household income levels in the study area are presented in Table 3.4 below. Approximately 44 % of households in the Cacadu District and 33 % in the Kouga municipal area had incomes below R9 600.00 per year in 2001. Humansdorp and Jeffrey's Bay fared substantially better than the District and slightly better than the wider Kouga municipal area.

Table 3.4: Household incomes in the wider study area (2001)

	Cacadu District	Kouga Municipality	Humansdorp	Jeffreys Bay	KwaNomzamo
No income	14%	11%	9%	10%	17%
R1 - R4 800	7%	5%	3%	3%	8%
R4 801 - R9 600	23%	17%	13%	13%	21%
R9 601 - R19 200	23%	24%	20%	17%	29%
R19 201 - R38 400	15%	19%	26%	17%	18%
R38 401 - R76 800	8%	12%	15%	18%	5%
R76 801 - R153 600	5%	8%	9%	14%	1%
R153 601 - R307 200	2%	3%	4%	6%	0%
R307 201 - R614 400	1%	1%	1%	1%	0%
R614 401 - R1 228 800	0%	0%	0%	1%	0%
R1 228 801 - R2 457 600	0%	0%	0%	0%	0%
R2 457 601 and more	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%

Source: StatsSA, 2002

The 2007 Kouga IDP notes that the proportion of household living in poverty has increased by 6.4% in the past 10 years from 26.6% to 32.9%. The rate of increase in the Eastern Cape Province and Cacadu District ranges between 9% and 10% over the same period. Encouragingly the Human Development Index (HDI) for the Kouga area has improved in the past 10 years from 0.57 in 1996 to 0.62 in 2005 and remains better than the provincial and District HDI (KLM, 2007). The 2010 IDP review also notes the lower rates of poverty in Kouga than nationally, provincially or on a district level (see Figure 10.2). It further illustrates that since 2003 there has been a steady decline in poverty in Kouga (KLM, 2010).

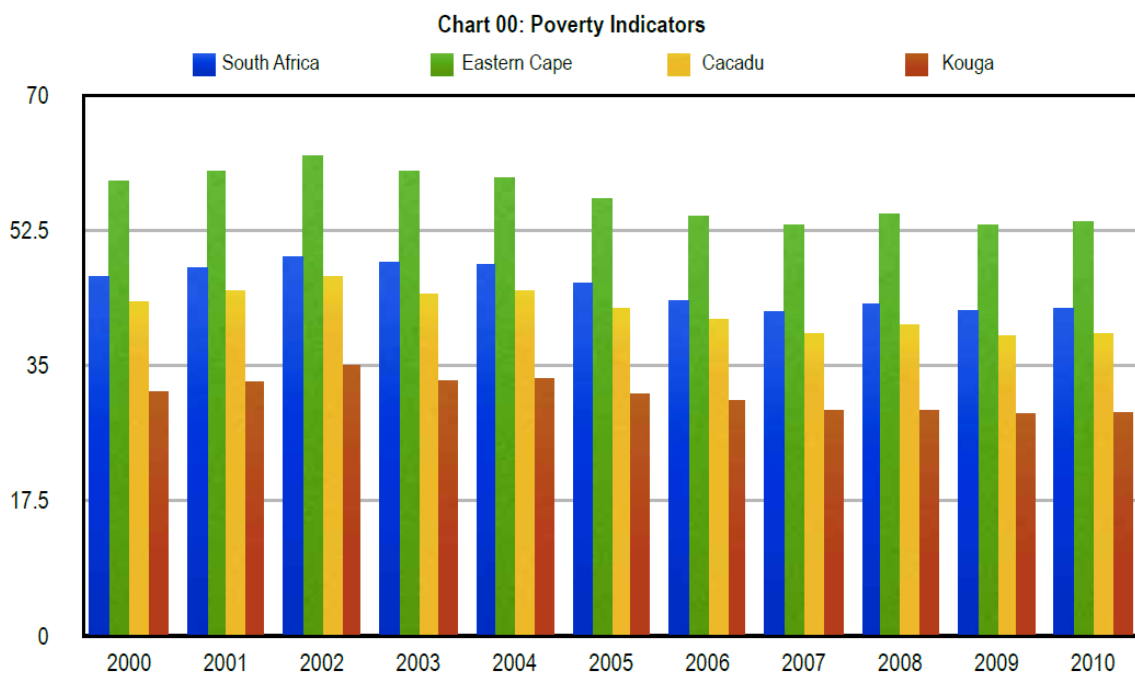


Figure 3.4: Poverty levels in the Kouga Municipality over time
 Source: KLM (2010)

3.3.4 Economic growth and development

Economic development faces many challenges in the Kouga municipal area although its performance relative to other areas in the Cacadu District and Eastern Cape is encouraging. The Kouga IDP points out that municipal productivity is higher than the average for the Cacadu District and province principally due to high growth in value creation relative to employment and labour remuneration. Growth in GDP and employment, from 1996 to 2004, and skills available to the local economy, are both higher than the Provincial average. Kouga also has among the highest Formal Economy Performance scores in the province, with positive factors including the positive trade balance, a fairly diversified economy, and strong GDP and employment growth performance. The Municipality fares well on Economic Absorption Capacity, considering the high

total disposable income, employment multiplier and informal sector capacity to generate economic opportunities relative to formal employment.

3.3.5 Landscape character and sense of place

The landscape character and “sense of place” of the local area may be affected in the following ways by the proposed wind energy project:

- Potential visual intrusion on views from protected areas (particularly: Swan Island Nature Reserve (NR), Seekoei River NR and Noorsekloof Local NR which are relatively close to the wind farm site);
- Potential visual intrusion on views from Humansdorp and holiday resorts and residences on the Kromme River and in Paradise Beach;
- Potential visual intrusion on views from coastal areas where few man-made structures are currently visible (e.g. between Oyster Bay and Seal Point, and south of Paradise Beach);
- Cumulative visual and landscape impacts of various wind farms proposed for the region.

3.4 PLANNING CONTEXT AND SURROUNDING LAND USES

The economy of the Kouga Municipal area has grown considerably over the last 10 years and the area has become a major holiday destination. The tourism market is growing tremendously and will further benefit from the establishment of a game reserve near Jeffrey’s Bay. A Tourism Forum, where all the local tourism organisations are represented, was established to drive tourism in the Kouga region.

Agricultural production is on the increase and as the benefits of intensive land utilisation are becoming apparent its growth is constantly gaining momentum.

The site for the proposed Banna Ba Pifhu wind farm is presently zoned for agriculture and comprises irrigated pastures and grazing land.

Activities on the land surrounding the wind farm sites include:

- Stock farming
- Crop farming and
- Untransformed land (natural vegetation).

The area is not pristine and has been transformed by various human activities over the last two centuries. Nevertheless development should only proceed with due cognisance of environmental features.