



SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT

**Scoping and Environmental Impact Assessment
for the proposed Manganese Export Facility and
Associated Infrastructure in the Coega Industrial
Development Zone, Port of Ngqura and Tankatara area**

DRAFT EIA REPORT

CHAPTER 3: DESCRIPTION OF THE AFFECTED ENVIRONMENT



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CHAPTER 3: DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 BACKGROUND

This section of the report provides a broad overview of the receiving environment that may be affected by the proposed Manganese Ore Export Facility. The receiving environment is understood to include biophysical, marine, socio-economic and heritage aspects which could be affected by the proposed development or which in turn might impact on the proposed development. The majority of information used in this chapter was sourced from studies conducted by the Coega Development Corporation (CDC) and recent EIAs conducted in the Coega area. Detailed descriptions of the proposed site are included in the specialists studies (Chapter 5 to 14) including Terrestrial Ecology, Freshwater ecosystem, Avifauna, Air Quality, Marine Ecology, Geohydrology, Noise, Heritage resources, visual implications and sense of place.

The present chapter aims at providing the reader with additional biophysical information that is not covered by the specialist studies in Chapter 5 to 14. The sections of this chapter apply to the entire proposed site and are therefore complementary to all specialist studies of this Draft EIA report.

3.2 SITE LOCATION

The Coega IDZ is situated along the southern coast of South Africa at the mouth of the Coega River, between the Sundays River in the East and the Swartkops River in the West, approximately 15 km north-east of the town of Port Elizabeth in the Eastern Cape Province. It is in close proximity to the Indian Ocean and to the Addo Elephant National Park located to the east of Tankatara farm (Figure 3.1 a).

The Coega IDZ falls within the boundaries of the NMBM which includes the former municipalities of Port Elizabeth, Uitenhage and Dispatch. The IDZ has been divided into a total of 14 zones, each of which has its own preferred land use relative to its specific zoning (Figure 3.1b). The proposed site for the manganese stockyard and handling facility including the doubling of the rail line is situated within Zones 8, 9 and 13 of the Coega IDZ. The proposed site for the rail compilation yard is positioned within Zones 11 and 13 of the Coega IDZ, and on the Remainder of Farm Tankatara Trust 643 located to the north east of the Coega IDZ. Zone 8 specifically forms the southern-most extent of the IDZ.

As mentioned in Chapter 2 (Section 2.2), given the topography of the surroundings of the proposed project and the technical requirements for the compilation yard, it was necessary to extend the latter onto the neighbouring land, Remainder of Tankatara farm.



Given that the development footprint for the proposed Manganese Ore Export Facility extends within and outside the boundary of the Coega IDZ, various landowners have been identified, as indicated in Table 3.1.

Table 3.1: Description of Registered Landowners for the Manganese Ore Export Facility Project

Project Component	Location	Landowner
Manganese Stockyard and Handling Facility	Zone 8	Transnet National Ports Authority
	Zone 9	CDC
Rail Compilation Yard and rail doubling	Zones 11 & 13	CDC, Transnet Freight Rail
	Remainder of Farm Tankatara Trust 643	Tankatara Properties (PTY) Ltd

Four landowners have been identified, namely TNPA, CDC, TFR and Tankatara Properties (PTY) Ltd. Note that two of the land owner entities are part of the applicant. In line with Regulation 15 (1) of the 2010 NEMA EIA Regulations, written notice of the proposed project was provided to the CDC and Tankatara Properties (PTY) Ltd, the registered owners of the land on which the proposed project is to be undertaken. These letters were also included in the EIA Application Form that was submitted to DEA on 29 March 2012 (Refer to Appendix B of the Final Scoping report).

Figure 3.1a /...



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AFFECTED ENVIRONMENT

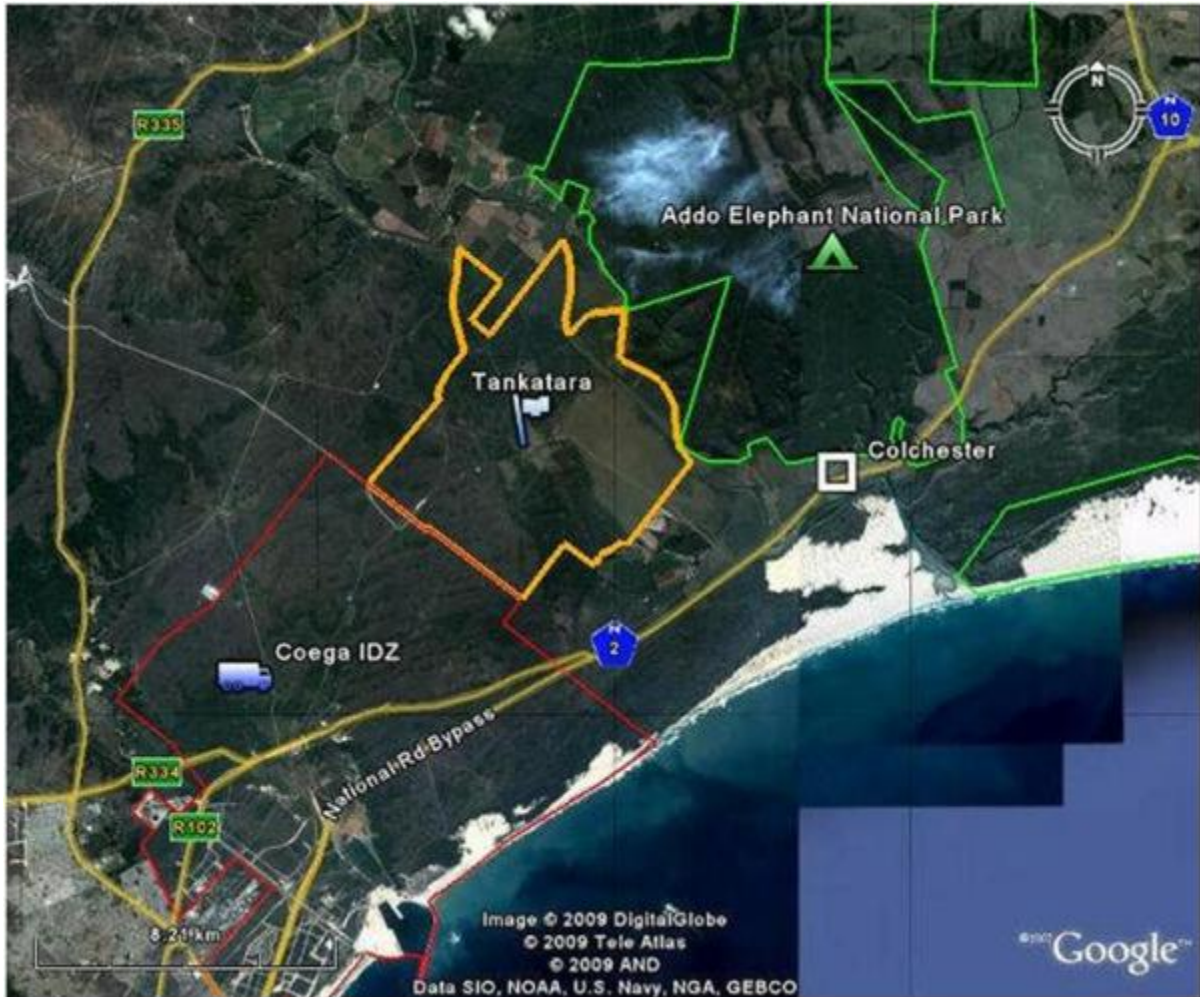


Figure 3.1a: Tankatara Farm and the Coega IDZ

(Source: Master Plan for the Coega IDZ East Bank, 2010 & Lungisa Bosman, Coastal & Environmental Services, Grahamstown)



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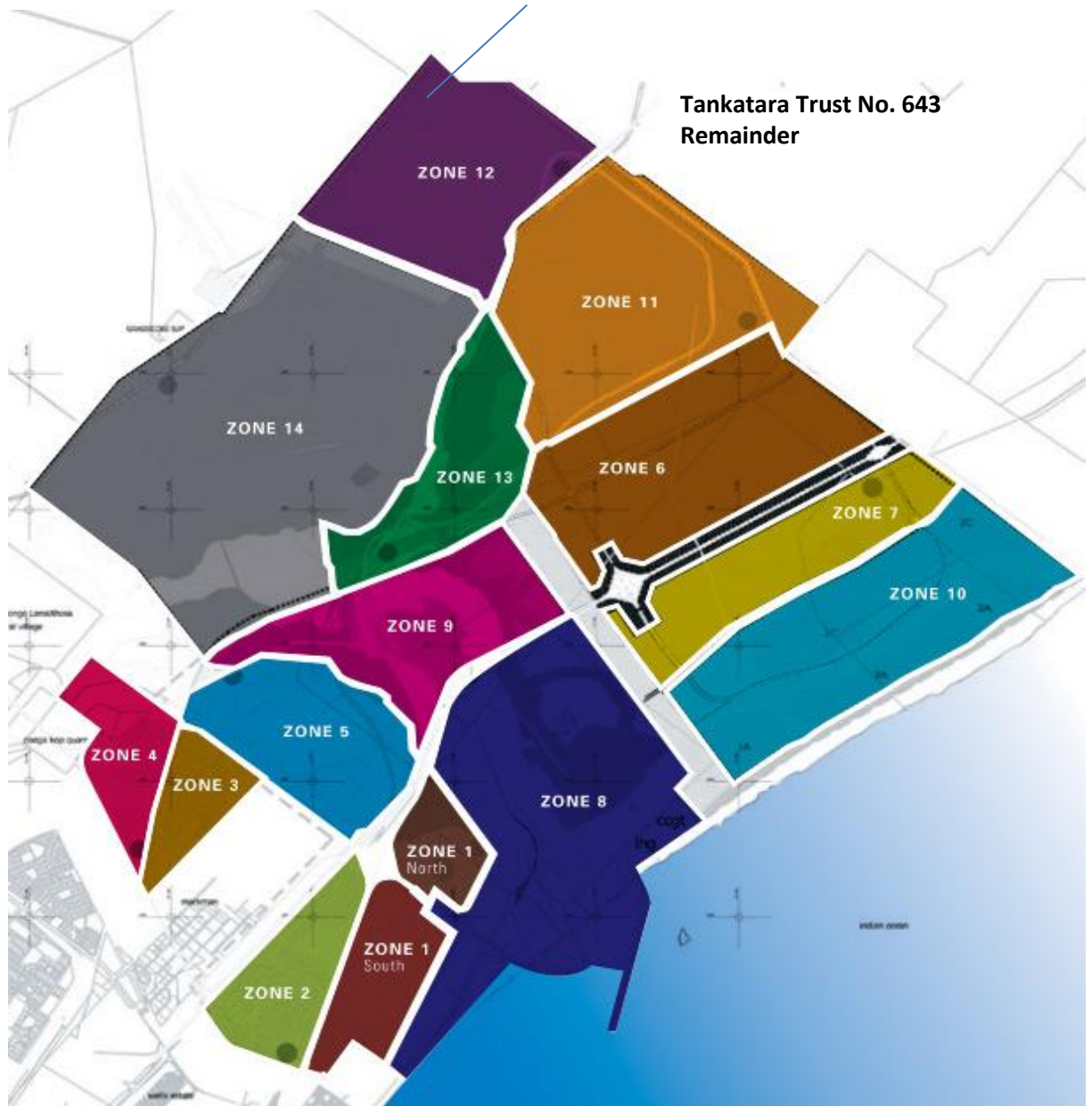


Figure 3.1b: Demarcated Zones within the Coega IDZ and Tankatara Trust No. 643 Remainder

3.3 BIOPHYSICAL ENVIRONMENT

3.3.1 Climate

The Coega IDZ is located in a transition zone situated between the temperate (winter rainfall) southern coastal belt and the subtropical (summer rainfall) eastern coast, and subsequently experiences warm summers and temperate winters. According to Stone (1988 in CSIR, 2007), the region displays wide variations in terms of temperature, rainfall and wind patterns.

Temperature in the study area ranges from an annual average maximum of 24° Celsius to an average minimum of 15° Celsius. Research indicates that the air temperatures in the region may reach exceptionally high values during berg wind conditions, which take place commonly in winter (Stone, 1988 in CSIR, 2007). Figure 3.2 below illustrates the average daily maximum and minimum temperatures recorded at Port Elizabeth from 1961 to 1990 by the South African Weather Services. Over this period, the highest average daily maximum temperatures were recorded in January, February and March, whilst the lowest average daily minimum temperatures were recorded in June and July.

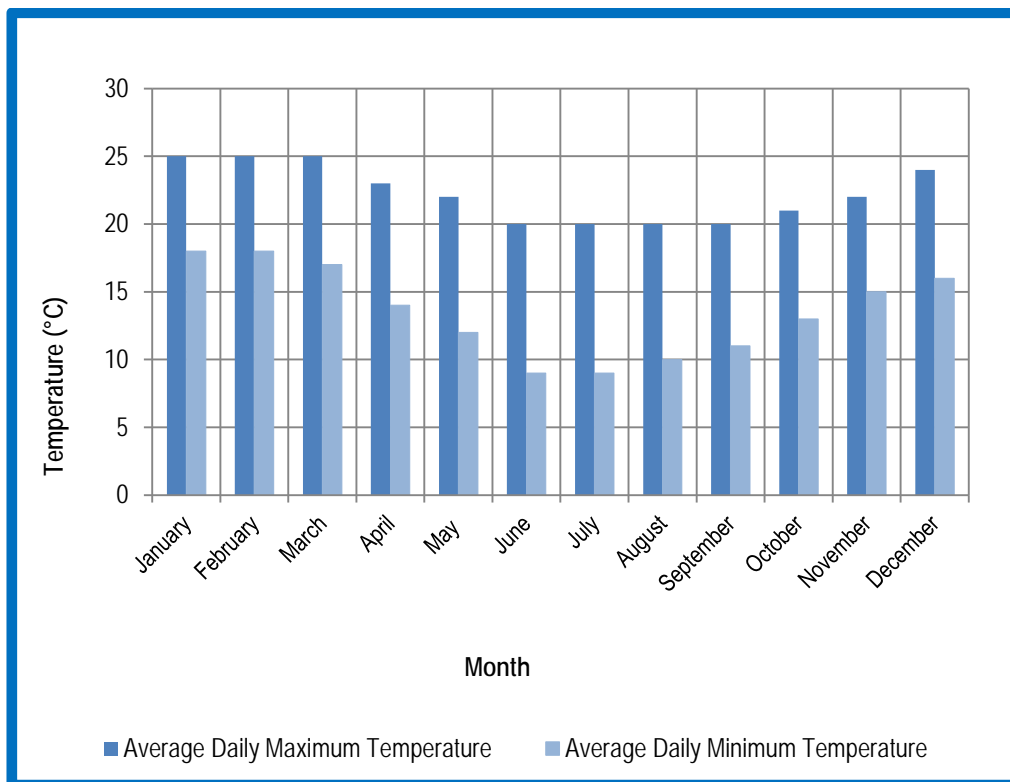


Figure 3.2: Average Daily Maximum and Minimum T° in Port Elizabeth (1961 to 1990).
(Source: South African Weather Services, 2003)

The study area experiences gradient winds for the majority of the year with the wind direction varying between west to west-south-westerly (14% of the time) and easterly (15% of the time). Wind speed and duration increases during the summer months (October to February) with 55% of wind with a speed of 3.3 m/s originating from the west and west-south-westerly direction. The calmest periods occur in May and June with strongest winds in October and November (CSIR, 2007). In addition, land breezes tend to occur at night, whereas sea breezes occur during the day (CES, 2010). Land breezes are stronger in winter than in summer, and sea breezes are stronger and more frequent in summer than in winter (CES, 2010).

Rainfall is distributed throughout the year with peaks in autumn (May to June) and spring (August to September), which generates a bimodal rainfall pattern (CSIR, 2007). The area has an annual average rainfall of approximately 400 mm (Coetzee *et al.*, 1996). Rainfall occurs as a result of convective summer rain and due to the passage of frontal troughs during winter (SRK, 2007). Figure 3.3 below illustrates the average monthly rainfall recorded at Port Elizabeth from 1961 to 1990 by the South African Weather Services. Over this 29-year period, the highest average monthly rainfall was recorded in August, and the lowest average monthly rainfall was measured in December.

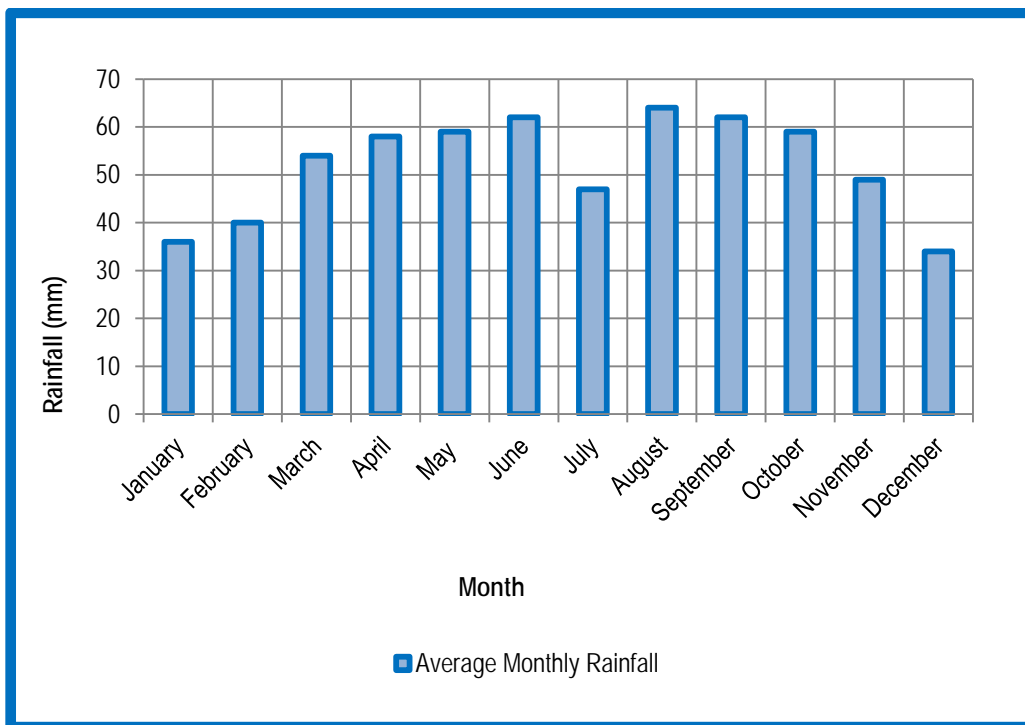


Figure 3.3: Average Monthly Rainfall in Port Elizabeth from 1961 to 1990.
(Source: South African Weather Services, 2003).

The CDC established an air quality monitoring programme in the Coega IDZ since 2009 (SRK, 2007, Zunckel *et al.*, 2010). The air quality monitoring programme consists of three stations located at the Saltworks, Amsterdamplein and Motherwell, which measure standard meteorological variables such as temperature, relative humidity, wind speed and wind direction (Figure 3.4). The Amsterdamplein station is located south of the R102 and the Coega Railway Station, in Zone 5 of the Coega IDZ. The station at Motherwell is located towards the north of the R102 and R335 intersection, towards the west of the Coega IDZ. The Saltworks station is positioned approximately 50 metres off the N2

National Highway, and opposite the Saltworks in the South (SRK, 2007; C&M Consulting Engineers, 2011; Zunckel *et al.*, 2010).

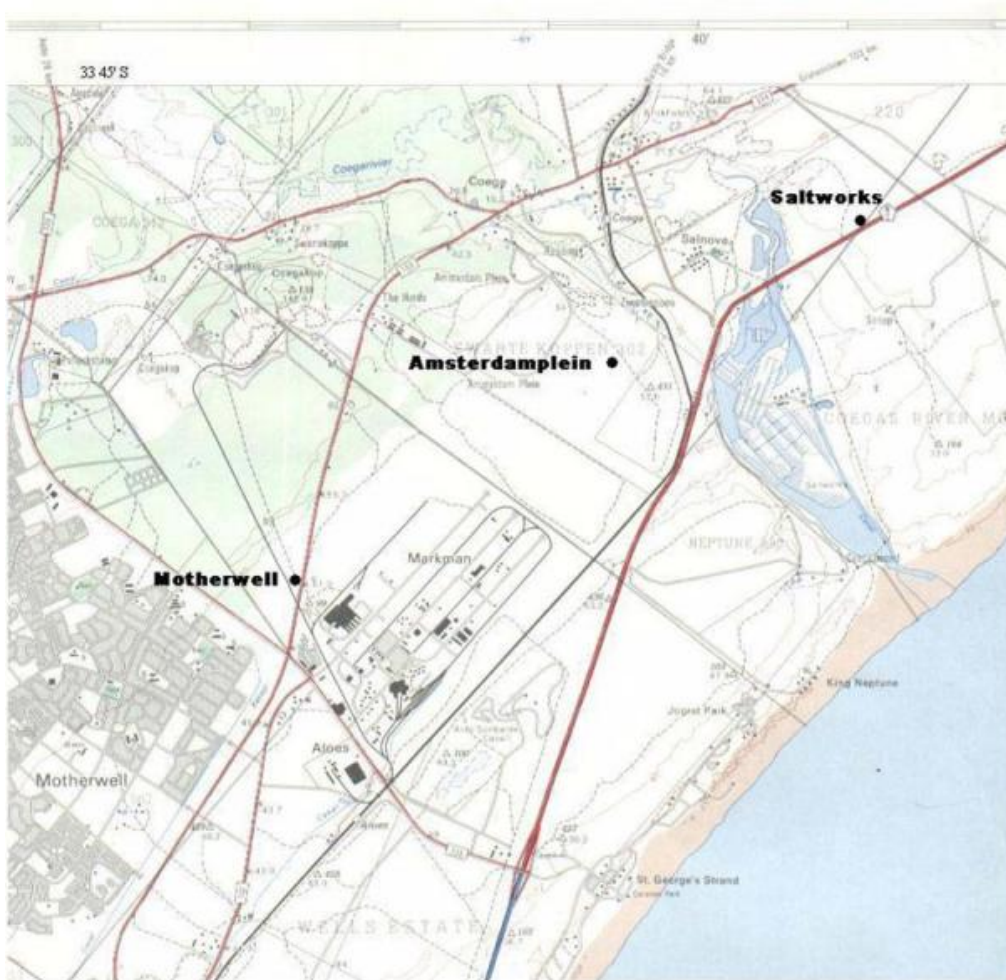


Figure 3.4: Location of the three air quality monitoring stations at Coega (Ecoserve, 2007)

Table 3.2 below illustrates the results of the meteorological monitoring (wind speed, ambient temperature and relative humidity) at the abovementioned three stations over a three year period extending from 2009 to 2011. The results are based on 10-minute averaged data.

Table 3.2: Wind Speed, Relative Humidity and Ambient Temperature Measurements at the Amsterdamplein, Motherwell and Saltworks station

Variable	Year	Amsterdamplein	Motherwell	Saltworks
Wind Speed (m/s)	2009	4.20	3.70	3.87
	2010	4.03	2.85	2.72
	2011	3.75	3.28	3.38
Ambient Temperature (°C)	2009	20.20	17.56	17.23
	2010	13.16	18.83	18.39
	2011	17.69	17.92	16.93
Relative Humidity (%)	2009	59.92	70.49	52.11
	2010	65.54	72.14	57.37
	2011	65.84	72.97	73.10

3.3.2 Landscape and Geology

3.3.2.1 Landscape

The majority of the study area has been previously disturbed and has been degraded as a result of agricultural activities which took place on the land prior to the establishment of the Coega IDZ. The vegetative cover has been transformed from its original pristine state, resulting in a disturbed environment. In addition, the presence of infrastructural components, particularly in the form of overhead electrical reticulation infrastructure also contributes to the disturbed character of the site. Listed below are two major landscape types that are distinguishable in the proposed project zone of ecological disturbance and visual influence:

- the raised coastal plain, and
- the sandy coastline and coastal dunes.

The raised coastal plain is located 50 to 70 m above mean sea level and comprises the main inland area of the IDZ.

The sandy coastline and coastal dunes is an area which includes the lower reaches of the Coega River, the Port of Ngqura and the immediate shoreline along the Algoa Bay area. The dunes along the coastline and at the lower reaches of the Coega River can be divided into vegetated (fixed) dunes and mobile dunes respectively and rise up to an elevation of 50 to 60 m on the eastern side of the port. These dunes lead to the raised coastal plain as described above, and form a visual barrier, separating the coastline from the elevated inland area of the Coega IDZ and the N2 highway.

3.3.2.2 Geological setting

The study area is underlain by a wide range of sedimentary rocks of the Palaeozoic Table Mountain Group, the Mesozoic Uitenhage Group and the Caenozoic Algoa Group (Almond, 2010). More specific, the geology of the study area is characterised by coastal limestone overlaid by windblown calcareous sands. Unconsolidated sand, alluvium and fluvial sediments dominate the Coega River floodplain, whilst coastal limestone occurs in the regions landward of the N2 national road (Terreco,



2006; CES, 2008). The extensive cover offered by the surface calcrete and superficial drift within the study area results in low levels of bedrock exposure (Almond, 2010). The soils within the study area are classified as deep, red, lime-rich, sandy clay loams (SRK, 2007; CES, 2008). Topsoil is evident by a generally thin layer, with average depths ranging between 100 mm and 200 mm (CES, 2008).

Research (SRK, 2007; CES, 2008 & Almond, 2010) indicate that the study area is underlain by the Salnova, Alexandria, Kirkwood and Sundays River Formations. The Coega fault is a major structural feature in the area. It extends from the Groendal Dam near Uitenhage towards the coast in an easterly direction (CES, 2001, 2008; SRK, 2007), and is part of the main southern fault system which crosses South Africa from east to west (CDC, 2011, *pers. comm.*).

3.3.3 Surface Water and Groundwater

3.3.3.1 Surface water

The study site is located approximately 25 – 30 km north of the Port Elizabeth CBD, located near the Coega River. The majority of the development falls within the Quaternary catchment M10C. The Coega River, which is a relatively small sand-bed river, covers a catchment area of 550 km² and is the most significant surface water body in the study area (SRK, 2007; Scherman, 2010). Please refer to Chapter 9 for further details on surface water.

3.3.3.2 Groundwater

According to SRK (2007 & 2010), the study area is underlain by four separate aquifers, comprising a shallow primary alluvial aquifer, an intergranular aquifer system of the Alexandria Formation, an aquiclude which contains mudstones of the Kirkwood Formation (Uitenhage Group) and a deep secondary artesian aquifer formed by the sandstones and quartzites of the Table Mountain Group. Please refer to Chapter 8 for further details on groundwater.

3.3.3.3 Surface water and groundwater monitoring

In 2000, the CDC initiated a surface water and groundwater monitoring programme of the Coega River system in order to monitor and determine the baseline soil and water quality conditions prior to the development of the Coega IDZ (Macleary, 2004; Scherman, 2010). Between 2000 and 2001, the baseline monitoring programme consisted of eight groundwater monitoring boreholes, four mini-piezometers, and six surface water monitoring sites (Scherman, 2010). In March 2008, several monitoring sites were established and located in the vicinity of a proposed Manganese Smelter, along the Coega River (Scherman, 2010). Some of the groundwater and surface water monitoring sites were located at the Coega Brick, Post Office and Swartkoppe Farm (Scherman, 2010). It is understood that groundwater and surface water monitoring takes place six times a year at six borehole sites and 12 surface water points along the Coega River respectively (SRK, 2011). In addition, sediment sampling takes place annually at 15 points along the Coega River (SRK, 2011). The groundwater and surface water sites are analysed for several physical parameters (such as pH, turbidity, conductivity, hardness, dissolved oxygen, colour, and total dissolved solids), and typical chemical and organic parameters (including Manganese) (Scherman, 2010). Figure 3.5 below illustrates the locations of the groundwater, surface water and sediment sampling stations as at June 2009 (SRK, 2011).

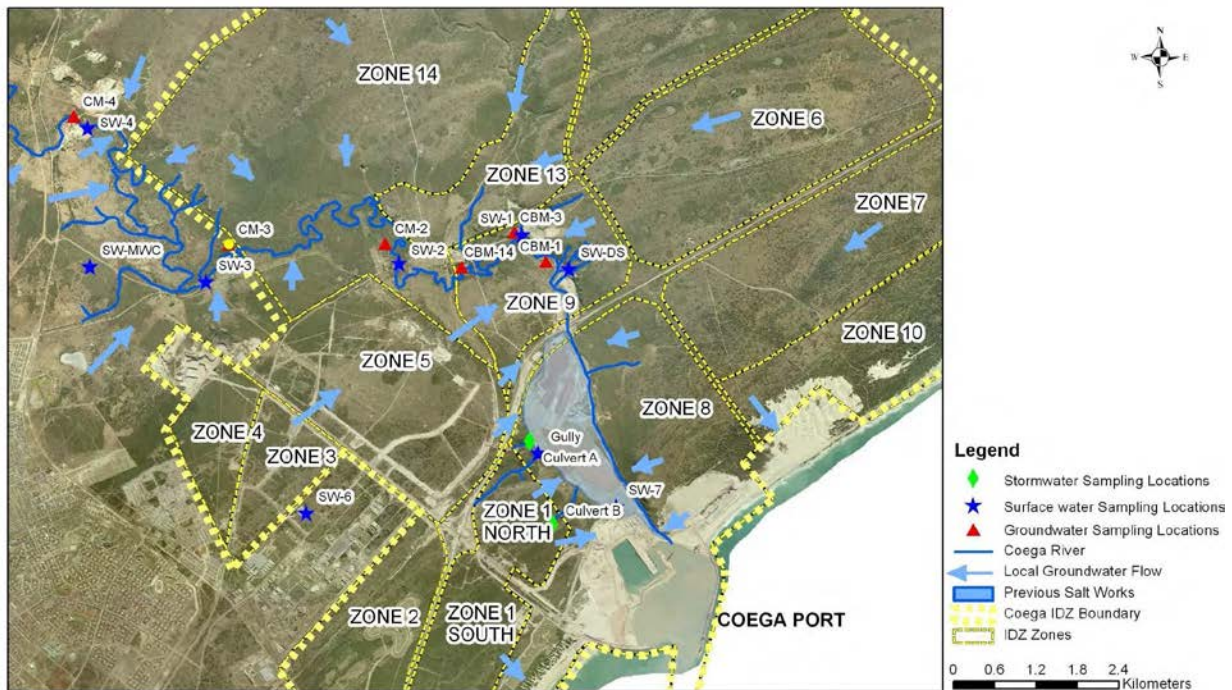


Figure 3.5: Locations of the sampling points for surface water, groundwater and sediment as part of the CDC monitoring programme (SRK, 2011).

3.3.4 Air Quality

The ambient air quality in the Coega area is categorised as relatively good, complying with ambient air quality standards (CES, 2000; SRK, 2007; Zunckel *et al.*, 2010). The area is well ventilated with a high frequency of strong westerly winds and pollutants seldom accumulate.

Currently there are no significant sources of air pollution in the Coega IDZ and air quality in the area is affected to some extent by emissions (mainly SO₂, particulate matter and fluoride) from (a) Alcoa Bricks located along the western periphery of the IDZ and currently being decommissioned (CDC, 2011, *pers. comm.*), (b) industrial activity in the Markman industrial area located on the south-western border of the Coega IDZ, (c) emissions from traffic on the nearby N2 and Old Grahamstown Road, (d) shipping emissions, (e) earthworks and construction in the Ngqura Port and (f) activities such as refuse and wood burning in the surrounding communities. The Markman Industrial Area contains an abattoir, two tanneries, and a foundry, which generate pollutants in the form of SO₂, particulate matter and odour. In addition, sparse vegetation cover and largely uncovered areas, particularly within the construction areas, are widespread within the Coega IDZ. Consequently, localised dust pollution is very likely, especially as a result of the moderate to strong winds that occur within the area. (SRK, 2007; Zunckel *et al.* 2010, C&M Consulting Engineers, 2011)

As mentioned in the preceding Climate section, the CDC commissioned an air quality monitoring programme in the Coega IDZ in 2009 with three air quality stations located at Amsterdamplein, Motherwell and the Saltworks. In addition to the measurement of standard meteorological variables mentioned previously, these stations also monitor nitrous oxides and sulphur dioxide (Figure 3.5). The monitoring station at Motherwell also measures ozone and particulate matter less than 10 microns (PM₁₀), whereas the remaining two stations measure the total suspended particulates. The



nitrogen dioxide, sulphur dioxide and particulate matter levels generally fluctuate during windy conditions; however the maximum 24-hour averages are within the limits of the National Ambient Air Quality Guidelines.

Please refer to Chapter 5 Air quality specialist study for further details.

3.3.5 Vegetation

The vegetation of the Eastern Cape is complex and is transitional between the Cape and subtropical floras. On a regional scale, the study area is located within the Subtropical Thicket Biome, known for its role in separating northern (summer rainfall) and southern (winter rainfall) floral regions. This biome extends from Mossel Bay in the West to Buffalo City (East London) in the East and reaches inland for roughly 100 to 200 km from the coast. The Terrestrial Ecology Research Unit (TERU) estimates this biome to include in excess of 1558 plant species of which 322 are endemic (Vlok & Euston-Brown, 2002).

On a local scale, the following two vegetation types are identified in the study area:

- Coastal and inland vegetation type, and
- Dune vegetation type.

Vegetation along the coastal band includes Algoa Dune Thicket and Colchester Strandveld and inland vegetation mainly consists of Grass Ridge Bontveld, Sunday Valley Thicket, Motherwell Karroid Thicket and Sundays Doringveld Thicket. Inland vegetation in an undisturbed state tends to form dense thickets in low-lying areas and valleys, while flat and ridged areas are characterised by grassland, fynbos and/or Karroid species interspersed with clumps of thicket species (Eyethu Engineers, 2006).

Motherwell Karroid Thicket is present north of the N2 along the slopes adjacent to the Coega River, where the proposed stockyard will be situated. The proposed compilation yard lies north of the N2 and east of the Coega River, dominated by Sundays Valley Thicket, along the steep slopes facing the Coega River. Grass Ridge Bontveld occurs on the level hilltops adjacent to the steep slopes and has a high conservation status. Estuarine vegetation is also present within the Coega River, which tends to be modified with high levels of existing transformation adjacent to the proposed conveyor route.

Recent studies, i.e. the Subtropical Thicket Ecosystem Project (Cowling *et al*, 2003) and the Nelson Mandela Bay Conservation Assessment and Plan (Stewart, 2007), provide conservation mapping and importance ratings for the study area and indicate that the vegetation communities present are also represented outside of the Coega IDZ. The following two vegetation types, Colchester Strandveld and Motherwell Karroid Thicket, are classified as endangered while all the other abovementioned vegetation types are classified as vulnerable.

The dune vegetation can be classed into three units common to the Eastern Cape coast, namely; Foredues and Hummocks, Dune Woodlands and Dune Grasslands. Dune vegetation tends to be highly invaded by Rooikrans (*Acacia cyclops*) with some pockets of indigenous vegetation remaining (Eyethu Engineers, 2006). The CDC is bound by the Record of Decision that was granted to them to remove all alien vegetation from the dunes to allow for the indigenous vegetation to regenerate.

Additional information on vegetation can be found in Chapter 6 Terrestrial ecology specialist study.



3.3.6 Fauna

3.3.6.1 Avifauna

The coastal birds and seabirds of Algoa Bay rely on the scattered special habitats provided by estuaries and river mouths, rocky shores, dune fields, reefs and the offshore islands. As mentioned above, the Coega IDZ is located in an ecological transition zone positioned at the western edge of the Subtropical Albany Thicket biome. To the west is the temperate Cape Floral Kingdom and inland is the dry Karoo biome. This, together with its coastal location that includes the Coega River Estuary and the salt pans, and the St Croix Island group results in the Coega IDZ having a diverse avifauna.

There are three Global Important Bird Areas in the vicinity, which include the:

- Swartkops Estuary and Salt pans 10 km to the south west,
- Alexandria Coastal Belt 18 km to the north east, and
- Algoa Bay Islands (St Croix and Bird Island group) immediately offshore of the Port of Ngqura (Barnes, 1998; Barnes *et al.* 2001).

Further details on avifauna are included in Chapter 7 Avifauna specialist study.

3.3.6.2 Terrestrial Fauna

Despite the emphasis placed on large mammals in the conservation literature, they make up less than 15 percent of the total mammal diversity in South Africa. The majority of mammals are small or medium-sized, with rodents being the most successful of all living mammals.

The reptile fauna and amphibian population of the Coega area is particularly diverse and rich. Most of the reptiles occur in the Succulent Thicket and riverine habitats, whilst fewer species are noted in the coastal dunes and estuarine habitats (SRK, 2007). Amphibians are important components of wetland systems, particularly ephemeral systems from which fish are either excluded or of minor importance. In these habitats, they are dominant predators of invertebrates, many of which may impact significantly on humans (e.g. as vectors of disease).

Information on the invertebrate fauna, apart from butterflies, is scarce. One endemic grasshopper (dunefields of Algoa Bay) and three butterfly species of interest have been recorded from the Coega area. Scorpions and Baboon Spiders are also relatively abundant in the area.

Additional information on terrestrial fauna can be found in Chapter 6 Terrestrial ecology specialist study.

3.3.7 Marine Environment: Port of Ngqura

Algoa Bay is the largest of a series of eastward-facing bays along the South Coast of South Africa. The Bird Island group of islands demarcates the eastern boundary of Algoa Bay, with Jahleel, St Croix and Brenton islands situated in the shallower central area. The mouth of the bay ranges between 60 and 70 km in width, whilst the depth is generally less than 50 m.

The Port of Ngqura is the third deepwater port in South Africa, together with Saldanha Bay and Richards Bay along the West and East Coasts respectively (NPA, 2011). Ngqura is positioned equidistantly from the aforementioned Ports of Richards Bay and Saldanha (TCP, 2008). Construction of the Port of Ngqura commenced in 2003 (TNPA, 2010), and operations commenced in October 2009 (Civil Engineering, 2010). The inner harbour consists of 1.8 km of concrete quay walls and a



section of undeveloped sandy coastline stretching 500 m (Dicken, 2010). Phase 1 of the port construction consisted of five berths (two container berths, one liquid bulk berth, and two multi-purpose or break-bulk berths) (TNPA, 2010). In terms of salinity, the ephemeral nature of the Coega River, as well as its dependency on rainfall events, causes the Port of Ngqura to be principally marine (Dicken, 2010). Figure 3.6 below illustrates the breakwaters of the Port of Ngqura.

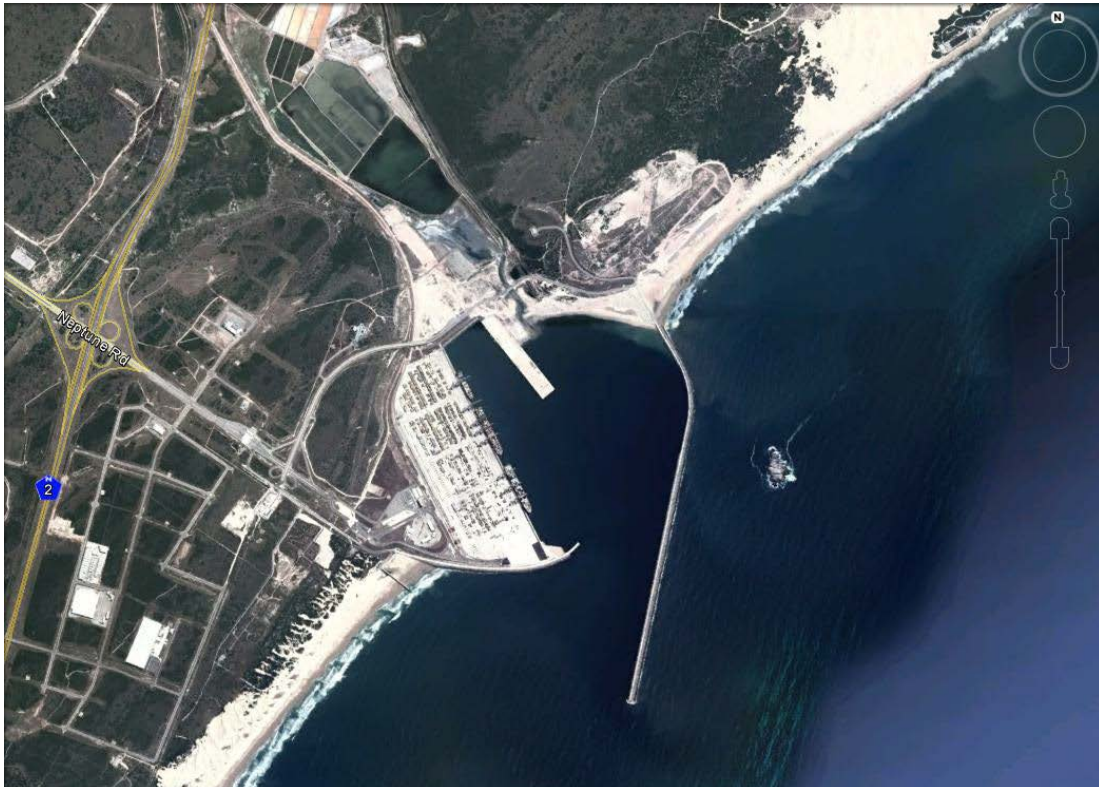


Figure 3.6: Aerial View of the Port of Ngqura (Google Earth, 2013).

A sand by-pass scheme has been established to curb the effects of the protruding port on the littoral drift along the coastline (PRDW, 2011c). The sand by-pass scheme was designed and implemented to control beach accretion along the updrift side of the Port of Ngqura, to prevent sedimentation in the harbour entrance, to prevent erosion along the downdrift side of the port, and to encourage continuous sediment transport along the coast (PRDW, 2011c). Sand that collects along the updrift section of the port is re-distributed on the downdrift side, approximately 3.4 km from the sand trap itself (PRDW, 2011c).

3.3.8 Physical Oceanography of Algoa Bay

The Agulhas Current, flowing south-westward with its core offshore of the continental shelf edge, forms the major open ocean influence (Schumann, 1998). The continental shelf width increases with distance south-westwards and concurrently the Agulhas Current also moves further offshore.

Currents measured in the immediate vicinity of the Port of Ngqura appear to be predominantly wind-driven (CSIR, 2007 & Roberts, 2010) and can reverse rapidly in response to changes in the wind.



Wave-driven currents predominate in the nearshore zone adjacent to the Port of Ngqura. Wave directions are dominated by the direction sector SSE – ESE.

The volume of sediment transported northward and eastward by longshore drift around Algoa Bay past the Coega River mouth is estimated at 150 000 – 200 000 m³/yr (Illenberger, 1997 in CSIR, 2007). The palaeo-valley of the Coega River is filled with discontinuous gravel, sand, silt, and clay layers (CES, 2001). Fine-grained sand (0.125 to 0.250 mm) is dispersed throughout the bay in shallow water. In general, coarse-grained sediments predominate in the deep water (Bremner 1991).

Please refer to Chapter 11 Marine ecology specialist study for further details.

3.3.9 Marine Biota

Marine ecosystems comprise a range of habitats each supporting a characteristic biological community. The important habitats in Algoa Bay are sandy beaches and surf zones, rocky shores on the adjacent Jahleel Island and in the vicinity of the abalone farm site east of the Ngqura port, the subtidal zone in the bay itself, the islands, the water body in Algoa Bay, and artificial surfaces and the water body in the port. These are all vulnerable in the event of a large scale product spill. Please refer to Chapter 11 Marine ecology specialist study for further details.

3.4 HERITAGE RESOURCES

A heritage study covering the entire IDZ (excluding Zone 8) was commissioned by the CDC in 2009 and 2010. This heritage study was compiled by Dr. John Almond and Dr. Johann Binneman who provided the palaeontological input and archaeological component, respectively. Ms. Jenny Bennie provided the Built Environment section of the HIA for the Coega IDZ and an overview of the cultural heritage resources. This heritage study is intended to provide a basis for project-specific EIAs in the IDZ and to provide location of significant heritage resources and indicate if they may be impacted by the proposed development. A summary of the draft results of the studies is provided below.

The area contained in the Coega IDZ has variable significance in terms of heritage resources, with evidence of Stone and Iron Age sites. The broader Eastern Cape region has historic significance due to its frontier location acting as an interface between hunter-gatherers, pastoralists and European settlers, thus it is expected that the proposed project area within the IDZ contained some degree of historical/cultural activity in the past. No culturally sensitive pre-18th century structures were observed in the designated zones although oral history (not required in this study) might show a variety of cultural groups (such as Early, Middle and Stone Age man, San, Khoekhoen and Black Xhosa speaking peoples) passing through the territory. The Trekboer, Dutch, and British 1820 Settlers, who also inhabited the area, left some remnants of their cultures in the form of buildings and demarcated grave sites identified within the Coega IDZ.

With regards to palaeontology, the Coega IDZ is underlain by sedimentary rocks that range in age from c. 470 million years ago to the present and are assigned to ten rock successions within the Palaeozoic Table Mountain Group, the Mesozoic Uitenhage Group and the Cenozoic Algoa Group. Most of these rock units contain fossil heritage of some sort but in most cases this is very limited. The notable exceptions are three marine successions, i.e. the Sundays River Formation, the Alexandria Formation, and coastal Salnova Formation. Important but rare fossils of dinosaurs and plants are also known from the Early Cretaceous Kirkwood Formation, but so far only outside the IDZ area. Levels of bedrock exposure within the Coega IDZ are generally very low due to extensive cover by superficial drift (e.g. soil, alluvium, in situ weathering products) as well as by surface calcrete



(pedogenic limestone) and dense vegetation. Man-made excavations such as road and railway cuttings, stormwater drainage channels, reservoirs and quarries, of which there are a considerable number here, often provide the best opportunities to examine and sample fresh, potentially fossiliferous bedrock.

The archaeological component (Binneman, 2010) of the IDZ heritage study reports that archaeological sites and materials have been recorded throughout the Coega IDZ. Shell middens, Later and Middle Stone Age stone tools have been found along the coast and adjacent sand dunes. Occasional Earlier, Middle and Later Stone Age stone tools were found in all of the inland zones. In general these stone tools were in secondary context and not associated with any other remains. Although the stone tools appear to be of low cultural sensitivity, other archaeological sites/materials may be exposed when the vegetation and top soil are removed (for example human remains). Binneman (2010) notes that although the IDZ area was occupied extensively in the past (judging from the large quantity of flaked stone randomly scattered throughout the area), it would appear that the area is relatively poor in large and important archaeological sites. However, many sites/materials and human remains may be covered by soil and vegetation.

Please refer to Chapter 14 Heritage impact assessment for further details.

3.5 SOCIO-ECONOMIC

3.5.1 Demographics and human development in the Eastern Cape Province

Statistics SA (2011) carried out mid-year population estimates in 2011. The mid-year population in South Africa in 2011 was estimated at 50.59 million, with the Eastern Cape containing the third largest mid-year population estimated at 6.83 million (Statistics SA, 2011). This represents 13.50 % of the total mid-year population of South Africa (Statistics SA, 2011). The Eastern Cape Province is subdivided into six district councils and one metropolitan municipality, which is the NMBM. The Eastern Cape Province is the second largest province in South Africa, covering approximately 169 580 square kilometres, or 13.9% of South Africa's total land area. With more than six million people, the Eastern Cape has the third largest provincial population. According to the Statistics SA Census (2001), the statistics reflect a large black population, with low incomes and high levels of unemployment.

In 2006, the Eastern Cape held an unemployment rate of 22.1 % (CES, 2010). A total of 16.6 % of the Eastern Cape Gross Domestic Product is sourced from manufacturing, 19.4 % is sourced from the finance, real estate and business sector, and 13.1 % is sourced from the wholesale, retail, trade, hotels and restaurants (CES, 2010).

Figure 3.7 below illustrates the results of the Census in 1996 and 2001, as well as the Community Survey in 2007 for the Eastern Cape. The Census carried out in 1996 and 2001 established that the Eastern Cape contained a total population of 6.13 million and 6.28 million respectively (Statistics SA, 2007a). In 2007, Statistics SA conducted a community survey in all provinces. The results indicated that in 2007, the Eastern Cape contained a total population of 6.53 million (Statistics SA, 2007a). Figure X indicates that the population of the Eastern Cape displayed a rising trend from 1996 to 2007. An approximate 2.1 % increase in population occurred from 1996 to 2001, whilst a 4 % increase occurred from 2001 to 2007 (Statistics SA, 2007a). In addition, the number of households enumerated during the Census in 1996 and 2001 were 1.30 million and 1.48 million respectively (Statistics SA, 2009). In addition, the number of households noted during the Community Survey equated to 1.59 million (Statistics SA, 2009).

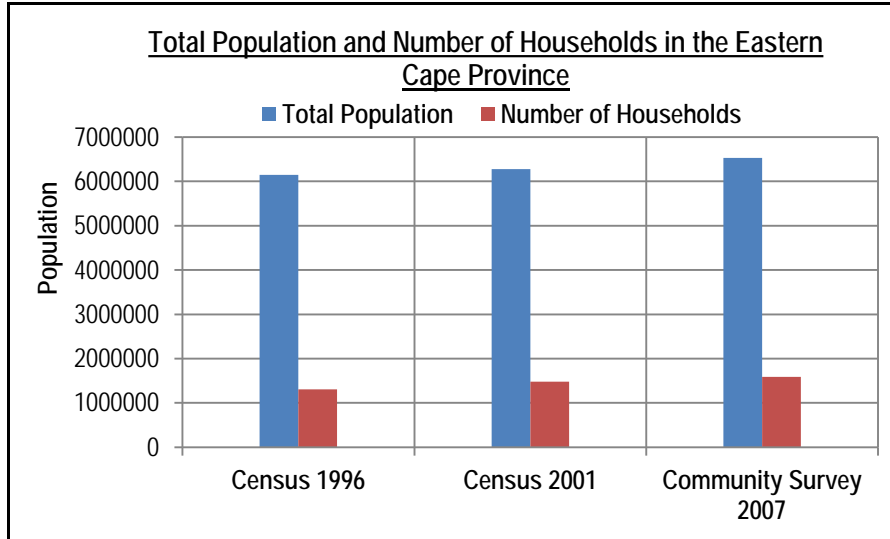


Figure 3.7: Population Statistics of the Eastern Cape in 1996, 2001 and 2007
(Data Source: Statistics SA, 2007a and 2009).

The percentage distribution of the population per each population group for the Eastern Cape is shown in Figure 3.8 below. The Census carried out in 1996 revealed that the total population comprised of 86.1 % Black African, 7.6 % Coloured, 0.3 % Asian or Indian and 5.4 % White (Statistics SA, 2007b). The Census conducted in 2001 indicated that the total population comprised 87.5 % Black African, 7.4 % Coloured, 0.3 % Asian or Indian and 4.7 % White (Statistics SA, 2007b). The total population distribution during the Community Survey carried out in 2007 was similar to the 2001 census (Statistics SA, 2007b).

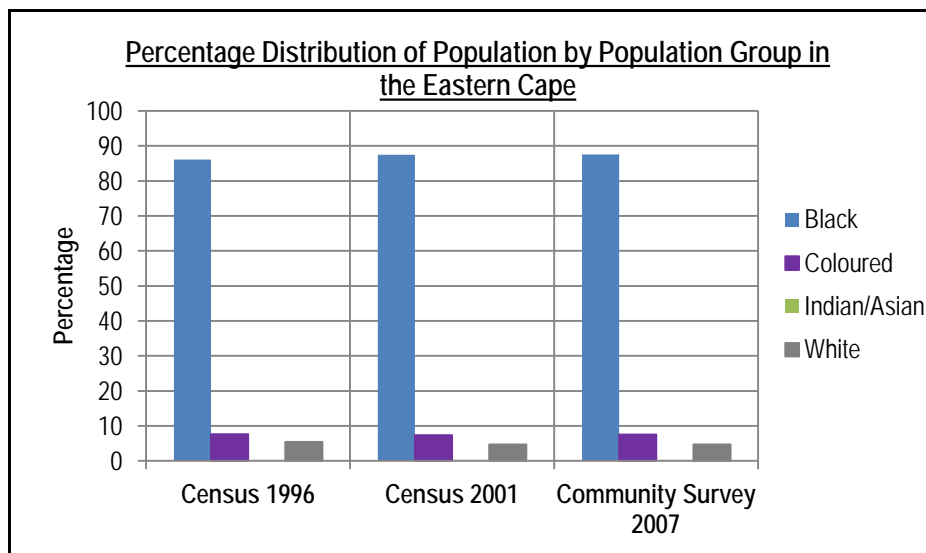


Figure 3.8: Percentage Distribution of Population by Population Group in the Eastern Cape in 1996, 2001 and 2007
(Data Source: Statistics SA, 2007b).

3.5.2 Demographics and human development in the NMBM

According to the NMBM Integrated Development Plan Review (NMBM, 2010), Nelson Mandela Bay covers an area of 1 950 square kilometres. Port Elizabeth is South Africa's second oldest city and is also the commercial capital of the Eastern Cape. Uitenhage and Despatch also form a part of the NMBM.

The Census carried out in 2001 specified that the NMBM contained a total population of 1 005 779, whilst the Community Survey carried out in 2007 calculated a total population of 1 050 930 (Statistics SA, 2009). This indicates a 4.3 % increase from 2001 to 2007 (Statistics SA, 2009). In terms of population groups, the total population calculated during the 2007 Community Survey consisted of 60.40 % Black, 22.56 % Coloured, 16.12 % White, and 0.92 % Indian or Asian (Statistics SA, 2009), as illustrated in Figure 3.9 below.

With regards to a gender breakdown, 48.91 % of the total population of the NMBM in 2007 was classified as male, whilst the remaining 51.09 % was female (Statistics SA, 2008). In terms of population groups, 8.30 % of the total population of the NMBM in 2007 was White female, 7.82 % was White male, 30.67 % was Black female, 29.73 % was Black male, 11.87 % was Coloured female, 10.89 % was Coloured male, 0.44 % was Indian or Asian female and 0.47 % was Indian or Asian male.

Figure 3.10 illustrates the population distribution according to the age groups of the NMBM in 2007. The majority of the population fell within the 20 – 24 age group, representing 10.65 % of the total population of the NMBM in 2007 (Statistics SA, 2008). Approximately 4229 people were within the 85 and above age group, representing a minimum of 0.44 % of the total population of the NMBM in 2007 (Statistics SA, 2008).

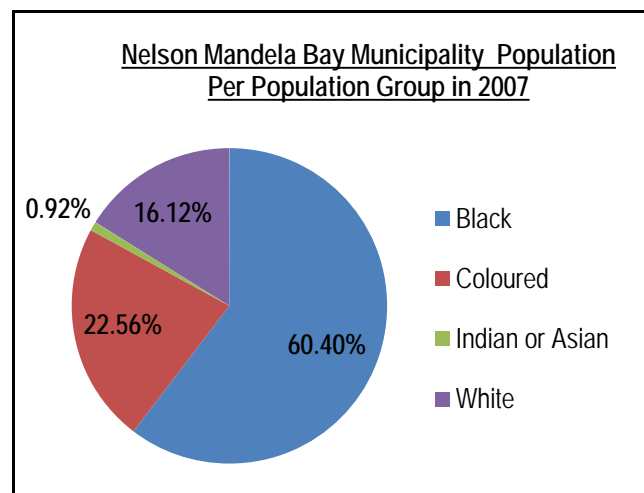


Figure 3.9: Percentage Distribution of Population by Population Group in the Nelson Mandela Bay Municipality in 2007
(Data Source: Statistics SA, 2008).

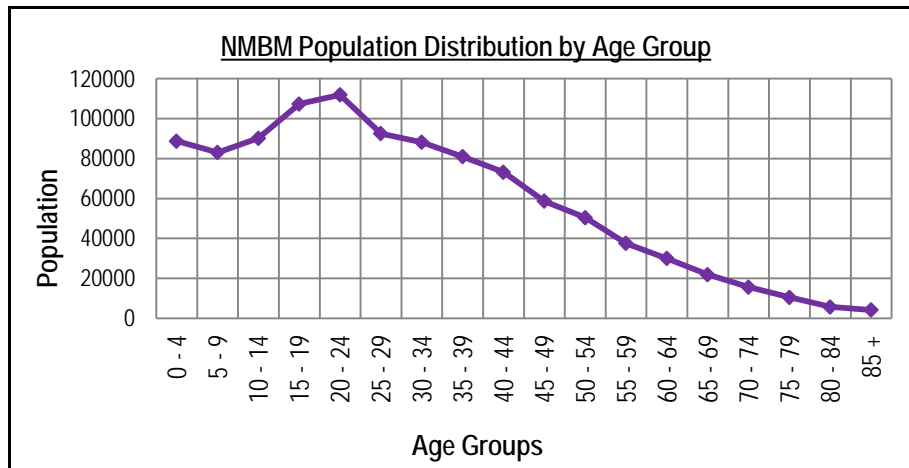


Figure 3.10: Population Distribution of the NMBM according to Age Group
(Data Source: Statistics SA, 2008).

In 2010 there were 4 689 new cases of TB identified in the municipality and there were 1156 TB cases per 100 000 of the population. Seventeen percent of women who visited ante natal clinics in the municipality in 2010, tested positive for HIV. About 3% of children under the age of 5 years had severe malnutrition in 2010.

Nelson Mandela Bay is the economic powerhouse of the Eastern Cape Province, and has experienced a 20 percent increase in Gross Geographic Product (GGP) over the last five years (NMBM, 2008). The biggest contribution to the economy is from community, social and personal services (27.3%) followed by manufacturing (25.8%) and trade and accommodation (16.3%). It is the hub of automotive manufacturing in South Africa, which accounts for 50 percent of local manufacturing. The NMBM has an unemployment rate of more than 35 % (NMBM, 2010). The results of the Community Survey conducted in 2007 indicate that approximately 270 296 people are employed and 179 920 people are unemployed (Statistics SA, 2008). Although the unemployment rate in Nelson Mandela Bay has shown a steady decline since 1994, it remains higher than the national average for South Africa. Communities in the NMBM range from relatively affluent to highly deprived. The deprivation index of the area was 1.55 in 2007, which was the lowest (best) in the Eastern Cape. Deprivation is influenced by factors such as unemployment rate and access to goods and services.

The motivation behind the Coega IDZ development, regarded as a keystone development in the Eastern Cape, came from the National Government's Growth, Employment and Redistribution (GEAR) strategy. It is the largest single infrastructure development project undertaken in South Africa since 1994. When fully functional, the port is expected to become a significant catalyst to the economic growth of Nelson Mandela Bay and the region. Current and future investments are expected to create more jobs and stimulate the economy. The economy of the Eastern Cape has grown faster than the national economy over the past few years.

According to the Eastern Cape Development Corporation (ECDC), the manufacturing sector increased by 21 percent in real terms from 1998 to 2001, compared to 9 percent for South Africa as a whole. The Eastern Cape Province manufacturing sector is well integrated into the world economy. Nearly half of the 120 large enterprises are part of international corporations, and over 50 percent of the large enterprises are exporting more than 25 percent of their output (CDC, 2004).



Considering that the IDZ is earmarked to increase the manufacturing sector and is one of the main contributors to the GGP, the proposed project is relevant in the context of supporting much needed growth in the manufacturing sector thereby increasing employment opportunities.

3.5.3 Initiatives to promote economic development

In order to reverse the above trends and stimulate and support socio-economic development, a number of initiatives are currently underway in the NMBM and surrounding areas. Key amongst these are the establishment of the Coega IDZ and the development of the Port of Ngqura, support services for the development of small-medium and micro-enterprises (SMMEs), and corporate social investment programmes. In addition, the expansion of the Addo Elephant National Park and the growth of the ecotourism sector in the Eastern Cape are being promoted for conservation value as well as for the contribution that tourism and conservation initiatives can make to employment creation.

3.5.4 Labour Management

- All construction activities at the Coega IDZ and at the Port of Ngqura require full compliance to the Coega Zone Labour Agreement (the Coega ZLA);
- The Coega ZLA was negotiated between the Construction Industry Employer Associations and the Construction Industry Trade Unions and concluded on 25 September 2002. This agreement was subsequently endorsed by both the Coega Development Corporation and Transnet National Ports Authority for application on all construction sites within the confines of the Coega IDZ and the Port of Ngqura;
- In order to maximise local labour opportunities, preference for employment in Civils and Building Task Grades A to D (Annexure H1 of the Coega ZLA) and MEI Category 1 to 3 (Annexure H2 of the Coega ZLA) shall be given to local candidates residing in Nelson Mandela Bay who are in possession of appropriate qualifications, skills or experience in the construction or contracting industries.
- Recruitment of all additional local labour shall only take place through the Recruitment & Induction Centre provided by the Coega Development Corporation.
- Contractors will be entitled to staff a project on the IDZ with seconded labour for core skills in categories other than those referred to above, through the Secondment approval process as managed by the Recruitment & Induction Centre provided by the Coega Development Corporation.
- The wage schedules to the Coega ZLA are updated annually to reflect Industry wage increases granted. Annexure H1 is based on the SAFCEC-NUM Agreement which is typically effected from 01 September annually, whilst the Annexure H2 increases negotiated through the Metal & Engineering Industries Bargaining Council, which is typically effected from 01 July annually (CSIR, 2011).

3.6 LAND-USE CONTEXT AND SENSE OF PLACE

Land-use in the Coega IDZ is decidedly industrial, with limited, though expanding, residential development in the adjacent areas of Motherwell and Bluewater Bay (Figure 3.11). The 11 000 hectares of land incorporated into the Coega IDZ is specifically zoned for the following sectors: Automotive, Agro Processing, Metallurgical, Educational and Training, Petro Chemical, General Manufacturing, Business Process Outsourcing and Energy. As a result of this extensive industrial



development and the resultant encouragement of adjacent residential areas, the “sense of place” of the Coega area is progressively altered from a coastal/rural quality to an industrial zone.

Informal dwellings located across the unfenced graveyard along the railway line in Zone 13 (on Transnet land) and near the Coega Hotel were identified through the cultural heritage specialist study.

Towards the north and north-east of the IDZ, the landscape assumes a more rural character with less transformation of the natural landscape and vegetation. The land is primarily vacant, but has been earmarked for low density residential developments/resorts/estates. These developments will create a buffer or transition between the IDZ and the Addo Elephant National Park (AENP) and Colchester.

Remainder of Farm Tankatara Trust 643 borders the Coega IDZ to the south and the AENP to the north. Proposed development at this location includes an Eco Residential Development comprising low density residential and eco-residential development with 752 units spread across the Tankatara property which adds up to approximately 4500 ha in size. Proposed uses will also include a school, game farm and hotel. It is however understood that the application for the proposed development has been withdrawn at this stage. Tankatara Farm also forms part of the Sunday’s River Valley Thicket, Dunefields and Coega Bonteveld Conservancy of which one of the objectives is to manage the Kudu population sustainably. As mentioned previously, Transnet intends to purchase a portion of the Tankatara land for the construction of the compilation yard to the north east of the Coega IDZ, and rezoning will therefore be required.

The current NMBM land use policy (i.e. Rural Development Policy) indicates that the properties adjoining the IDZ to the north and west fall within the ‘Agricultural Development Zone’. This classification enables, in addition to agricultural land uses, more intensive land uses including; residential estates at a density of two units per 10 ha (provided that ‘footprint development’ is utilised), wedding venues including overnight accommodation, nurseries, tourist facilities and mining (CDC, 2010). Given the NMBM’s policy relevant to the adjoining properties as well as current land proposals surrounding the IDZ, it is clear that within the near future the IDZ will be surrounded by more intensive land uses than the current low intensity agricultural activity.

The higher intensity land uses will make it more costly and cumbersome to expand the IDZ activities beyond the current boundary. In addition, the proposed land uses will invariably introduce higher human occupation of these areas, which may lead to constraints being placed on the location of intensive industrial activities in close proximity. (CDC, 2010)



3.7 COEGA OPEN SPACE MANAGEMENT PLAN

An open space management plan (OSMP) was developed for the Coega IDZ and formally approved by the national Department of Environmental Affairs (DEA) as part of the conditions of environmental authorisation granted for the IDZ. The Coega Open Space Management Plan, composed of primary, secondary and tertiary networks, provides for a number of different uses. The primary network area, which allows for the conservation of a number of vegetation types and preservation of important ecological processes, has been designed to be representative of all plant communities and ecological processes occurring within the Coega IDZ as well as allowing for linkages to the greater Nelson Mandela Bay Conservation Assessment and Plan (NMB CAP). One of the objectives of the OSMP is to provide viable corridors between habitats in the IDZ to allow migration of animals and as such, the OSMP incorporates areas of highest ecological value within the IDZ (e.g. areas of Mesic Succulent Thicket and Bontveld vegetation). This plan has been updated several times over the past 8 years, and the current approved version is Revision 9 (Figure 3.11a). However, the proposed project has taken into consideration CDC's planning objectives and proposed changes to the OSS as reflected in Revision 10 of their future planned open space network (Figure 3.11 b).

The intention of creating open spaces within the IDZ is to protect cultural and ecologically sensitive areas while stimulating passive and active recreation in the IDZ. Accordingly, the objective of the OSMP is to create an effective management system for open spaces in the IDZ and to provide specific management guidelines, based on sound ecological principles, for the management of ecological and cultural resources present within the IDZ.

Of concern associated with the proposed project, is that there will be additional fragmentation of designated Open Space areas within the IDZ OSMP. Further details on the OSMP can be found in Chapter 6 Terrestrial ecology specialist study.



3.8 BIODIVERSITY PLANNING FRAMEWORKS

The biodiversity planning documents (at national, provincial and local scale), with relevant vegetation units and their conservation status, are provided in Table 3.3. Implications of these frameworks for this proposed project are discussed in Chapter 6 of this report.

Table 3.3 Biodiversity planning resources

BIODIVERSITY PLANNING RESOURCE	VEGETATION UNIT	STATUS
The Vegetation of South Africa Lesotho and Swaziland (VegMap; Mucina & Rutherford)	Coega Bontveld Sundays Thicket Cape Estuarine Saltmarsh (Transformed) Algoa Dune Strandveld (Transformed)	Least threatened Least Threatened Least Threatened Least Threatened
National Spatial Biodiversity Assessment (NSBA)	Coega Bontveld Sundays Thicket Cape Estuarine Saltmarsh (Transformed) Algoa Dune Strandveld (Transformed)	Least threatened Least Threatened Least Threatened Least Threatened
Eastern Cape Biodiversity Conservation Plan (ECBCP)	CBA 2 (Compilation Yard) CBA 1 (Stock Yard and Conveyor)	Near Natural Landscapes Natural Landscapes
Subtropical Thicket Ecosystem Project (STEP)	Grassridge Bontveld Sundays Valley Thicket Motherwell Karroid Thicket Algoa Dune Thicket (Transformed) Estuarine Saltmarsh (Transformed)	Currently NOT Vulnerable Currently NOT Vulnerable Vulnerable Vulnerable Critically Endangered
Cape Action for People and the Environment (CAPE)	Sundays Mesic Succulent Thicket	N/A
Nelson Mandela Bay - Conservation Assessment & Plan (NMB CAP)	Grassridge Bontveld Sundays Valley Thicket Motherwell Karroid Thicket Algoa Dune thicket (Transformed) Coega Estuary and Floodplain	Vulnerable Vulnerable Endangered Vulnerable Critically Endangered

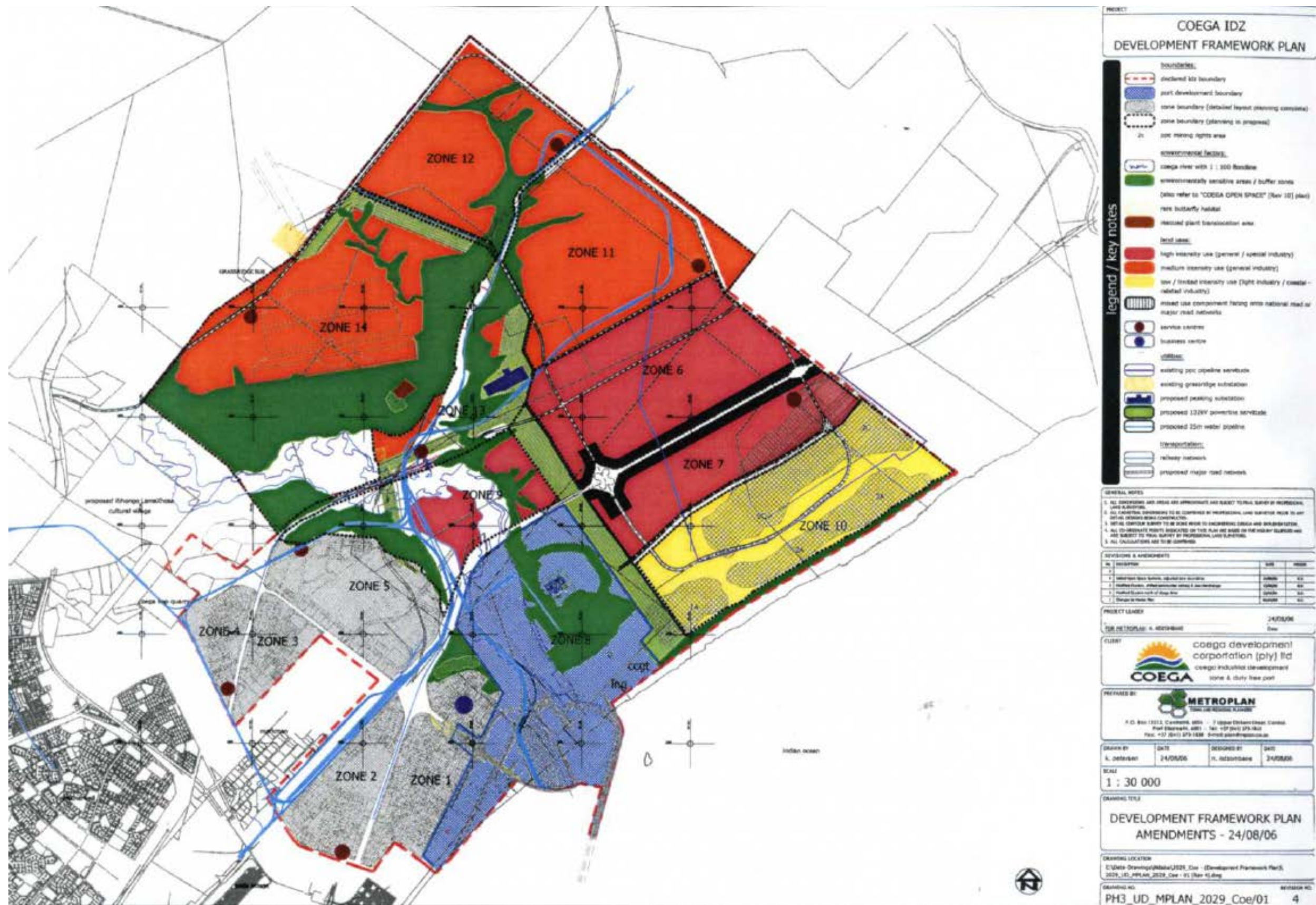


Figure 3.11: Land Use planning within the Coega IDZ (Metroplan, 2006)