

CHAPTER 6 THE AFFECTED ENVIRONMENT

This chapter provides a description of the key characteristics of the biophysical, socio-economic and cultural/historical heritage environment through which the proposed N2 Wild Coast Toll Highway would pass. It also includes relevant information on the planning, legal and policy context. The description of the affected environment is based on relevant information contained in the scientific literature, independent specialist reports compiled as part of the previous and current EIA, the Wild Coast Conservation and Sustainable Development Project, the Spatial Development Framework for the Wild Coast (September, 2005), the Strategic Environmental Assessment for the Wild Coast (January, 2006), and the Wild Coast Biodiversity Strategy and Action Plan (July, 2005). Understanding of the affected environment was enhanced by field trips conducted through the study area.

6.1 STUDY AREA

The proposed N2 Wild Coast Toll Highway Project would be located in the eastern part of South Africa, and would traverse sections of both the Eastern Cape and KwaZulu-Natal provinces. The proposed project would extend over a total distance of approximately 560 km from the Gonubie Interchange near East London (Eastern Cape) to the Isipingo Interchange south of Durban (KwaZulu-Natal) (refer to Figure 1.1). The proposed toll highway would connect major centres in the Eastern Cape and KwaZulu-Natal such as East London, Mthatha, Port St Johns, Lusikisiki, Port Edward, Port Shepstone and Durban.

6.2 BIOPHYSICAL ENVIRONMENT

6.2.1 CLIMATE

The climatology over the study area is influenced by the semi-permanent Indian high pressure cell that shifts both in latitude and longitude. The weather on the east coast is influenced by the continuous procession of eastward-moving high and low pressure cells. Low pressure systems move in an easterly to south-easterly direction, typically between 20 and 30°S. This means that only the effects of a trailing cold front are experienced along the east coast and that there is a gradation in climatic regime across the study area. The northern part of the Eastern Cape experiences cool sub-tropical conditions, while KwaZulu-Natal is classified as warm sub-tropical. Climatic conditions also vary between coastal and inland environments, with conditions ranging from more extreme inland temperatures to the milder temperatures and higher rainfall of the coastal areas.

Night-time surface temperature inversions are common along the entire route of the proposed toll highway, particularly in winter. These inversions will tend to be stronger and more persistent further inland than along the coast. The occurrence of surface temperature inversions together with light or calm winds inhibit efficient dispersion of pollutants released near ground-level. Under these conditions pollutants tend to accumulate and disperse only after the inversion dissipates with surface warming.

The region is predominantly a summer rainfall area with most rains occurring in the spring and summer months (October to March) although rain falls throughout the year at East London, Mthatha and Durban. The temperate and sub-tropical influence is also reflected in the rainfall, with Durban experiencing the highest yearly rainfall (1 009 mm averaged over a period of approximately 30 years). Precipitation and temperature data for the different road sections of the proposed toll highway are given in Table 6.1.

Table 6.1: Climate data for road sections along the proposed toll highway route (Weather Bureau, 1997)

ROAD SECTION	AVERAGE ANNUAL PRECIPITATION (mm)	TEMPERATURE (° C)	
		Average Daily maxima	Average Daily minima
East London to Kei River	960	20.5 – 25.5	10.3 – 17.9
Kei River to Mthamvuna (Port St Johns)	1 032	12.5 – 21.7	4.2 – 16.3
Port Shepstone Area	1 140	21.2 – 26.5	12.3 – 20.8
Durban Area	1 009	22.6 – 28.0	10.5 – 21.1

6.2.2 TOPOGRAPHY, GEOLOGY AND SOILS

The topography and geology of the proposed route between East London and Port Edward is particularly diverse and varied, mainly due to the range of geological formations and the complex topography it traverses. These landscape features give rise to the name “Wild Coast”. The general topography of the route is characterised by undulating to rolling terrain with deeply incised river valleys, particularly within the greenfields sections of the proposed toll highway. In some areas, e.g. the section between Ntlaza (793 m), Port St Johns (10 m) and Lusikisiki (610 m), the terrain is very rugged and mountainous with deep and steep-sided river valleys.

The section of the proposed toll highway between Gonubie and Mthatha passes through undulating to rolling country with deeply incised river valleys, few of which have a well developed alluvium. The geology is Beaufort Group sediments with some or rare dolerite intrusions. Deep soils are limited to dolerite and to old land surfaces where remnants of deep weathering remain.

The first half of the proposed toll highway route between Mthatha and Ndwalane would be on Beaufort Group sediments, while the second half would be on Ecca Group sediments with patches of Dwyka tillite and sediments. The landform becomes more steeply rolling as the coast is approached. Where slopes are not too steep, deep soils can be found on Ecca and Dwyka Group sediments, although the landscape is degraded along the road to Ndwalane, which has not allowed deep accumulation. In the coastal region soils are generally less erodible than on Beaufort Group sediments, and are cultivated, even on fairly steep slopes.

The soil types along the section of the proposed toll highway from Ndwalane to the Mzimvubu River are Mispah, Clovelly and Glenrosa with small patches of Hutton. The soils on the alluvial plain are very heavy non-calcareous Oakleaf form soils with a dark yellowish-brown sub-soil, with approximately 35% of clay. The section from the Mzimvubu River to the Ntafufu River has only a very narrow strip of Dundee form soil. Along the Ntafufu River the soil types are Mispah, Glenrosa and Clovelly.

Between Ntafufu and Lusikisiki the proposed toll highway traverses Ecca and Dwyka (tillite) Formation sediments, and the topography tends to be rolling to steeply rolling along the river valleys. The soils away from the alluvium in the river valleys are shallow.

The section between Lusikisiki and the Mthamvuna River (within approximately 15 km of the coastline) is characterised by a fairly gentle undulating coastal plateau (300 to 450 m high), which slopes gently towards the coast (see Figure 6.1). The terrain rises towards the interior and is deeply dissected by the many rivers. The high-lying areas are characterised by deeply incised river gorges and large areas of

open savanna interspersed between the valleys. South of Lusikisiki the terrain is extremely broken in the coastal region, and made up of Karoo Supergroup rocks.

The area inland of the coastal plateau is characterised by extremely broken and rugged mountainous terrain with widely eroded river basins, which are comparable to the geological features of the “Valley of a thousand hills” of the so-called “Natal Monocline” (King 1982) (see Figure 6.1). The terrain generally rises steeply inland (800 m at Holy Cross, 1 000 m at Flagstaff) to culminate in the 3 000 m high Drakensberg range some 200 km inland.

Along the Pondoland coast a regional uplift south of the Msikaba River to the Mthamvuna River in the north has influenced the landform, and a number of coastal terraces descend in steps towards the sea. The region is dominated by a smooth coastal-plain surface. Rivers in this region have cut impressive gorges through the sandstone region to the sea, for example the Msikaba and Mthentu rivers. The coastal terrace of the Pondoland is about 150-160 m above sea level in resistant sandstone of the Msikaba Formation. The rivers that cross this area have eroded narrow ravines or gorges, and the whole platform is said to be in a youthful stage of dissection (King, 1951).

At Waterfall Bluff there is a distinctive change in the Pondoland coast where the Egossa Fault results in weak Karoo beds on its southern side and resistant sandstones meeting the sea to the north. There is a striking contrast on the coastal plain on either side of this fault, where the rivers to the north have cut trenches directly into the sea, whereas those to the south dissect a belt of rugged country (King, 1951).

The geology of the Pondoland region is characterised by the Cape Super Group rocks that consist of sandstones, shales and quartzites of Paleozoic age. These rest unconformably upon older formations and are followed by the Karoo Super Group rocks (Du Toit, 1939). The succession of the Cape Super Group rocks allows the identification of three groups, namely the Witteberg Group – quartzites and subordinate shales, the Bokkeveld Group – shales, flagstones and sandstones, and the Table Mountain Group – thick unfossilised grits with scattered pebbles.

The sandstones of the Pondoland region are defined as generally white/sometimes reddish sandstones stretching north-east from Port St Johns through “Natal” into “Zululand” and are correlated with the Table Mountain Sandstone of the Cape (Du Toit, 1939). A wide terrace belt occurs along the Pondoland coast, stretching into KwaZulu-Natal. The inland section of beds form a flat plateau, while in the coastal section the sandstones dip seawards beneath the Karoo beds, sometimes forming the actual shore. The Natal Sandstones consist of a number of formations, with the Msikaba Formation being the most southerly, stretching from Port St Johns to just north of Port Shepstone.

The landscape in the section of the proposed toll highway between the Mthamvuna River and Isipingo is undulating to rolling and the soils are mainly shallow. The geology is strongly faulted and thus the proposed route would cover a mosaic of Precambrian granite, Table Mountain Group sandstones, Ecca Group sediments, Dwyka Formation sediments and coastal sand.

6.2.3 AQUATIC ENVIRONMENT

Drainage lines and rivers

The streams and rivers found within the study area are characteristic of the eastern coastal regions of South Africa, with small regional catchments and incised middle and lower reaches (Rowntree *et al.*, 2000). A brief summary of the key characteristics of the rivers in each of the proposed toll highway sections is given below.

Gonubie Interchange to Ngobozi

This section of the proposed toll highway includes the Gqunube, Kwelera and Kei rivers. Most of the quaternary catchments from East London to the Kei River are largely modified and of low Ecological Importance and Sensitivity (EIS). The Kei River catchment is considered to have a low EIS, and is moderately modified (Coastal Environmental Services (CES), 2006).

Ngobozi to Mthatha (Ngqeleni)

This section of the proposed toll highway would utilise the existing N2 highway, which would be rehabilitated and upgraded. Additional bridges would be constructed across the Corana and Mthatha rivers, and a mainline toll plaza would be constructed near the Candu River. The main rivers in this section are the Mbashe, Mthatha and the Buwa. Other smaller rivers include the Cegcuwana, Mchubakazi, Munyu, Nywara, Mpozolo and Candu rivers. The drainage area of the Khoboqaba and iNxaxo rivers is considered to be a very important and sensitive drainage area and is largely natural. The Mbashe and Mthatha River catchments are regarded to be moderately important and largely modified. The EIS of the rivers in this section is generally moderate, and the most sensitive systems include the Khoboqaba and iNxaxo rivers (CES, 2006).

Mthatha (Ngqeleni) to Ndwalane

This section of the proposed toll highway would involve rehabilitation and upgrading of the existing R61, which would include bridge widening at the Mngazi River. The main rivers along this stretch of the proposed toll highway include the Mthatha and Mtakatye rivers. Other rivers include the Mgwenyana, Mkomfi and Dwesa rivers. The catchments of the Mnenu, Mngazana, Mngazi, Mvilo and Mdumbi rivers are largely natural and considered to be of very high importance. The rivers are largely natural with a high EIS (CES, 2006).

Ndwalane to (and including) Ntafufu River crossing

This section of the proposed toll highway is short, and would involve new road construction, with a major high-level bridge crossing over the Mzimvubu River and an additional crossing over the Ntafufu River. Although largely natural, the Mzimvubu River is considered to be of low EIS (CES, 2006). The highly erodible soils of the Mzimvubu catchment and land use activities such as subsistence farming and clearing for firewood have led to extensive erosion and high sediment loads in the river (Madikizela *et al.*, 2001). The rivers in this section are considered to be moderately modified.

Ntafufu River to Lusikisiki (Magwa Intersection)

The largest river found in this section is the Mzintlava River, which is considered to be a largely natural system (CES, 2006). Other rivers of significance include the Mzizangwa River, the Mkozi River at Fraser Falls and the Xura River (a tributary of the Msikaba River) near Lusikisiki. The proposed route skirts around many of these rivers, with the only crossing of significance considered to be the widening of the bridge over the Mzintlava River.

Lusikisiki (Magwa Intersection) to Mthamvuna River

There are a number of important rivers along this section of the proposed toll highway, in particular the Mkambati, Mthentu, Mnyameni, Mzamba and Mthamvuna rivers. A number of deeply incised gorges and small streams would be crossed by this section of the proposed toll highway (including the Msikaba, Mthentu, Kwadlambu, Mnyameni, Kulumbe, Mpahlane and Mzamba River gorges). The Mthentu and Msikaba bridges would involve high-level crossings while other gorges would be crossed by more conventional river crossings. The EIS of many rivers in this section is high to very high (i.e. high for the Msikaba and Mthentu rivers, and very high for the Mnyameni, Mzamba and Mthamvuna rivers).

Mthamvuna River to Isipingo Interchange

This section of the proposed toll highway would cross many rivers, all with existing bridge structures. The

main rivers that would be crossed include the Mpenjati, Mbizane, Mzimkhulu, Mzumba, Mtwalume, Fafa, Mpambanyoni, Mkomazi and Lovu rivers. There are also a number of smaller rivers present in the area. Most rivers along this section are modified, with a moderate EIS.

Estuaries

Estuaries in the region between East London and Port Edward are extremely important as they form the transition zone from the warm temperate estuaries of the Eastern Cape to the sub-tropical estuaries of KwaZulu-Natal. There are 188 estuaries between Gonubie and Isipingo. Estuaries along the Wild Coast have been identified nationally as being of high biodiversity and ecological importance, e.g. the Mngazana and Mbashe estuaries (DEAET, 2004). Estuaries north of Port Edward, although more disturbed by development, are also reservoirs of biodiversity and play an important role in terms of ecosystem functioning.

There are three major types of estuaries along the route: one river mouth (Mzimvubu Estuary); estuaries with a permanent link to the sea; and those that close for varying lengths of time (i.e. Temporarily Open/Closed Estuaries (TOCEs)). An explanation of how estuaries are classified can be found in the aquatic ecosystems specialist report (Volume 2, Appendix 3). A brief summary of the key characteristics of the estuaries in each of the proposed toll highway sections is given below.

Gonubie Interchange to Ngobozi

This section of the proposed route would not cross any estuaries. However, 16 estuaries exist between the Gonubie and Great Kei River mouths, comprising nine TOCEs and six permanently open systems. The existing N2 crosses over five of these permanently open systems, i.e. the Gonubie, Kwelera, Bulura, Quko and Great Kei rivers (Harrison *et al.*, 2000). However, these systems are crossed in the “river” sections of the catchment. The fish communities in these estuaries are generally in a “good” state, the water quality status is “good to excellent” and the aesthetics is “good” (Harrison *et al.*, 1998; Harrison *et al.*, 2000).

Ngobozi to Mthatha (Ngqeleni)

The route along this section of the proposed toll highway would be inland, which means that the estuaries would not be directly affected. Fifty-seven estuaries exist between the Great Kei and Mthatha River mouths; the majority (42) being TOCEs which would generally be unaffected by the proposed highway, while 15 are permanently open systems. Of these, the Qora, Mbashe and Mthatha estuaries are the largest and are crossed by the existing N2. The fish communities in these estuaries are generally in a “moderate to good” state, the water quality status is “poor” and the aesthetics is “good” (Harrison *et al.*, 1998; Harrison *et al.*, 2000).

Mthatha (Ngqeleni) to Ndwalane

There are 13 estuaries between the Mthatha and the Mngazi estuaries, comprising seven TOCEs and six permanently open systems. The Mngazana Estuary is ranked as the most important estuary along the Wild Coast, and the fifteenth most important in South Africa, principally due to the extensive mangrove forests found in the system. This section of the proposed toll highway would consist of the existing R61, which crosses the Mngazana and Mngazi rivers relatively close to the estuaries and coast. The fish communities in these estuaries are generally in a “moderate to good” state, the water quality status is “fair to good” and the aesthetics is “moderate to good” (Harrison *et al.*, 1998; Harrison *et al.*, 2000).

Ndwalane to Ntafufu River

Twelve estuaries exist between the Mngazi and Ntafufu estuaries, comprising seven TOCEs and five permanently open systems. The Mzimvubu is classified as a river mouth due to the high volume of freshwater exiting the mouth, and is already classified as suffering from excess siltation (Whitfield, 2000).

The Ntafufu Estuary is classified as important due to the range of habitats available (Whitfield, 2000), which make it a significant ecosystem and nursery ground for breeding and juvenile fish. New bridges would be constructed over the Mzimvubu and Ntafufu rivers. The fish communities in the estuaries between the Mngazi and Ntafufu estuaries are generally in a “moderate to good” state, the water quality status is “fair to good” and the aesthetics is “moderate to good” (Harrison *et al.*, 1998; Harrison *et al.*, 2000).

Ntafufu River to Lusikisiki (Magwa Intersection)

There are 14 estuaries between the Ntafufu and Mlambomkulu estuaries, of which the only permanently open system is the Mzintlava Estuary. The proposed toll highway would involve widening much of the existing road along this section, including the widening of the road bridge across the Mzintlava River. Whitfield (2000) describes the condition of the majority of the estuaries in this section as “excellent”.

Lusikisiki (Magwa Intersection) to Mthamvuna River

This section of the proposed toll highway would not cross any estuaries due to the generally inland alignment of the proposed route. However, the route may traverse wetlands, with possible knock-on effects on estuaries. There are 25 estuaries between the Mlambomkulu and Mthamvuna estuaries, 21 of which are TOCEs, and four of which are permanently open medium to large systems (i.e. Msikaba, Mthentu, Mzamba and Mthamvuna estuaries). No information is currently available for the Mnyameni Estuary. Access to the coastline in this section of the Wild Coast is very difficult, which means that the estuaries have remained in a near pristine state, and are very important habitats for fish. The fish communities in these estuaries are generally in a “moderate to good” state, the water quality status is “fair to good”, and the aesthetics is “moderate to good”. The water quality status of the Mzamba and Mtentwana systems is “poor” (Harrison *et al.*, 1998; Harrison *et al.*, 2000).

Mthamvuna River to Isipingo Interchange

Fifty-one estuaries exist between the Mthamvuna and Isipingo estuaries, most of which (45) are TOCEs, while six are permanently open systems. The majority of estuaries in this region are reported to have high *E. coli* levels (i.e. water quality poses a potential threat to human health). This existing section of the proposed toll highway is very close to the coastline, which means that the majority of the estuaries are crossed directly. The fish communities in these estuaries are generally in a “moderate to good” state, although they are considered to be in a “very poor” state at the Vungu Estuary. The water quality status in these estuaries is “very poor to good” and the aesthetics is “moderate to good”, although close to Durban the aesthetics is “poor” (Harrison *et al.*, 1998, 2000).

Wetlands

Most South African wetlands are temporal due to the seasonality of rainfall in the country, but the majority of wetlands in the study area seem to be permanent and act as a consistent water supply for both rivers and people in the area. As a result there are existing impacts on these systems. Only a few wetlands are in a near natural condition, these being found in the north-eastern portion of the study area around Msikaba and up to the Mthamvuna River. Generally, the wetlands in the study area do not appear to be well conserved, and do not appear to contain many animal species of special concern, one exception being the regionally endemic Kloof frog, which is dependent on the type of wetland habitats found in the Pondoland area.

In general, the wetland areas that would be in close proximity to the proposed routes in the greenfields areas are small, occurring in the form of palustrine seepage slope systems due to the topography and geology of the region. These palustrine wetlands play an important role in riverine hydrology and maintenance of ecosystem health, and are sensitive to habitat fragmentation. However, extensive

wetlands of high domestic importance are found between Lusikisiki and Mthamvuna River, particularly along the Coastal Mzamba route.

The overall sensitivity of the wetlands in the study area (when judging them from an ecological point of view) is “moderate”. However, from a social perspective, the overall sensitivity of these wetlands is “high”, particularly during winter when they are mostly utilised for grazing and as a source of water supply for domestic use and livestock watering.

Endangered fish species

A variety of Red Data Book (RDB) fish species occur in the aquatic ecosystems along the proposed route. These species include those occurring in both estuarine and freshwater ecosystems. The status of these species range from Rare to Critically Endangered and the key RDB species are summarised in Table 6.2. However, the rivers between Ngobozi and Lusikisiki have historically been poorly surveyed, thus the distributions listed should not be considered to be definitive.

Table 6.2: Red Data list of freshwater species (IUCN, 2006)

ROAD SECTION	FISH SPECIES	STATUS (IUCN)
1. Gonubie interchange – Ngobozi (Upgrade of existing N2)	<i>Sandelia bainsii</i> <i>Myxus capensis</i>	Endangered Lower Risk / Least Concern
2. Ngobozi – Mthatha (Upgrade existing N2)	<i>M. capensis</i>	Lower Risk / Least Concern
3. Mthatha – Ndwalane (Upgrade existing R61)	<i>M. capensis</i>	Lower Risk / Least Concern
4. Ndwalane – (and including) Ntafufu River crossing (Construction of new road)	<i>M. capensis</i>	Lower Risk / Least Concern
5. Ntafufu River – Lusikisiki (Magwa Intersection) (Upgrade existing R61)	<i>M. capensis</i>	Lower Risk / Least Concern
6. Lusikisiki (Magwa Intersection) to Mthamvuna River (Construction of new road)	<i>M. capensis</i> <i>B. gurneyi</i>	Lower Risk / Least Concern Moderately intolerant of habitat change
7. Mthamvuna River – Isipingo Interchange (Upgrade of R61 and N2)	<i>M. capensis</i> <i>B. gurneyi</i> <i>Redigobius dewaali</i> <i>Hypseleotris dayi</i>	Lower Risk / Least Concern Moderately intolerant of habitat change Lower Risk, Near Threatened Lower Risk, Near Threatened

6.2.4 VEGETATION AND FLORA

Context

Floristically the study area is very diverse and complex, with endemic plants and areas of high diversity located throughout the region. The entire study area falls within the Maputaland-Pondoland-Albany (MPA) Hotspot, which lies along the east coast of southern Africa below the Great Escarpment (Steenkamp *et al.*, 2004). Much of the vegetation in the MPA Hotspot has been destroyed or severely degraded. Most endemic plant species are confined to grassland, the most seriously threatened vegetation type in the MPA region.

The Pondoland Centre of Endemism (PCE) is one of the three foci of endemism within the MPA Hotspot, and is an area of high endemism and high diversity. It is edaphically defined and restricted to sandstone-derived soils, primarily of the Msikaba Formation. The vegetation of the PCE consists primarily of grasslands, with forests restricted primarily to river gorges. It is renowned for containing high numbers of endemic species and is considered to be South Africa’s second most diverse floristic area after the fynbos region (Van Wyk and Smith, 2001). One plant family and six genera are found only in Pondoland.

Vegetation can be described at different scales from biomes through to regional vegetation types, local plant communities, plant populations and individual plants. The broad vegetation types (according to the recently completed new national vegetation map undertaken by the South African National Biodiversity Institute (SANBI) (Mucina and Rutherford, 2006)) occurring in the study area are shown in Figure 6.2. Table 6.3 provides an overview of the remaining extent, degree of transformation and conservation status of the vegetation types occurring in the study area.

Table 6.3: Overview of some key features (at a national level) of the vegetation types occurring in the study area (Driver *et al.*, 2005; Mucina and Rutherford, 2006)

VEGETATION TYPE	AREA (km ²)	TRANSFORMED (%)	CONSERVATION STATUS
Mthatha Moist Grassland	5 704	41	Vulnerable
Eastern Valley Bushveld	10 682	15	Least Threatened
Transkei Coastal Belt	1 773	20	Vulnerable
Ngongoni Veld	10 670	39	Vulnerable
Pondoland-Ugu Sandstone Coastal Sourveld	1 303	29	Vulnerable
Scarp Forest	917	3	Least Threatened
Midlands Mistbelt Grassland	6970	51	Endangered
KwaZulu-Natal Coastal Belt	6 690	50	Endangered
East Griqualand Grassland	9 251	25	Vulnerable
Drakensberg Foothill Moist Grassland	13 756	20	Least Threatened

An overview of the available information related to vegetation in the study area is given below.

Overview of Vegetation Types

The vegetation types found along the proposed route from East London to Mthatha consist largely of Coastal Forest Mosaic, Coastal Grassland and Valley Thicket. The rolling hills are characterised by grassland and agricultural developments with patches of Valley Thicket and forest on the steep valley slopes and river valleys. North of the Kei River, savanna and open grasslands are found on the plateaus and spurs between rivers. The grasslands and savanna are heavily impacted by settlements and grazing of domestic animals.

Coastal Valley Thicket occurs along the proposed route between Mthatha and Lusikisiki. The Msikaba Sandstone Formation forms an important habitat for endemics and endangered Pondoland plant species. The area between Thombo and Lusikisiki has been significantly disturbed and cultivated by the local inhabitants, but many endemics are still likely to occur.

Vegetation in the area between Lusikisiki and the Mthamvuna River can be viewed as the most sensitive along the proposed route. Particularly sensitive sites in the area include the Vumisi Forest Reserve and the Mkambati Nature Reserve. Many endemics and sensitive vegetation types of the PCE have not yet been documented or thoroughly studied. Between Lusikisiki and Msikaba the area along the proposed route has been disturbed by the presence of many villages and associated heavy grazing by livestock. Between the Msikaba and Mthamvuna rivers the proposed toll highway would mainly pass through grassland plateaus and over deep river gorges. This area is considered to be the most sensitive with respect to Pondoland grasslands, with many of these species occurring on the Msikaba Sandstone Formation. Many endangered and endemic species occur in this region. Sensitive vegetation types in the region include:

- Coastal and Pondoland grasslands, which are rich in herbaceous plants and fynbos species;

- Vleis and marshes, which are rich in orchids, bulbous monocotyledons, herbaceous dicotyledons and dominant sedges and rushes;
- Rocky outcrops, which have unique patches of vegetation with a variety of Pondoland endemics;
- Forests on rocky ledges and steep gorges with a variety of endemic woody species;
- Riverine forest and riverine thicket; and
- Coastal Forest Thicket with endemics restricted to coastal sands.

Grasslands are the most impacted of the vegetation types in this region, mainly due to farming activities and overgrazing by stock. Nonetheless, some pristine patches do still occur in remote areas.

The vegetation between the Mthamvuna River and Isipingo consists mainly of Coastal Forest Mosaic that is extensively fragmented by urban development and agriculture (predominantly sugarcane plantations). The proposed route in this section would run close to the coast, and in places would pass through coastal thicket and coastal forest. Patches of woodland and savanna and outcrops of coastal grassland are found further inland. Sensitive vegetation types of the PCE extend up to Port Shepstone, with Pondoland endemics also occurring in the Oribi Gorge Nature Reserve. “Species of special concern” (i.e. species endemic to South Africa) and threatened species also occur in the wetlands associated with the proposed river crossings. There is, in general, large-scale degradation of natural vegetation in this area due to sugar plantations and industrial and resort developments.

6.2.5 TERRESTRIAL FAUNA

Background

The regional fauna, unlike the distinctive flora of the PCE, has not been extensively studied and is not known to exhibit as many unique features. Indeed, faunal knowledge of the former Transkei region, specifically the proposed greenfields corridor, remains poor (apart from the areas around Port St Johns and various coastal resorts and reserves). Available information does indicate that within protected areas there is high faunal biodiversity and numerous endemic species. Outside of these areas, the fauna of this region is, in general, considered to be impoverished due to large scale overgrazing and other human-induced impacts. The birds of the region are relatively well studied. Due to its extended length, faunal composition along the proposed toll highway route shows regional differences. Refer to the fauna specialist report (Volume 2, Appendix 2) for an explanation of how the various Species of Special Concern were defined for this report.

Invertebrates

A number of species from the broad Eastern Cape – KwaZulu-Natal region have been identified as being of conservation concern, including four butterfly species and two terrestrial slug species. A very rare archaeid spider is endemic to the Vernon Crookes Nature Reserve and two endemic species of spider have been found in isolated coastal forests in the Eastern Cape section of the study area (Lotz, 2007). Millipedes often show high levels of endemism and a new species of millipede has recently been described from forest habitat in the Lusikisiki District (Alderweireldt, 1998). Highly localised cicada species have been described from the former Transkei region (Villet, 1997; Villet 1999), and these insects are known to be sensitive to habitat fragmentation due to their long, unusual life cycles.

Amphibians

It is well documented that amphibian numbers are globally in decline, and as a group they are more threatened than either mammals or birds (Beebee and Griffiths, 2005). The Pondoland region occurs at an important transition zone between a southern temperate amphibian fauna and a tropical fauna that

extends along the coastal littoral in association with the warm waters of the Agulhas Current (Poynton, 1990). The known amphibian fauna of the region includes approximately 31 species. New taxa may well exist in the poorly studied forest patches, river gorges and coastal grasslands. Species currently known only from coastal locations may also have relic inland populations.

Six regionally endemic frog species and five sensitive species have been confirmed along the proposed toll highway route. Three threatened frog species may occur in the greenfields sections (Harrison *et al.*, 2001). Furthermore, five tropical species reach their southern limit in the region and these populations are therefore also considered to be sensitive.

Reptiles

Approximately 60 species of reptiles have been recorded - or are likely to occur - along the proposed toll highway route (Branch, 1998). Whilst some are wide-ranging species (e.g. snakes such as the boomslang and puff adder), others have relatively restricted distributions. A number of taxa may include hidden, undescribed species that could be of conservation concern. Sensitive and localised species in the study area include the common slug-eating snake (*Duberria lutrix*), the giant legless skink (*Acontias plumbeus*) and a small, undescribed snake species possibly from the Mthatha region (although it is not known to occur along the proposed toll highway route). Although several isolated populations of dwarf chameleons are known to occur in isolated populations in forest and thicket habitat in the study area, no species are thought to occur in habitats along or adjacent to the proposed toll highway route (Tolley *et al.*, 2004; 2006). New chameleon species have been described from the Mkambati Nature Reserve, the Mthamvuna Nature Reserve and the Oribi Gorge region (Raw, 2001).

No species are currently included in the SA RDB for reptiles and amphibians (Branch, 1988). However, the SA RDB is currently out of date, as over 100 species have been described or recognised as valid species in South Africa since its publication. Furthermore, many species have restricted distributions that would place them in the IUCN's Vulnerable or Endangered categories. These include three lizard species and one snake species.

Birds

The former Transkei region has a rich avifauna (Quickelberge, 1989; Harrison *et al.*, 1997) with nearly 500 species recorded from the region (approximately half of the species recorded from the subcontinent). Of these, numerous are sensitive and threatened species. The coastal mosaic of grassland and forest habitats are important areas for montane species in the winter, and many Intra-African summer migrant birds also use the region both for breeding and in transit to more southerly areas.

A significant number of threatened species occur along the proposed route. These include one Critically Endangered, two Nationally Endangered, one Globally Endangered, three Endangered, 13 Vulnerable and 12 Near-Threatened species. A further three species along the route can be classified as sensitive, dependent upon forest habitat.

The Msikaba and Mthentu Gorge Vulture colonies are situated in the area between Lusikisiki and the Mthamvuna River.

Mammals

The study area has a diverse mammal fauna, with approximately 80 species recorded, including 11 species of insectivores, 19 bats, three primates, two lagomorphs, 19 rodents, 15 carnivores, one ant bear, two hyrax, one bush pig and five to six small antelope species (Branch, 2003). However, the surviving

mammal fauna of the Wild Coast is now impoverished by the local extinction of many of the megaherbivores (elephants, buffalo, rhino, eland, etc.). Few mammals of conservation concern now survive in the study area. The few large megaherbivores surviving in the study area include bushbuck, common duiker and Cape Grysbok. In addition, the Chacma baboon, Vervet Monkey, bush pig and a variety of small carnivores (viverids, genets, Cape Clawless Otter, etc.) survive in small pockets. All are non-threatened and many have successfully adapted to surviving in peri-urban areas. Large and medium-sized mammals thought to be locally extinct may still occur in small fragmented populations in isolated forests (e.g. leopard and brown hyena). Three Endangered, three Vulnerable, two Near-Threatened and one Data Deficient species (Smithers, 1986) occur within the study area. Most of these threatened species inhabit forest habitats, with a further four sensitive species dependent on forest habitats.

Because their distributions are often constrained by the patchy occurrence of suitable breeding and roosting sites, bats are the most threatened mammal group and many species are of conservation concern. Two Endangered and six Near-Threatened species of bat occur within the study area.

6.2.6 BIODIVERSITY CONSERVATION

Amongst the nine broad geographic priority areas identified for terrestrial biodiversity conservation action in the National Spatial Biodiversity Assessment (Driver *et al*, 2005), two occur within the study area, namely “Maputaland-Pondoland” (located in KwaZulu-Natal and north-eastern part of the Eastern Cape) and “Albany Thicket and Wild Coast” (located in the Eastern Cape). Based on an evaluation of the combined level of future pressures on biodiversity in each area, the Maputaland-Pondoland priority area is ranked as one of the areas facing the highest overall pressures on biodiversity in South Africa.

The Maputaland-Pondoland-Albany region, which includes the PCE, has been recognised by Conservation International as one of 34 global biodiversity hotspots. Biodiversity hotspots are classified as regions of high endemism and threat requiring conservation attention. As a result of the regions’ very high biodiversity value, the Wild Coast/Pondoland National Park has been proposed by DEAT. This conservation area would extend from the northern banks of the Mzimvubu River at Port St Johns to the south bank of the Mthamvuna River near Port Edward, an overall distance of about 80 km. Its extent inland would range between 4 km at its narrowest point, to 20 km inland at its widest point (see Figure 6.3). Within this area are numerous state forests, a provincial nature reserve, extensive grazing areas and agricultural lands and villages (see Section 6.5 for more detail). The proposed greenfields route between Lusikisiki and the Mthentu River would roughly coincide with the north-western boundary of the proposed Pondoland/Wild Coast National Park, would bisect the PCE and would pass through sections of the proposed Park, most notably the section between the Mthentu River and the Mthamvuna River (refer to Figure 5.3).

The endemic plants characteristic of the PCE are confined to the Msikaba Formation, growing in soils that are sandy, highly leached, acidic and relatively shallow. Rocky outcrops are common and the soils are mostly of low agricultural potential. The PCE is characterised by grasslands interspersed with forests along protected riverine gorges and other isolated forest patches. The Pondoland-Natal Sandstone Coastal Sourveld grassland is predominant. Outside of conserved areas (Mkambati, Oribi Gorge and Mthamvuna nature reserves) the grasslands vary in terms of the level of transformation and degradation, from relatively light utilisation along the coastal areas to completely modified and intensively cultivated areas. More than 80 plant species are endemic to the region and it has been suggested by local ecologists that grasslands that are in a reasonably good natural condition should have a high rating for conservation prioritisation. Forests in the PCE are largely constrained by gorges and other topographical features to a belt within approximately 15 km of the sea. These features play a secondary role in

providing protection from fires. The forests have remarkable species diversity (330 woody species) and high levels of endemism (30 endemic species) (Abbott, 2002).

The savanna and grassland areas on the rolling hills north of the Mzimvubu River are considered to be the least sensitive botanical environment in the PCE. There are dense thickets of alien woody vegetation, as well as annual weeds on the riverbanks and on the margins of the cultivated land. In addition, disturbed areas on floodplains have been extensively invaded by alien vegetation. The Eastern Cape's provincial environmental department recognises the importance of the PCE, and aims to protect at least 10 % of its area by 2013 (DEAET, 2004).

The Wild Coast is currently poorly protected, with only 3.26 % of the land formally protected (Reyers and Ginsburg, 2005). The majority of the protected land (with formal conservation status) is in the form of Provincial Nature Reserves. Trust Forests, managed by the Department of Water Affairs and Forestry (DWAF), are indigenous forests that were either reserved for forestry under the Native Trust and Land Act or demarcated as State Forests. The status of these forests as protected areas is uncertain. There also exists in terms of the Transkei Environmental Decree (1992) a 1 km strip along the coast that has been declared a Coastal Conservation Area, where only limited development is permitted. The current land cover and protected area coverage of the Wild Coast is summarised in Table 6.4.

An expansion of the existing KwaZulu-Natal Nature Reserve, Mthamvuna, towards the mouth of the Mthamvuna River has also been proposed. The area would include both shores of the river, whereas the current reserve is only on the KwaZulu-Natal side of the river. Proposed boundaries of the Pondoland Priority Area and Mthamvuna Expansion can be seen in Figure 6.3.

The Conservation Assessment specialist study report compiled as part of the Wild Coast Conservation and Sustainable Development Project by Reyers and Ginsburg (2005) identified Priority Areas for conservation along the Wild Coast. Whilst biosphere reserves are seen as appropriate vehicles for conservation of biodiversity in the Pondoland area along the Eastern Cape coast, it is not intended that all Priority Areas be established as protected areas, but rather that they should be managed in a 'biodiversity friendly fashion' (Wild Coast Spatial Development Framework - WCSDF, 2005).

Table 6.4: Total land cover and protected area coverage of the Wild Coast (adapted from Reyers and Ginsburg, 2005)

PROTECTED AREAS	NATURAL AREAS	TOTAL TRANSFORMED	FORM OF TRANSFORMATION					DEGRADED
			Cultivated Land	Hard Surfaces	Mines	Plantations	Urban	
3.26 %	56.79 %	34.67 %	16.86 %	13.48 %	0.05 %	1.73 %	2.55 %	5.29 %

6.2.7 AIR QUALITY

A brief outline of current ambient air quality in the study area follows below.

Gonubie Interchange to Mthatha

There are currently no major sources of air pollution in this region, aside from the contribution that domestic fires and vehicle emissions make along the existing road. Ploughed fields, unpaved roads and unvegetated land are all sources of wind-generated dust. Current ambient air quality in this region is considered to be good.

Mthatha to Mthamvuna River

The highest concentration of motor vehicles and their associated emissions are likely to occur in Mthatha and Lusikisiki - there are relatively few motor vehicles elsewhere along this section of the proposed toll highway. Ploughed fields, unpaved roads and unvegetated land are a source of wind-generated dust. There are no other sources of air pollution besides domestic fire and biomass burning and the current ambient air quality in this region is considered to be good.

Mthamvuna River to Isipingo Interchange

Air quality in the region from the Mthamvuna River to south of Amanzimtoti is considered to be generally good. There are a number of isolated industrial sources of air pollution in this section (including paper and sugar mills), which may result in local episodes of poorer air quality. Domestic fires and sugar cane burning also contribute to air pollution within this section of the proposed toll highway.

The highest density of motor vehicle traffic along the proposed toll highway is found between Amanzimtoti and the Isipingo Interchange on weekday mornings and afternoons. This section of the existing road also runs adjacent to the Prospecton industrial area where a range of industries emit various pollutants into the atmosphere. This area is also located at the southern end of the South Durban Industrial Basin (SDIB), which contributes to poorer ambient air quality.

6.3 SOCIO-ECONOMIC ENVIRONMENT

6.3.1 PROVINCIAL CONTEXT

Eastern Cape

The Eastern Cape is one of the poorer provinces in South Africa. Its economy has been characterised in the Province's 2004-2014 Provincial Growth and Development Plan (PGDP) as having "extreme levels of uneven development". It is situated in the south-east of the country and includes the former Eastern Province, Border, north-eastern Cape areas and the former "homelands" of Transkei and Ciskei. Spatially, it is the second largest province, covering almost 14 % of the total surface area of South Africa.

It has urban industrial manufacturing centres in Buffalo City and the Nelson Mandela Metropolitan Municipality, a well-developed commercial farming sector and high concentrations of developed socio-economic infrastructure in the western parts. In contrast to this is the undeveloped rural hinterland in the former Transkei and Ciskei homelands, which consist of weak subsistence agriculture and very limited socio-economic growth. The coastal area known as the "Wild Coast" is very sparsely populated, mainly due to limited infrastructure and inadequate access to the coastal nodes. Annual average economic growth for the provincial economy over the last decade was 2.2 % against the national average of 2.8 %. Farming is an important contributor to household livelihoods in the former Transkei where the proposed toll highway would be developed, but it is largely a subsistence activity.

Two harbours, at East London and Port Elizabeth, are located along its coastline and a modern deep-water port has recently been constructed at Coega. In 2007 the province had a population of about 6.90 million, comprising approximately 14 % of the national population. The province has an average density of 67 – 80 people per km². The Eastern Cape has the third lowest urbanised population, at 42.9 % (Development Bank of Southern Africa - DBSA, 2000).

The Gross Geographic Product (GGP) of the Eastern Cape was just more than R 81 billion in 2001, equalling 8.2 % of South Africa's Gross Domestic Product (GDP). The three most important sectors at the intra-provincial level are manufacturing, commerce and community services. The province possesses comparative economic advantages with regard to textiles, leather products, rubber products and vehicles.

The Eastern Cape has the highest unemployment rate in South Africa, with almost half of its labour force being unemployed. The unemployment rate of 48.4 % is 14.6 percentage points higher than the national average. These figures exclude large numbers of people who left the province to find employment in other provinces such as the Western Cape and Gauteng. Average annual household income in 2001 for South Africa as a whole was R 46 291, while for the Eastern Cape it was R 28 468 (Stats SA Census, 2001).

KwaZulu-Natal

KwaZulu-Natal covers approximately 7.5 % of the total surface area of South Africa and has an average density of 150 – 200 people per km². The two most important national ports, at Richards Bay and Durban, are located on its coastline. Durban is one of the busiest ports in Africa with a good rail network reaching into Southern Africa. In 2000 the population of KwaZulu-Natal was estimated to be 8.99 million, the highest concentration of people in South Africa, and the province has the fifth highest urbanised population, at 45.1 %. Approximately 36 % of the population resides in the Durban metropolitan area, which is responsible for 62 % of the GGP.

In 2000 the economy of KwaZulu-Natal was the second largest contributor (at 16.1 %) to South Africa's GDP. The most important sectors in its economy (in terms of contribution to national production) include agriculture, manufacturing, transport and communication. Manufacturing is the single most important contributor to the Province's GGP, comprising 31.7 % of the total.

In 2001 the average household income for KwaZulu-Natal was R 37 814 (against R 46 291 for South Africa as a whole - Stats SA Census, 2001). Development levels are uneven throughout the province, and there are vast differences between the Durban metro/selected growth nodes and the rest of the province.

KwaZulu-Natal has an HIV/AIDS prevalence rate of 33.5%, which is the highest in the country.

The areas close to the national roads are generally well supplied with physical infrastructure and social amenities, while areas on the periphery of Durban tend to be poorly resourced. Unemployment and household income patterns closely follow those of urbanisation and population density across the length of the proposed toll highway. Generally, lower levels of unemployment are found towards the north-eastern end of the proposed route, in the more urbanised eThekweni municipal area of KwaZulu-Natal. During 2000 the province had an unemployment rate of 39.1 %, which was 5.3 % above the national average of 33.8 % (DBSA, 2000).

6.3.2 MUNICIPAL CONTEXT

The study area includes the following district and metropolitan municipal areas:

- Amatole District Municipality (DM) (Eastern Cape) – includes the area from East London to just west of Mthatha;
- OR Tambo DM (Eastern Cape) – includes the area from just west of Mthatha to the Mthamvuna River (Port Edward);
- Alfred Nzo DM (Eastern Cape) – includes Qumbu and Mount Frere along the existing N2 between Mthatha and Port Shepstone;
- Sisonke DM (KwaZulu-Natal) – includes Kokstad along the existing N2 between Mthatha and Port Shepstone;

- Ugu DM (KwaZulu-Natal) – includes the coastal area from Port Edward to Scottburgh and the inland town of Harding; and
- eThekweni Metropolitan Municipality (MM) (KwaZulu-Natal) – includes the greater Durban area (and stretches as far as Scottburgh in the south).

Key socio-economic attributes of the district and metropolitan municipal areas through which the proposed toll highway would pass are summarised in Table 6.5.

Table 6.5: Key socio-economic attributes of the four municipal areas in which the proposed toll highway would be located (Bureau for Economic Research, 2007; CSIR, 2007; Martins and Maritz, 2004; Statistics SA, 2007)

ATTRIBUTE	MUNICIPALITY			
	AMATOLE	O.R. TAMBO	UGU	eTHEKWINI
Total hectares	2 357 882	1 596 795	504 693	228 602
Total population (2004)	1 883 077	1 770 469	713 831	3 244 381
% of Provincial Population (2001)	26.5	26.7	7.3	32.2
% of National Population (2001)	3.7	3.7	1.6	6.9
People under Minimum Living Level (MLL) (2004)	1 298 980	1 463 491	443 365	1 046 053
% of Population under MLL in municipal area (2004)	77.6	87.0	62.8	33.8
% of Population under MLL in province (2004)	27.4	30.9	8.1	19.1
% of Population under MLL in RSA (2004)	5.5	6.2	1.9	4.4
Unemployment (2001)	378 832	298 257	131 983	697 351
% of Unemployed in Province (2001)	30.2	23.8	6.6	35.0
% of Unemployed in RSA (2001)	4.2	3.3	1.5	7.8
Total Household Income (2001)	11 699 843 583	6 376 812 146	3 969 269 350	44 948 366 009

Table 6.5 indicates that the proposed toll highway would largely traverse relatively poor areas. Except for the eThekweni Metropolitan municipal area, the remainder of the corridor (i.e. the municipal areas of Amatole, O.R. Tambo and Ugu) has a relatively indigent population. Although the population of these three municipal areas represents 3.7 %, 3.7 % and 1.6 % of the national population respectively, the number of people in these areas whose disposable income is below the Minimum Living Level (MLL) represents 5.5 %, 6.2 % and 1.9 % of the national population. The estimated annual average MLL per household (taken at four persons/household) in 2004 for Amatole, O.R. Tambo, Ugu and eThekweni municipal areas was R 22 500, R 12 200, R 18 300 and R 24 500, respectively (Martins and Maritz, 2004).

Amatole DM

The proposed toll highway between the Gonubie Interchange (East London) and an area just north of Dutywa would pass through portions of the Amatole DM, in particular the Buffalo City Local Municipality (LM), Great Kei LM, Mnquma LM and Mbashe LM.

The Amatole DM has a total population of approximately 1.88 million people (refer to Table 6.5), 48 % of whom are younger than 20 years of age, while 36 % are 15 years or younger. The formal unemployment rate is given as 21 %. The estimated annual household income is R 5 624 per annum. Approximately 18% of households are estimated to have no annual income and three percent have an estimated income in excess of R 100 000 per annum. The two most important sectors in the Amatole DM economy in terms of Gross Regional Product (GRP) are community services and manufacturing (industrial).

OR Tambo DM

The proposed toll highway between the area just north of Dutywa and the Mthamvuna River (Port Edward) would pass through extensive portions of the OR Tambo DM, in particular the King Sabata Dalindyebo LM, Nyandeni LM, Port St Johns LM, Inquza Hill LM and Mbizana LM.

The OR Tambo DM has a total population of approximately 1.77 million people (refer to Table 6.5), with the largest portion of the population concentrated in the western area around Mthatha. Many towns currently experience a negative growth rate due to the severe impact of the HIV/AIDS pandemic in the region as well as migration to major cities elsewhere in South Africa. Approximately 71.5 % of the potentially economically active population are unemployed and the dependency ratio for the region is 1:5. Rural settlements and villages accommodate the majority of the population with 93.3 % residing in rural areas with an average household size of 5.3 persons.

The average percentage of households that function below the MLL is 87 % (refer to Table 6.5). This is largely due to the growth of informal settlements, the informal sector and unemployment. Very little of the demarcated arable land is cultivated and most of it is used for communal grazing. The state has also stopped services to farmers due to poor budgeting. The two most important sectors in the OR Tambo DM economy in terms of GRP are community services and retail.

Alfred Nzo DM

The existing N2 between Mthatha and Brooks Nek passes through portions of the OR Tambo DM and Alfred Nzo DM, in particular the Mhlonlolo LM and Umzimvubu LM, which includes Qumbu, Mount Frere and Mount Ayliff.

The following socio-economic characteristics of the Alfred Nzo DM were derived from the 2001 Census:

- An estimated population of 550 401;
- Most (99.8 %) were classified as “African”;
- 44.0 % of the population was younger than 15 years of age, and 49.7 % between the ages of 15 to 64;
- A gender quotient of 44.8 % male to 55.2 % female;
- Of those over 20 years of age, 23.3 % had no education, 37.4 % had attained a primary school education, 35.2 % a secondary school education, and 4.1 % a higher education;
- Only 5.2 % of the total population were employed. Of the potentially economically active population in the 15 to 64 age group, only 10.3 % were employed; and
- The estimated median annual household income was less than R 4 800.

Sisonke DM

The existing N2 in the area of Kokstad passes through a small portion of the Sisonke DM, KwaZulu-Natal, limited to the Greater Kokstad LM. Kokstad serves as the service centre and commercial hub for most of East Griqualand and much of the Eastern Cape. There is potential for the town to strengthen its commercial sector, build small and micro enterprises and promote Local Economic Development (LED) strategies. The existing industrial area is well located and easily accessible. Agriculture includes a wide range of activities (such as crops, livestock, horticulture, beekeeping and fish production) and the agricultural sector provides most economic activity.

The following socio-economic characteristics of the Sisonke DM were derived from the 2001 Census:

- An estimated population of 56 528;
- Most (82.9 %) were classified as “African”;
- Equal proportions of males and females;
- 30.9 % of the population was under the age of 15, and 66.1 % aged 15 to 64;
- Of those over 20 years of age, 10.1 % had no education, 32.1 % had attained a primary school education, 50.2 % a secondary school education, and 7.8 % a higher education;
- Of the potentially economically active population, 48.4 % were employed; and
- The estimated median annual household income was in the range of R9 601 to R19 200.

Ugu DM

The existing N2 between the area of Kokstad and Port Shepstone passes through portions of the Ugu DM, in particular the municipal areas of the uMuziwabantu LM, Ezingoleni LM and Hibiscus Coast LM. The proposed toll highway (existing R61 section) between Port Edward and Port Shepstone would pass through the Hibiscus Coast LM while the section of the proposed toll highway on the existing N2 between Port Shepstone and Scottburgh would pass through municipal areas of the Hibiscus Coast LM, Umzumbe LM and Umdoni LM. The remaining section of the proposed toll highway (i.e. between Scottburgh and the Isipingo Interchange) would pass through the municipal areas of the eThekweni MM.

The Ugu DM has a population of approximately 713 000 (refer to Table 6.5). The formal unemployment rate is estimated at 22 % and the average household income is R 16 131 per annum. In recent years over R300 million has been invested in the Port Shepstone CBD and the adjacent coastline. The strongest economic sectors are tourism, agriculture, trade and catering, transport and communication, as well as finance and real estate. The agricultural sector of Umdoni LM contributes 12.3 % to the GGP whilst manufacturing is set at 46.8 %. The proximity of the area to the Durban International Airport is seen as an opportunity to expand the tourism potential of the area.

The uMuziwabantu LM consists of the town of Harding, farmland, commercially grown forests and Traditional Authority areas. It is largely a rural area. Harding is a modern town with schools (including a special school for handicapped children), two libraries and a hospital. The main source of income for the area is derived from the municipality’s extensive wattle, gum, pine and poplar plantations and associated industries (including saw mills and furniture-making factories).

The two most important sectors in the Ugu DM economy, in terms of GRP, are community services and manufacturing (industrial). The Ugu district produces 195 000 tons of pine per annum and approximately 1.8 million tons of gum and wattle are used by the pulp mills. The 200 sawmills operating in the area produce approximately 6 000 tons of board per year. This district produces one third of the bananas consumed in South Africa, and is also an important tea planting area. Macadamia nut cultivation is being considered as an export-driven agro-industry. The Ugu DM borders the eThekweni Metropolitan Area at the Mkomazi River.

eThekwini MM

The eThekwini MM is the main economic driver in KwaZulu-Natal, contributing over half of the province's output, employment and income. In national terms, eThekwini is the second most important economic complex after Gauteng, accounting for 15 % of national output, 14% of household income and 11 % of national employment. eThekwini's economic strength is partly due to its role as South Africa's international trade hub as well as being a leading regional industrial, commercial and financial centre in its own right. Supported by excellent road, rail and communications infrastructure, the Durban region has become the location of choice for manufacturing firms exporting a wide range of products. The most important sectors in the eThekwini MM economy, in terms of GRP, are manufacturing (industrial) and financial services.

The African, Asian and European influences in the eThekwini Metropolitan Area create a cosmopolitan society with a population of approximately 3.2 million people. The Metropolitan Area has a relatively youthful population, with 38 % being under the age of 19. A distinct human development imbalance exists across settlement types, with the high-income white settlements having higher development standards than low-income formal, informal and peri-urban African settlements. The GGP income per person per year is estimated to be R 25 529.

6.3.3 TOURISM OVERVIEW

According to Statistics SA a total of 8.4 million foreign visitors arrived in South Africa in 2006, which is an increase of 13.9 % from 2005, and exceeds the global tourism growth of 4.5 % in 2006.

The study area has extensive tourism appeal to a variety of markets. However, the two provinces through which the proposed toll highway would traverse (the Eastern Cape and KwaZulu-Natal) differ substantially from one another. The remoteness and lack of large commercial resort developments in much of the Eastern Cape Wild Coast is substantially appealing to adventure travellers and eco-tourism enthusiasts. With a number of beaches, rivers and estuaries that are in very good condition together with rich botanical endemism, the Eastern Cape Wild Coast has the potential to become a premium eco-tourism destination. On the other hand, the southern KwaZulu-Natal is a substantially developed "mainstream" tourist destination. Many domestic tourists as well as a number of international tourists already frequent this area.

The Eastern Cape was the fifth most popular province visited by foreign tourists in 2005, whilst KwaZulu-Natal was the third, after Gauteng and the Western Cape. In the category of domestic overnight trips, KwaZulu-Natal was placed second behind Gauteng, while the Eastern Cape was placed third together with the Western Cape and Northern Province.

The study area currently attracts approximately 2.3 million overnight leisure and business tourists per annum, of whom 52 % (1.2 million) are foreign and 48 % (1.1 million) are domestic. The portion of the study area that falls within KwaZulu-Natal receives approximately 1.6 million tourists per annum, of which 65 % are foreign. On the other hand, the portion of the study area that falls within the Eastern Cape receives approximately 760 000 tourists per annum, of which only 28 % are foreign.

A brief overview of tourism aspects associated with specific toll highway sections is provided below.

East London to Butterworth

Towns and settlements associated with this section of the study area include East London, Gonubie, Cintsa, Haga Haga, Morgans Bay and Kei Mouth. The coastal resort destinations along this section have an established domestic holiday market, which tends to consist of repeat visitors. East London has the

fourth largest harbour in South Africa and is also the country's only river port. It is seen as an important coastal tourist resort for domestic tourists and is well established as a tourist destination amongst its current market of mainly domestic business tourists. Out of 161 accommodation establishments surveyed in the tourism specialist study (see Volume 3, Appendix 6), the average room/unit occupancy was 68 %. The average number of tourists in this part of the study area is approximately 600 000 per annum. Tourist attractions in this part of the study area include, amongst others, the following:

- Kei Mouth;
- Rainbow Valley;
- Sunrise on Sea; and
- Kwelera Mouth.

Butterworth to Mthatha

Towns and settlements associated with this section of the study area include Butterworth, Dutywa, Mqanduli, Coffee Bay, Viedgesville, Mthatha, Mazeppa Bay, Qolora Mouth and Qunu. Mthatha is an established tourist destination amongst its current market of largely domestic business tourists. It is estimated that approximately 124 000 tourists visited this part of the study area in 2006. Out of 43 accommodation establishments surveyed in the tourism specialist study, the average room/unit occupancy was 65 %, although utilisation of existing accommodation establishments was highly seasonal. Tourist attractions in this part of the study area include, amongst others, the following:

- The Nelson Mandela Museum;
- Gcuwa River Cascades;
- Bawa Falls;
- Coffee Bay; and
- Hole-in-the-wall.

Mthatha to Ntafufu

Out of 23 accommodation establishments surveyed in the tourism specialist study, the average room/unit occupancy was 59 %. The average number of tourists in this part of the study area is approximately 70 000 per annum. Tourist attractions in this part of the study area include, amongst others, the following:

- The beaches of Port St Johns;
- Umngazi;
- Water sports on the Mzimvubu River;
- The sardine run; and
- The Hluleka and Silaka nature reserves.

Ntafufu to Lusikisiki

This section of the study area includes Lusikisiki and Mbotyi, and is very underdeveloped. The tourism specialist study identified only four accommodation establishments between Ntafufu and Lusikisiki and these establishments were operating with low occupancies (average room/unit occupancy of 49 %). The average number of tourists in this part of the study area is approximately 10 000 per annum. Tourist attractions in this part of the study area include, amongst others, the beaches of Mbotyi and various waterfalls (including Magwa Falls, Fraser Falls and Mateku Falls).

Lusikisiki to Mthamvuna River

Towns associated with this section of the study area include Flagstaff and Bizana, while the proposed toll highway would traverse a currently inaccessible greenfields section of the Wild Coast. This part of the study area is largely undeveloped as a tourist destination, despite obvious potential. Out of 16 accommodation establishments surveyed in the tourism specialist study, the average room/unit

occupancy was 62 %. The average number of tourists in this part of the study area is approximately 58 000 per annum. The coast is difficult to access and the largest tourism development in this section is the Wild Coast Sun Casino resort development, which has a golf course, conference centre and casino. Tourist attractions in this part of the study area include, amongst others, the following:

- Waterfall Bluff;
- Mthentu and Msikaba river gorges;
- The Mkambati Nature Reserve;
- The proposed Pondoland/Wild Coast National Park; and
- Shipwrecks along the coast adjacent to the Mkambati Nature Reserve, the *Sao Bento* (1554) near the mouth of the Msikaba River and the *Grosvenor* (1782) in Lambasi Bay;

Existing N2 section between Mthatha and Port Shepstone via Kokstad

This section of the existing N2 would not form part of the proposed toll highway alignment, but could be affected by the diversion of traffic to the new toll highway if the proposed project were to go ahead. The existing N2 section includes the town of Qumbu, Mount Frere, Mount Ayliff, Kokstad and Harding, which are all undeveloped as tourist destinations. These towns rely primarily on transit traffic and Kokstad and Harding have become stop-over destinations for people travelling along the existing N2. Out of 41 accommodation establishments surveyed in the tourism specialist study, the average room/unit occupancy was 60 %. The average number of tourists in this part of the study area is approximately 48 000 per annum. The tourist attractions in this part of the study area include, amongst others, the following:

- Isinamva Cultural Village Mount Frere;
- Ubuntu Craft Market Mount Ayliff (still to become operational); and
- Nature reserves.

Mthamvuna River to Isipingo

This section of the proposed toll highway would include the towns of Port Edward, Margate, Port Shepstone, Scottburgh, Hibberdene, Umkomaas, Amanzimtoti and Isipingo. In addition, a number of resorts are situated between Port Shepstone and the Isipingo Interchange. This part of the study area is a well-established tourist destination, which receives mostly foreign tourists (71 %) and more holiday tourists than the section of the study area that falls within the Eastern Cape. The average number of tourists in this part of the study area is approximately 1 000 000 per annum, and the area has a large number of tourism establishments that operate at relatively high occupancies. Out of 307 accommodation establishments surveyed in the tourism specialist study, the average room/unit occupancy was 63 %. The tourist attractions in this part of the study area include, amongst others, the following:

- Beaches;
- Watersports, mountain biking and hiking;
- Game and nature reserves (including the Oribi Gorge Nature Reserve, the Uvongo Nature Reserve, the Vernon Crookes Nature Reserve and the Silverglen Nature Reserve); and
- Cultural tourism.

6.3.4 SOCIAL AND LAND USE ASPECTS

A brief overview of the key characteristics of the social and land use aspects along the proposed toll highway is given below. A full list of all schools and clinics situated within 2 km of the proposed route is provided in the social specialist report (Volume 3, Appendix 5).

Gonubie to Mthatha

This section of the proposed toll highway would pass through the towns of Butterworth, Dutywa and Mthatha. Butterworth is the oldest town in the former Transkei, whilst Mthatha was the capital of the former Transkei until the reincorporation of the town into South Africa in 1994. Mthatha is currently the business centre and economic hub of the general area. The condition of the existing N2 through Mthatha is very poor and is well past its design life, and traffic congestion is a significant problem. Traffic flow through the towns in this section is currently slowed by a range of issues such as: traffic lights (which are often not operational); traffic entering and leaving from side roads; taxi/bus ranks and drop-off areas on the side of the road; street parking; hawkers/informal markets on the side of the road and considerable pedestrian traffic during the day.

There are two types of rural settlement patterns along this section of the proposed toll highway. In the Buffalo City and Great Kei municipal areas at the western end of this section of the proposed route, large private commercial farms dominate the settlement pattern. In the rest of the former Transkei areas the dominant form of settlement is communal, with communal forms of tenure. There are 43 communal settlements along this section of the proposed toll highway. In some cases two of these settlements may be located right next to each other but on opposite sides of the existing N2 road. There has been a decline in agricultural activities in communal areas over the last 100 years, combined with a growing dependence on wage employment and state grants, which has encouraged people to live closer to roads to gain access to transport services.

Another feature of the settlement patterns along this section of the existing road is ribbon development, particularly in the areas close to Mthatha and Butterworth. At least 60 houses with access directly onto the N2 were observed in August 2007. Many more households were located immediately adjacent to the road fences and servitude. In some cases these sites have been illegally demarcated within the current road reserve. Residents of the 43 communal settlements along this section of the N2 also need to cross the road on a regular basis to access settlements, schools, clinics, agricultural lands and natural resources on the other side of the road. This means that there is a high number of pedestrians crossing or walking along the road, and many of these residents are not well informed about traffic issues. Animals are another hazard along this section of the existing N2, as there is a daily movement of livestock between the settlements and the adjacent communal grazing areas and livestock often stray onto the main road in areas where there are no fences or the fences are damaged. Thus, a serious traffic safety risk exists for road users and a considerable risk of loss for livestock owners. Traffic accidents are very common along this section of road and it is thus considered one of the most dangerous road sections in South Africa (pers. comm., Mthatha municipal officials).

Annual household income levels of the population living in the wards along this section of the existing road are very low and highly unequal, and it is clear that poverty is a considerable problem in this region of the study area. Rural residents of this region depend very heavily on the goods and services available in the closest towns, and thus need to travel to these centres on a regular basis. Informants in the taxi industry indicated that 75-80 % of their business involves transporting short distance commuters between rural and urban areas.

Arable agriculture is practised in the vicinity of Franklin and Annexation on deeply weathered soils. Otherwise, agriculture is restricted to dairy or beef cattle with limited arable agriculture. In the major river valleys the soils are very shallow and rock outcrops are common, and much of this section of South Africa is only suited to ranching or game farming.

The state/tribal land in the former Transkei area is largely used for communal grazing. There are small areas of better soils in the section between Ngobozi and Mthatha, such as around Qunu, and there is

some cultivation (mainly of maize) for subsistence. Most of the old abandoned cultivated fields are eroded. There has been a tendency for people to abandon fields away from the homestead and for people to concentrate their efforts on their homestead gardens instead. The only commercial agriculture of note is one farmer producing cabbage between Butterworth and Dutywa.

Mthatha to Ndwalane

The proposed route between Mthatha and Ndwalane would pass through numerous “subsistence” rural villages and scattered communities. Access to various services and resources (schools, grazing land, the St Barnabas Hospital, cattle dipping facilities and shops) is gained by crossing the existing R61. This section of the proposed toll highway would traverse approximately 72 km of rugged terrain characterised by extensive traditional communal settlement patterns, with some nodal development (e.g. Thombo) and betterment planned areas (see social specialist report in Volume 3, Appendix 5 for an explanation of betterment planning) adjacent to the route.

The land is almost exclusively state-owned and communally grazed with limited areas of subsistence cultivation (mainly of maize for subsistence). A broad area with colluvial and alluvial soils along the Mngazi River valley is cultivated (and irrigated in places). Soils are also cultivated elsewhere, even on fairly steep slopes. The existing road is largely unfenced and livestock are a significant danger to traffic, particularly at night.

Ndwalane to Ntafufu River

The section of the proposed toll highway between Ndwalane and the Mzimvubu River would traverse a large proportion of formerly private farmland in the “Mzimvubu bends”. The land is currently held by the Department of Land Affairs and is occupied by members of the Ndamase Royal Family of the Nyandeni Regional Authority as well as by lessees.

Alternative Alignment 1b (refer to Section 5.4.1) between Ndwalane and the Mzimvubu River, largely following the existing Fort Harrison road and the floodplain of the Mzimvubu River, would threaten the current access to the farming areas and affect some commercial operations.

Alternative Alignment 1e – the SANRAL preferred route – between Ndwalane and the Mzimvubu River would affect inhabited areas of Mampube Village and land being used for subsistence and commercial purposes. Graves are present within the older section of the village.

Traditional subsistence cropping occurs on some very steep slopes. Despite this, little erosion is apparent on the slopes. Most of the land that is not under thicket has been divided into small fields with hedgerows separating each field. Crops planted are mainly maize for subsistence purposes, while some plantains and papayas are grown. On the Mzimvubu alluvial plain farmers used to grow cabbage, avocados, citrus, sugar cane and pecans in small commercial farms. Currently, however, the land is not cultivated.

North of the Mzimvubu River the proposed toll highway would be aligned close to the villages of Sphatha, Mgugwana, Ntafufu, Ntongwana and Luqhoqweni, with Ntafufu village (and its schools) potentially being most affected. Services and resources in this area include a number of schools, cattle dipping facilities and grazing lands.

Traditional agriculture with small fields occurs on the northern side of the Mzimvubu River, with some mangoes being grown on the river banks. In the area of Ntili Neck much cultivation takes place along the proposed route on the steeper slopes away from the homestead areas (which are mostly located on the ridge crests). Mid and lower slopes have almost no maize cultivation, with little apparent erosion. In the

vicinity of the proposed crossing of the Ntafufu River, subsistence cultivation of papaya, mealies and plantains takes place close to areas around the homesteads.

Alternative Alignments 2a and 2f would potentially affect the Ntafufu Junior and Senior Secondary Schools and/or their associated fields. The latter include about 5 ha under irrigation for vegetable production.

Ntafufu to Lusikisiki (Magwa Intersection)

This section of the proposed toll highway has similar social characteristics to the proposed route between Mthatha and Ndwalane (i.e. with access across the R61 to various services and resources such as schools, a hospital - Bambisana Hospital - and grazing land). The route would traverse a combination of large open grazing lands, traditionally dispersed households and communities, some betterment planned areas and several densely settled peri-urban areas situated east of Lusikisiki, which include some ribbon development. The Bambisana Hospital, located a few kilometres off the existing R61, is the only hospital in the area and is critical to the local communities in the area.

Some cultivation of maize for subsistence purposes takes place where the soil is not too shallow. The land is almost exclusively state/tribally owned and communally grazed with scattered subsistence cultivation on less steep slopes.

Lusikisiki (Magwa Intersection) to the Mthamvuna River

Some of the communities located within the section between the Magwa Intersection and the Mthamvuna River are considered among the poorest in South Africa. Scattered rural subsistence settlements predominate along this section of the proposed toll highway, with some villages being fairly inaccessible. Communities situated along the proposed route include Lower Hlabathi, Baleni, Mdatya, Xolobeni and Ebenezer.

Contours found in places on the slopes along the proposed route between the existing DR 08024 and the Msikaba River suggest that the land was previously cultivated although it is now covered by dense grassland. Currently this area is used only for grazing. The Lambasi Forest close to the Msikaba River is utilised by the local communities for hunting, wood collection and cultivation of traditional medicine and herbs.

Between the Msikaba and Mthentu rivers the proposed toll highway would mostly traverse non-cultivated land. North-east of the Msikaba River each homestead has some subsistence cultivation around it – maize is the dominant crop. The area is generally characterised by scattered gum tree woodlots and gum trees associated with the homesteads. North of the road to Mkambati on the grassland above the old Transkei Agricultural Corporation (TRACOR) maize scheme the soil presents good potential for rain fed cropping.

Scattered subsistence cultivation associated with homesteads occur along most of the proposed toll highway between the Mthentu and Mthamvuna rivers (on both the Coastal Mzamba and SANRAL preferred routes), with intensive cultivation in the section where the SANRAL preferred route would be aligned close to the existing district gravel road to Xolobeni. No cultivation was observed in the general area between the Mnyameni and Mzamba rivers.

Mthamvuna River to Port Shepstone

The land adjacent to this section of the proposed toll highway route is characterised by commercial farming (bananas and sugar cane are the dominant crops), peri-urban and rural settlement and commercial and industrial uses. The distribution of relative affluence is largely consistent with the coastal urban strip while the rural hinterland is relatively poor. With a few exceptions the population density

increases with proximity to the Durban metropolis. Full lists of settlements situated adjacent to this existing section of the proposed toll highway are provided in the social specialist report (see Volume 3, Appendix 5).

The section of the proposed toll highway between the Mthamvuna River and Port Shepstone includes Port Edward and would utilise the existing R61 section of the proposed toll highway up to the Port Shepstone interchange. The areas adjacent to the existing R61 are dominated by intensive coastal development on the eastern (seaward) side and farming on the western (landward) side. The coastal settlements rely on tourism and comprise a large retirement population. The settlements west of the road are predominantly agricultural and include the relatively poor township of KwaGamalakhe. Other than intra-local access, the settlement populations rely on access to the existing R61 as their dominant service road, and virtually all goods brought into, or taken out of, the settlements utilise the R61 as their primary means of access.

Port Shepstone to Isipingo

This section of the proposed toll highway would utilise the existing N2. The section from Port Shepstone to the R102 Interchange at Hibberdene is dominated by intensive coastal development on the eastern side and farming on the western side. The coastal settlements have a large tourism industry and retirement population. The settlements west of the road are predominantly agricultural, and other than intra-local access, all of the settlement populations rely on access to the N2 as their dominant service road. The urban coastal communities are at relatively high densities and are dominated by permanent residents who are either directly or indirectly dependent on local employment opportunities. Unemployment is generally relatively low, although there are pockets of high unemployment.

Between Hibberdene and Park Rynie the proposed toll highway would pass through areas dominated by intensive agricultural development. The commercial farms produce a variety of commodities such as bananas, sugarcane, macadamia nuts, timber and vegetables, with sugarcane being the dominant crop. As in the case of the KwaZulu-Natal segments described above, tourism industries and retirement populations are found in the coastal settlements and the settlements west of the road are predominantly agricultural. There is a great deal of commercial sugarcane farming, but subsistence settlements also exist.

The proposed route between Park Rynie and Isipingo Interchange would pass through areas with various land use and settlement types, including commercial farming, rural, peri-urban and urban settlements, and commercial and industrial areas. Important industrial service towns include Umkomaas (serving the SAICOR complex) and Umbogintwini. The section between Umbogintwini and Isipingo includes the heavily populated industrial basin of South Durban.

6.4 CULTURAL AND HISTORICAL HERITAGE

Feely (1987), who surveyed large areas in the former Transkei for archaeological sites and features, found that the “archaeological visibility was reduced to zero” when the ground was covered by vegetation. Similarly, the previous and current heritage specialist studies found that dense grass cover hampered the identification of possible archaeological sites. Consequently, it is highly likely that heritage resources additional to those described below are present along the route of the proposed toll highway.

Gonubie Interchange to Ndwalane

Graves of family members who have been buried in homestead gardens could potentially be affected where resettlement would be required as a result of proposed construction activities along this section of the proposed toll highway. Apart from these graves, no sites of archaeological, cultural or historical

significance have been identified along this section. However, it is possible that sites are potentially covered by soil and vegetation and may only be located during earthworks during the construction phase.

Ndwalane to Ntafufu River crossing

A potentially important historical site may be situated at the Riverside Primary School area where, according to the occupant, Mr D. Otto, a trading store was built in 1901.

Graves are often sited at old abandoned homesteads far from present residences. Graves are located in the old section of Mampube village and a minimum of four graves would potentially be impacted upon in Ntafufu. Rothra Lake has been identified as an initiation site and a place of local cultural heritage significance.

Late Iron Age pottery has been found on the eastern bank of the Mzimvubu River in the vicinity of Ngqotsini (Binneman, 2002). A few tools have been collected from the Port St Johns coast, and research in the upper Mzimvubu River valley (50 km north-west of the proposed road construction area), indicated that the first Early Iron Age farming communities were already settled in the Eastern Cape region by the seventh and eighth centuries.

Ntafufu River to Lusikisiki (Magwa Intersection)

King Faku's Heritage Place is a grave located along the Mzintlava River in the vicinity of the bridge earmarked for widening, and other graves are also located along this section of the proposed toll highway.

Lusikisiki (Magwa Intersection) to Mthamvuna River

This area may be considered an integral part of an ethnographic landscape that has evolved over the last 1 000 years, due to extensive livestock management within the context of low-density human settlement and subsistence agriculture. Social capital is held in homesteads and graves, and graves are often at original homestead sites, long since left for new homesteads.

A few Later Iron Age and two Early Iron Age sites have been identified in the general area of the Mkambati Nature Reserve (Granger and Feely, 1985; Feely, 1987). Charred remains of the rare Mkambati palm nut, dating back almost 5 000 years, have been discovered in the area. The following sites of archaeological significance have been identified in the area between the Mkambati Nature Reserve and Port Edward:

- Four rock shelters in the Mnyameni River valley, one of which displays a few rock paintings;
- Late Iron Age potshards on the slope above the Mnyameni River;
- Four stone cairns, called *izivivane*, on the western bank of the Mpahlane River; and
- 300 000 year old stone artefacts from the Sangoan era within a three kilometre stretch of the coast within the Xolobeni area.

Mthamvuna River to Isipingo Interchange

This section of the proposed toll highway would involve activities that would predominantly take place within the current road reserves of the existing R61 and N2 respectively. No significant heritage resources are known to occur in the current road reserves.

6.5 PLANNING CONSIDERATIONS

National policy related to spatial planning is currently focused on the rationalisation of a fragmented system of land use and related laws. This is a result of the spatially fragmented pattern of human settlement and urban sprawl evident in South Africa, which is seen as a direct consequence of the skewed and inappropriate planning legislation of the past. Thus, an enabling law on spatial planning, land use management and land development (The Land Use Management Act) is in the process of being promulgated. The preparation and approval of spatial development framework plans, as an integral part of each municipality's Integrated Development Plan (IDP), is seen as the most critical planning responsibility within all three spheres of government. Once the spatial development framework is approved it has a binding effect not only on the private sector but also on all spheres of government.

6.5.1 EASTERN CAPE

Current priority issues identified in IDPs of Eastern Cape municipalities include the need to:

- Alleviate poverty;
- Improve access to social infrastructure;
- Provide housing and basic services (in rural areas);
- Increase economic development through tourism and Local Economic Development Projects; and
- Increase institutional capacity and management performance.

In particular, the OR Tambo DM has formulated four major integrated development programmes to address these challenges: a Social Programme, a Local Economic Development Programme, an Institutional Programme and an Infrastructure Programme. The OR Tambo DM's 2006/2007 IDP identifies the proposed "N2 Toll Road from East London to Umtata, between Umtata and Port St Johns/Lusikisiki and Port Edward", as one of the key components of its Integrated Transport Plan. The IDP recognised tourism as one of the key focus areas for economic development in the municipality (refer to the planning specialist report – Volume 4, Appendix 12 - for an overview of the planning considerations for each local municipality).

Government has proposed key development initiatives for the Wild Coast region, namely the Wild Coast Spatial Development Initiative (SDI) and the proposed Pondoland/Wild Coast National Park. A number of Wild Coast spatial and environmental planning initiatives are also currently being undertaken under the broad banner of the Wild Coast Conservation and Sustainable Development Project.

The Wild Coast Conservation and Sustainable Development Project

The Wild Coast Conservation and Sustainable Development Project was established in May 2004 as a 16-month project supported by DEAT, DEAET, DBSA and the United Nations Development Programme's Global Environment Facility (UNDP-GEF). The major objective of this project was to set up a planning framework that would enable the leverage of additional resources for the benefit of local economic development and to fast-track sustainable development in the region. It was envisioned that this would be achieved through the provision of public infrastructure and the stimulation of economic activity, particularly in the tourism, forestry and agricultural sectors. The main priorities of the project were to create benefits for local communities, while maintaining the unique attributes of the Wild Coast. The project provided assistance to local and district municipalities in developing land use planning frameworks and developed a detailed plan of implementation.

The products of this project include:

- A Strategic Environmental Assessment (SEA) (draft report completed in September 2005 and final report completed in January 2006);
- A Spatial Development Framework (SDF) (completed in September, 2005); and
- A Biodiversity Strategy and Action Plan (BSAP) for implementation (completed in July 2005).

Wild Coast SEA

The broad objectives of the SEA were to:

- Provide a decision-support framework to guide and direct forward land use planning and development planning of the Wild Coast;
- Proactively inform development of the district and local municipalities' SDFs by identifying the opportunities and constraints that the environment places on development and resource use;
- Review the sustainability of alternative options for development and resource use and recommend the most desirable spatial distribution of developments and resource uses across the planning domain; and
- Provide inputs into the management guidelines and the identification of limits of acceptable change or thresholds of potential concern for each preferred land use option.

In order to meet these objectives, the SEA aimed to provide an objective interpretation of existing information and to make it available in such a way that it offers decision-makers a means to weigh up alternative land use options. The SEA also provided an assessment of the potential ecological, economic and social issues that would be associated with the "N2 Toll Road". The SEA identified the following "opportunities" related to transportation networks on the Wild Coast:

- "The toll road will enhance economic development in sectors such as agriculture and forestry, mining and tourism (well situated to service first order nodes) and by means of providing an upgraded link between major centres in KwaZulu-Natal and the Eastern Cape. To a more limited extent there will be improved access for communities in the area;
- Shifting the alignment of the toll road in a westerly direction would provide a clear delineation for the PC[E] and support conservation initiatives in the area;
- The construction phase of the toll road will provide numerous opportunities for the local community/contractors which will also support skills development;
- The Wild Coast Meander will improve access for tourism facilities and communities alike; and
- There are numerous access roads to the coast and, as a result, improving access to these areas would only require an upgrade of the existing roads."

The following "constraints" related to transportation networks on the Wild Coast were identified:

- "Acknowledging the economic potential afforded by the toll road, outside the construction phase the benefits during the operational phase will be directed towards the provincial and national government and development proponents, as opposed to the local communities, which raises the issue of equity;
- The toll road is to be fenced thereby limiting ribbon development adjacent to the road and access is limited to large urban areas and resorts and will not enhance the access to regional services. As such, it will not serve communities and may separate communities and the assets upon which they rely (stock, fields, natural resources);
- The existing toll road alignment has been selected to limit the cost associated with traversing the topography further inland. However, queries remain regarding the economic sustainability of the road with insufficient paying users to finance the development;

- The current toll road alignment may impact on endemic species either due to road construction or as a result of settlements relocating along the route and in the vicinity of the off-ramps;
- The toll road alignment between the Mzamba and Mtentu Rivers will detract from the area's sense of place, particularly in the southern part of this strip; and
- The Wild Coast Meander may limit the allocation of funding to other transport related initiatives.”

The SEA included the following recommendations with regard to the proposed toll highway:

- “The current alignment of the N2 toll road through the PCE is not a sustainable land use option. Rather the alignment should form the boundary of this area. Such an option would also not necessarily preclude large scale development such as mining, and agriculture and forestry projects;
- In considering the alignment of the road every effort should be made to determine the potential impact on endemics through the area, particularly in the north. Further, if the road alignment is not changed, the proposed Mthentu toll plaza and exit should be moved well away from that area, since an activity node at this point is incompatible with the wilderness character and conservation objectives of the area; and
- The extent to which the road provides access to communities situated in the general vicinity of the alignment is limited. In order for the road to contribute to the socio-economic development of these communities, access is required and this aspect needs careful consideration in order to maximise potential opportunities.”

The SDF

The function of the SDF was to incorporate the SEA into an over-arching framework to guide decisions of public, private and community stakeholders with regard to land use, development, investment and planning. The SDF is expected to support provincial policy that development should be restricted to nodes, and it also aims to establish limits to development over a 20 year timeframe. The objective is also to identify opportunities for growth and establish a framework that will facilitate the processing of applications for development. This SDF stretches across the coastal portion of a number of municipal areas and will function as an umbrella to ensure co-ordination between different municipal SDFs.

Outcomes of the project would include the following:

- Inclusion of concepts and components of the Wild Coast SDF into district and local municipality SDFs and their subsequent revision to IDPs;
- Adoption of the SDF by Provincial Government and its use in processing development applications;
- Incorporation of SDF principles into biodiversity decision-making procedures;
- Facilitation of capacity building to manage land use decisions and integrate environmental and land use planning; and
- Provision of infrastructure needed to support the spatial concept for the study area and its surrounds.

In particular, the SDF addressed the following issues:

- Areas in which particular types of land use should be encouraged or discouraged;
- Areas in which the intensity of land development could either be increased or reduced;
- Conservation of both the built and natural environment;
- Development required to redress past imbalances;
- Special development areas for targeted management;
- Directives for growth; and
- Major movement routes.

Of particular relevance to the proposed toll highway would be the potential impact of the proposed project on the main elements of the broad land use management system proposed in the SDF. This would include: towns; rural service centres; first order nodes; second order nodes; rural settlement and emerging farming areas; nature tourism areas; no development zones; commercial agriculture, mariculture; plantation forestry and other elements.

The BSAP

The aim of the BSAP was to develop a vision, operational strategy and detailed implementation programme for biodiversity stewardship in the Wild Coast. The BSAP for the Wild Coast consolidates the outcomes of the conservation assessment, the outcomes of the SEA, recommendations of the SDF, lessons learnt from the pilot projects in Mkambati and Hluleka, and the outcomes of the projects for capacity building and community development activities into a consolidated programme of action.

A Situation Assessment formed the first stage, followed by the formulation of a Strategy and Action Plan, Implementation and Monitoring and Evaluation. During Phase 1 the Conservation Assessment was initiated as was the Stakeholder and Community Engagement Process. The Conservation Assessment identified the planning domain for the project and was informed by consultation with key stakeholders. A series of individual sector consultations also took place as part of the Stakeholder and Community Engagement process.

The Situation Assessment included the following seven specialist studies:

- Wild Coast Planning Domain Data and Methodology;
- Conservation Assessment;
- Economic specialist study;
- Institutional Assessment;
- Legal Assessment;
- Public Participation specialist study; and
- Socio-Economic Report.

Phase 2 comprised the formulation of a Strategy that built on the Situation Assessment undertaken in Phase 1. The purpose of the Strategy document was to articulate clearly the desired outcome of this project and included a vision, goal and objectives.

Phase 3 comprised the formulation of an Action Plan in consultation with key stakeholders. A detailed Implementation Programme has been developed in collaboration with implementation agencies. The Implementation Programme details the practical steps required to achieve the objectives of the project. Within the Implementation Programme, reference is made to continued input/involvement in the “N2 Toll Road EIA Process”.

Current status

The Wild Coast Conservation and Sustainable Development Project completed its preparatory work in 2005, and is currently engaged in the process of implementation. Eastern Cape Parks (ECP) has now been appointed as the implementing agency for the project. The implementation phase is funded by the UNDP-GEF. The project is aimed at promoting the establishment of a representative system of protected areas, and to facilitate the creation of effective and sustainable co-management institutions. The Project Management Unit was put in place in 2007 and the Terms of Reference for the major activities were approved in April 2008. A Skills Development Facilitator has been appointed to drive the skills development programme. A number of tenders related to the implementation phase were advertised in May 2008, and activities related to the advertised tenders will have begun by July 2008. The activities, as advertised in the tenders, included the following:

- The development of a Monitoring and Evaluation system – there was a need for a strong Monitoring and Evaluation framework that will facilitate adaptive measures to improve the impact of the project, allow monitoring of institutional performance and capture lessons that emerge;
- Boundary surveying and demarcation of indigenous state forests along the Wild Coast – there was a lack of clarity on the extent of indigenous forests/the state of the forests and the project seeks to assess the status of indigenous forests, survey boundaries and clarify the demarcation of these forests;
- The development and implementation of a Skills Development Programme – skills development and capacity building for key stakeholders who have a role to play in co-management arrangement was identified as a priority, given the complexity of issues that face communities along the Wild Coast;
- The development of a Knowledge Management Framework and Strategy for the Wild Coast – the need to facilitate the exchange of ideas and leverage lessons learned from the Wild Coast project was identified, and will be achieved through a Knowledge Management Framework. This would allow for the replication of successes elsewhere and the sharing of lessons learnt between the project and other initiatives in the country;
- The development of an appropriate invasive alien plant control strategy for the Wild Coast and risk assessment of alien plant invasion – a threat analysis undertaken during the preparation phase identified invasive alien plants as potentially having a significant impact on the biodiversity of the Wild Coast. This intervention would assess and map the extent and risk posed by invasive alien plants along the Wild Coast, and would develop a management strategy for invasive alien plant monitoring, control and eradication; and
- The development of Fire Management Plans for Wild Coast protected areas – the terrestrial ecosystems of the Wild Coast consist of primary coastal vegetation and grasslands. Fire is a natural part of the grassland ecosystem and needs to be managed, hence a need was identified to develop and implement an integrated fire management system.

The Wild Coast Spatial Development Initiative (SDI)

The Wild Coast SDI was initiated in 1996 and was aimed at generating long-term international competitiveness, growth and development through joint efforts between the private and public sectors.

The SDI identified tourism as the priority or lead economic sector for the Wild Coast region. In terms of the SDI the construction of a major road was considered to be required between Mthatha and Port Edward in order to enhance access, communication, tourism and accompanying development. The SDI took a nodal approach to development in the area.

The key objectives of the SDI, as stated in the Province of the Eastern Cape Growth and Development Strategy, are as follows:

- To generate sustainable economic growth and development in the Wild Coast area;
- To generate long-term and sustainable employment for local inhabitants;
- To maximise the mobilisation of private investment, especially in the context of community tourism development and to lessen demands on government funds for development projects;
- To exploit spin-off opportunities from tourism investments for the development of SMMEs and for the development of local communities; and
- To exploit the under-utilised location and economic advantages of SDI areas for export-oriented growth.

After completion of a socio-economic appraisal of the area, the following sectors (which have economic potential) were identified:

- Tourism;
- Forestry and related down-stream activities; and
- Agriculture and agri-processing.

Development nodes identified along the Wild Coast include the following:

- Mkambati Nature Reserve;
- Coffee Bay and Hole-in-the-Wall; and
- Dwesa/Cwebe nature reserves.

The Wild Coast Tourism Development Policy

The Wild Coast Tourism Development Policy is intended to promote, facilitate and regulate tourism development along the Wild Coast during the conceptualisation, planning, construction and operational stages. This policy delineates the following:

- Tourism development guidelines;
- Environmental policy guidelines for tourism development; and
- Draft procedures for tourism development applications.

Five development anchor areas were identified on the Wild Coast, namely:

- Mzamba;
- Magwa/Mbotyi;
- Port St Johns;
- Dwesa/Cwebe; and
- Khobonqaba/Nxaxo/Cebe – the Wavecrest area.

The Policy is applicable to a one km strip inland from the high water mark for the entire Wild Coast and from the Kei River in the south to the Mthamvuna River in the north. The Policy identifies tourism as the lead economic sector within the coastal zone along the Wild Coast, provides guidelines for tourism planning and development within the one km coastal strip and proposes that tourism development should be concentrated within so-called “nodes” (see Table 6.6).

Table 6.6: First and second order nodes along the Wild Coast

FIRST ORDER NODES	SECOND ORDER NODES
<ul style="list-style-type: none"> • Mzamba • Port St Johns • Umtata Mouth • Coffee Bay • Mazeppa Bay • Qolora Mouth 	<ul style="list-style-type: none"> • Msikaba • Mbotyi • Mngazi • Mngazana • Presley’s Bay/Lwandile • Sinangwana • Hole-in-the-wall • Breezy Point • The Haven/Mbashe • Qora Mouth • Cebe • Wavecrest • Kobonqaba/Mound Point

First order nodes are the most urban and extensively developed areas, of a “seaside resort” nature, such as Port St Johns or Coffee Bay. Within these areas, the main focus should be on recreation provided by the development, not the environment, although the development is located in a pleasant, clean and attractive setting. These nodes are suitable for large hotel and cluster developments, with some cottage development. Second order nodes are less developed and urban in nature, being more focused on ‘family holiday’ tourism and recreation facilities, provided by both the development and the environment. Cottages, cluster complexes and family hotels may be developed within these nodes. The third type of node is the eco-tourism/low impact tourism zones, within which eco-tourism (defined for the purpose of the policy as natural resource based, low intensity, environmentally and culturally sensitive tourism) developments and activities are emphasised. The policy also proposes that no tourism development should occur outside of the above-mentioned zones, and that careful attention needs to be given to the compatibility of uses within the zone (DEAET, 2001).

Eastern Cape Growth and Development Plan

This Plan has a 10-year vision of achieving sustainable growth and human development, with the ultimate goal of providing a better life for the people of the Eastern Cape. The Plan sets targets for growth and poverty reduction. It also contains programmes to address the short-term needs and crises of the province together with longer-term community-based poverty reduction initiatives.

The Strategy Framework for Growth and Development 2004 - 2014 was also formulated under this programme and sets quantified targets to be reached within the 10 year period. To reach the specific targets, the following focus areas have been identified in the framework:

- The systematic eradication of poverty;
- The transformation of the agrarian economy;
- Developing and diversifying the manufacturing and tourism sectors;
- Building human resource capabilities;
- Infrastructure, including the eradication of backlogs and the development of enabling infrastructure for economic growth and development; and
- Public sector and institutional transformation in support of improved service delivery.

According to the Strategy Framework for Growth and Development 2004 - 2014, “road access to resorts needs to be greatly improved. Major opportunities are to link the future Wild Coast Toll Road with a programme of upgraded rural access roads, and the ‘Wild Coast Meander’ – an all-weather low-impact link road to the coastal resorts.”

Eastern Cape Tourism Master Plan

The Eastern Cape Tourism Master Plan was completed in 2003 and has the following objectives:

- To provide the tourism industry and community in the Eastern Cape with a longer-term framework for conducting their activities for the five year period from 2003 – 2007;
- To enable individual businesses to anticipate, plan and prepare for potential changes, opportunities and threats;
- To provide the industry and community with a firm basis for planning financial and resource requirements;
- To isolate and develop key issues associated with the industry's development;
- To put in place programmes for improving the Eastern Cape's tourism industry, its profitability and performance; and
- To emphasise the impact of tourism and its growing importance in terms of employment in the Eastern Cape economy today and in the future.

This Master Plan does not supersede or replace earlier planning and tourism reports, policies and initiatives but is essentially a framework to facilitate action over a five year period.

The Eastern Cape Tourism Board's Destination Management Strategy

This document serves to guide destination branding and marketing for the province and outlines the functions of the East Cape Tourism Board. The mandate of the organisation is to support the development of infrastructure that will support tourism development. The document notes access to the Wild Coast region as a key challenge for creating a wider distribution of tourists to the area and that the proposed toll highway would be actively pursued as a strategy to improve access to the region.

Proposed Wild Coast/Pondoland National Park

Since 1997 the provincial environmental authority, South African National Parks (SANParks) and DEAT have been lobbying for the establishment of a large consolidated conservation area along the Pondoland coast in the Eastern Cape Province. Considerable groundwork has been undertaken to inform and involve stakeholders, determine more accurate boundaries of the proposed Park, obtain widespread support for the proposal and to determine institutional arrangements for the future administration of the Park. These efforts culminated in the establishment of the Park being announced by the Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, on 31 August 2005.

The Park would form a consolidated conservation area of approximately 50 000 ha in extent (see Figure 6.4). The area varies in width according to the presence of deep and rugged gorges as well as in response to large indigenous forests and declared State Forest Reserves under the control of the Department of Water Affairs and Forestry. The actual boundaries of the Park have not yet been finalised, but would conform to the idea of Biosphere Reserves with specific core, buffer and transition zones.

Included within the proposed area are:

- A Provincial nature reserve (i.e. Mkambati Nature Reserve);
- The TRACOR land (owned and managed by the Mkambati Land Trust in terms of the Settlement Agreement with the National Department of Land Affairs);
- Numerous State Forest Reserves (e.g. Ntsubane, Hili, Lotana, Mtambalala, Ntlopeni, Bomvini, etc.);
- Extensive grazing areas under the control of the Quakeni Regional Authority;
- Agricultural lands and villages (e.g. Mbotyi, Mtambalala, Manteku, Xolobeni, etc. also under the control of the Quakeni Regional Authority and local Chiefs); and
- The coastline, inter-tidal zone and deep sea, which fall under the control of DEAT through its Division of Marine and Coastal Management.

The presence of a number of small conservation areas in this region (i.e. Mkambati Nature Reserve, the Mkambati Palms National Monument, a small marine reserve, numerous indigenous forest reserves) and large tracts of state land (Magwa Tea Estates, South African Defence Force and other state-owned land), all within relatively close proximity to each other makes for ideal building blocks for the establishment of a large, viable protected area.

Development of the Park would largely conform to existing SDI nodes. Three nodes would be influenced by the establishment of the Park, and include:

- Mzamba;
- Magwa/Mbotyi (Mkambati); and
- Port St Johns.

Consideration of the compatibility of the proposed N2 Wild Coast Toll Highway with other developments has been considered as core to the determination of a preferred route. Consultation with the provincial environmental authorities, SANParks and DEAT regarding the proposed Pondoland Park and the proposed route alignment has endeavoured to ensure compatibility, in principle, of these two developments from the outset of the proposed project.

The Xolobeni Mineral Sands Mining Proposal

The Xolobeni Mineral Sands Mining Proposal was submitted by the Perth-based company Mineral Resource Commodities (MRC) for the mining of titanium in the area between the Mthamvuna and Mthentu rivers. TransWorld Energy and Mineral Resources (S.A.) Pty Ltd (TEM) (a company associated with Mark and Joseph Caruso, the Directors of MRC) is a South African registered company and is the sole purpose holding company for the Xolobeni Mineral Sands Project. Early in 2005 it was decided that the collection of baseline data for the EIA of the proposed project should rather be undertaken under the umbrella of the Prospecting Right before the formal submission of an EIA as part of the Mining Right Application (MRA) process. Importantly, while the Xolobeni site may technically fall within the jurisdiction of the OR Tambo LM, it has long been tribal land, presided over by the king and queen of Pondoland.

During March 2005 TEM, via Groundwater Consulting Services (GCS), submitted a Prospecting Rights Application (PRA) to the Eastern Cape Department of Minerals and Energy Affairs (DME). The application was provisionally accepted subject to the compilation of a prospecting EMP by May 2005. The EMP for prospecting was submitted to the DME on 26 April 2005.

The Xolobeni Mineral Sands Project MRA, which was submitted in March 2007, was approved by DME on 29 July 2008. The Mining Right has, however, only been approved for the so-called “Kwanyana block” within the Xolobeni Mineral Sands tenement area. TEM was instructed to revise the EIA and EMP for this block only. The remaining areas will be held under a Prospecting Right that will be valid until 2010, and will be renewable for another five years.

If appeals do not result in the decision to grant the Mining Right to MRC being set aside, and the proposed N2 Wild Coast Toll Highway were approved, it is likely that the new road would serve as an important transport route for the mining activity, allowing easy access to shipping ports to the north (Durban) and south (East London). However, SANRAL has emphasised that the proposed N2 Wild Coast Toll Highway is in no way linked to, or dependent on, the Xolobeni mining proposal.

6.5.2 KWAZULU-NATAL

KwaZulu-Natal Department of Economic Development: Strategic and Performance Plan 2005/2006 – 2009/2010

Key aspects of this plan include the following:

- The enhancement of logistical and transportation infrastructure;
- The implementation of an accelerated Trade Gateway Programme built upon the province’s port and transport infrastructure; and
- The improvement of the efficiency of port-road/rail-freight corridors in the interest of KwaZulu-Natal’s industry.

The KwaZulu-Natal Tourism Product Development Strategy

This document provides strategic direction to tourism development in the KwaZulu-Natal province. It supports the development of infrastructure that will enable the growth of tourism products.

Ugu DM IDP, 2006/2007

The IDPs of the Hibiscus Coast, Umzumbe and Umdoni LMs are consistent with the IDP of the Ugu DM. The main issues regarding transport in the region include accessibility problems and the poor condition of roads.

eThekwini MM IDP, 2006 - 2011

Durban (and the eThekwini Metropolitan Area) is regarded as a transportation hub and a gateway to KwaZulu-Natal. A plan is currently being compiled to ensure the co-ordination and facilitation of the movement of goods by air, rail, road and sea. It includes the assessment of network capacities and delivery speeds, as well as information systems needed to link and monitor freight movements. The eThekwini Municipality's focus in their second IDP is to translate their City Vision into action by:

- Improving the Port and logistic infrastructure;
- Using land use management to increase densities and reduce sprawl;
- Bridging the digital divide;
- Developing a good public transport system;
- Encouraging ecological and related tourism; and
- Ensuring ecological integrity.

General development projects

Within the section between the Mthamvuna River and the Isipingo Interchange a number of proposed developments are likely to either impact on or be impacted upon by the proposed toll highway. Projects within the eThekwini Municipality boundary include the following:

- A proposed major retail shopping centre at Kingsburgh;
- The "Estuary" Shopping Centre close to the Amanzimtoti River (it seems unlikely that this project will take place as no proposals have been submitted to the municipality for approval);
- A Value Centre near the Moss Kolnick Interchange (the building plans for this project have been approved by the municipality); and
- Arbour View mall situated adjacent to The Value Centre (currently being constructed).

Two projects identified in the previous KwaZulu-Natal Planning/Development study have, in the interim, been completed and are currently operational, namely the SATI Container Depot in Southgate, Umbogintwini and the Golf Driving Range in Amanzimtoti (which includes a Pro Shop, Nine-Hole Putt-Putt Course and Conference Centre).

There are also a number of housing projects in the planning and/or development phase identified on "the doorstep of the N2", including the following:

- A housing development at Lovu West, Kingsburgh;
- The Merlewood Housing Project along the N2 inland of Port Shepstone;
- The Danganya Housing Project at the Umgababa Interchange (project completion date set for 2010);
- Ifafa Glebe at the Sezela Interchange (additional facilities such as a library is now in the planning phase);

- Bobhoji at the Oribi Interchange (Phase one units already occupied);
- The Zimbali Valley Housing Development; and
- The Nzimakwe Housing Project at the Port Edward Interchange (adjacent to Leisure Bay) (certain units already occupied).

6.6 LEGAL AND POLICY CONSIDERATIONS

Legislation regarding the ECA and NEMA EIA Regulations and procedures was discussed in Chapter 2, while the legislative framework for the tolling of national roads was discussed in Chapter 3. Some additional environmental legislation and policies relevant to the EIA and proposed project includes, but is not limited to, the following:

6.6.1 General Legislation

The Constitution of South Africa, 1996 (Act No. 108 of 1996)

The Bill of Rights promulgated in the Constitution, 1996 states that everyone has the right:

- a) To an environment that is not harmful to their health or well-being; and
- b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
 - i. Prevent pollution and ecological degradation;
 - ii. Promote conservation; and
 - iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998)

The purpose of this Act is to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for the co-ordination of environmental functions exercised by organs of state; and to provide for matters connected therewith.

Chapter 1 sets out a range of national environmental management principles. These include the following:

- 2(1) - the principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment;
- 2(2) - environmental management must place people and their needs at the forefront of its concern;
- 2(3) - development must be socially, environmentally and economically sustainable; and
- 2(4) lists a number of principles, including: sustainable development factors; that environmental management must be integrated; environmental justice must be pursued; there must be equitable access to environmental resources; participation of interested and affected parties must be promoted; social, economic and environmental impacts of activities must be considered; and there must be open and transparent decision-making.

Chapter 5 (Sections 23 and 24) presents the general objectives and implementation of IEM. Section 23(2) presents the general objectives of IEM, as follows:

- To promote the integration of the principles of environmental management into the making of all decisions which may have a significant effect on the environment;

- To identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management;
- To ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
- To ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- To ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
- To identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management.

Chapter 5 outlines the actual implementation of the IEM principles, stating that activities that require authorisation by law and which may significantly affect the environment must be considered, investigated and assessed prior to their implementation. This should then be reported to the organ of state charged by law with authorising, permitting or otherwise allowing the implementation of an activity.

Section 24 also sets out the procedures for the investigation, assessment and communication of the potential impact of activities, which must (as a minimum) ensure the following:

- (a) Investigation of the environment likely to be significantly affected by the proposed activity and alternatives thereto;
- (b) Investigation of the potential impact, including cumulative effects, of the activity and its alternatives on the environment, socio-economic conditions and cultural heritage, and assessment of the significance of that potential impact;
- (c) Investigation of mitigation measures to keep adverse impacts to a minimum, as well as the option of not implementing the activity;
- (d) Public information and participation, independent review and conflict resolution in all phases of the investigation and assessment of impacts;
- (e) Reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;
- (f) Investigation and formulation of arrangements for the monitoring and management of impacts, and the assessment of the effectiveness of such arrangements after their implementation;
- (g) Co-ordination and co-operation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;
- (h) That the findings and recommendations flowing from such investigation, and the general objectives of integrated environmental management laid down in this Act and the principles of environmental management set out in Section 2 are taken into account in any decision made by an organ of state in relation to the proposed policy, programme, plan or project; and
- (i) That environmental attributes identified in the compilation of information and maps as contemplated in Subsection (2)(e) are considered.

6.6.2 Legislation and policies relevant to the Construction and/or Operational Phase of the proposed project

Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)

The objectives of this Act are to provide for the conservation of the natural agricultural resources of the Republic by maintenance of the production potential of the land. This objective is to be accomplished by combating and preventing soil erosion and the weakening or destruction of water resources, and by the

protection of vegetation and combating of weeds and invader plants. Full regulations concerning declared weeds and invaders are listed in Government Notice R1048.

Although the Act focuses on agriculture, it does have the effect of incidentally conserving ecosystems and habitats outside protected areas. For example, in terms of the Act, the vegetation of vleis, marshes or water sponges within the flood area of a watercourse or within 10 m horizontally outside such flood area may not be drained, cultivated or utilised in a manner that causes or may cause the deterioration or damage to the natural agricultural resources. All areas supporting indigenous vegetation are regulated by the Act, which states that virgin land may not be developed without appropriate permits for all changes in land use (Regulation 2) and all slopes exceeding 20° (Regulation 3). Virgin land is defined as land that has remained undisturbed for 10 years or more. Permission is required from the Department of Agriculture for the removal of river bank vegetation and disturbance of the river bank itself. All disturbances also have to be appropriately rehabilitated.

National Forests Act, 1998 (Act No. 84 of 1998)

The main purpose of the Act is to promote the sustainable management of forests, and also to provide special measures for the protection of certain forests and trees.

Under this Act, proclaimed demarcated State Forests are managed for the protection of biodiversity and the associated ecosystems. Withdrawal from demarcation has to be approved by cabinet. Numerous forests in the greenfields areas have been proclaimed state forests and are managed by DWAF. The Act also prohibits the destruction of indigenous trees in any natural forest without a licence.

In terms of this Act, and Government Notice 1339 of 6 August 1976 (which was promulgated under the Forest Act (Act No. 122 of 1984)) the removal, relocation or pruning of any protected plants that may occur within the proposed road reserve would require a permit.

National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The South African Heritage Resources Agency (SAHRA) was established in terms of Section 11 of the Act to co-ordinate the identification and management of the national estate, and has jurisdiction over heritage issues of national importance. Provincial and local heritage authorities are responsible for issues of regional or local importance.

In terms of Section 35 (4) of the Act, no person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. In terms of Section 36 (3) of the Act, no person may, without a permit issued by SAHRA or a provincial heritage authority, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. Any finds should be reported to SAHRA, the project archaeologist, the South African Police Services (SAPS) and the state pathologist.

Graves are protected by two additional Acts: the Exhumations Ordinance (No. 12 of 1980), which protects headstones and human remains, and the Human Tissues Act (Act 65 of 1983), which governs the storage and handling of human remains. Graves that are older than 60 years must be exhumed by an archaeologist, while graves that are under 60 years old should be dealt with by the SAPS.

National Water Act, 1998 (Act No. 36 of 1998)

This Act provides for Constitutional demands including pollution prevention, ecological and resource conservation and sustainable utilisation. In terms of the Act, all water resources are the property of the State and the EIA process is used as a fundamental management tool.

A water resource includes a watercourse, surface water, estuary or aquifer and (where relevant) its bed and banks. A watercourse means: a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam, into which or from which water flows; and any collection of water that the Minister may declare to be a watercourse. Permits are required in terms of the Act for the undertaking of the following activities:

- Alteration of the bed, banks, course or characteristics of a watercourse in terms of Sections 21(i) and 40;
- Abstraction of water from a water resource in terms of Section 21(a);
- Storage of water in terms of Section 21(b);
- Stream flow reduction as contemplated in Section 36 of the Act in Section 21(d);
- Discharge of waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit in terms of Section 21(f);
- Disposal of waste in a manner that may detrimentally impact on a water resource in terms of Section 21(g); and
- Removal, discharge or disposal of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people in terms of Section 21(j).

The General Authorisations published on 26 March 2004 (Government Gazette vol. 465, No. 26187) in terms of Section 39 of the Act, allow conditional water use without a licence, although the water use must be registered. Water use that exceeds the limits posed by Schedule 1 and the Authorisations requires the water user to apply for a licence. The General Authorisations relating to (1) impeding or diverting the flow of water in a watercourse and (2) altering the bed, banks or characteristics of a watercourse are discussed below.

Impeding or diverting the flow of water in a watercourse

This Authorisation allows the flow of water in a watercourse to be impeded or diverted, provided the water use is within the conditions set out by the Authorisation. A licence is required for structures built fully or partially in or across a watercourse that:

- Exceed a foundation width of 15 m;
- Exceed a length of 200 m, measured from one side of the watercourse to the other; or
- Occur within a distance of 500 m upstream or downstream of another structure that impedes or diverts flow on the same watercourse, measured along the watercourse.

Altering the bed, banks or characteristics of a watercourse

This Authorisation allows the bed, banks or characteristics of a watercourse to be altered provided that the water use is within the conditions set out by the Authorisation. A licence is required for structures built fully or partially across a watercourse that:

- Exceed a height of 10 metres, measured from the natural level of the bed of the watercourse on the downstream face of the structure to the crest of the structure;
- Exceed a width of 10 metres, measured at the widest part of the structure;
- Exceed a length of 50 metres, measured from one edge of the watercourse to the other; or
- Occur within a distance of 500 metres upstream or downstream of another structure that alters the bed, banks or characteristics of the same watercourse, measured along the watercourse.

Pollution of river water (silt-laden run-off, oil from machines, etc.) is a contravention of this Act. Part 4 of the Act deals with pollution prevention, and in particular the situation where pollution of a water resource occurs or might occur as a result of activities on land. The person who owns, controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources. Part 5 of the Act deals with pollution of water resources following an emergency incident, such as an accident involving the spilling of a harmful substance that finds or may find its way into a water resource. The responsibility for remedying the situation rests with the person responsible for the incident or the substance involved.

The Act (Chapter 3, Part 3) also provides for the protection of significant water resources through the “Ecological Reserve”, i.e. the quantity and quality of water needed to sustain basic human needs and ecosystems (e.g. estuaries, rivers, lakes, groundwater and wetlands). This is to ensure ecologically sustainable development and utilisation of a water resource. The Reserve pertains specifically to aquatic ecosystems, and is primarily focussed on activities such as abstractions, discharges and alterations to flow patterns and velocity. The implication of certain road-building activities on aquatic ecosystems triggers the requirement for licensing, and therefore the requirement for the Reserve to be assessed (which is a function normally conducted by DWAF).

Interim national water quality guidelines for aquatic ecosystems have been developed for South Africa by DWAF. These guidelines are used in water quality management as the primary source of reference information and decision support for the management and protection of aquatic ecosystems. Stringent water quality guidelines apply specifically to “Special Standards” Rivers.

Integrated Coastal Management Bill

This Bill promotes a holistic way of thinking by promoting co-ordinated and integrated coastal management which views the coast as a system and manages it as such. Management of estuaries will be according to Chapter 4 of the Bill, which is currently being approved by Parliament and will be promulgated into law by the end of 2008 (i.e. Draft 11.4 of 16 May 2007) (pers. comm., Kroese). According to this Bill, the management of estuaries will be effected using the “national estuarine management protocol” and “estuarine management plans”.

The national estuarine management protocol states that estuaries and the estuarine ecosystems of which they form part must be managed in a coordinated and efficient manner. They must also be managed in accordance with a national estuarine management protocol, which must be prescribed by the Minister within two years of the Bill coming into force.

Estuarine management plans for individual estuaries may form an integral part of a provincial coastal management programme or a municipal coastal management programme.

Marine Living Resources Act, 1998 (Act No. 18 of 1998)

This Act focuses on the sustainable management of marine environments, including estuaries, as many marine line fish populations utilise estuaries as nursery areas (e.g. the White Steenbras and Spotted Grunter).

Minerals and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002)

This Act provides for the control of mining activities such as the development of borrow pits or rock quarries. It also prevents any mining activity without the appropriate right and/or permit as issued by the

Minister of Minerals and Energy. Such right and/or permit may only be issued once there has been compliance with the regulations promulgated in terms of the Act.

Government Notice R76, in terms of Section 106(1) of the Act, exempts any organ of state from applying for such rights and/or permits. However, in terms of Section 106(2), organs of state must submit an Environmental Management Programme (EMPr) for approval by the Minister in terms of Section 39(4). Section 39(3) sets out the minimum required information that must be contained in such an EMPr, including baseline information regarding the affected environment, an assessment of the potential impacts of the proposed activity, as well as measures to mitigate and rehabilitate the potential impacts.

National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

The Act, which is administered by DEAT, provides for the control of air pollution. Air pollution is defined as any change in the composition of the air caused by smoke, soot, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, aerosols and odorous substances. The only other legislation that deals with limited aspects of air pollution control is the Health Act (No. 63 of 1977), regulations in terms of the Mines and Works Act 27 of 1956 and the Road Traffic Act 29 of 1989.

Part V deals with the control of dust, which can impact on local air quality during construction activities. The Minister has the authority to declare a dust control area by notice in the Government Gazette. The Act requires that these impacts be controlled during construction and operation of a project.

Nature and Environmental Conservation Ordinance, 1974 (as amended)

Land within a state forest is considered to be a national issue, thus Parliament would need to de-proclaim such an area for development of a road.

The Ordinance also covers the protection of important plants and animals outside of protected areas.

National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

In terms of Section 57(1) of the Act a person may not carry out a restricted activity involving a specimen of a threatened or protected species without a permit issued in terms of Section 90 of the Act.

In terms of Section 57(2) the Minister may, by notice in the Gazette, prohibit the carrying out of an activity which is of a nature that may negatively impact on the survival of a threatened or protected species; and which is specified in the notice, or prohibit the carrying out of such activity without a permit issued in terms of Section 90 of the Act.

Eastern Cape Environmental Conservation Bill (2003)

This Bill provides for the declaration of provincial protected areas, for the management of biodiversity in the province and for provincial coastal management. It also regulates air quality and waste management in the province. The Bill states that no person may without a permit:

- Keep, control or be in possession of any endangered flora;
- Sell, buy, donate or receive any endangered flora;
- Pick, uproot, damage or destroy any endangered flora; or
- Pick, uproot or destroy any endangered flora on land of which he or she is not the owner, without the permission of the owner of such land or of any person authorised by such owner to give such permission.

Eastern Cape Provincial Nature Conservation Ordinance (1974)

This Ordinance provides for the protection of certain fauna and flora within the Eastern Cape. In terms of this Ordinance, a permit must be obtained from DEAET to remove or destroy any plants listed in the Ordinance.

Transkei Decree (9 of 1992)

This decree applies to the one kilometre strip along the entire former Transkei coastline, and makes provision for various forms of legislation to manage, development and conserve, protect and control the utilisation of indigenous fauna and flora within the coastal strip. This implies that any development within the one kilometre coastal strip requires approval in terms of the Transkei Decree, 1992.

Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

Regulations contained in Government Notice R1179 of 25 August 1995, promulgated under this Act, would be of importance during the construction of the road. Substances such as cement, lime and all fuels and lubricants are listed as hazardous chemical substances. Employees must be protected against exposure to such substances. Adequate storage areas should be provided for such substances and these should be kept neat and under control.

Land Use Planning Ordinance (15 of 1985)

Where a proposed project is in conflict with approved plans, these plans would have to be amended according to the requirements of the legislation in terms of which they were prepared. Structure plans would thus need to be amended in terms of section 4(7) of the Land Use Planning Ordinance, 1985 (15 of 1985), while IDPs would need to be amended in terms of Section 34(a)(ii) of the Municipal Systems Act, 2000 (Act No. 32 of 2000).

Development Facilitation Act, 1995 (Act No. 67 of 1995)

The principle of adopting a normative-based spatial planning system was first introduced by this Act, which defines various principles that collectively form a vision for land use and planning in the country, consistent with national objectives. These principles include:

- General principles for land development, which reject low-density, segregated, fragmented and mono-functional development, and embrace compact, integrated and mixed-use settlements instead;
- Land Development Objectives, which are local land use plans that take into account the need to plan for land use in an integrated and strategic manner; and
- Development Tribunals provide for a speedy route for the consideration of land use change and land development applications.

Municipal Systems Act, 2000 (Act No. 32 of 2000)

This Act developed the key concept of the IDP, which is a single, inclusive and strategic plan for the development of a municipality. IDPs are the principal strategic planning instruments that guide and inform all planning and development, and all decisions with regard to planning, management and development in each municipality.

Sensitive Coastal Areas: Environment Conservation Act, 1989 (Act No. 73 of 1989)

In 1996 and 1998 the Minister of Environmental Affairs and Tourism instituted a series of regulations in terms of the amended ECA. The regulations were introduced to protect sensitive areas along South Africa's coast, particularly from indiscriminate plot-clearing and dune-flattening to prepare sites for development. In terms of the regulations earthworks, dredging, dune stabilisation and the disturbance of vegetation are prohibited within demarcated Sensitive Coastal Areas (SCAs) unless a permit has been obtained. Administration of the SCA regulations is usually delegated to local authorities. Pennington and Umtamvuna on the KwaZulu-Natal south coast have been designated SCAs.

However, the regulations related to SCAs avoid duplicating existing legislation, so they do not apply to mining, commercial forestry, agriculture, or activities controlled by the ECA EIA regulations (Government Notice No. R. 1182 of 5 September 1997). In addition, the SCA regulations will generally not be applied within urbanised areas.

Noise Control Regulations: Environment Conservation Act, 1989 (Act No. 73 of 1989)

In accordance with the ECA, two procedures exist for assessing and controlling road traffic noise:

- The procedures contained in the South African National Standard (SANS) 10328 "Methods for environmental noise impact assessments".
- The procedures contained in the National Noise Control Regulations promulgated under sections 25 and 28 of the Environment Conservation Act, 1989 applicable to the Eastern Cape and KwaZulu-Natal provinces.

SANS 10328 contains procedures to be followed to quantify the predicted impact that noise emanating from a proposed development will have on surrounding land, based on scientific principles. The predicted impact is assessed in accordance with SANS 10103 "The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication". This entails determining whether the level of the predicted noise will exceed the residual (background) noise level on that land and/or the acceptable level of noise pertaining to the use of that land and relating this excess to the probable response of a community to the noise.

In accordance with Section 7.3.1.4 of SANS 10328, the rating level of noise emanating from road traffic is determined in accordance with SANS 10210 "Calculating and predicting road traffic noise". The rating level is then compared with the acceptable outdoor rating level for the particular district under investigation as recorded in Table 2 of SANS 10103, or with the rating level of residual noise in the area under investigation. SANS 10103 contains procedures for the measurement and assessment of noise in various districts and on human activities with respect to possible annoyance.

In accordance with Section 7.5 of SANS 10328, the estimated traffic noise impact is assessed by determining the probable community response from Table 5 of SANS 10103. Refer to the specialist noise report for Table 2 and Table 5 of SANS 10103 and for more detailed explanations of the regulations governing noise control.

Section 4.6.4 of SANS 10103 states that it is highly probable that the noise will be annoying or otherwise intrusive into a community or group of persons if that rating level, L_r , of the ambient noise exceeds the typical level (including the predicted noise of the proposed project) as indicated in Table 2 of the SANS 10103 or exceeds the residual noise (excluding the predicted noise of the proposed project).

In terms of Schedule 3(d) of the National Noise Control Regulations:

“No person shall build a road or change an existing road, or alter the speed limit on a road, if it shall in the opinion of the local authority concerned cause an increase in noise in or near residential areas, or office, church, hospital or educational buildings, unless noise control measures have been taken in consultation with the local authority concerned to ensure that the land in the vicinity of such road shall not be designated as a controlled area”.

In other words, if the predicted noise due to the proposed development is likely to cause the noise level on surrounding land to exceed 65 dBA, noise mitigation measures would need to be implemented to ensure that noise levels on affected land are reduced so as not to exceed 65 dBA.

International Convention on the Conservation of Biological Diversity

The Convention on Biological Diversity (CBD) was signed at the Earth Summit in Rio de Janeiro, Brazil, in 1992 and it entered into force on 29 December 1993. South Africa became a signatory to the CBD in June 1995 and DEAT is responsible for ensuring that the provisions of the CBD are implemented in South Africa. It is the first global agreement to cover all aspects of biological diversity and the three main objectives of the Convention are:

- The conservation of biodiversity;
- The sustainable use of biological resources; and
- The fair and equitable sharing of benefits arising from the use of genetic resources.

As a signatory to the CBD, South Africa is obliged to ensure that the agreement is implemented in accordance with its objectives.

Agenda 21 (1992)

Agenda 21, an action plan and blueprint for sustainable development, was one of five documents adopted by more than 178 governments at the United Nations Conference on Environment and Development (UNCED), known as the Earth Summit, in Rio de Janeiro in 1992. This policy focuses on partnerships involving the public and all relevant stakeholders to resolve developmental problems and to plan strategically for the future. It also tries to address the practicalities of applying sustainable development principles to human activities and to development. The South African “custodian” for Agenda 21 is DEAT.

Ramsar Convention

This Convention is an intergovernmental treaty that was adopted in Ramsar, Iran, in 1971. It provides a framework for international cooperation for the conservation and wise use of wetlands and their resources. Countries that become contracting parties (South Africa did so in 1975) accept the following four main obligations:

- Designate at least one wetland as a site of “International Importance”;
- Formulate and implement planning to promote wise use of wetlands in their territory;
- Establish nature reserves on wetlands; and
- Engage in international cooperation with other countries.

According to Article 4 of the Ramsar Convention:

“Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat”.

South Africa currently has 19 Ramsar sites covering a total of 543 978 ha (see Table 6.7). None of these sites occur in the study area.

Table 6.7: Ramsar sites in South Africa

SITE	PROVINCE	EXTENT (ha)
Barberspan	North-West	3 118
Nylsvley Nature Reserve	Northern Province	3 970
Blesbokspruit	Gauteng	1 858
Verloren Valei Nature Reserve	Mpumalanga	5 891
Makuleke Wetlands	Limpopo	7 757
Kosi Bay	KwaZulu-Natal	10 982
Lake Sibaya	KwaZulu-Natal	7 750
Natal Drakensberg Park	KwaZulu-Natal	242 813
Ndumo Game Reserve	KwaZulu-Natal	10 117
St Lucia System	KwaZulu-Natal	155 500
Turtle Beaches/Coral Reefs of Tongaland	KwaZulu-Natal	39 500
Seekoeivlei Nature Reserve	Free State	4 754
Orange River Mouth	Northern Cape	2 000
De Hoop Vlei	Western Cape	750
De Mond (Heuningnes Estuary)	Western Cape	918
Prince Edward Islands	Western Cape	37 500
Verlorenvlei	Western Cape	1 500
Wilderness Lakes	Western Cape	1 300
Langebaan	Western Cape	6 000



Figure 6.1: Satellite image of topography in the study area between Lusikisiki and the Mthamvuna River, with SANRAL's preferred greenfields route through this section

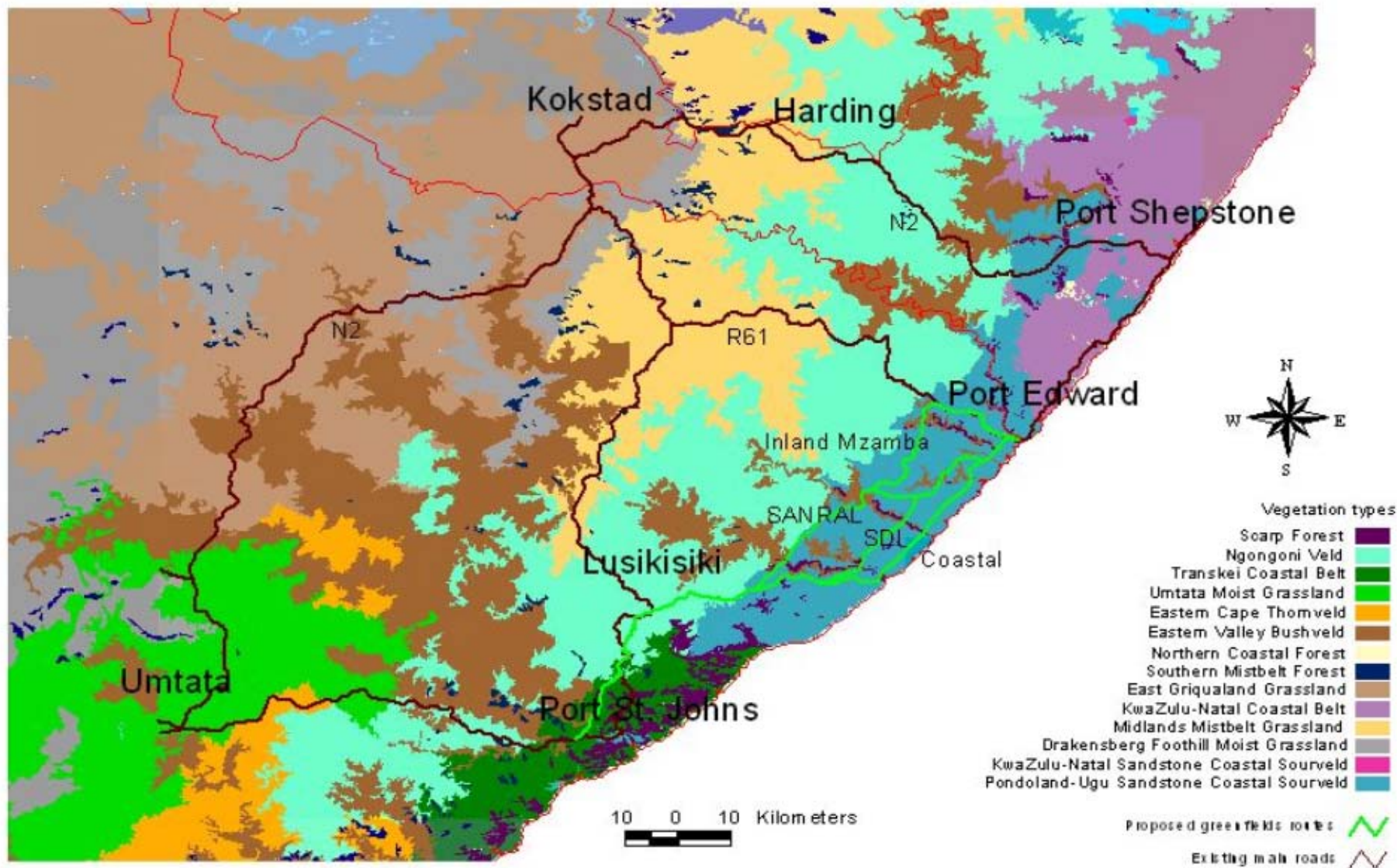


Figure 6.2: Vegetation types in the study area between Mthatha and Port Shepstone (Mucina and Rutherford in press)



Figure 6.3: The Pondoland Biosphere Priority Area and Mthamvuna Expansion Priority Area showing priority forest, coastal, river and estuarine areas within. Biomes, existing protected areas and the proposed Pondoland Biosphere Reserve are also shown (from Reyers and Ginsburg, 2005)



Figure 6.4: Proposed Wild Coast/Pondoland National Park planning domain (source: SANParks)