ESKOM HOLDINGS SOC LTD

PROPOSED DEVELOPMENT OF THE RICHARDS BAY COMBINED CYCLE POWER PLANT (CCPP) AND ASSOCIATED INFRASTRUCTURE ON A SITE NEAR RICHARDS BAY, KWAZULU-NATAL PROVINCE

VISUAL IMPACT ASSESSMENT REPORT

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1 INTRODUCTION

1.1 GENERAL

This Visual Impact Assessment (VIA) report forms part of the Scoping and Environmental Impact Assessment that is being undertaken for the proposed development of the 3000MW Combined Cycle Power Plant (CCPP) in Richards Bay by Savannah Environmental (Pty) Ltd on behalf of Eskom Holdings SOC Ltd (Eskom).

In terms of the amended National Environmental Management Act (NEMA) Act No. 107 of 1998, the proposed development requires environmental authorisation. A key impact to be assessed comprises the visual impact that the facility will have on surrounding areas.

This VIA report has been prepared for inclusion in the project EIA report following the approval of the Scoping report.

The site investigation was undertaken in December 2017. The key issue regarding the timing of the site investigation is that it is undertaken during a period of clear weather. This enabled key landscape features to be identified more easily over the greatest distance and for the assessor to consider the project under the worst-case conditions in terms of likely maximum visibility.

From personal experience of visiting Richards Bay on numerous occasions since the site visit, it is the author's opinion that the visual environment has not changed significantly which means that the original assessment remains valid.

1.2 PROJECT LOCATION AND ALTERNATIVE SITES

The proposed site is located adjacent and to the south west of the existing Mondi Plant within the Richards Bay Industrial Development Zone (Phase 1D), and approximately 3.5km west south west of the Richards Bay Town Centre. The affected properties are Portion 2 of erf 11376 and Portion 4 of erf 11376.

The project site is comprised of Portion 2 and Portion 4 of Erf 11376 located within the Richards Bay IDZ Phase 1D, KwaZulu-Natal

The site is indicated on the Site location Plan (Map 1).

1.3 PROJECT CONTEXT

The project context was confirmed during the site visit.

The proposed site is located to the west of Richards Bay within an area that is planned for heavy industry (Richards Bay IDZ Phase 1D) and immediately adjacent to existing heavy industrial installations including the Mondi Paper Mill.

Existing heavy industry is likely to screen the development from areas to the east and north east.

The main southern access into Richards Bay from the N2, the John Ross Highway (R34) runs close and to the south of the proposed site.

The N2 Freeway runs approximately 5km to the west of the proposed site.

The western end of the R34 corridor immediately east of the N2 has recently been developed with offices, a hotel and a new car dealership. There are also a number of vacant sites so this development node is likely to expand further.

An extensive number of overhead HV power lines run parallel with and on the northern side of the R34 between the road and the proposed site.

Whilst large sections of the landscape particularly to the south of the R34 are agricultural in nature, in the vicinity of the site and further east, the overriding landscape character is derived from the heavy industrial installations that are located to the north.

1.4 BACKGROUND OF SPECIALIST

Jon Marshall qualified as a Landscape Architect in 1978. He is also a certified Environmental Assessment Practitioner (EAP) of South Africa. He has been involved in Visual Impact Assessment over a period of approximately 30 years. He has developed the necessary computer skills to prepare viewshed analysis and three-dimensional modelling to illustrate impact assessments. He has undertaken visual impact assessments for major buildings, industrial developments, mining and infrastructure projects and has been involved in the preparation of visual guidelines for large scale developments.

Jon has also undertaken work in Richards Bay as part of a planning team that reviewed development options for the Richards Bay Water Front. He also undertook the drafting of the original Richards Bay IDZ Environmental Impact Assessment Report and has undertaken numerous other projects within the area. He is therefore familiar with the area.

A brief Curriculum Vitae outlining relevant projects is included as **Appendix I.**

1.5 TERMS OF REFERENCE AND RELEVANT GUIDELINES

The brief is to assess the visual impact that the facility will have on surrounding areas.

Work has been undertaken in accordance with the following guideline documents;

a. The Government of the Western Cape Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (Western Cape Guideline), which is the only local relevant guideline, setting various levels of assessment subject to the nature of the proposed development and surrounding landscape, and

b. The Landscape Institute and Institute of Environmental Management and Assessment (UK) Guidelines for Landscape and Visual Impact Assessment which provides detail of international best practice (UK Guidelines).

Together these documents provide a basis for the level and approach of a VIA as well as the necessary tools for assessment and making an assessment legible to stakeholders.

The Visual Assessment Scoping Report found that the affected landscape is not likely to be sensitive to possible changes in view due to the proposed development.

It also found that because development of this site is unlikely to significantly extend the influence of industry over the landscape surrounding Richards Bay and because the

proposed development seems unlikely to have a major influence in terms of changing the nature of views, it seems unlikely that there will be any visual impacts that cannot be readily mitigated.

Largely due to the nature of the proposed development, the Western Cape Guidelines indicate that a moderate impact might be expected. If a moderate impact is predicted then a Level 3 Assessment should be undertaken.

A Level 3 Assessment requires the following input;

- Identification of issues raised in scoping phase, and site visit;
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Inclusion of potential lighting impacts at night;
- Description of alternatives, mitigation measures and monitoring programmes.
- Review by independent, experienced visual specialist (if required).

1.6 ISSUES IDENTIFIED

Anticipated issues related to the potential visual impact of the proposed project that were identified at the scoping stage include the following:

a) The proposed development could negatively impact on the landscape character of the area. From the desktop analysis, the landscape character is likely to vary including developed and industrialised landscapes as well as rural and natural landscapes. However, the proposed site is located within an existing heavy industrial area. The EIA phase will focus on the extent to which this development will further industrialise rural and natural landscapes.

b) The proposed development could have a negative impact on urban areas. The desktop analysis indicates that distance and the VAC of the landscape is likely to help mitigate this possible impact.

c) Whilst the area around Richards Bay is developed, this is not highly obvious from the coast or out to sea as a result of an extensive coastal dune system that appears relatively natural despite including areas of forestry plantation that are present. Development of the proposed site is unlikely to alter this situation. From the site visit, the proposed development will not be obvious from the coast or from out to sea. **This issue has therefore not been considered further**.

d) There are eight protected areas within the approximate limit of visibility of the development. The desktop analysis indicates that the majority of these areas are likely to be unaffected although, the development may be visible from within the Richards Bay Game Reserve.

e) The proposed development could be visible from routes throughout the area. From the desktop analysis it is anticipated that some of these routes will have tourism significance although they are all currently impacted by industrial development to a degree.

f) The proposed development could impact negatively on local homesteads. There are a small number of homesteads from which the development could be visible.

g) The recreational uses on the northern side of the port could be negatively impacted by further industrialisation of the landscape.

h) A service station on the N2 that overlooks the coastal plain to the south of Richards Bay. This facility is used by many tourists as a rest and refuelling stop. Heavy

industry is currently visible from this location but the project has the potential to extend the industrial character over larger sections of the landscape as seen from this location.

i) Lighting associated with the development could extend existing light pollution. There is already significant lighting associated with industry and urban development. The introduction of a new light source is not anticipated to be a significant issue particularly as it will be seen in the context of lighting associated with other industrial uses. However, good practice in ensuring that it causes minimum impact and nuisance for receptors should be ensured.

These issues have been considered in the context of the Landscape Character Areas, visual effects identified and possible cumulative influence of other development.

Possible mitigation measures have also been identified.

1.7 LIMITATIONS AND ASSUMPTIONS

The assessment has been based on the requirements of the Western Cape Guidelines.

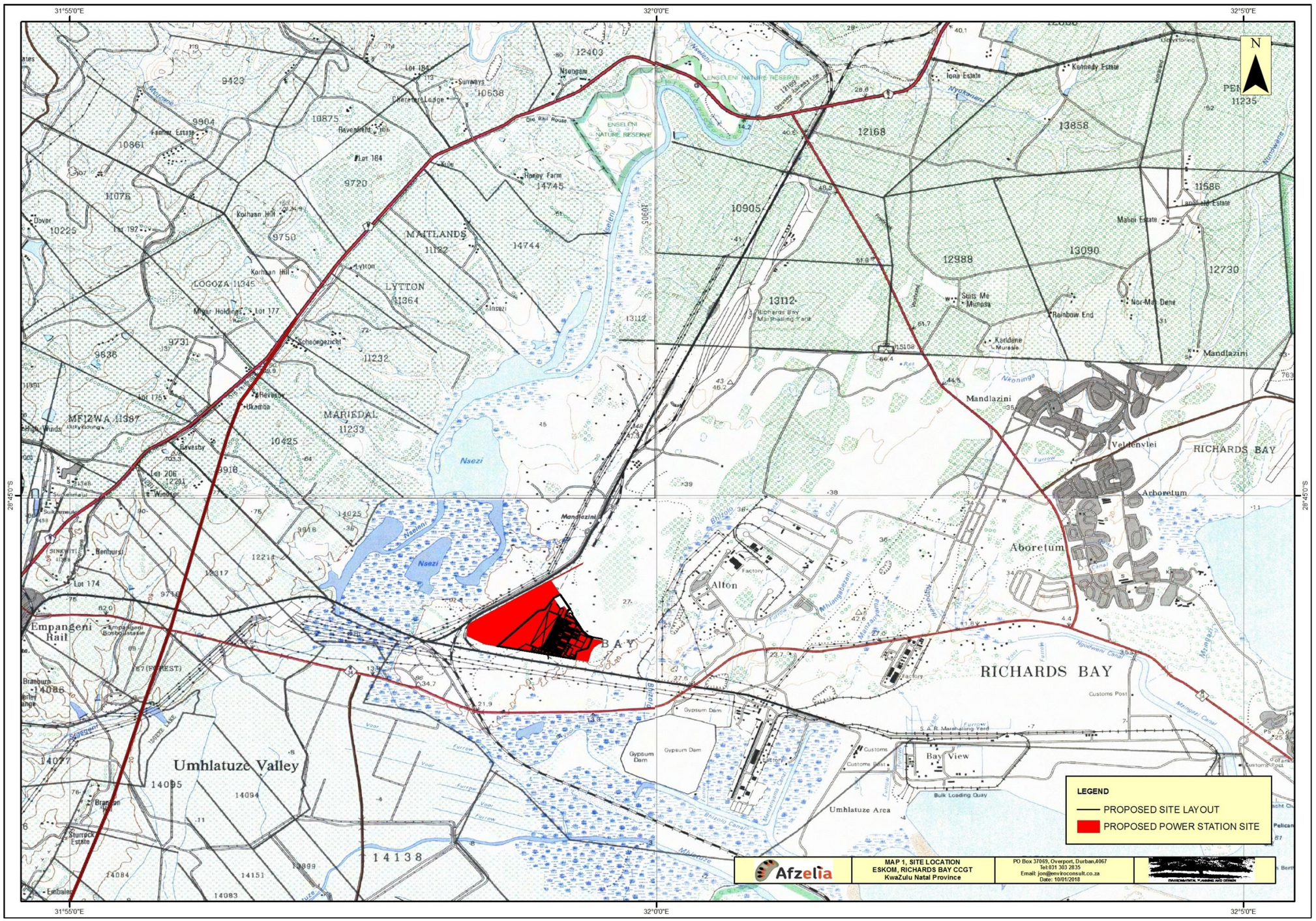
Whilst the majority of homesteads and settlement areas were visited during the site visit in order to confirm their nature and likely visibility of the development, it was not possible to visit all homesteads. The nature and use of all homesteads therefore was not confirmed.

The acceptance of the Scoping Phase required consideration of other existing and proposed similar developments within a 30km distance of the proposed project.

The assessment of cumulative impacts is partly based on personal knowledge of Richards Bay the planned extent of the Richards Bay Port as well as the planned extent of the Richards Bay Industrial Development Zone.

The assessment is based on a site visit that was conducted over a single day (16th December 2017). Weather conditions were clear and visibility was good.

MAP 1 – SITE LOCATION



2. PROJECT DESCRIPTION

2.1 PROJECT MOTIVATION

Historically, coal has provided the primary fuel resource for baseload electricity generation in South Africa. Consequently, Eskom, who is the main electricity generating company in the country, generates approximately 92% of the country's electricity from coal resources, resulting in a large carbon footprint.

Taking into consideration the ever-increasing attention being placed on climate change and the management thereof throughout the world, Eskom has accepted the challenge of sustainable development taking into consideration the social issues associated with their current coal operations. Eskom therefore aims to investigate and use opportunities locked up in technology and fuel alternatives for the generation of electricity to enable the implementation of efficient energy usage and energy generation, as well as the efficient usage of other scarce natural input resources required for electricity generation such as water.

There is also a call for alternative flexible fuel resources for the generation of electricity to diversify the energy mix.

Eskom therefore recognises the need for change within the national grid, specifically the need to make use of alternative energy resources and through the diversification of the energy mix. This need is supported by national policies, specifically the Integrated Resource Plan (IRP). The IRP 2010 developed by the Department of Energy states a need for a diversified energy mix to meet the requirements of the country's economic and social growth. The IRP (2010) considers natural gas to have greatest significant potential to add to the energy mix. It is envisaged that the gas-derived electricity will be through open-cycle gas turbines (OCGT) and combined cycle gas turbines (CCGT), which should generate 3.9GW and 2.4GW respectively. While the above-mentioned supply is the target for 2030, the IRP asserts that CCGT technologies and an LNG terminal needs to be built urgently so that the first CCGT capacity is available by 2020 to assist with electricity supply in the short run. The IRP recognises that Gas Fired Combined Cycle Gas Turbines (CCGTs) present the most significant potential for developing the gas market in South Africa.

In order to consider and enable sustainable growth and development in the national grid, Eskom has taken the initiative to investigate, consider and develop a 3000MW Combined Cycle Gas Turbine (CCGT) Power Plant (i.e. the Richards Bay combined Cycle Power Plant (CCPP) and associated infrastructure). Eskom considers the development of this plant to be a necessity due to the following:

- The Richards Bay CCPP will add baseload and/or mid-merit capacity to the South African national grid, which will ensure that the supply demand in the country is met, enabling economic and social growth.
- Avoidance of transmission investment and a reduction in transmission losses through the development of a power generation facility in close proximity to a supply centre (i.e. Richards Bay).

- The CCPP will provide a flexible back-up generation solution for renewable energy, should renewable energy fuel resources not be available.
- The use of natural gas as an energy resource for the generation of electricity emits approximately half of the carbon that would have been emitted by coal generated electricity of the same capacity, due to the higher efficiencies of CCGT power plants. The operation of a CCGT Power Plant also uses considerably less water than coal-fired power stations. Therefore, the development of the Richards Bay CCPP will reduce Eskom's carbon footprint, supporting the South African commitment towards a reduction in carbon emissions.
- Provide support to the Government's energy objective in terms of diversifying the energy mix of South Africa.

2.2 PROJECT DESCRIPTION

2.2.1 General

The Richards Bay Combined Cycle Power Plant (CCPP) involves the construction of a gas-fired power station which will provide mid-merit[1] power supply to the electricity grid. The weekly mid-merit power supply will be between a range of 20% to 70% of the total electricity supply produced by the Richards Bay CCPP. The power station will have an installed capacity of up to 3 000MW, to be operated on natural gas, with diesel as a back-up fuel. The natural gas is to be supplied by potential gas suppliers via a gas pipeline to the CCPP from the supply take-off point at the Richards Bay Harbour. The Liquefied Natural Gas (LNG) terminal infrastructure at the port and the gas supply pipeline to the boundary fence of the Richards Bay CCPP does not form part of the scope of this assessment as this project focuses only on the footprint activities inside Eskom's boundary fence on site 1D of the Richards Bay Industrial Development Zone (IDZ).

2.2.2 Overview of a CCPP

A CCPP uses a gas turbine generator to generate electricity and the waste heat is used to make steam to generate additional electricity via a steam turbine. The CCPP is one of the most efficient power generating facilities to convert either gas or diesel fuel to mechanical power or electricity. In other words, gas or diesel is burnt in a gas turbine producing both electrical power via a coupled generator and fairly hot exhaust gases. The hot exhaust gases pass through a water-cooled heat exchanger to produce steam, which can be turned into electric power with a coupled steam turbine and generator.

The main infrastructure associated with the facility includes the following:

» Gas turbines for the generation of electricity through the use of natural gas or diesel (back-up resource).
» Heat recovery steam generators (HRSG) to capture heat from high temperature exhaust gases to produce high temperature and high-pressure dry steam to be utilised in the steam turbines.

[1] Mid-merit electricity generation capacity refers to the generation of electricity which is adjusted according to the fluctuations in demand in the national grid.

» Steam turbines for the generation of additional electricity through the use of dry steam generated by the HRSG.
» Bypass stacks associated with each gas turbine.
» Dirty Water Retention Dams.
» Exhaust stacks for the discharge of combustion gases into the atmosphere.
» A water treatment plant for the treatment of potable water and the production of demineralised water (for steam generation).
» Water pipelines and water tanks to transport and store water of both industrial quality and potable quality (to be supplied by the Local Municipality).
» Dry-cooled system consisting of air-cooled condenser fans situated in fan banks.
» Closed Fin-fan coolers to cool lubrication oil for the gas and steam turbines.
» A gas pipeline and a gas pipeline supply conditioning process facility for the conditioning and measuring of the natural gas prior to being supplied to the gas turbines. It must be noted however that the environmental permitting processes for the gas pipeline construction and operation will be undertaken under a separate EIA Process
» Diesel off-loading facility and storage tanks.
» Ancillary infrastructure including access roads, warehousing, buildings, access control facilities and workshop area, storage facilities, emergency back-up generators, fire fighting systems, lay-down areas and 132kV and 400kV switchyards.
» A power line to connect the Richards Bay CCPP to the national grid for the evacuation of the generated electricity. It must be noted however that the due environmental permitting processes for the development of the power line component are being undertaken under a separate EIA Process.

Water will be required for the CCPP power generation process. High quality water is required for use within the CCPP power generation process. Membranes/ion exchange systems would be required for water treatment on site. A waste treatment plant for the effluent from this water treatment system will be required. All solid waste generated from this process would be disposed of off-site at a suitably licensed waste disposal facility.

The power station is to be operated as a zero liquid effluent discharge (ZLED) system, i.e. water within the power station will be recycled for re-use in the power station process. No liquid waste from the power station will therefore be discharged to the environment.

In addition, the Project will include the following facilities/components:

- Access road to site;
- 132kV and 400kV switchyard;
- Control and electrical building;
- Central control room, warehouse and administrative buildings;
- Fuel/gas/diesel storage facilities;
- Emergency backup generators (diesel or LPG); and
- Chemical storage facilities (Water treatment chemicals, and demineralizing resins, lubricants, grease and turbine cleaning detergents, fire extinguishing foams).

The orientation of the proposed power station has been based on wind rose analysis of the proposed site and on the following requirements:

- Highest efficiency when cold air used in combustion process;
- Cannot have warm air from Air Cooled Condensers (ACCs) in gas turbines; and
- The dam has to be on the lowest elevation of the site.

Refer to Map 2 for the proposed site layout.

2.2.3 Proposed Power Lines

Power line connections to the National Grid are currently under consideration. These will be subject to a separate application.

2.3 LIKELY SCALE OF DEVELOPMENT

Approximate heights have been provided by the developer for the following elements:

a. A bypass stack for the CCGT was originally anticipated to be approximately 40m – 60m in height. It has now been confirmed that they will be a minimum 40m high;
b. Air-cooled condenser fans situated in fan banks approximately 40m above ground; and
c. Exhaust stacks were originally anticipated to be between 40m and 60m meters in height. It has now been confirmed that they will be a minimum 40m high.

The height of various elements is fundamental to visual impact, broad assumptions based on layout and illustrative information provided by the applicant have to be made in order to progress the Scoping Assessment.

The main elements that are likely to have visual influence on surrounding areas within the Power Plant can be divided into the following:

i. **High elements** in excess of 40m that will include the three HSRG bypass stacks and the HRSG exhaust stack. These may be up to 60m high. Whilst these will be the highest elements within the development, they will be comprised of three relatively slim structures that may be easily missed by the casual viewer particularly if only the upper sections are visible. It is possible however that attention could be drawn to the stacks by visible emissions;

ii. **Medium high elements** that will include the condenser fan banks, the workshop building, the three HSRG enclosures, the diesel tank, the taller elements in the transmission yard including bus bars, and power lines. These elements are likely to be up to 40m high. Whilst not the tallest elements, they will appear as relatively solid structures that will be combined to provide visual mass that is likely to present a simple geometric form that contrasts strongly in terms of scale outline, texture and colour with a surrounding landscape. The exception is likely to be the higher structures associated with the transmission yard which include the bus bars and possibly lightning conductors and power lines. These elements are likely to be comprised of relatively narrow steel sections and possibly lattice structures. Whilst they

may be relatively high, their nature is likely to mean that they will be visible over a limited distance only; and

iii. **Low elements** will include; the water treatment plant, ancillary buildings, pipelines, security fencing, loading / unloading areas, and external storage areas. These elements are all likely to be lower than 20m with the majority being below 10m high. From a visual perspective they will add to the visual mass of the plant particularly from close quarters. Where visible they will also add visual complexity and detail that some may find interesting but has the potential to provide a high level of contrast with immediate surroundings particularly when set against a cohesive naturalistic landscape. However, because these elements are relatively low there is a good possibility that screening may be effective.

These orders of height have been used in the assessment to help indicate the nature and extent of visibility of the various elements and to help identify the nature of impacts that are likely to affect sensitive receptors.

2.4 LIKELY LIMITS OF VISIBILITY

A GIS based visibility assessment does not take the curvature of the earth or reduction in scale due to distance into account. In order to provide an indication of the likely limit of visibility due to this effect a universally accepted navigational calculation (refer to **Appendix III**) has been used to calculate the likely distance that the proposed structures might be visible over. Using this formula, table 2 indicates the distances within which the various structures highlighted in 2.3 might be visible within a flat landscape.

Table 2 – Likely Limits of Visibility

Structure	Likely limit of visibility
Tall structures up to 60m high	27.7km
Medium tall structures up to 40m high	22.6km
Low structures up to 20m high	16.0km

It is acknowledged that the landscape within which the development is proposed is far from flat. This approximate visual horizon is therefore only used as a rough guide of visibility from areas of a similar or lower elevation than the proposed site.

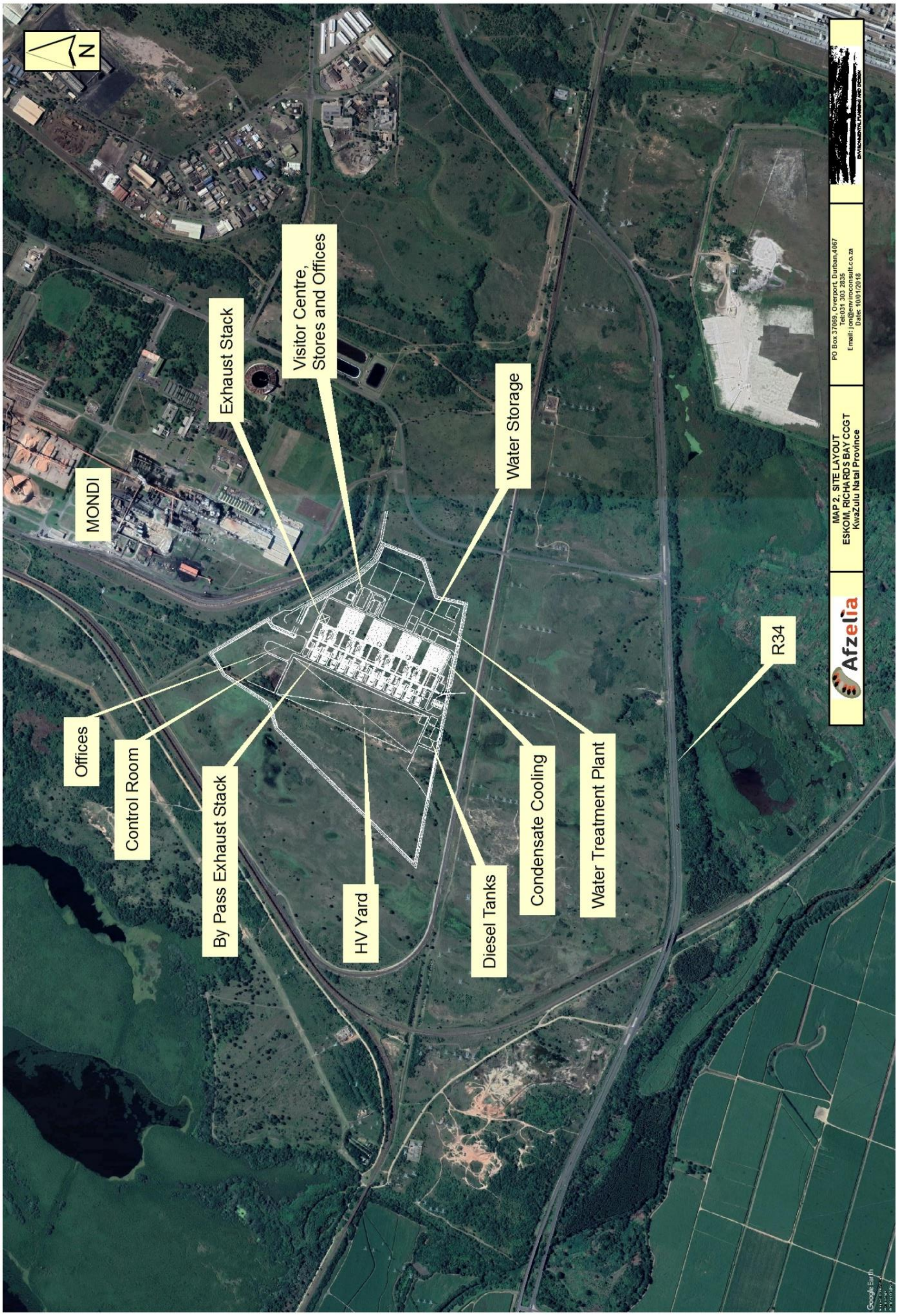
The landscape inland and to the north and west within the likely limits of visibility is relatively flat / gently sloping. Adjacent to the coast, to the south and east of the study area, the terrain is comprised of tall steep dunes. These higher areas are however generally within the limits highlighted above. The limits indicated are therefore considered to be a reasonable estimate of the limits of visibility.

In reality visibility could be reduced by:

- Weather conditions that limit visibility. This would include hazy conditions during fine weather as well as mist and rain; and
- Scale and colour of individual elements making it difficult to differentiate structures from background.

Figure 1 – 3D Illustration of Proposed Installation

Figure 2 – Image of the Pembroke Combined Cycle Power Plant



N
MONDI
Exhaust Stack
Visitor Centre,
Stores and Offices
Water Storage
Offices
Control Room
By Pass Exhaust Stack
HV Yard
Diesel Tanks
Condensate Cooling
Water Treatment Plant
R34
Afzelia
MAP 2. SITE LAYOUT
ESKOM, RICHARDS BAY CCGT
KwaZulu Natal Province

3. DESCRIPTION OF RECEIVING ENVIRONMENT AND RECEPTORS

It is possible that landscape change due to the proposed development could impact the character of an important landscape. Landscape character can be derived from specific features relating to the urban or rural setting and may include key natural, historic or culturally significant elements. Importance might also relate to landscapes that are uncommon or under threat from development.

This section will:

- Describe the types of landscape that may be impacted;
- Indicate likely degree of sensitivity; and
- Describe how the landscape areas are likely to be impacted.

The study area is defined by the limit of visibility of the proposed project. As an initial guide, the limit has been set at 27.7km from the proposed stacks being the approximate visual limit of the tallest items associated with the development. Refer to Section 2 for the justification for this distance.

3.1 LANDSCAPE CHARACTER

Landscape character is defined as "a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another".

Landscape character was defined from a site visit supplemented by available online mapping and aerial photography. Key character components identified were subject to verification through the EIA site visit

The proposed site lies within an area that is heavily industrialised and within which additional industrial development is planned. However, it is also close to an area that is predominantly rural in character.

Landscape Character is a composite of a number of influencing factors including;

- Landform and drainage
- Nature and density of development
- Vegetation patterns

3.1.1 Landform and Drainage

The proposed project will be located on a wide coastal plain close to Richards Bay. Landform close to the coast to the east and south east of the study area is a high dune cordon that largely blocks views of the sea from inland areas. The coastal plain is generally set at a level of between 5 and 30m amsl, and at its highest, the dune cordon rises to between 50 and 60m amsl.

Due to a generally high water table and highly permeable soils within the coastal plain, there are numerous drainage pans even within higher areas of the coastal plain.

In the vicinity of Richards Bay the coastal plain is approximately 13 to 14 km wide. Inland of this, a small range of hills run approximately parallel to the coast rising to between 80 to 120m amsl effectively blocking views between the coastal plain and areas further inland.

A large proportion of the coastal plain is comprised of flood plain areas for watercourses that flow through the area. Due to the landform many water courses in the area terminate in closed lagoons. The development of the port of Richards Bay has altered this system to allow the main river within the region, the Mhlatuze, to flow directly into the Indian Ocean. The natural lagoon has been protected however in that the river flows through the lagoon and then through a tidal gate into the port. The Mhlatuze Lagoon forms the basis of the Richards Bay Game Reserve which is an important provincial nature reserve.

The relative flatness of areas around Richards Bay and the visual barriers comprised of the coastal dune cordon and inland hills are significant in assessing visual impacts.

This landform is likely to have a number of implications for visibility of the proposed development;

- The power generation units are proposed on the valley floor which means that the small hills inland of the development as well as the coastal dunes are likely to provide a high degree of screening for the development.
- The relatively flat terrain surrounding the proposed development is likely to mean that the landform will have little screening effect for the immediately surrounding area.

Refer to Map 3 for analysis of the landform and drainage.

3.1.2 Landcover

Landcover mapping has been extracted from the South African National Biodiversity Institute 2009 mapping. Major landcover types in the vicinity of the proposed site include;

a) Urban development;
b) Plantation;
c) Cultivation; and
d) Natural areas.

a) Urban Areas

Major urban centres have developed within the coastal plain including Richards Bay, Empangeni and Esikhawini, all of which are in relatively close proximity to the proposed site.

Inland of the coastal plain built development has largely developed as smaller more scattered centres.

There is also little or no urban development within the main coastal dune cordon. The exception to this is Richards Bay where port, residential and recreational areas have developed in close proximity to the coast.

b) Plantation

Forestry plantations extend to the east, the north east and the south west of Richards Bay within the coastal plain. There are also smaller sections of forestry plantation on the coastal dune cordon close to and within areas of natural dune vegetation. Forestry plantation is important from a visual perspective because as the trees develop, they provide a significant amount of screening. Once mature however, trees within large areas of plantation are felled immediately opening up views to surrounding areas. Within larger plantation areas felling of mature blocks does not generally tend to expose views of areas

outside forestry areas. This is due to the fact that the areas are comprised of a large number of blocks with trees at various stages of development.

c) Cultivation
There are two types of cultivation evident within the areas identified;

i. A part of this landcover type is comprised of traditional areas. Typically, cultivation in these areas is made up of small-scale agricultural units cultivating vegetables and small areas of sugar cane with groups of houses and kraals located relatively evenly throughout the area. In visual terms this is a small-scale rural landscape with numerous structures and boundary trees and other woody vegetation that provide a degree of screening.
ii. Large scale intensive sugar cane production generally covers cultivated areas outside traditional areas. Settlement within this area is made up of occasional farmsteads comprised of a main farm house, workers cottages and agricultural buildings. In visual terms, sugar cane does provide a degree of screening particularly as cane matures before harvesting. Screening potential however is relatively limited particularly as the majority of roads and urban development have occurred on slightly higher land resulting in a clear overview of cultivated areas.

d) Natural Areas
Natural areas are generally located inland of the coastal plain as well as within a narrow band adjacent to the coast that is generally comprised of the dune cordon and areas surrounding lagoons.

In addition to the general pattern noted above, there is also a significant area of natural vegetation cover to the east, south and west of Richards Bay.

The nature of vegetation within natural areas is described in below.

From a visual perspective, the significance of natural areas is that, subject to their nature, they can provide a high degree of screening for development on a relatively permanent basis.

e) Industrial Development
Richards Bay is known as an industrial centre. The main industrial areas in the vicinity of the site include:

- Extensive industrial development has occurred to the south of Richards Bay and to the north of the Port. This area is home to numerous large-scale, heavy industrial installations that have largely developed in the area due to their location close to a major port. Whilst there is an extensive area of existing heavy industry, this is likely to expand in the future as currently undeveloped areas have been designated as an Industrial Development Zone.
- The north east area of the port which is largely set up for loading and unloading bulk cargo. This has included the establishment of extensive silos and conveyor systems some of which extend through the adjacent landscape to external industrial operations.
- The south eastern section of the port within which a major coal terminal has been established for export. This area includes extensive coal stockpiles in addition to railway and loading infrastructure.

- A major dune mining operation that is being undertaken to the north of Esikhawini. This operation includes the stripping and processing of dune soils. In addition to disturbance of mined areas, it has resulted in the development of a major slimes dam immediately adjacent and to the south of the N2 on the inland edge of the coastal plain.

From a visual perspective these elements all add to the perception that the area around and particularly to the south of Richards Bay is an industrialised landscape.

Refer to Map 4 for analysis of the landcover.

3.1.3 Vegetation Patterns

Vegetation includes areas of natural vegetation indicated on Map 4 as well as crops, alien invasive and ornamental vegetation within the study area.

Map 5 overlays key activities that have modified natural vegetation patterns that occurs in the area as identified by the SA National Biodiversity Institute. Key influencing activities are indicated in the bolder colours on Map 4, they include:

- Cultivation that generally includes sugar cane plantations. This arable monoculture has generally resulted in the removal of the majority of natural vegetation although forest patches tend to remain on un-cultivatable overstep slopes. In general, however, natural vegetation other than the sugar cane crop plays a minimal role in visual considerations within this area.
- Urban development which has largely removed natural vegetation from within its footprint area although patches and corridors remain. The predominant vegetation type within this area is either ornamental vegetation in the form of street trees and garden shrubs and trees or alien invasive vegetation that generally colonises undeveloped plots and property boundaries.
- Forestry plantation that has also generally resulted in the removal of the majority of natural vegetation. There are however corridors of natural forest remaining within these plantations that generally occur along water courses and main roads. Whilst these corridors may provide visual interest for viewers within the plantation areas, they are likely to have no effect in terms of helping to mitigate impacts of the proposed development.
- Mining areas are also evident within the area. In general, these operations involve the stripping of existing vegetation to allow the open cast processing of the sands and soils below. Rehabilitation generally entails the return of the affected area to cultivation or plantation.

Areas of natural vegetation as described by Mucina and Rutherford[2] are indicated in the pastel colours on Map 4. The vegetation types closer to the proposed site that are likely to have an influence on the landscape character of the area in which they are set and possible screening of the site include;

- **Maputaland Coastal Belt** is the dominant natural vegetation type associated with the coastal plain in the Richards Bay area. Mucina and Rutherford (2006) report that this vegetation type is a feature of the flat coastal plain. It was originally densely forested in places with a wide range of interspersed non-forest plant communities including dry grasslands (which include palm veld where special

[2] Vegetation types of South Africa (including Prince Edward and Marion Islands), Lesotho and Swaziland, 2006

conditions prevail), hygrophilous grasslands and thicket groups. This vegetation type therefore generally enables open views across the coastal plain although the occasional thicket groups are likely to provide a degree of enclosure and may soften views of visible development.

- **Northern Coastal Forest** generally occurs in small patches within the coastal plain and is the dominant vegetation type close to the coast and on the coastal dune cordon. Mucina and Rutherford (2006) report that this vegetation type is comprised of species-rich, tall/medium height subtropical coastal forests with well-developed tree, shrub and herb layers. This vegetation type therefore contributes to an enclosed landscape from within which views over surrounding areas will be limited.
- **Subtropical Coastal Lagoon** is a large area which is located to the south of Richards Bay. Mucina and Rutherford (2006) report that this vegetation type occurs within flat topography supporting low beds dominated by reeds, sedges and rushes and waterlogged meadows dominated by grasses. This vegetation type therefore generally enables open views across the coastal plain.
- **Mangrove Forest,** a portion of which is located within the Richards Bay Game Reserve. Mucina and Rutherford (2006) report that this vegetation type is comprised of species-poor and often monospecific, low and dense forests of mangroves (and fringing thickets of *Hibiscus tiliaceus* and *Acrostichum aureum*) in tidal zones of coastal lagoons and estuaries. This vegetation type influences landscape character within its immediate vicinity only and is unlikely to provide significant screening of development.

Refer to Map 4 for analysis of the Vegetation.

3.2 LANDSCAPE CHARACTER AREAS & VISUAL ABSORPTION CAPACITY

Landscape Character Areas (LCAs) are defined as "single unique areas which are the discrete geographical areas of a particular landscape type[3]".

Visual Absorption Capacity (VAC) is *defined* as the landscape's ability to absorb physical changes without transformation in its visual character and quality. Where elements that contrast with existing landscape character are proposed, VAC is dependent on elements such as landform, vegetation and other development to provide screening of a new element. The scale and texture of a landscape is also critical in providing VAC, for example; a new large-scale industrial development located within a rural small scale field pattern is likely to be all the more obvious due to the scale.

Topography provides the main character division, dividing the affected area up into three separate zones. The coastal dunes effectively cut of visibility between the coastal plain and the coast and views inland of the coastal plain are generally screened by the low hills on its inland edge.

Within these three areas landcover and vegetation provide varying degrees of enclosure:

- Forestry Plantations, particularly the larger blocks where clear felling of the entire area does not occur, provide significant enclosure;
- Arable areas that include sugar cane plantations provide relatively open landscape areas within which visibility is often only limited by landform;

[3] Landscape Institute and Institute of Environmental Management and Assessment.

- Natural vegetation which also generally provides enclosure. Even where long range views might be expected from the summit of tall dune slopes the screening effect of natural dune vegetation often blocks views;
- Urban areas are generally hard landscapes where structures, ornamental vegetation and alien vegetation provide enclosure limiting external views and focusing attention on internal areas;
- The majority of urban areas and the CBD of Richards Bay are screened from the development area by existing heavy industry; and
- Open water in the form of the Port and larger lagoons that provide openness and long vistas in addition to a major scenic element.

Once these elements are overlaid onto the landform, the following key Landscape Character Areas are identified;

Coastal Plain and Intensive Agriculture LCA – this area is comprised of cultivated areas indicated as being outside of traditional settlement areas. It is a relatively open landscape however a degree of VAC is provided by small clumps of woody vegetation in the form of occasional natural forest patches and alien species that largely occur along roadsides and property boundaries. The primary importance of this LCA is as a productive landscape. It does have some visual significance however, due to the length of view that is generally possible.

Coastal Plain and Traditional Agriculture LCA - this area is comprised of cultivated areas indicated as being inside of traditional settlement areas. It is a relatively enclosed landscape with a high degree of VAC which is provided by patches of woody vegetation which is mainly made up of alien species that largely occur along roadsides and on the boundaries of small scale cultivated areas. This area is important as both a productive landscape and a settlement area.

Coastal Plain and Forestry LCA – this LCA is largely enclosed with very limited views over surrounding LCAs that are generally limited to its outer edge. VAC is therefore high. This area is also important as a productive landscape.

Coastal Plain and Open Water LCA – this LCA is relatively open with long views possible over large water bodies. VAC is therefore generally low although vegetation that fringes the waterbodies is generally dense and relatively natural and it does provide a degree of screening of larger industrial elements. Landscape importance relates to that of a working landscape in terms of the Port, however, all the areas of open water highlighted are also important for tourism and local recreation.

Coastal Plain and Urban LCA – this is generally an inward looking LCA from which views of surrounding areas are only possible from its outer edges. Its primary importance is as a living and working environment. Outlook is therefore important particularly from residential and commercial use areas. Some urban areas particularly those areas in close proximity to the coast also have tourism importance.

Coastal Strip and Forestry LCA – small patches of forestry occur within the coastal strip. This often occurs within areas that have been mined. The coastal strip is particularly important for recreation and tourism. Areas of forest plantation do detract slightly from the natural character that is reinforced by the majority of vegetation within this landform type. However, the fact that it is green and generally undeveloped does help to provide visual continuity along the coastline which is important for coastal recreation and tourism.

Coastal Strip and Natural LCA – this LCA is important for its natural resources as well as providing an attraction and backdrop for coastal recreation and tourism. VAC within the area is relatively high.

Upland and Urban LCA – this LCA consists of the urban area of Empangeni and adjacent settlements. It is located within the low hills inland of the coastal plain and it is generally not visible from lower areas to the south and east. As with other urban areas, external views are generally limited. Its prime importance is as a living and working environment and so outlook is generally important. Due to surrounding rolling hills that are likely to screen the LCA from the proposed site and its inward looking nature, this LCA is unlikely to be significant in the assessment.

Upland, Agriculture and Settlement LCA – this LCA is relevant due to the fact that it consists of the area of rolling hills inland of the coastal plain that generally block views of coastal plain areas from further inland. Where views are possible, they are generally limited to higher hilltops. VAC is therefore generally high. A number of landcover types exist within the LCA including scattered rural settlement, natural areas and intensive sugar cane production.

This landscape analysis is indicated on **Map 6** and was ground truthed during the site visit.

3.3 RELEVANT ACTIVITIES

There are a number of activities in the general area surrounding the proposed site that elevate the importance of various areas. These include;

Existing Protected Areas and in particular the Richards Bay Game Reserve that is an important local conservation resource as well as being a local recreation and tourism attraction.

Offshore recreation is important to Richards Bay, particularly deep-sea fishing and whale watching. The two local ski boat clubs undertake numerous competitions during the year and they are an important draw card for international and national participants. Whilst the focus of the activity is game fishing, this experience is no doubt enhanced for many by the perception that it is being undertaken off a reasonably natural coastline.

The north eastern edge of the Port is particularly important for local recreation and tourism. In addition to the area being the home of a number of water-based sports clubs, the back of the port area has generally been laid out as an informal recreation area that attracts large numbers of people particularly during holidays and weekends. The area is also used for formal sporting events such as the Richards Bay / Esikhawini Marathon.

3.4 VISUAL RECEPTORS

3.4.1 Definition

Visual Receptors are defined as "individuals and / or defined groups of people who have the potential to be affected by the landscape change associated with the proposal" [4].

It is also possible that an area might be sensitive due to an existing use. The nature of an outlook is generally more critical to areas that are associated with recreation, tourism and in areas where outlook is critical to land values.

[4] Landscape Institute and Institute of Environmental Management & Assessment.

3.4.2 Possible visual receptors

This section is intended to highlight possible Receptors within the landscape which due to use could be sensitive to landscape change. They include;

Area Receptors that include:

- Urban areas of Esikhawini which is located approximately 6.5km to the south west of the proposed site. Residential areas particularly may be sensitive to change in view;
- The Richards Bay Game Reserve is located approximately 4.5km to the south east of the proposed site; and
- The popular public recreational area on the northern edge of the Port which is located approximately 9km to the east of the proposed site.

Linear Receptors which include the roads that are aligned through the area. The main linear receptors include;

- The N2 Freeway which runs approximately 3.9km inland and to the west of the proposed site. This road is a key regional route and is important for both tourism and business. In the vicinity of Richards Bay, it runs on elevated ground just inland of the coastal plain and therefore an overview of the coastal plain looking towards the proposed development site is possible.
- The R34 is the main route into Richards Bay from the south. It links the N2, Empangeni and inland areas to the urban area and the port. This road is duelled over most of its length. It is the main access route that carries a high proportion of business and tourism related traffic. As it crosses flood plain areas it is slightly elevated which does enable views over lower sections of the coastal plain. As it approaches Richards Bay it is located on slightly elevated land that is surrounded by natural vegetation. This vegetation and the landform results in only partial views over the coastal plain being possible. This road traverses close to the proposed site which is located within an area that is planned for industrial development and close to existing major industrial uses.
- The P106 is the main route between the R34 / Richards Bay and Esikhawini. This road crosses the flood plain of the Mhlatuze River that is largely planted with sugar cane. Whilst it is set at a relatively low level, panoramic views over the flood plain are possible. This road joins the R34 in close proximity to the proposed site. This road is largely a local distributor providing access for local residents and businesses. It is unlikely to carry a large number of tourists although it does provide access to the southern side of the Richards Bay Game Reserve.

Point Receptors that include:

- Isolated homesteads and small rural settlements most of which are likely to be associated with agricultural uses. There are no isolated homesteads in the vicinity of the proposed site. There are however a number of homesteads located in higher areas inland of the coastal plain.
- A service station on the N2 overlooking the coastal plain. This facility is used by many local and regional travellers as a rest and refuelling stop. A large proportion of these travellers are likely be travelling for tourism related reasons.

LANDSCAPE CHARACTER AREAS

Plate 2
Coastal Plain & Agriculture LCA

Plate 3
Coastal Plain & Urban LCA

Plate 4
Coastal Plain & Industry LCA.

LANDSCAPE CHARACTER AREAS

Plate 5
Coastal Plain & Open Water LCA

Plate 6
Coastal Plain & Forestry LCA

Plate 7
Upland Agriculture & Settlement LCA

SENSITIVE RECEPTORS

Plate 8
Recreational and tourism activity areas to the north of Richard Bay Port

Plate 9
The N2 Highway

Plate 10
The R34 approaching Richards Bay

SENSITIVE RECEPTORS

Plate 11
The P106 near Esikhawini looking towards the proposed site.

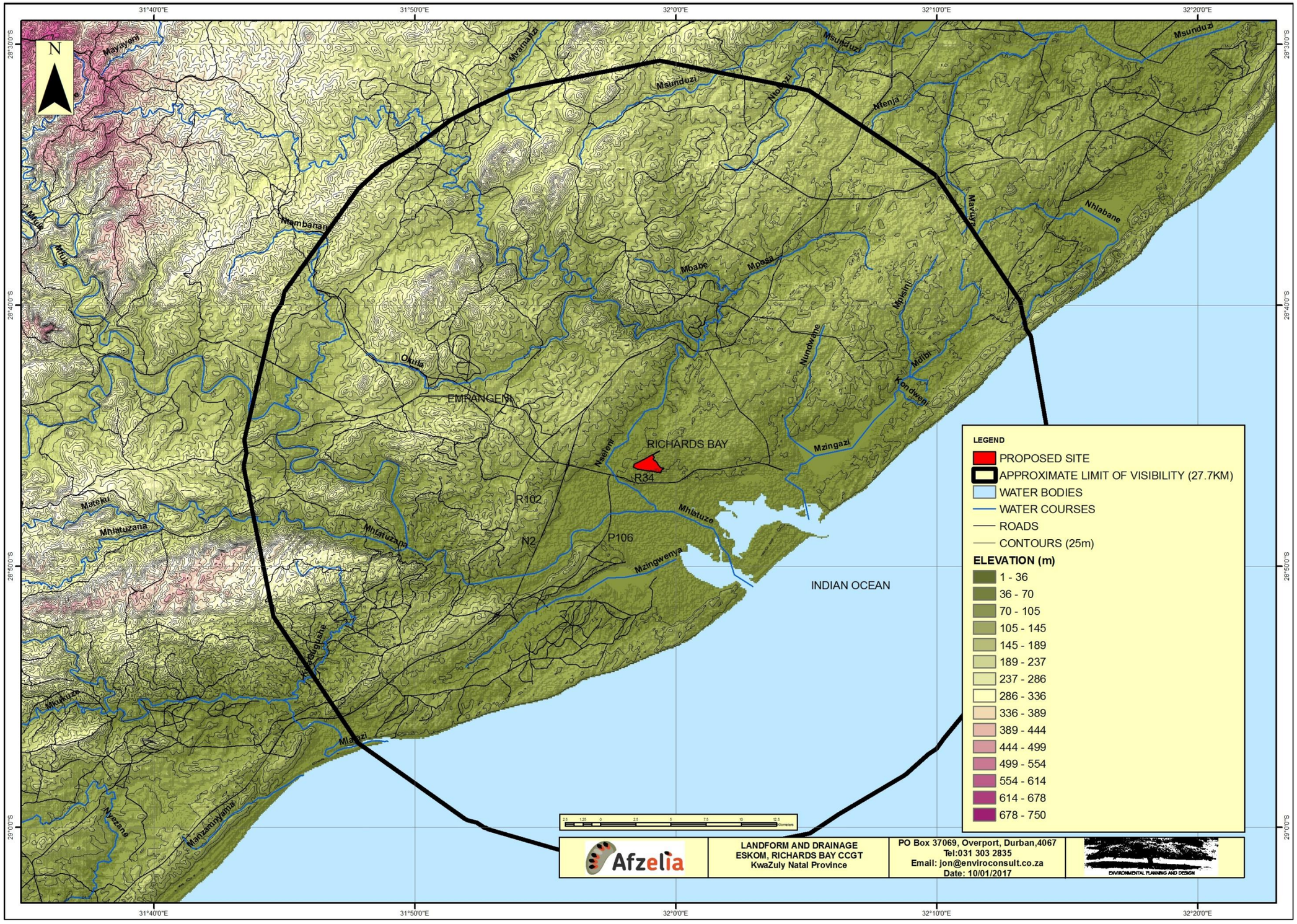
Plate 12
The Service Station on the N2

PLATE 13
Residential areas

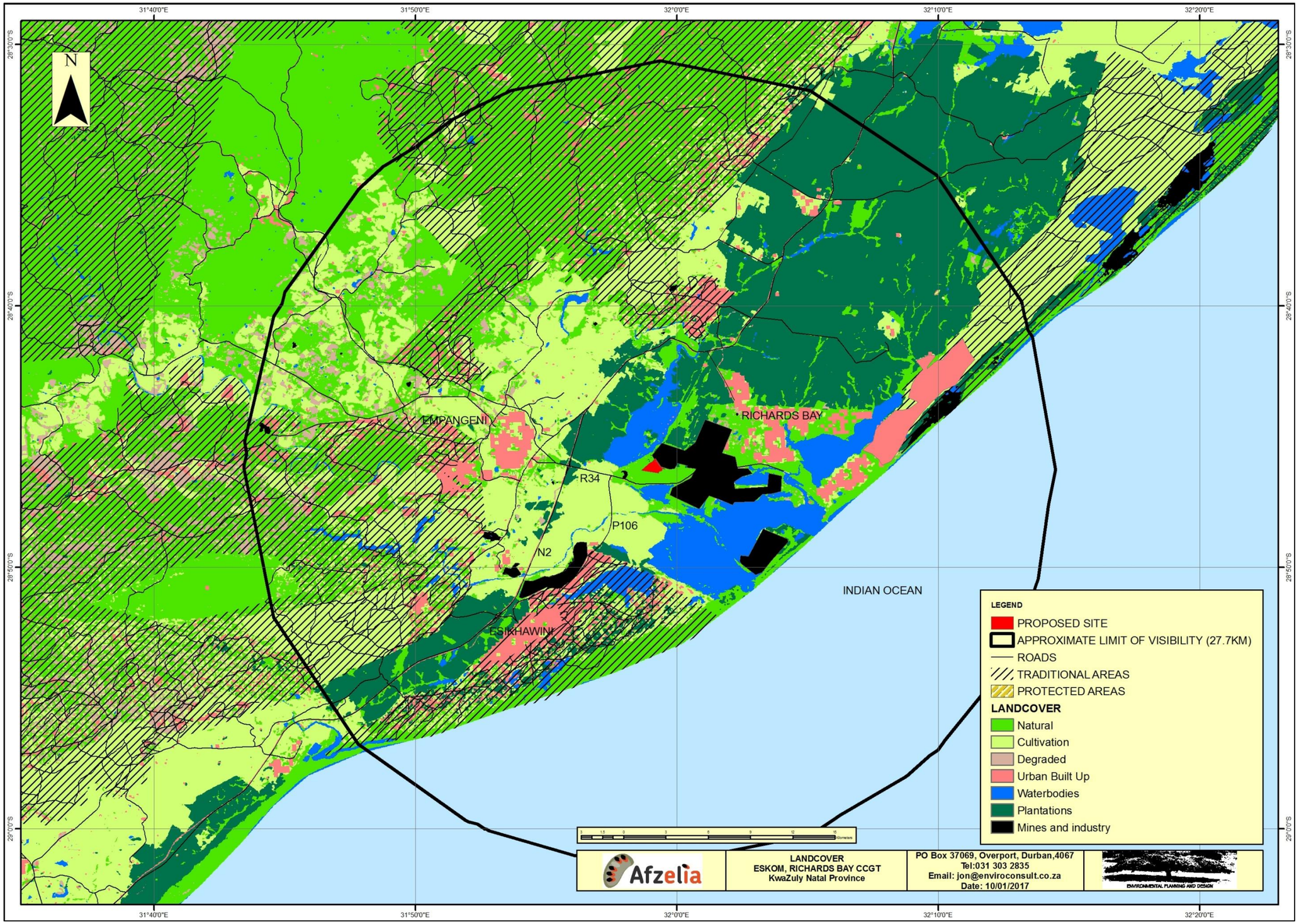
SENSITIVE RECEPTORS

PLATE 14
Protected areas, Richards Bay Nature Reserve

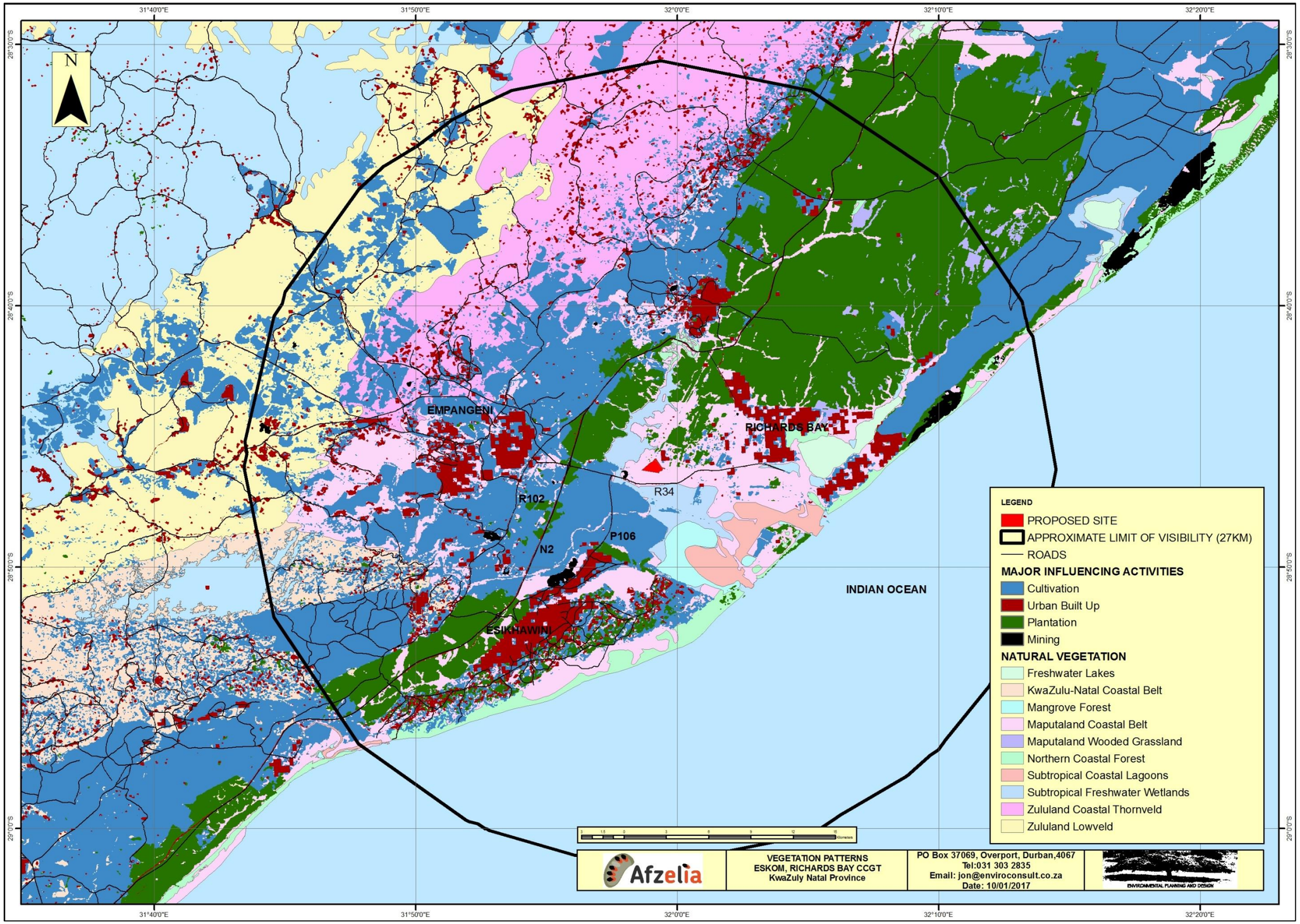
MAP 3 – LANDFORM AND DRAINAGE



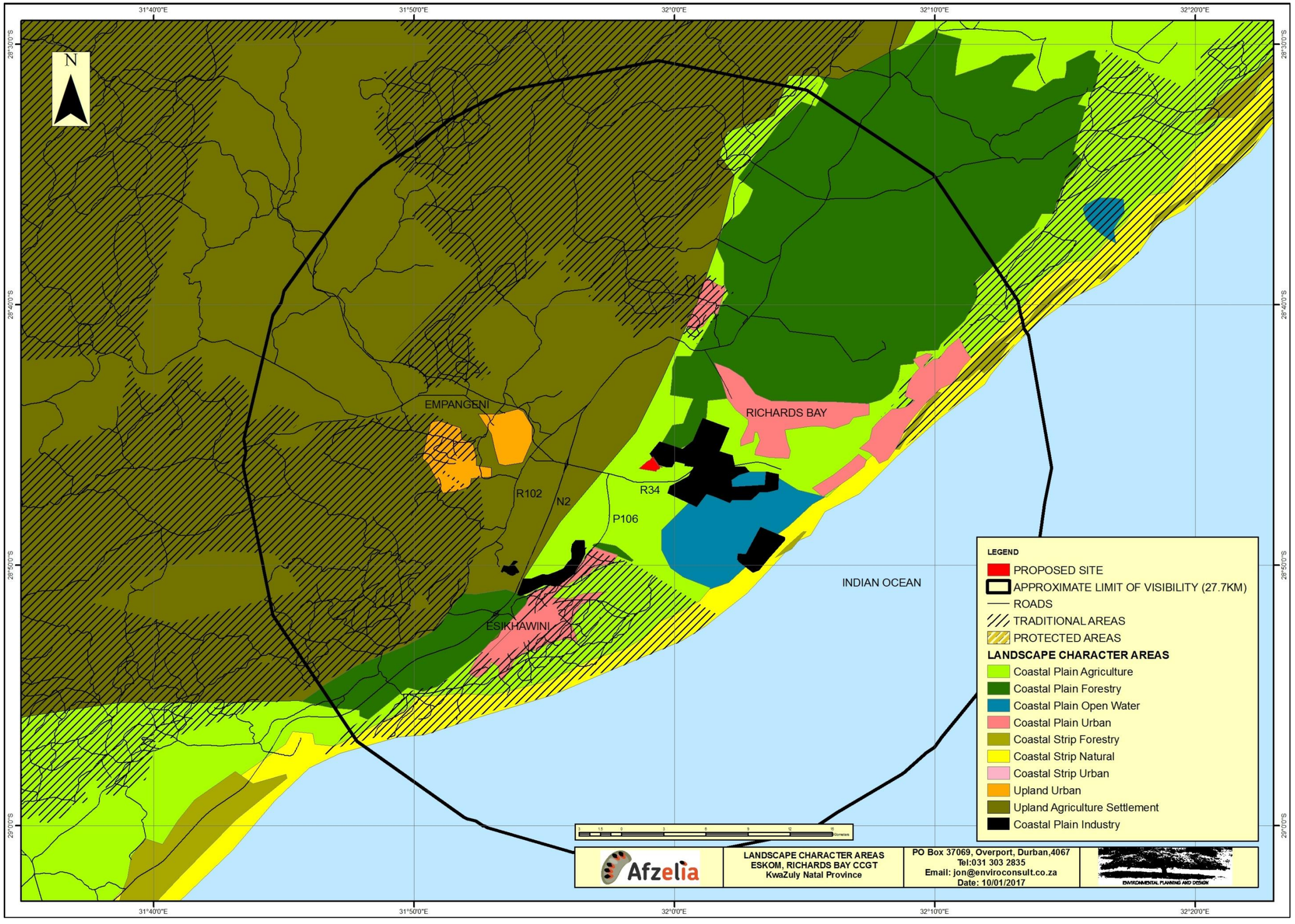
MAP 4 – LANDCOVER



MAP 5 – VEGETATION PATTERNS



MAP 6 – LANDSCAPE CHARACTER AREAS



4 VISIBILITY AND THE NATURE OF POTENTIAL VISUAL IMPACTS

4.1 GENERAL

Impacts could include general landscape change due to the development as it could detract from the existing character as well as change of view for affected people and / or activities;

a. General landscape change or degradation. This is particularly important for protected areas where the landscape character might be deemed to be exceptional or rare. However, it can also be important in non-protected areas particularly where landscape character is critical to a specific broad-scale use such as tourism or just for general enjoyment of an area. This is generally assessed by the breaking down of a landscape into components that make up the overall character and understanding how proposed elements may change the balance of the various elements. The height, mass, form and colour of new elements all help to make new elements more or less obvious as does the structure of an existing landscape which can provide screening ability or texture that helps to assimilate new elements. This effect is known as visual absorption capacity.
b. Change in specific views within the affected area from which the character of a view may be important for a specific use or enjoyment of the area.
    - Visual intrusion is a change in a view of a landscape that reduces the quality of the view. This can be a highly subjective judgement. Subjectivity has however been removed as far as is possible by classifying the landscape character of each area and providing a description of the change in the landscape that will occur due to the proposed development. The subjective part of the assessment is to define whether the impact is negative or positive. Again, to make the assessment as objective as possible, the judgement is based on the level of dependency of the use in question on existing landscape characteristics.
    - Visual obstruction is the blocking of views or foreshortening of views. This can generally be measured in terms of extent.

    Due to the nature of the proposed development, visual impacts are expected to relate largely to intrusion.

4.2 ZONES OF THEORETICAL VISIBILITY

Zones of Theoretical Visibility (ZTV) are defined by the UK Guidelines as "a map usually digitally produced showing areas of land within which a development is theoretically visible".

The ZTV analysis has been undertaken using Arc Spatial Analyst GIS. The assessment is based on terrain data that has been derived from satellite imagery. This data was originally prepared by NASA and is freely available on the CIAT-CCAFS website (http://www.cgiar-csi.org).

The ZTV analysis is based on points placed within the site boundary to represent the major elements as indicated on the site layout (Map 1). The Z value (height) of each point has been allocated in accordance with the table included in 2.4.

The approximate limits of visibility as indicated in 2.4 are indicated on the ZTV Mapping for information.

ZTV mapping has been prepared for all three heights (60m, 40m and 16m) of elements associated with the proposed power plant. However, because there is only a small difference in the ZTV areas only the 60m ZTV is presented. This development height could be visible over a distance of approximately 27.7km.

In reality this visibility of all elements could be reduced by;

- Weather conditions. This would include hazy conditions during fine weather as well as mist and rain.
- Scale and colour of individual elements making it difficult to differentiate structures from the background.

Map 6 indicates the likely ZTV of the power plant.

4.3 LIKELY VISIBILITY OF THE PROPOSED ELEMENTS

The proposed site is located immediately adjacent to existing heavy industry and within an area in which additional heavy industrial development is planned (Richards Bay IDZ Phase 1D).

The proposed development will occur immediately adjacent to the existing Mondi Plant which is an industrial installation of similar extent and scale. During the site visit Mondi proved to be both a useful landmark and a benchmark in terms of likely visual impact

4.2.1 Visibility to Recreation Areas

Development of the proposed site is visible to limited areas of the coastal strip and recreational areas to the north of the port. It will be seen in the context and is not likely to be distinguishable from existing adjacent industrial development. From the site visit, it was obvious that whilst segments of the proposed development could be visible, considering the distance involved, the amount of vegetation and other industrial elements that provide screening and the industrial backdrop, it is unlikely that the development will be distinguishable.

A view was taken from the eastern edge of the recreational area closest to the proposed development **(VP10)** from this viewpoint, Mondi was not visible. It is therefore highly unlikely that the proposed power plant will be visible.

4.2.2 Visibility to Urban Areas

Development is indicated as being visible to all indicated urban areas. The proposed power plant is however located immediately adjacent to existing heavy industrial areas and will either be viewed against this industrial backdrop as in the case of Esikhawini or existing industry will act as an effective screen as is the case for all other residential areas.

In reality, the high VAC associated with urban areas is likely to limit visibility of proposed power plant to negligible levels.

A view was taken on the P106 on the northern edge of Esikhawini **(VP4)**. From the site visit this was adjudged to be the worst case viewpoint from any residential area. From a point approximately 50m to the south of the viewpoint, it became impossible to gain a

view towards the site. Views towards the site could not be found in any other settlement area.

4.2.3 Visibility to Protected Areas

The Richards Bay Game Reserve is the only formal protected area that is likely to be affected. This area is comprised of a large open lagoon fringed by mangroves and coastal vegetation.

During the site visit it was not possible to access the Reserve as it required a permit from Transnet to access through the port.

Development of the proposed site may be visible from sections of the Reserve, however as with views from the Coastal Recreation Area, should views be possible they will be seen in the context of other major industrial development in the area. Distance and the VAC of the intervening landscape is also likely to result in only small partial views of the development.

A view was taken from a slightly elevated viewpoint that is located as close to the Reserve as possible (**VP9).** It is obvious from the viewpoint that Mondi is not visible. It is highly unlikely that the proposed development will be visible from within the Reserve, if it is it visible, the view is likely to be of a small section of the plant only and is unlikely to be distinguishable.

4.2.4 Visibility to Roads

Development of the proposed power station will be visible to approximately 11km of the N2, 13km of the R34 and 8km of the P106. However, the development will be seen against a backdrop of other heavy industrial developments that are located immediately to the north and east from most viewpoints. It is therefore unlikely to create a new area of impact but may intensify the existing industrial character of the area.

Three views have been taken on the N2 **(VP 1, VP 2 & VP 8),** two viewpoints on the R34 **VP 6 & VP 7),** and two viewpoints on the P106 **VP 4 & VP 5),** in order to illustrate the anticipated impacts of the power plant.

4.2.5 Visibility to Rural Homesteads

The proposed power plant is likely to be visible to a small number of rural homesteads within the Upland Agriculture LCA inland of the coastal plain. However, only views in excess of 5.5km will be possible. Developments will also be seen in the context of other industrial development. Whilst it is possible that the development could increase the degree of industry visible it is unlikely to be a significant impact.

Viewpoint VP2 is typical of the worst-case views of the development that are likely to be possible from Rural Homesteads.

4.2.6 Visibility to the N2 Service Station

The change in view experienced from the N2 Service Station is likely to be similar in nature as that described for the N2 Road.

The proposed development is likely to be visible but it will be partially screened and it will be viewed against other heavy industry. It is therefore unlikely to be obvious.

Viewpoint VP2 is indicates the worst-case view from this receptor.

4.3 POSSIBLE IMPLICATIONS FOR LANDSCAPE CHARACTER

In general terms, the development of the proposed project is in keeping with the heavy industrial base in the Richards Bay area.

The proposed site is located immediately adjacent to large scale industrial development and within an area in which industrial expansion is planned, and is therefore likely to have minimal impact on the character of surrounding areas.

4.4 POSSIBLE IMPLICATIONS FOR VISUAL RECEPTORS

Whilst development on the site will be visible over a relatively wide area it is unlikely to be discernible over much of the ZTV from existing heavy industry.

It will be most obvious from the R34 which runs approximately 800m to the south of the site. Travellers on this road will experience closer views than any other sensitive receptor. Even here however, the development will be viewed in the context and largely with a backdrop of other heavy industrial installations. Impacts in terms of further industrialisation of surrounding landscapes as experienced by possible sensitive receptors are therefore likely to be negligible.

MAP 7 – ZTV OF POWER PLANT

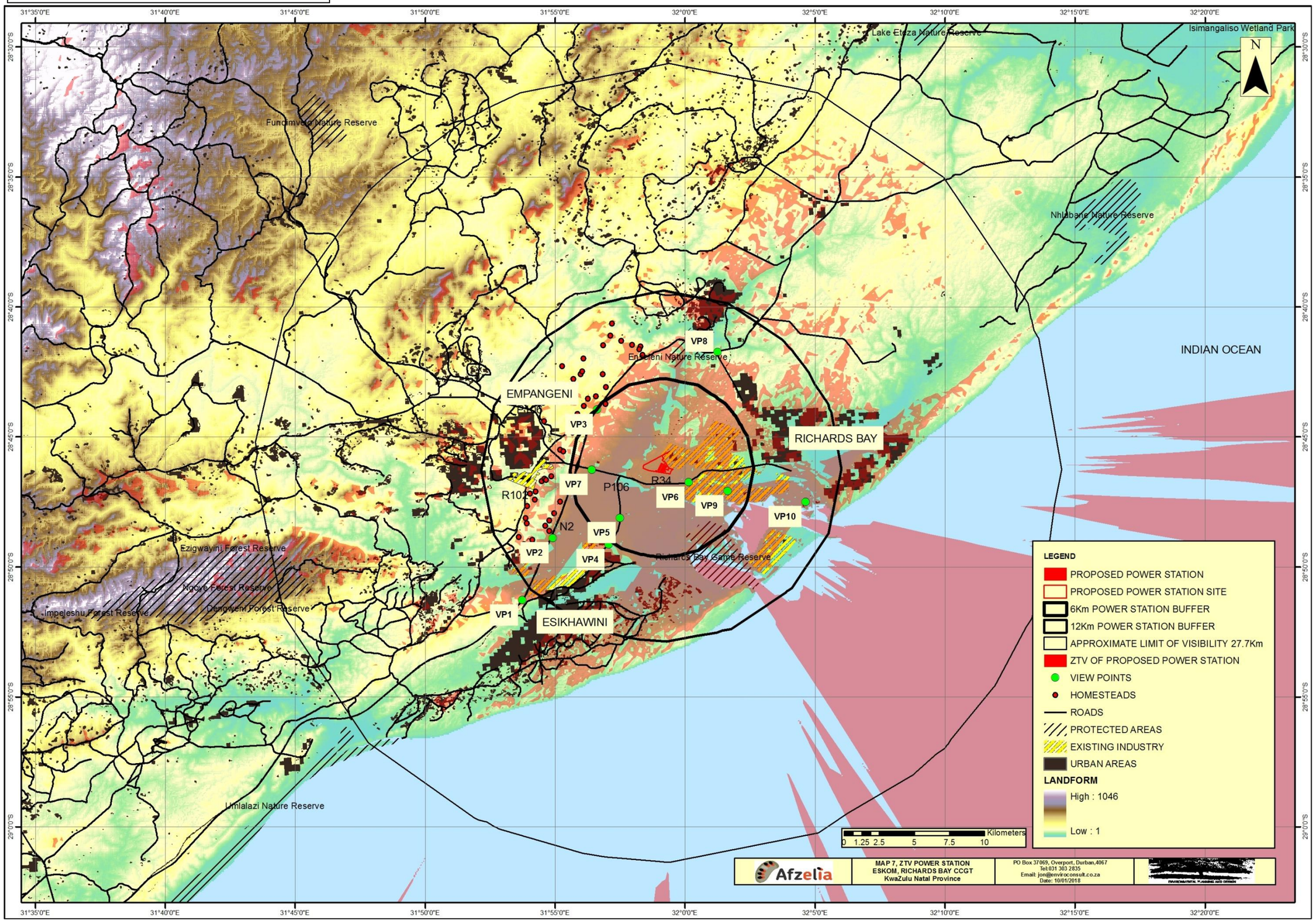


PLATE 15 - VP1, View from the N2 approximately 12.7km to the south west of the proposed plant. This is the location where the road runs through a minor ridge onto the Mhlathuze floodplain. The slight elevation of the viewpoint above the floodplain means that it is the first opportunity for clear views towards Richards Bay when approaching from the South. Existing industry is just visible in profile on the horizon, however it is not obvious and at this distance might be missed by the casual observer. The proposed power plant is unlikely to be differentiable from the existing industry.

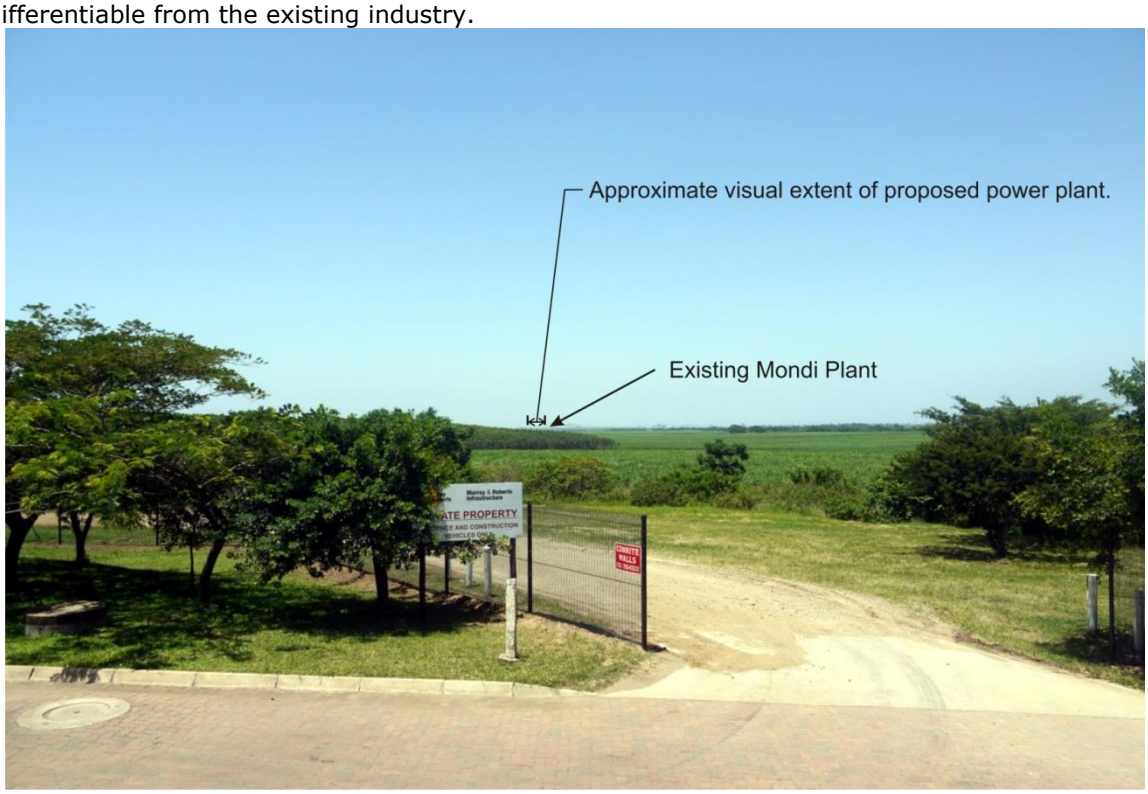


PLATE 16 - VP2, View from the N2 Service Station approximately 8.0km to the south west of the proposed plant. This view is also typical of views from the road particularly immediately to the south of the service station. Existing industry including the adjacent Mondi Plant is seen in elevation and partly screened by existing vegetation. The proposed power plant will be viewed directly in front of the existing Mondi Plant. It will therefore not extend the apparent extent of industry as seen from this viewpoint.

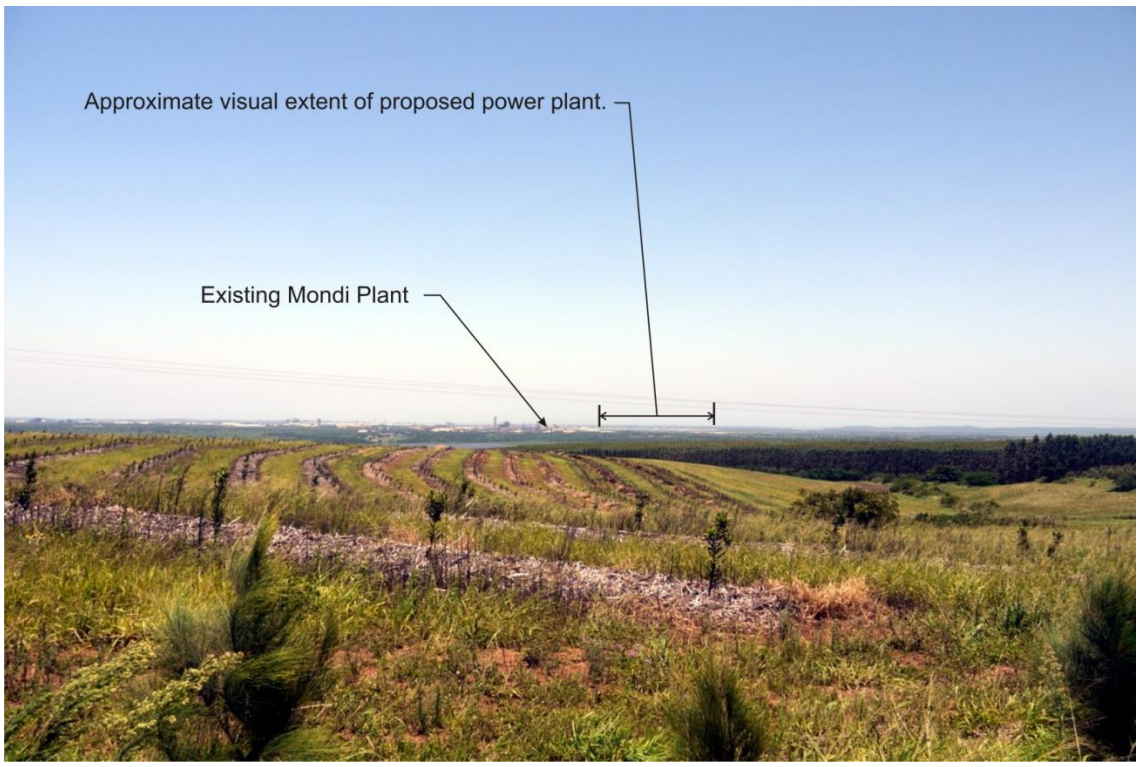


PLATE 17 - VP3, View from the N2 approximately 5.6km to the west north west of the proposed plant. As can be seen, in a year or two, this view is likely to be screened by a forestry plantation. Existing industry including the adjacent Mondi Plant is seen clearly on the shallow valley slope facing the viewpoint. The proposed plant will be seen immediately adjacent to the Mondi Plant and it will increase the apparent extent of industry as seen from this viewpoint. The proposed plant will also increase the number of stacks that are visible, there being four stacks of up to 60m high associated with the proposed plant.

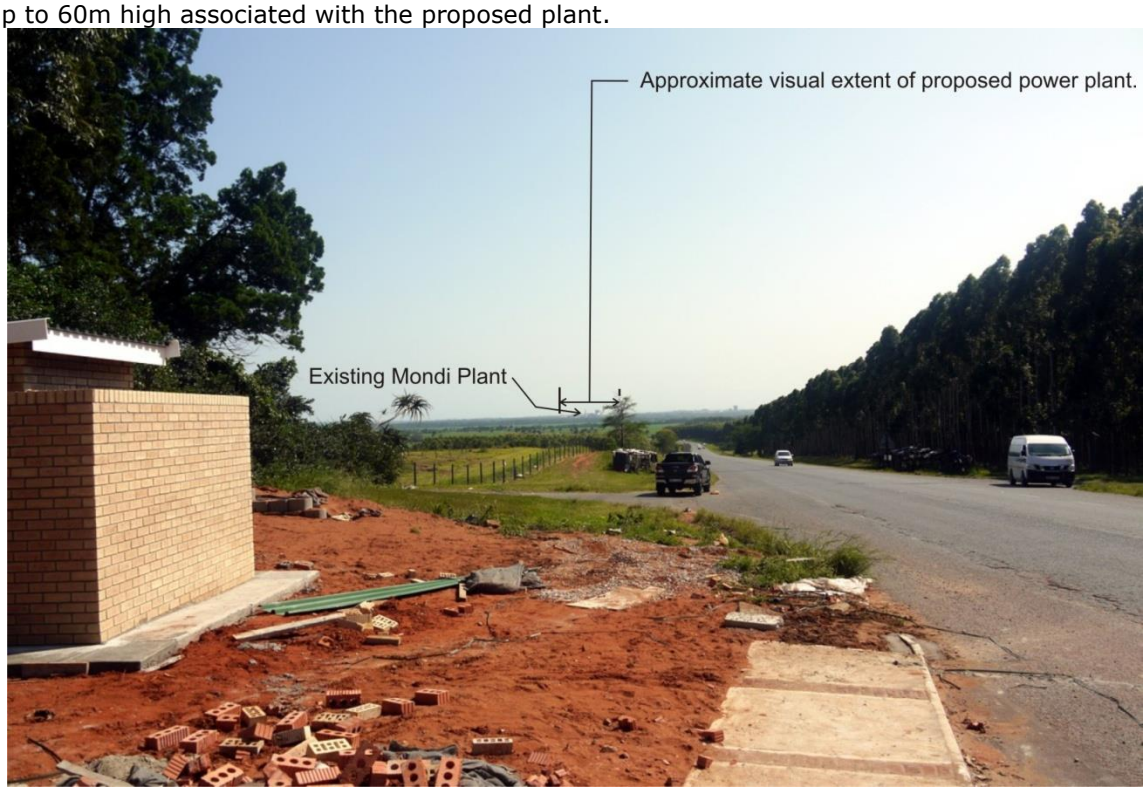


PLATE 18 - VP4, View from the P106 approximately 6.0km to the west north west of the proposed plant and immediately to the east of Esikhawini. This viewpoint is representative of the worst-case view from Esikhawini as well as from the road. For the most part, views towards the development are screened from inside the settlement. The existing Mondi Plant is just visible. The proposed power plant will be seen slightly in front of Mondi. It will be to be a similar scale as Mondi and will not extend the visible extent of industrial development.

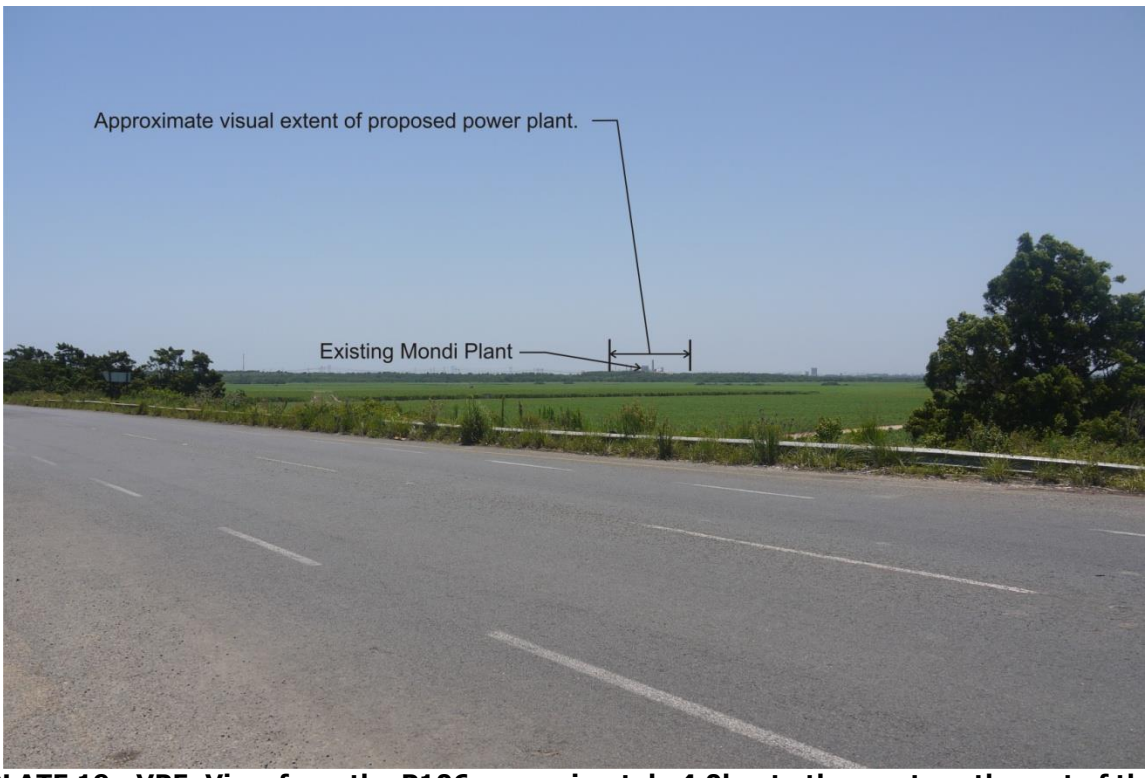


PLATE 19 - VP5, View from the P106 approximately 4.0km to the west north west of the proposed plant. The existing Mondi Plant is obvious on the horizon. The proposed power plant will be seen slightly in front of Mondi and whilst it has approximately the same length of frontage, due to it being slightly closer, it will slightly increase the extent of industrial development obvious on the horizon

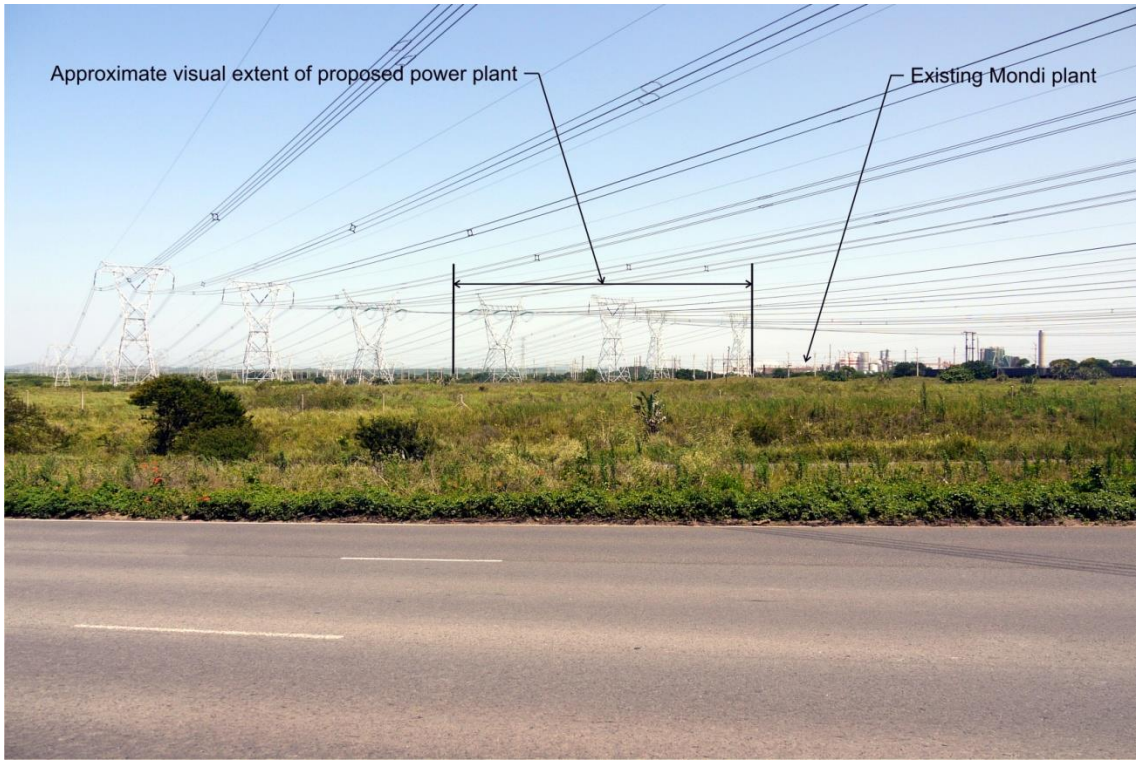


PLATE 20 - VP6, View from the R34 approximately 1.5km to the south east of the proposed plant. The existing Mondi Plant is obvious to right of picture. The proposed power plant will be seen to the left of Mondi. It will increase the extent of industry that is visible, however, it will be viewed through numerous power lines.

PLATE 21 - VP7, View from the R34 approximately 4.0km to the west of the proposed plant. The existing Mondi Plant is obvious mid picture. The proposed power plant will be seen to the right of Mondi. It will increase the extent of industry that is visible

PLATE 23 – VP9, View from close to the Richards Bay Game Reserve looking towards the site. It is possible that the stacks of the power plant may be just visible, however they are unlikely to be obvious.

PLATE 24 – VP10, View from the western edge of the port recreational area looking towards the power plant. None of the heavy industry in the vicinity of the proposed power plant is visible from this viewpoint. Due to distance and the VAC of the landscape, it is highly unlikely that the proposed power plant will be visible.

5 VISUAL IMPACT ASSESSMENT

5.1 ASSESSMENT METHODOLOGY

The previous section of the report identified specific areas where visual impacts may occur. This section will quantify these impacts in their respective geographical locations and in terms of the identified issues (see Section 1.5).

The methodology for the assessment of potential visual impacts includes:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional:
    - local extending only as far as the development site area – assigned a score of 1;
    - limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
    - will have an impact on the region – assigned a score of 3;
    - will have an impact on a national scale – assigned a score of 4; or
    - will have an impact across international borders – assigned a score of 5.
- The **duration**, wherein it will be indicated whether:
    - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
    - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
    - medium-term (5–15 years) – assigned a score of 3;
    - long term (> 15 years) - assigned a score of 4; or
    - permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
    - 0 is small and will have no effect on the environment;
    - 2 is minor and will not result in an impact on processes;
    - 4 is low and will cause a slight impact on processes;
    - 6 is moderate and will result in processes continuing but in a modified way;
    - 8 is high (processes are altered to the extent that they temporarily cease); and
    - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
    - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
    - Assigned a score of 2 is improbable (some possibility, but low likelihood);
    - Assigned a score of 3 is probable (distinct possibility);
    - Assigned a score of 4 is highly probable (most likely); and
    - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which will be described as either positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The *degree* to which the impact can be *mitigated.*
- The **significance** is determined by combining the criteria in the following formula:
    - S=(E+D+M)P; where S = Significance weighting, E = Extent, D = Duration, M = Magnitude, P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

5.2 ASSESSMENT

The following assessment focuses firstly on general landscape change that will occur due to the proposed development which provides context for the assessment of impacts on identified sensitive receptors.

It should be noted that the impact identified will all gradually increase from the current situation to the impact level indicated during the construction phase, be consistent at the impact levels indicated during the operational phase and decrease again from the levels indicated to close to the current situation during the decommissioning phase.

Cumulative impacts are detailed in Appendix IV. A synopsis of the assessment of cumulative impacts is included in the assessment tables below.

5.2.1 Industrialisation of the surrounding Rural Landscape.

Nature of impact:

This impact relates to industrialisation of the rural landscape surrounding the proposed site. This will occur if views of the proposed power station and associated infrastructure become visible and obvious from areas that currently are not impacted by views of industry. Given the extent of existing and historical industry surrounding the proposed site, this is unlikely to occur.

From all viewpoints, the proposed power plant will be seen in the context of existing and planned future heavy industry. From closer viewpoints on the R34 as well as one temporary viewpoint on the N2, the development will appear to increase the extent of industrial development. This however is marginal when future planned development is considered.

There will an intensification of industrial elements locally, however, this is likely to only be noticeable from closer viewpoints. From within more rural areas this intensification is unlikely to be noticeable.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small **(0)**	Small **(0)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(12)**	Low **(12)**
Status	The landscape is already industrialised. From a landscape quality perspective therefore the identified impacts	**Neutral to negative**

	is likely to be **neutral to negative**.	
Reversibility	Low	Low
Irreplaceable loss	The proposed development will intensify industrial character over a relatively small section of the landscape. **There will be no irreplaceable loss.**	**No irreplaceable loss.**
Can impacts be mitigated?	**Not to any significant degree**	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan screen planting to soften views of the development particularly for the R34; and
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake screen planting; and
- Undertake dust control.

Operations:

- Monitor rehabilitated areas and implement remedial actions (monthly until establishment, thereafter at the middle and end of every growing season);
- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

There will an intensification of industrial elements locally, however, this is likely to only be noticeable from closer viewpoints. From distances exceeding 3 – 4km this intensification is unlikely to be noticeable.

The contribution to cumulative impacts is assessed as low.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective

rehabilitation is undertaken during and after construction as well as on closure of the plant.

5.2.2 Impact of the Proposed Development on Identified Sensitive Receptors

Potential visual impacts on sensitive receptors that have been identified through scoping and the site visit include:

a) The proposed development could have a negative impact on urban areas. The desktop analysis indicates that distance and the VAC of the landscape is likely to help mitigate this possible impact.
b) There are eight protected areas within the approximate limit of visibility of the development. The desktop analysis indicates that the majority of these areas are likely to be unaffected although, the development may be visible from within the Richards Bay Game Reserve.
c) The proposed development could be visible from routes throughout the area. From the desktop analysis it is anticipated that some of these routes will have tourism significance although they are all currently impacted by industrial development to a degree.
d) The proposed development could impact negatively on local homesteads. There are a small number of homesteads from which the development could be visible.
e) The recreational uses on the northern side of the port could be negatively impacted by further industrialisation of the landscape.
f) A service station on the N2 that overlooks the coastal plain to the south of Richards Bay. This facility is used by many tourists as a rest and refuelling stop. Heavy industry is currently visible from this location but the project has the potential to extend the industrial character over larger sections of the landscape as seen from this location.
g) Lighting associated with the development could extend existing light pollution. There is already significant lighting associated with industry and urban development. The introduction of a new light source is not anticipated to be a significant issue particularly as it will be seen in the context of lighting associated with other industrial uses. However, good practice in ensuring that it causes minimum impact and nuisance for receptors should be ensured.

These issues will be considered in the context of the Landscape Character Areas, visual effects identified and possible cumulative influence of other possible infrastructure projects that are planned in the vicinity.

It should be noted that due to the VAC of the surrounding landscape is relatively low and is provided by mainly be the gently undulating landform. From the site visit, it was found that the ZTV analysis is an accurate indicator of where views of the development may be possible from.

a) Industrialisation of views from Urban Areas

Nature of impact:

The proposed development could have a negative impact on urban areas.

The analysis indicates that all urban areas other than Esikhawini will be screened from the development by existing heavy industry, landform and existing vegetation.

The assessment also indicates that the site is only likely to be visible from small sections of the northern edge of Esikhawini. From this area the power plant will be

viewed against existing heavy industrial development and, due to distance, it is unlikely to be highly obvious and will not be differentiable from existing development.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small **(0)**	Small **(0)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(12)**	Low **(12)**
Status	The affected landscape is already industrialised. From a landscape quality perspective therefore the identified impacts is likely to be **neutral to negative**.	**Neutral to negative**
Reversibility	Low	Low
Irreplaceable loss	**No irreplaceable loss.**	**No irreplaceable loss.**
Can impacts be mitigated?	**Not to any significant degree**	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake screen planting; and
- Undertake dust control.

Operations:

- Monitor rehabilitated areas and implement remedial actions (monthly until establishment, thereafter at the middle and end of every growing season);
- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and

- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

The power plant is only likely to be visible from small sections of the northern edge of Esikhawini. From this area it will be viewed against existing heavy industrial development and, due to distance, it is unlikely to be highly obvious and will not be differentiable from existing development.

The contribution to cumulative impacts is therefore assessed as low.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective rehabilitation is undertaken during and after construction as well as on closure of the plant.

b) Industrialisation of Views from Protected Areas

Nature of impact:

There are eight protected areas within the approximate limit of visibility of the development. The analysis indicates that only the Richards Bay Game Reserve could be affected as distance, landform, forestry and other intervening landscape features will result in the development being screened from other protected areas.

Development of the proposed site may be visible from small sections of the Richards Bay Game Reserve, however, should views be possible they will be seen in the context of other major industrial development in the area. Distance and the VAC of the intervening landscape is also likely to result in only small partial views of the development being possible. These are unlikely to be obvious.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small **(0)**	Small **(0)**
Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(12)**	Low **(12)**
Status	The affected landscape is already industrialised. From a landscape quality perspective therefore the identified impacts is likely to be **neutral to negative**.	**Neutral to negative**

Reversibility	Low	Low
Irreplaceable loss	**No irreplaceable loss.**	**No irreplaceable loss.**
Can impacts be mitigated?	**Not to any significant degree**	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

The proposed development is unlikely to be obvious from this receptor.

There are other industrial developments around the port that are visible from the Reserve. The proposed development will therefore not add significantly to this existing impact.

The contribution to the cumulative impact is assessed as low.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective rehabilitation is undertaken during and after construction as well as on closure of the plant.

c) Industrialisation of Views from Roads

Nature of impact:

The proposed project could affect views from the N2, the R34, the R102 and the P106. The N2 and R34 carry a proportion of tourism related traffic. The other affected roads are likely to carry mainly local commuter and business-related traffic.

From **the N2** the proposed power plant is likely to be visible. At its closest the road is approximately 4.9km from the road. The proposed power plant will be viewed with the backdrop of existing heavy industry. It is therefore unlikely to be highly obvious and will not change the nature of views from this road.

The R34 is the road that runs closest and to the south of the proposed power plant. At its closest it is just under 1km from the proposed plant.

From the R34, the power plant will be visible intermittently over approximately 8km. From every viewpoint it will be seen in the context of existing heavy industry. From the closest sections of the road particularly to the east of the plant the development will appear to increase the extent of existing industry.

The proposed power plant will be visible from **the P106**, from the entire road however, it will be viewed against the backdrop of existing heavy industry. By virtue of the fact that it is closer to the road than existing industry, it will marginally increase the extent of visible industry as the viewer travels towards the plant.

	Without mitigation	**With mitigation**
Extent	**N2** Site and immediate surroundings **(2)** **R34** Site and immediate surroundings **(2)** **P106** Site and immediate surroundings **(2)**	**N2** Site and immediate surroundings **(2)** **R34** Site and immediate surroundings **(2)** **P106** Site and immediate surroundings **(2)**
Duration	**N2** Long term **(4)** **R34** Long term **(4)** **P106** Long term **(4)**	**N2** Long term **(4)** **R34** Long term **(4)** **P106** Long term **(4)**
Magnitude	**N2** Small **(0)** **R34** Minor **(2)** **R106** Small **(0)**	**N2** Small **(0)** **R34** Small to minor **(1)** **R106** Small **(0)**
Probability	**N2** Improbable **(2)**	**N2** Very improbable **(1)**

	R34 Probable **(3)** **R106** Improbable **(2)**	**R34** Probable **(3)** **R106** Improbable **(2)**
Significance	**N2** Low **(12)** **R34** Low **(24)** **R106** Low **(12)**	**N2** Low **(12)** **R34** Low **(21)** **R106** Low **(12)**
Status	The affected landscape is already industrialised. From a landscape quality perspective therefore the identified impacts is likely to be **neutral to negative**.	**Neutral to negative**
Reversibility	Low	Low
Irreplaceable loss	**No irreplaceable loss.**	
Can impacts be mitigated?	**Not to any significant degree**	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

The contribution of the project to cumulative visual impacts was assessed as low.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective rehabilitation is undertaken during and after construction as well as on closure of the plant.

d) Industrialisation of Views from Homesteads

Nature of impact:

48 homesteads have been identified largely located between Empangeni and the N2 that have potential to be affected by views of the proposed development.

Due to fact that most homesteads are located inland of the N2 within an area or rolling hills above the coastal plain, due to VAC and distance, visibility of the proposed power plant is likely to be limited.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small **(0)**	Small **(0)**
Probability	Improbable **(2)**	Very improbable **(1)**
Significance	Low **(12)**	Low **(6)**
Status	Neutral to negative	Neutral to negative
Irreplaceable loss	**No irreplaceable loss.**	**No irreplaceable loss.**
Can impacts be mitigated?	**Yes**	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

The contribution of the project to cumulative visual impacts was assessed as low.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective rehabilitation is undertaken during and after construction as well as on closure of the plant.

e) The recreational uses on the northern side of the port could be negatively impacted by further industrialisation of the landscape

Nature of impact:

The proposed power plant may be just visible to small sections of this LCA. However only small partial views are likely to be possible from a distance. These are unlikely to be distinguishable from the surrounding landscape.

Impacts therefore will be negligible.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small **(0)**	Small **(0)**
Probability	Very improbable **(1)**	Very improbable **(1)**
Significance	Low **(6)**	Low **(6)**
Status	**Neutral**	**Neutral**
Reversibility	Low	Low
Irreplaceable loss	**No irreplaceable loss.**	**No irreplaceable loss.**
Can impacts be mitigated?	**Not to any significant degree**.	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;

- Plan colours of structures to visually blend with the local landscape.

Construction:
- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:
- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:
- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

Existing industry is visible in the distance from parts of these use areas however, they do not generally detract from enjoyment of the area.

The proposed power plant may be just visible to small sections of this area. However only small partial views are likely to be possible from a distance. These are unlikely to be distinguishable from the surrounding landscape.

The contribution to cumulative visual impacts is assessed as having a low significance.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective rehabilitation is undertaken during and after construction as well as on closure of the plant.

f) The industrialisation of the view as seen from the N2 Service Station

Nature of impact:

The proposed power plant will be viewed at a distance in excess of 8km from the viewpoint. It will also be seen against the backdrop of existing heavy industry. The development is therefore unlikely to be obvious.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small to minor **(1)**	Small **(0)**

Probability	Improbable **(2)**	Improbable **(2)**
Significance	Low **(14)**	Low **(12)**
Status	**Neutral.**	**Neutral.**
Irreplaceable loss	**No irreplaceable loss.**	**No irreplaceable loss.**
Can impacts be mitigated?	**Not to any significant degree**	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Cumulative Impacts:

Existing industry is obvious from this viewpoint and is generally seen as a profile on the horizon.

The proposed power plant will be viewed against the backdrop of existing heavy industry. The development is therefore unlikely to be obvious.

The contribution to cumulative visual impacts is assessed as having a low significance.

Residual Risks:

The residual risk relates to loss of rural landscape being obvious on decommissioning of the proposed project. It is likely that by the time that decommissioning occurs that rural areas to the south may be developed due to both industrial and port expansion. In order to minimise this risk however, it is important that effective rehabilitation is undertaken during and after construction as well as on closure of the plant.

g) Lighting Impacts

Nature of impact:

The introduction of a new light source is not anticipated to be a major issue in terms of general light pollution as the surrounding area already has numerous light sources.

Lighting is likely to include;

- Aviation warning lights are may be required on the top of the stacks;
- Operational lighting will be required at buildings;
- Floodlighting is likely to be required for key operational areas including the sub-station. This may be required to ensure that maintenance work can be undertaken during hours of darkness;
- Internal road lighting is likely to be required; and
- Security lighting is likely to be required. This may be high mast lighting or boundary lighting along the fence line.

The largest risk of nuisance is likely to be associated with flood lit areas, boundary security lighting and high mast lighting.

Receptors at greatest risk of impact include minor access roads.

	Without mitigation	**With mitigation**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Minor **(2)**	Small, **(0)**
Probability	Improbable **(2)**	Vey improbable **(1)**
Significance	Low **(16)**	Low **(6)**
Status	Lighting glare affecting adjacent roads is likely to be considered negative by affected people. **Negative**	If lights are visible but there is no / minimal glare then lighting is unlikely to be considered as a negative impact. **Neutral**
Reversibility	High	High
Irreplaceable loss	No irreplaceable loss	No irreplaceable loss
Can impacts be mitigated?	Yes	

Mitigation / Management:

Planning:

- Ensure that lighting is focused on the development with no light spillage outside the site; and
- Keep lighting as low as possible.

Cumulative Impact: The contribution to cumulative visual impacts is assessed as having a low significance.
Residual Risks: No residual risk has been identified.

6 CONCLUSIONS

6.1 GENERAL

The proposed site is located to the west of Richards Bay within an area that is planned for heavy industry (Richards Bay IDZ Phase 1D).

The proposed power plant will be flanked to the north and east by other major industrial installations including the Mondi Paper Mill.

To the south of the proposed site the landscape is largely rural in character although it needs to be highlighted that a mining operation has recently been developed in this area and there are long term plans to extend the port and port facilities into this general area.

Whilst this site is highly visible, the proposed development is likely to be seen in the context of other heavy industrial structures from all but the closest viewpoints.

The assessment indicates that the proposed power plant and associated infrastructure will impact a highly modified landscape.

Existing heavy industry is likely to screen the development from areas to the east and north east.

6.2 LANDSCAPE CHARACTER AND IMPORTANCE

The majority of the affected landscape has been transformed by a combination of industrial development, mining activities and agriculture.

The importance of the different landscape areas identified really relates to the activities that are undertaken. These include;

Existing Protected Areas and in particular the Richards Bay Game Reserve that is an important local conservation resource as well as being a local recreation and tourism attraction located approximately 3.2 km to the south east of the power plant. The site visit has indicated that the proposed power plant is unlikely to be obvious from this area.

Offshore recreation is important to Richards Bay, particularly deep sea fishing and whale watching. The two local ski boat clubs undertake numerous competitions during the year and they are an important draw card for international and national participants. Whilst the focus of the activity is game fishing, this experience is no doubt enhanced for many by the perception that it is being undertaken off a reasonably natural coastline. The assessment has shown that views of the proposed power plant will be mitigated by distance and by tall coastal dunes that largely hides most development from seaward off the beaches.

The north eastern edge of the Port is particularly important for local recreation and tourism. In addition to the area being the home of a number of water based sports clubs, the back of the port area has generally been laid out as an informal recreation area that attracts large numbers of people particularly during holidays and weekends. The area is also used for formal sporting events such as the Richards Bay / Esikhawini Marathon. As with offshore recreation, the recreational areas on the northern side of the port the distance between the areas in question and the VAC of the intervening landscape will result in the proposed power plant being largely screened.

6.3 VISUAL RECEPTORS

Visual receptors have been identified through a desktop mapping exercise followed by on site verification.

Area Receptors that include:

- The urban area of Esikhawini which is located approximately 6.5km to the south west of the proposed site. Residential areas particularly may be sensitive to change in view;
- The Richards Bay Game Reserve is located approximately 4.5km to the south east of the proposed site; and
- The popular public recreational area on the northern edge of the Port which is located approximately 9km to the east of the proposed site.

Linear Receptors which include the roads that are aligned through the area. The main linear receptors include;

- The N2 Freeway which runs approximately 3.9km inland and to the west of the proposed site. This road is a key regional route and is important for both tourism and business. In the vicinity of Richards Bay, it runs on elevated ground just inland of the coastal plain and therefore an overview of the coastal plain looking towards the proposed development site is possible.
- The R34 is the main route into Richards Bay from the south. It links the N2, Empangeni and inland areas to the urban area and the port. This road is duelled over most of its length. It is the main access route that carries a high proportion of business and tourism related traffic. As it crosses flood plain areas it is slightly elevated which does enable views over lower sections of the coastal plain. As it approaches Richards Bay it is located on slightly elevated land that is surrounded by natural vegetation. This vegetation and the landform results in only partial views over the coastal plain being possible. This road traverses close to the proposed site which is located within an area that is planned for industrial development and close to existing major industrial uses.
- The P106 is the main route between the R34 / Richards Bay and Esikhwini. This road crosses the flood plain of the Mhlatuze River that is largely planted with sugar cane. Whilst it is set at a relatively low level, panoramic views over the flood plain are possible. This road joins the R34 in close proximity to the proposed site. This road is largely a local distributor providing access for local residents and businesses. It is unlikely to carry a large number of tourists although it does provide access to the southern side of the Richards Bay Game Reserve.

Point Receptors that include:

- Isolated homesteads and small rural settlements most of which are likely to be associated with agricultural uses. There are no isolated homesteads in the vicinity of the proposed site. There are however a number of homesteads located in higher areas inland of the coastal plain.
- A service station on the N2 overlooking the coastal plain. This facility is used by many local and regional travellers as a rest and refuelling stop. A large proportion of these travellers are likely be travelling for tourism related reasons.

6.4 AREAS AND NATURE OF VISUAL IMPACT

Possible visual impacts that have been identified include:

a) Industrialisation of the rural landscape to the south;
b) The proposed development could have a negative impact on urban areas. The desktop analysis indicates that distance and the VAC of the landscape is likely to help mitigate this possible impact.
c) There are eight protected areas within the approximate limit of visibility of the development. The desktop analysis indicates that the majority of these areas are likely to be unaffected although, the development may be visible from within the Richards Bay Game Reserve.
d) The proposed development could be visible from routes throughout the area. From the desktop analysis it is anticipated that some of these routes will have tourism significance although they are all currently impacted by industrial development to a degree.
e) The proposed development could impact negatively on local homesteads. There are a small number of homesteads from which the development could be visible.
f) The recreational uses on the northern side of the port could be negatively impacted by further industrialisation of the landscape.
g) A service station on the N2 that overlooks the coastal plain to the south of Richards Bay. This facility is used by many tourists as a rest and refuelling stop. Heavy industry is currently visible from this location but the project has the potential to extend the industrial character over larger sections of the landscape as seen from this location.
h) Lighting associated with the development could extend existing light pollution. There is already significant lighting associated with industry and urban development. The introduction of a new light source is not anticipated to be a significant issue particularly as it will be seen in the context of lighting associated with other industrial uses. However, good practice in ensuring that it causes minimum impact and nuisance for receptors should be ensured.

a) Industrialisation of the surrounding Rural Landscape

This impact relates to industrialisation of the rural landscape to the south of the proposed site.

From all viewpoints, the proposed power plant will be seen in the context of existing and planned future heavy industry. From closer viewpoints as well as mid distance viewpoint, the development will appear to increase the extent of industrial development. This however is marginal when future planned development is considered.

There will an intensification of industrial elements locally, however, this is likely to only be noticeable from closer viewpoints. From within more rural areas this intensification is unlikely to be noticeable.

The impact was assessed as a low neutral to negative impact with and without mitigation.

b) Industrialisation of Views from Protected Areas

There are eight protected areas within the approximate limit of visibility of the development. The analysis indicates that only the Richards Bay Game Reserve could be affected as distance, landform, forestry and other intervening landscape features will result in the development being screened from other protected areas.

Development of the proposed site may be visible from sections of the Richards Bay Game Reserve, however, should views be possible they will be seen in the context of other major industrial development in the area. Distance and the VAC of the intervening landscape is

also likely to result in only small partial views of the development being possible. These are unlikely to be obvious.

The impact was assessed as a low neutral to negative impact without mitigation and low neutral to negative impact with mitigation.

c) Industrialisation of views from roads

No major tourism routes will be affected.

The proposed project could affect views from the N2, the R34, the R102 and the P106. The N2 and R34 carry a proportion of tourism related traffic. The other affected roads are likely to carry mainly local commuter and business-related traffic.

From **the N2** the proposed power plant is likely to be visible. At its closest the road is approximately 4.9km from the road. The proposed power plant will be viewed with the backdrop of existing heavy industry. It is therefore unlikely to be highly obvious and will not change the nature of views from this road.

The R34 is the road that runs closest and to the south of the proposed power plant. At its closest it is just under 1km from the proposed plant.

From the R34, the power plant will be visible intermittently over approximately 8km. From every viewpoint it will be seen in the context of existing heavy industry. From the closest sections of the road particularly to the east of the plant the development will appear to increase the extent of existing industry.

The proposed power plant will be visible from **the P106**, from the entire road however, it will be viewed against the backdrop of existing heavy industry. By virtue of the fact that it is closer to the road than existing industry, it will marginally increase the extent of visible industry as the viewer travels towards the plant.

d) Industrialisation of views from homesteads

48 homesteads have been identified largely located between Empangeni and the N2 that have potential to be affected by views of the proposed development.

Due to fact that most homesteads are located inland of the N2 within an area or rolling hills above the coastal plain, due to VAC and distance, visibility of the proposed power plant is likely to be limited.

e) Industrialisation of views from Recreational Areas on the Northern Side of the Port

The proposed power plant may be just visible to small sections of this LCA. However only small partial views are likely to be possible from a distance that are unlikely to be distinguishable from the surrounding landscape.

The Impacts therefore will be negligible.

f) The industrialisation of the view as seen from the N2 Service Station

The proposed power plant will be viewed at a distance in excess of 8km from the viewpoint. It will also be seen against the backdrop of existing heavy industry. The development is therefore unlikely to be obvious.

Visual impact was assessed as having a low, neutral significance.

f) Lighting Impacts

The introduction of a new light source is not anticipated to be a major issue in terms of general light pollution as the surrounding area already has numerous light sources.

Lighting is likely to include;

- Aviation warning lights are may be required on the top of the stacks;
- Operational lighting will be required at buildings;
- Floodlighting is likely to be required for key operational areas including the sub-station. This may be required to ensure that maintenance work can be undertaken during hours of darkness;
- Internal road lighting is likely to be required; and
- Security lighting is likely to be required. This may be high mast lighting or boundary lighting along the fence line.

The largest risk of nuisance is likely to be associated with flood lit areas, boundary security lighting and high mast lighting.

Receptors at greatest risk of impact include minor access roads.

The impact was assessed as a low negative impact without mitigation and a low neutral impact with mitigation.

6.5 CUMULATIVE IMPACT

Because the proposed development will occur within an area that has been industrialised and where further heavy industrial development is planned, the power plant will largely be viewed against the background of other heavy industrial development. Because of this it is unlikely to significantly increase the extent of industrial development that is obvious from most key viewpoints. It will also not influence views over existing rural areas.

The proposed power plant has therefore been assessed as likely to have low contribution to industrialisation of the landscape as viewed from sensitive receptors.

6.6 POWER PLANT MITIGATION POTENTIAL

The affected landscape surrounding the existing industrial zone and the proposed development sites has a low degree of visual absorption capacity (VAC) due to its relatively flat and open nature.

However, despite there being limited VAC, the nature of the development particularly within a heavy industrial context provides potential for mitigation. This is particularly relevant for longer views such as those associated with more sensitive uses including views from the N2, recreational areas to the north of the port and the Richards Bay Game Reserve which are seen from a minimum of 5km, 9km and 4km respectively. At these distances, with the development being viewed against an industrial backdrop in the case of the N2 and only partial views being possible in the case of the latter two areas. This means that even without mitigation impacts are likely to be relatively low from these key areas. With appropriate colouring, however, the development is likely to be indistinguishable from its backdrop.

Mitigation should therefore focus on designing the new elements to blend as naturally as possible with their backdrop. Dust suppression will also be important during the construction phase.

From close quarters, screen planting may be possible to help hide the lower sections of the development. This may be important for views from the R34.

The retention and management of vegetation within the site during construction and operation is also likely to be important in maintaining relatively low visual impacts.

The potential to undertake successful mitigation of visual impacts associated with the power plant is therefore relatively high despite the low level of VAC of the immediately surrounding landscape.

6.8 CONCLUSION

Due to the nature of the landscape in the vicinity of the proposed project which includes an area of wide coastal plain, the development could be visible from an extensive area.

It should be noted however, that due largely to local topography including an extensive coastal dune system and elevated rolling hills directly inland of the coastal plain and the location of the site within an existing heavy industrial area, it is likely that visibility of the project will largely be limited to areas that are already impacted visually by heavy industry.

Because development of this site is unlikely to significantly extend the influence of industry over the rural landscape to the south of Richards Bay and because the proposed development seems unlikely to have a major influence in terms of changing the nature of views from areas used for potentially sensitive uses, it seems highly unlikely that there will be any visual impacts that cannot be readily mitigated.

The assessment has confirmed that there are no visual impacts that will preclude development. From a visual perspective therefore, the project may be authorised.

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APPENDIX I

SPECIALIST'S BRIEF CV

Name	JONATHAN MARSHALL
Nationality	British
Year of Birth	1956
Specialisation	Landscape Architecture / Landscape & Visual Impact Assessment / Environmental Planning / Environmental Impact Assessment.

Qualifications

Education	Diploma in Landscape Architecture, Gloucestershire College of Art and Design, UK (1979) Environmental Law, University of KZN (1997)
Professional	Registered Professional Landscape Architect (South Africa) Chartered Member of the Landscape Institute (UK) Member of the International Association of Impact Assessment, South Africa

Languages	English	- Speaking	-	Excellent
		- Reading	-	Excellent
		- Writing	-	Excellent

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Key Experience

Jon qualified as a Landscape Architect (Dip LA) at Cheltenham (UK) in 1979. He has also had extensive experience of working as an Environmental Assessment Practitioner in South Africa.

During the early part of his career (1981 - 1990) He worked with Clouston (now RPS) in Hong Kong and Australia. During this period he was called on to undertake visual impact assessment (VIA) input to numerous environmental assessment processes for major infrastructure projects. This work was generally based on photography with line drawing superimposed to illustrate the extent of development visible.

He has worked in the United Kingdom (1990 - 1995) for a major supermarket chain and prepared CAD based visual impact assessments for public enquiries for new green field store development. He also prepared the VIA input to the environmental statement for the Cardiff Bay Barrage for consideration by the UK Parliament in the passing of the Barrage Act (1993).

His more recent VIA work (1995 to present) includes a combination of CAD and GIS based work for a new international airport to the north of Durban, new heavy industrial operations, overhead electrical transmission lines, mining operations in West Africa and numerous commercial and residential developments.

VIA work undertaken during the last eighteen months includes assessments for two private power stations, numerous solar plant projects for Eskom and private clients, proposed wind farm development and a proposed tourism development within the Isimangaliso Wetland Park World Heritage Site.

Jon has also had direct experience of working with UNESCO representatives on a candidate World Heritage Site and has undertaken VIAs within and adjacent to other World Heritage Sites.

Relevant Visual Impact Assessment Projects

- **Bhangazi Lake Tourism Development, iSimangaliso Wetland Park** – VIA for a private tourism development within the World Heritage Site.
- **Palesa Power Station** - VIA for a new 600MW power station near Kwamhlanga in Mpumalanga for a private client.
- **Heuningklip PV Solar Project** – VIA for a solar project in the Western Cape Province for a private client.
- **Kruispad PV Solar Project** – VIA for a solar project in the Western Cape Province for a private client.
- **Doornfontein PV Solar Project** – VIA for a solar project in the Western Cape Province for a private client.
- **Olifantshoek Power Line and Substation** – VIA for a new 10MVA 132/11kV substation and 31km powerline, Northern Cape Province, for Eskom.
- **Noupoort Concentrating Solar Plants -** Scoping and Visual Impact Assessments for two proposed parabolic trough projects.
- **Drakensberg Cable Car –** Preliminary Visual Impact Assessment and draft terms of reference as part of the feasibility study.
- **Paulputs Concentrating Solar Plant (tower technology)** – Visual Impact Assessment for a new CSP project near Pofadder in the Northern Cape.
- **Ilanga Concentrating Solar Plants 1, 2, 3, 4 & 5** – Scoping and Visual Impact Assessments for the proposed extension of five authorised CSP projects including parabolic trough and tower technology within the Karoshoek Solar Valley near Upington in the Northern Cape.
- **Ilanga Concentrating Solar Plants 1, 2, 3, 4 & 5 Shared Infrastructure** –Visual Impact Assessment for the necessary shared infrastructure including power lines, substation, water pipeline and roads for these projects.
- **Ilanga Concentrating Solar Plants 7, 8 & 9** - Scoping and Visual Impact Assessments for three new CSP projects including parabolic trough and tower technology within the Karoshoek Solar Valley near Upington in the Northern Cape.
- **Sol Invictus Solar Plants** - Scoping and Visual Impact Assessments for three new Solar PV projects near Pofadder in the Northern Cape.
- **Gunstfontein Wind Energy Facility** – Scoping and Visual Impact Assessment for a proposed WEF near Sutherland in the Northern Cape.
- **Moorreeesburg Wind Energy Facility** – Visual Impact Assessment for a proposed WEF near Moorreeesburg in the Western Cape.
- **Semonkong Wind Energy Facility** - Visual Impact Assessment for a proposed WEF near Semonkong in Southern Lesotho.
- **Great Karoo Wind Energy Facility** – Addendum report to the Visual Impact Assessment Report for amendment to this authorised WEF that is located near Sutherland in the Northern Cape. Proposed amendments included layout as well as rotor diameter.
- **Perdekraal East Power Line** – Visual Impact Assessment for a proposed power line to evacuate power from a wind energy facility near Sutherland in the Northern Cape.
- **Tshivhaso Power Station** – Scoping and Visual Impact Assessment for a proposed new power station near Lephalale in Limpopo Province.
- **Saldanha Eskom Strengthening** – Scoping and Visual Impact Assessment for the upgrading of strategic Eskom infrastructure near Saldanha in the Western Cape.
- **Eskom Lethabo PV Installation** - Scoping and Visual Impact Assessment for the development of a solar PV plant within Eskom's Lethabo Power Station in the Free State.
- **Eskom Tuthuka PV Installation** - Scoping and Visual Impact Assessment for the development of a solar PV plant within Eskom's Thutuka Power Station in Mpumalanga.
- **Eskom Majuba PV Installation** - Scoping and Visual Impact Assessment for the development of a solar PV plant within Eskom's Majuba Power Station in Mpumalanga.
- **Golden Valley Power Line** - Visual Impact Assessment for a proposed power line to evacuate power

from a wind energy facility near Cookhouse in the Eastern Cape.

- **Mpophomeni Shopping Centre** – Visual impact assessment for a proposed new shopping centre close to the southern shore of Midmar Dam in KwaZulu Natal.
- **Rheeboksfontein Power Line** - Addendum report to the Visual Impact Assessment Report for amendment to this authorised power line alignment located near Darling in the Western Cape.
- **Woodhouse Solar Plants** – Scoping and Visual Impact Assessment for two proposed solar PV projects near Vryburg in the North West Province.
- **AngloGold Ashanti, Dokyiwa (Ghana)** – Visual Impact Assessment for proposed new Tailings Storage Facility at a mine site working with SGS as part of their EIA team.
- **Gateway Shopping Centre Extension (Durban)** – Visual Impact Assessment for a proposed shopping centre extension in Umhlanga, Durban.
- **Kouroussa Gold Mine (Guinea)** – Visual impact assessment for a proposed new mine in Guinea working with SGS as part of their EIA team.
- **Mampon Gold Mine (Ghana)** - Visual impact assessment for a proposed new mine in Ghana working with SGS as part of their EIA team.
- **Telkom Towers** – Visual impact assessments for numerous Telkom masts in KwaZulu Natal.
- **Eskom Isundu Substation** – Visual Impact Assessment for a proposed major new Eskom substation near Pietermaritzburg in KwaZulu Natal.
- **Eskom St Faiths Power Line and Substation** – Visual Impact Assessment for a major new substation and associated power lines near Port Shepstone in KwaZulu Natal.
- **Eskom Ficksburg Power Line** – Visual Impact Assessment for a proposed new power line between Ficksburg and Cocolan in the Free State.
- **Eskom Matubatuba to St Lucia Power Line** – Visual Impact Assessment for a proposed new power line between Mtubatuba and St Lucia in KwaZulu Natal.
- **Dube Trade Port, Durban International Airport** – Visual Impact Assessment
- **Sibaya Precinct Plan** – Visual Impact Assessment as part of Environmental Impact Assessment for a major new development area to the north of Durban.
- **Umdloti Housing** – Visual Impact Assessment as part of Environmental Impact Assessment for a residential development beside the Umdloti Lagoon to the north of Durban.
- **Tata Steel Ferrochrome Smelter** - Visual impact assessment of proposed new Ferrochrome Smelter in Richards Bay as part of EIA undertaken by the CSIR.
- **Durban Solid Waste Large Landfill Sites –** Visual Impact Assessment of proposed development sites to the North and South of the Durban Metropolitan Area. The project utilised 3d computer visualisation techniques.
- **Hillside Aluminium Smelter, Richards Bay -** Visual Impact Assessment of proposed extension of the existing smelter. The project utilised 3d computer visualisation techniques.
- **Estuaries of KwaZulu Natal Phase 1 –** Visual character assessment and GIS mapping as part of a review of the condition and development capacity of eight estuary landscapes for the Town and Regional Planning Commission. The project was extended to include all estuaries in KwaZulu Natal.
- **Signage Assessments** – Numerous impact assessments for proposed signage developments for Blast Media.
- **Signage Strategy** – Preparation of an environmental strategy report for a national advertising campaign on National Roads for Visual Image Placements.
- **Zeekoegatt, Durban** - Computer aided visual impact assessment. EDP acted as advisor to the Province of KwaZulu Natal in an appeal brought about by a developer to extend a light industrial development within a 60 metre building line from the National N3 Highway.
- **La Lucia Mall Extension** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed extension to shopping mall for public consultation exercise.
- **Redhill Industrial Development** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed new industrial area for

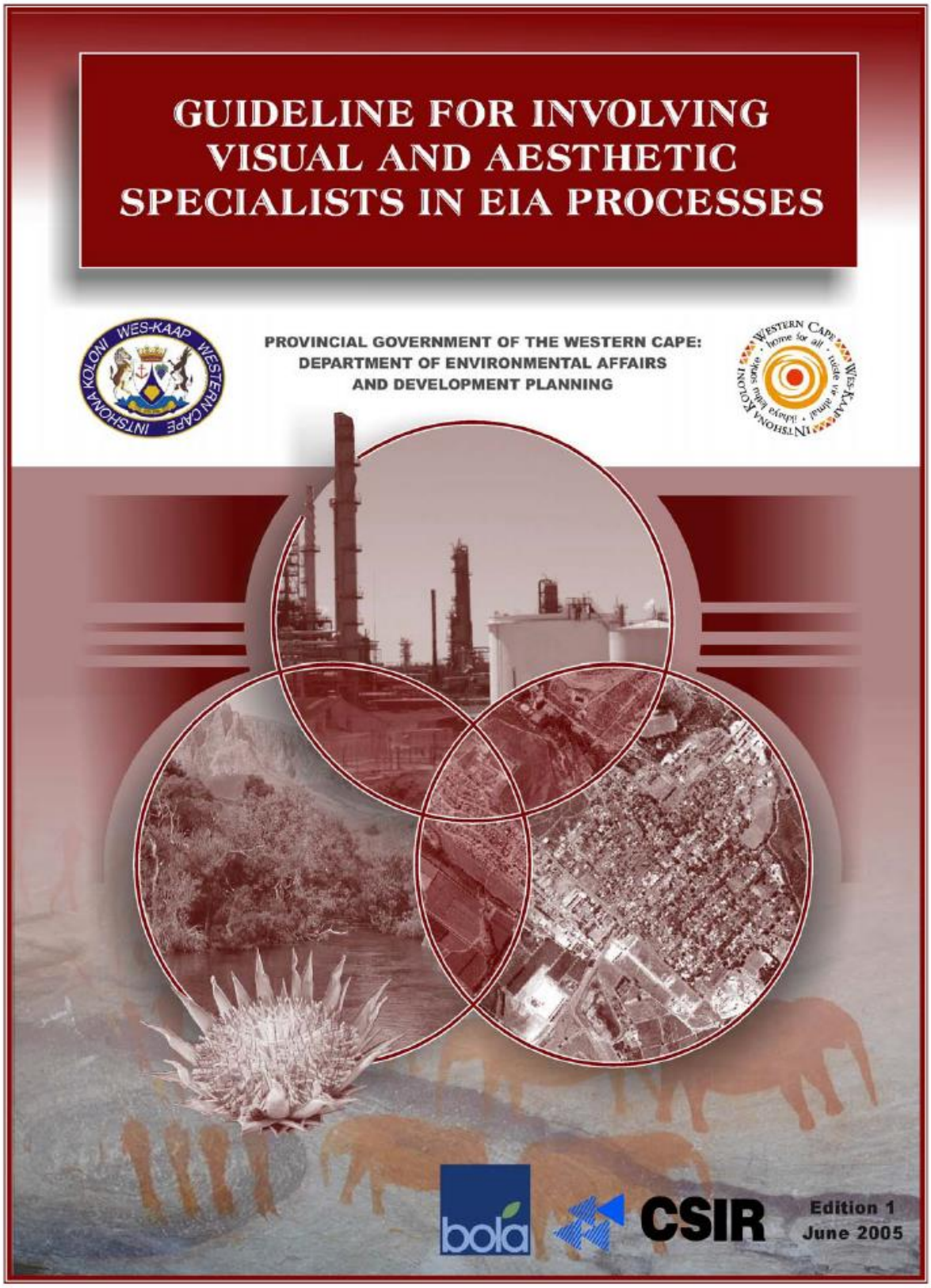
public consultation exercise.

- **Avondale Reservoir** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed hilltop reservoir as part of Environmental Impact Assessment for Umgeni Water.
- **Hammersdale Reservoir** - Visual impact assessment using three dimensional computer modelling / photo realistic rendering and montage techniques for proposed hilltop reservoir as part of Environmental Impact Assessment for Umgeni Water.
- **Southgate Industrial Park, Durban** - Computer Aided Visual Impact Assessment and Landscape Design for AECI.
- **Sainsbury's Bryn Rhos** - Computer Aided Visual Impact Assessment/ Planning Application for the development of a new store within the Green Wedge North of Swansea.
- **Ynyston Farm Access** - Computer Aided Impact Assessment of visual intrusion of access road to proposed development of Cardiff for the Land Authority for Wales.
- **Cardiff Bay Barrage** – Preparation of the Visual Impact Statement for inclusion in the Impact Statement for debate by parliament (UK) prior to the passing of the Cardiff Bay Barrage Bill.
- **A470, Cefn Coed to Pentrebach** - Preparation of landscape frameworks for the assessment of the impact of the proposed alignment on the landscape for The Welsh Office.
- **Sparkford to Illchester Bye Pass** - The preparation of the landscape framework and the draft landscape plan for the Department of Transport.
- **Green Island Reclamation Study** - Visual Impact Assessment of building massing, Urban Design Guidelines and Masterplanning for a New Town extension to Hong Kong Island.
- **Route 3** - Visual Impact Assessment for alternative road alignments between Hong Kong Island and the Chinese Border.
- **China Border Link** - Visual Impact Assessment and initial Landscape Design for a new border crossing at Lok Ma Chau.
- **Route 81, Aberdeen Tunnel to Stanley** - Visual Impact Assessment for alternative highway alignments on the South side of Hong Kong Island.

APPENDIX II

GUIDELINES FOR INVOLVING VISUAL AND AESTHETIC SPECIALISTS IN EIA PROCESSES

(Preface, Summary and Contents for full document go to the Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning web site, http://eadp.westerncape.gov.za/your-resource-library/policies-guidelines)


GUIDELINE FOR INVOLVING VISUAL AND AESTHETIC SPECIALISTS IN EIA PROCESSES
PROVINCIAL GOVERNMENT OF THE WESTERN CAPE:
DEPARTMENT OF ENVIRONMENTAL AFFAIRS
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GUIDELINE FOR INVOLVING VISUAL AND AESTHETIC SPECIALISTS IN EIA PROCESSES

Edition 1

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Stakeholders engaged in the guideline development process:

These guidelines were developed through a consultative process and have benefited from the inputs and comments provided by a wide range of individuals and organizations actively working to improve EIA practice. Thanks are due to all who took the time to engage in the guideline development process.

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Finalisation of report figures and formatting:

Magdel van der Merwe and Elna Logie, DTP Solutions

PREFACE

The purpose of an Environmental Impact Assessment (EIA) is to provide decision-makers (be they government authorities, the project proponent or financial institutions) with adequate and appropriate information about the potential positive and negative impacts of a proposed development and associated management actions in order to make an informed decision whether or not to approve, proceed with or finance the development.

For EIA processes to retain their role and usefulness in supporting decision-making, the involvement of specialists in EIA needs to be improved in order to:

- Add greater value to project planning and design;
- Adequately evaluate reasonable alternatives;
- Accurately predict and assess potential project benefits and negative impacts;
- Provide practical recommendations for avoiding or adequately managing negative impacts and enhancing benefits;
- Supply enough relevant information at the most appropriate stage of the EIA process to address adequately the key issues and concerns, and effectively inform decision-making in support of sustainable development.

It is important to note that not all EIA processes require specialist input; broadly speaking, specialist involvement is needed when the environment could be significantly affected by the proposed activity, where that environment is valued by or important to society, and/or where there is insufficient information to determine whether or not unavoidable impacts would be significant.

The purpose of this series of guidelines is to improve the efficiency, effectiveness and quality of specialist involvement in EIA processes. The guidelines aim to improve the capacity of roleplayers to anticipate, request, plan, review and discuss specialist involvement in EIA processes. Specifically, they aim to improve the capacity of EIA practitioners to draft appropriate terms of reference for specialist input and assist all roleplayers in evaluating whether or not specialist input to the EIA process is appropriate for the type of development and environmental context. Furthermore, they aim to ensure that specialist inputs support the development of effective, practical Environmental Management Plans where projects are authorised to proceed (refer to *Guideline for Environmental Management Plans*).

The guidelines draw on best practice in EIA in general, and within specialist fields of expertise in particular, to address the following issues related to the timing, scope and quality of specialist input. The terms "specialist involvement" and "input" have been used in preference to "specialist assessment" and "studies" to indicate that the scope of specialists' contribution (if required) depends on the nature of the project, the environmental context and the amount of available information and does not always entail detailed studies or assessment of impacts.

The guidelines draw on best practice in EIA in general, and within specialist fields of expertise in particular, to address the following issues related to the timing, scope and quality of specialist input. The terms "specialist involvement" and "input" have been used in preference to "specialist

assessment" and "studies" to indicate that the scope of specialists' contribution depends on the nature of the project, the environmental context and the amount of available information.

	ISSUES
TIMING	▪ When should specialists be involved in the EIA process; i.e. at what stage in the EIA process should specialists be involved (if at all) and what triggers the need for their input?
SCOPE	▪ Which aspects must be addressed through specialist involvement; i.e. what is the purpose and scope of specialist involvement? ▪ What are appropriate approaches that specialists can employ? ▪ What qualifications, skills and experience are required?
QUALITY	▪ What triggers the review of specialist studies by different roleplayers? ▪ What are the review criteria against which specialist inputs can be evaluated to ensure that they meet minimum requirements, are reasonable, objective and professionally sound?

The following guidelines form part of this first series of guidelines for involving specialists in EIA processes:

- Guideline for determining the scope of specialist involvement in EIA processes
- Guideline for the review of specialist input in EIA processes
- Guideline for involving biodiversity specialists in EIA processes
- Guideline for involving hydrogeologists in EIA processes
- Guideline for involving visual and aesthetic specialists in EIA processes
- Guideline for involving heritage specialists in EIA processes
- Guideline for involving economists in EIA processes

The *Guideline for determining the scope of specialist involvement in EIA processes* and the *Guideline for the review of specialist input in EIA processes* provide generic guidance applicable to any specialist input to the EIA process and clarify the roles and responsibilities of the different roleplayers involved in the scoping and review of specialist input. It is recommended that these two guidelines are read first to introduce the generic concepts underpinning the guidelines which are focused on specific specialist disciplines.

Who is the target audience for these guidelines?

The guidelines are directed at authorities, EIA practitioners, specialists, proponents, financial institutions and other interested and affected parties involved in EIA processes. Although the guidelines have been developed with specific reference to the Western Cape province of South Africa, their core elements are more widely applicable.

What type of environmental assessment processes and developments are these guidelines applicable to?

The guidelines have been developed to support project-level EIA processes regardless of whether they are used during the early project planning phase to inform planning and design decisions (i.e. during pre-application planning) or as part of a legally defined EIA process to obtain statutory approval for a proposed project (i.e. during screening, scoping and/or impact assessment). Where specialist input may be required the guidelines promote early, focused and appropriate involvement of specialists in EIA processes in order to encourage proactive consideration of potentially significant impacts, so that negative impacts may be avoided or

effectively managed and benefits enhanced through due consideration of alternatives and changes to the project.

The guidelines aim to be applicable to a range of types and scales of development, as well as different biophysical, social, economic and governance contexts.

What will these guidelines not do?

In order to retain their relevance in the context of changing legislation, the guidelines promote the principles of EIA best practice without being tied to specific legislated national or provincial EIA terms and requirements. They therefore do not clarify the specific administrative, procedural or reporting requirements and timeframes for applications to obtain statutory approval. They should, therefore, be read in conjunction with the applicable legislation, regulations and procedural guidelines to ensure that mandatory requirements are met.

It is widely recognized that no amount of theoretical information on how best to plan and coordinate specialist inputs, or to provide or review specialist input, can replace the value of practical experience of coordinating, being responsible for and/or reviewing specialist inputs. Only such experience can develop sound judgment on such issues as the level of detail needed or expected from specialists to inform decision-makers adequately. For this reason, the guidelines should not be viewed as prescriptive and inflexible documents. Their intention is to provide best practice guidance to improve the quality of specialist input.

Furthermore, the guidelines do not intend to create experts out of non-specialists. Although the guidelines outline broad approaches that are available to the specialist discipline (e.g. field survey, desktop review, consultation, modeling), specific methods (e.g. the type of model or sampling technique to be used) cannot be prescribed. The guidelines should therefore not be used indiscriminately without due consideration of the particular context and circumstances within which an EIA is undertaken, as this influences both the approach and the methods available and used by specialists.

How are these guidelines structured?

The specialist guidelines have been structured to make them user-friendly. They are divided into six parts, as follows:

- **Part A**: Background;
- **Part B**: Triggers and key issues potentially requiring specialist input;
- **Part C**: Planning and coordination of specialist inputs (drawing up terms of reference);
- **Part D**: Providing specialist input;
- **Part E**: Review of specialist input; and
- **Part F**: References.

Part A provides grounding in the specialist subject matter for all users. It is expected that authorities and peer reviewers will make most use of Parts B and E; EIA practitioners and project proponents Parts B, C and E; specialists Part C and D; and other stakeholders Parts B, D and E. Part F gives useful sources of information for those who wish to explore the specialist topic.

SUMMARY

This guideline document, which deals with specialist visual input into the EIA process, is organised into a sequence of interleading sections. These follow a logical order covering the following:

- the background and context for specialist visual input;
- the triggers and issues that determine the need for visual input;
- the type of skills and scope of visual inputs required in the EIA process;
- the methodology, along with information and steps required for visual input;
- finally, the review or evaluation of the visual assessment process.

Part A is concerned with defining the visual and aesthetic component of the environment, and with principles and concepts relating to the visual assessment process. The importance of the process being logical, holistic, transparent and consistent is stressed in order for the input to be useful and credible.

The legal and planning context within which visual assessments take place indicate that there are already a number of laws and bylaws that protect visual and scenic resources. These resources within the Western Cape context have importance for the economy of the region, along with the proclaimed World Heritage Sites in the Province.

The role and timing of specialist visual inputs into the EIA process are outlined, with the emphasis being on timely, and on appropriate level of input, from the early planning stage of a project, through to detailed mitigation measures and management controls at the implementation stage.

Part B deals with typical factors that trigger the need for specialist visual input to a particular project. These factors typically relate to:

(a) the nature of the receiving environment, in particular its visual sensitivity or protection status;
(b) the nature of the project, in particular the scale or intensity of the project, which would result in change to the landscape or townscape.

The correlation between these two aspects are shown in a table, in order to determine the varying levels of visual impact that can be expected, i.e. from little or no impact, to very high visual impact potential.

Part C deals with the choice of an appropriate visual specialist, and the preparation of the terms of reference (TOR) for the visual input. Three types of visual assessment are put forward, each requiring different expertise, namely:
Type A: assessments involving large areas of natural or rural landscape;
Type B: assessments involving local areas of mainly built environment;
Type C: assessments involving smaller scale sites with buildings, or groups of buildings.

The scope of the visual input would in summary relate to the following:

- the issues raised during the scoping process;
- the time and space boundaries, i.e. the extent or zone of visual influence;

- the types of development alternatives that are to be considered;
- the variables and scenarios that could affect the visual assessment;
- the inclusion of direct, indirect and cumulative effects.

Approaches to the visual input relate to the level of potential impact and range from minimal specialist input, to a full visual impact assessment (VIA). A list of the typical components of a visual assessment is given, and the integration with other studies forming part of the EIA process is discussed.

Part D provides guidance for specialist visual input, and on the information required by specialists. Notes on predicting potential visual impacts are given, along with suggested criteria for describing and rating visual impacts. The assessment of the overall significance of impacts, as well as thresholds of significance are discussed.

Further aspects that need to be considered by visual specialists in EIA processes include:

- affected parties who stand to benefit or lose,
- risks and uncertainties related to the project,
- assumptions that have been made, and their justification,
- levels of confidence in providing the visual input or assessment,
- management actions that can be employed to avoid or mitigate adverse effects and enhance benefits, and
- the best practicable environental option from the perspective of the visual issues and impacts.

Finally, pointers for the effective communication of the findings are given.

Part E lists specific evaluation criteria for reviewing visual input by a specialist, where this becomes necessary. Further guidance on this is given in the document on *Guideline for the review of specialist input in EIA processes.*

CONTENTS

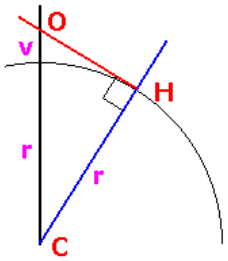
APPENDIX III

FORMULA FOR DERIVING THE APPROXIMATE VISUAL HORIZON

The Mathematics behind this Calculation

This calculation should be taken as a guide only as it assumes the earth is a perfect ball 6378137 metres radius. It also assumes the horizon you are looking at is at sea level. A triangle is formed with the centre of the earth (C) as one point, the horizon point (H) is a right angle and the observer (O) the third corner. Using Pythagoras's theorem we can calculate the distance from the observer to the horizon (OH) knowing CH is the earth's radius (r) and CO is the earth's radius (r) plus observer's height (v) above sea level.

Sitting in a hotel room 10m above sea level a boat on the horizon will be 11.3km away. The reverse is also true, whilst rowing across the Atlantic, the very top of a mountain range 400m high could be seen on your horizon at a distance of 71.4 km assuming the air was clear enough.



APPENDIX IV

CUMULATIVE IMPACT ASSESSMENT

1 Industrialisation of the surrounding Rural Landscape.

Nature:
Adding to the industrialisation of the area.

The proposed development will take place within an area that is under development for heavy industry. The site is currently flanked to the north and east by existing major industrial developments

From all viewpoints, the proposed power plant will be seen in the context of existing and planned future heavy industry. From closer viewpoints on the R34 as well as one temporary viewpoint on the N2, the development will appear to increase the extent of industrial development. This however is marginal when future planned development is considered.

There will an intensification of industrial elements locally, however, this is likely to only be noticeable from closer viewpoints. From distances exceeding 3 – 4km this intensification is unlikely to be noticeable.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Regional, **(2)**	Regional, **(3)**
Duration	Long term, **(4)**	Long term, **(4)**
Magnitude	Small to low, **(1)**	Low to minor, **(8)**
Probability	Improbable **(2)**	Definite **(5)**
Significance	**Low**, **(14)**	**Medium, (75)**
Status (positive or negative)	Neutral to negative	Negative
Reversibility	Low	Low
Loss of Resources?	No	Yes
Can impacts be mitigated?	To a small degree	
Confidence in findings:	High	

Mitigation:

Planning:

- *Plan to maintain the height of structures as low as possible;*
- *Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;*
- *Plan screen planting to soften views of the development particularly for the R34; and*
- *Plan colours of structures to visually blend with the local landscape.*

Construction:

- *Minimise disturbance and loss of existing vegetation;*
- *Undertake rehabilitation of disturbed areas;*
- *Undertake screen planting; and*
- *Undertake dust control.*

Operations:

- Monitor rehabilitated areas and implement remedial actions (monthly until establishment, thereafter at the middle and end of every growing season);
- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

2 Industrialisation of views from Urban Areas

Nature:
All urban areas other than Esikhawini will be screened from the development by existing heavy industry, landform and existing vegetation.

The power plant is only likely to be visible from small sections of the northern edge of Esikhawini. From this area it will be viewed against existing heavy industrial development and, due to distance, it is unlikely to be highly obvious and will not be differentiable from existing development.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Site and immediate surroundings, **(2)**	Site and immediate surroundings, **(2)**
Duration	Long term, **(4)**	Long term, **(4)**
Magnitude	Small, **(0)**	Low, **(4)**
Probability	Improbable, **(2)**	Probable, **(3)**
Significance	Low, **(12)**	Low, **(30)**
Status (positive or negative)	Neutral to negative	Negative
Reversibility	Low	Low
Loss of Resources?	No	Yes
Can impacts be mitigated?	Yes to a small degree	No
Confidence in findings:	High	

Mitigation:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake screen planting; and
- Undertake dust control.

Operations:

- Monitor rehabilitated areas and implement remedial actions (monthly until establishment, thereafter at the middle and end of every growing season);

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

3 Industrialisation of Views from Protected Areas

Nature:

Development of the proposed site may be visible from small sections of the Richards Bay Game Reserve, however, should views be possible they will be seen in the context of other major industrial development in the area. Distance and the VAC of the intervening landscape is also likely to result in only small partial views of the development being possible. These are unlikely to be obvious.

There are other industrial developments around the port that are visible from the Reserve. The proposed development will therefore not add significantly to this existing impact.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Site and immediate surrounds, **(2)**	Regional, **(3)**
Duration	Long term, **(4)**	Long term, **(4)**
Magnitude	Small, **(0)**	Low, **(4)**
Probability	Improbable, **(2)**	Probable, **(3)**
Significance	**Low**, **(12)**	**Medium, (33)**
Status (positive or negative)	Neutral to negative	Negative
Reversibility	High	High
Loss of resources?	No	Yes
Can impacts be mitigated?	To a small degree	No
Confidence in findings:	High	High

Mitigation:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

4 Industrialisation of Views from roads

Nature:
The proposed project could affect views from the N2, the R34 and the P106. The N2 and R34 carry a proportion of tourism related traffic. The other affected roads are likely to carry mainly local commuter and business-related traffic.

From **the N2** the proposed power plant is likely to be visible but it unlikely to be highly obvious and will not change the nature of views from this road.

From **the R34**, the power plant will be visible intermittently over approximately 8km. From every viewpoint it will be seen in the context of existing heavy industry. From the closest sections of the road particularly to the east of the plant the development will appear to increase the extent of existing industry.

The proposed power plant will be visible from **the P106**, from the entire road however, it will be viewed against the backdrop of existing heavy industry. By virtue of the fact that it is closer to the road than existing industry, it will marginally increase the extent of visible industry as the viewer travels towards the plant.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	**N2** Site and immediate surroundings **(2)** **R34** Site and immediate surroundings **(2)** **P106** Site and immediate surroundings **(2)**	**N2** Site and immediate surroundings **(2)** **R34** Site and immediate surroundings **(2)** **P106** Site and immediate surroundings **(2)**
Duration	**N2** Long term **(4)** **R34** Long term **(4)** **P106** Long term **(4)**	**N2** Long term **(4)** **R34** Long term **(4)** **P106** Long term **(4)**
Magnitude	**N2** Small **(0)**	**N2** Low **(4)**

	R34 Minor **(2)** **P106** Small **(0)**	**R34** Moderate **(6)** **P106** Low to moderate **(5)**
Probability	**N2** Improbable **(2)** **R34** Probable **(3)** **P106** Improbable **(2)**	**N2** Highly probable **(4)** **R34** Definite **(5)** **P106** Probable **(3)**
Significance	**N2** Low **(12)** **R34** Low **(24)** **P106** Low **(12)**	**N2** Medium **(40)** **R34** Medium **(60)** **P106** Medium **(33)**
Status (positive or negative)	**N2** Neutral **R34** Neutral to negative **P106** Neutral	**N2** Negative **R34** Negative **P106** Negative
Reversibility	Low	Low
Loss of resources?	No irreplaceable loss.	Yes
Can impacts be mitigated?	To a small degree	No
Confidence in findings:	High	

Mitigation:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

5 Industrialisation of views from Homesteads.

Nature:
Due to fact that most homesteads are located inland of the N2 within an area or rolling hills above the coastal plain, due to VAC and distance, visibility of the proposed power plant is likely to be limited.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Small **(0)**	Low **(4)**
Probability	Improbable **(2)**	Highly probable **(4)**
Significance	Low **(12)**	Medium **(40)**
Status (positive or negative)	Neutral to negative	Negative
Reversibility	Low	Low
Loss of resources?	No	No
Can impacts be mitigated?	No	
Confidence in findings:	High	

Mitigation / Management:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

6 Recreational uses on the northern side of the port

Nature:
Existing industry is visible in the distance from parts of these use areas however, they do not generally detract from enjoyment of the area.

The proposed power plant may be just visible to small sections of this area. However only small partial views are likely to be possible from a distance. These are unlikely to be distinguishable from the surrounding landscape.

Additional impacts therefore will be negligible.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Site and immediate surrounds, **(2)**	Site and immediate surrounds, **(2)**
Duration	Long term, **(4)**	Long term, **(4)**
Magnitude	Small, **(0)**	Low, **(4)**
Probability	Improbable, **(2)**	Probable, **(3)**
Significance	**Low**, **(12)**	**Low, (30)**
Status (positive or negative)	Neutral to negative	Negative
Reversibility	High	Low
Loss of resources?	No	Yes
Can impacts be mitigated?	To a small degree	No
Confidence in findings:	High	High

Mitigation:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

7 N2 Service Station

Nature:
Existing industry is obvious from this viewpoint and is generally seen as a profile on the horizon.

The proposed power plant will be viewed against the backdrop of existing heavy industry. The development is therefore unlikely to be obvious.

	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Site and immediate surroundings **(2)**	Site and immediate surrounds, **(2)**
Duration	Long term **(4)**	Long term, **(4)**
Magnitude	Small to minor **(1)**	Low, **(4)**
Probability	Improbable **(2)**	Probable **(3)**
Significance	Low **(14)**	**Low, (30)**
Status (positive or negative)	Neutral	Neutral to Negative
Reversibility	Low	Low
Loss of resources?	No	Yes
Can impacts be mitigated?	To a small degree	No
Confidence in findings:	High	High

Mitigation:

Planning:

- Plan to maintain the height of structures as low as possible;
- Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development;
- Plan colours of structures to visually blend with the local landscape.

Construction:

- Minimise disturbance and loss of existing vegetation;
- Undertake rehabilitation of disturbed areas;
- Undertake dust control.

Operations:

- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area;

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use of the site;
- Return all possible areas to their original state; and
- Monitor rehabilitated areas post-decommissioning and implement remedial actions.

8 Lighting Impacts

Nature:
The area already has numerous industrial lighting sources.

The proposed development will add to existing lighting but is unlikely to significantly extend areas of existing impact.		
	Cumulative Contribution of Proposed Project	**Cumulative Impact without Proposed Project**
Extent	Site and immediate surroundings **(2)**	Site and immediate surroundings **(2)**
Duration	Long term **(4)**	Long term **(4)**
Magnitude	Minor **(2)**	Moderate **(6)**
Probability	Improbable **(2)**	Probable **(3)**
Significance	Low **(16)**	Medium **(48)**
Status (positive or negative)	Neutral to negative	Negative
Reversibility	High	High
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings:	High	
Mitigation: Planning: • Ensure that lighting is focused on the development with no light spillage outside the site; and • Keep lighting as low as possible.		

APPENDIX V

ENVIRONMENTAL MANAGEMENT PLAN

Project component/s	Power plant structures Construction, Operation and Decommissioning.
Potential Impact	Further industrialisation of the landscape as viewed by sensitive receptors.
Activity/risk source	The nature of these elements will contrast with rural characteristics and will be highly obvious as new industrial development.
Mitigation: Target/Objective	Planning: • Plan to maintain the height of structures as low as possible; • Minimise disturbance of the surrounding landscape and maintain existing vegetation around the development; • Plan screen planting to soften views of the development particularly for the R34; and • Plan colours of structures to visually blend with the local landscape. Construction: • Minimise disturbance and loss of existing vegetation; • Undertake rehabilitation of disturbed areas; • Undertake screen planting; and • Undertake dust control. Operations: • Monitor rehabilitated areas and implement remedial actions (monthly until establishment, thereafter at the middle and end of every growing season); • Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area; Decommissioning: • Remove infrastructure not required for the post-decommissioning use of the site; • Return all possible areas to their original state; and • Monitor rehabilitated areas post-decommissioning and implement remedial actions.

Mitigation: Action/control	**Responsibility**	**Timeframe**
	Developer (D) Contractor (C) Environmental Control Officer (ECO) Environmental Liaison Officer (ELO)	Planning Phase (P) Construction Phase (C) Operational Phase (O) Decommissioning Phase (D)

Plan the development to minimise visibility by minimising structure heights as far as possible.	D, C	P
Ensure that colours used particularly for larger elements within the development do not draw attention to the development particularly when viewed from a distance.	D	P D
Minimise and reinstate vegetation loss.	C, ECO, ELO	C, D
Undertake screen planting particularly on southern edges	D, C, ECO, ELO	O
Manage vegetation buffers during the operational period to ensure their effectiveness in screening the development from surrounding areas.	D, ECO, ELO	O
Remove structures and rehabilitate site to natural state on decommissioning.	D, ECO, ELO	O, D
Monitor rehabilitated areas post-construction and post-decommissioning and implement remedial actions.	C, ECO, ELO	O, D

Performance Indicators	Vegetation presence and density. Presence of unnecessary infrastructure. Visibility of the power plant.
Monitoring	Evaluate the effectiveness of colours and surface finishes to visually recede from selected viewpoints. Evaluate health and effectiveness of vegetation to provide necessary screening before, during and after construction and annually thereafter. Evaluate vegetation growth and reinstatement during decommissioning and for five years thereafter. Take regular time-line photographic evidence. Responsibility: ECO and ELO. Prepare regular reports.