

## CONCLUSIONS

## CHAPTER 9

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Eskom Holdings Limited is proposing to establish a commercial wind energy electricity generation facility on a site on the West Coast north of the Olifants River in the Western Cape Province. It is proposed for a cluster of up to 100 wind turbines (typically described as a wind energy facility or a wind farm) to be constructed over an area of approximately 25km<sup>2</sup> in extent. This facility could be constructed in a phased approach, erecting and commissioning a first phase of 100 MW (approximately 50 industry-standard 2 MW turbines).

The Scoping Phase for the proposed Wind Energy Facility on the West Coast in the Western Cape Province has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006, in terms of Section 24(5) of the National Environmental Management Act (NEMA; Act No 107 of 1998). A Draft Scoping Report was prepared and released for a 30-day public review period.

The Scoping Report aimed at detailing the nature and extent of this facility, identifying potential issues associated with the proposed project, and defining the extent of studies required within the EIA. This was achieved through an evaluation of the proposed project, involving the project proponent, specialist consultants, and a consultation process with key stakeholders that included both relevant government authorities and interested and affected parties (I&APs). In accordance with the requirements of the EIA Regulations, feasible project-specific alternatives (including the "do nothing" option) have been identified for consideration within the EIA process.

The conclusions and recommendations of this Final Scoping Report are the result of on-site inspections, desk-top evaluations of impacts identified by specialists, and the parallel process of public participation. The public consultation process has been extensive and every effort has been made to include representatives of all stakeholder groupings in the study area and the Province.

A summary of the conclusions of the evaluation of the proposed wind energy facility and the associated 132 kV powerline alignment is provided below. Recommendations regarding investigations required to be undertaken within the EIA are provided within the Plan of Study for EIA (refer to Chapter 10).

## 9.1. Conclusions drawn from the Evaluation of the Proposed Site for Development of a Wind Energy Facility

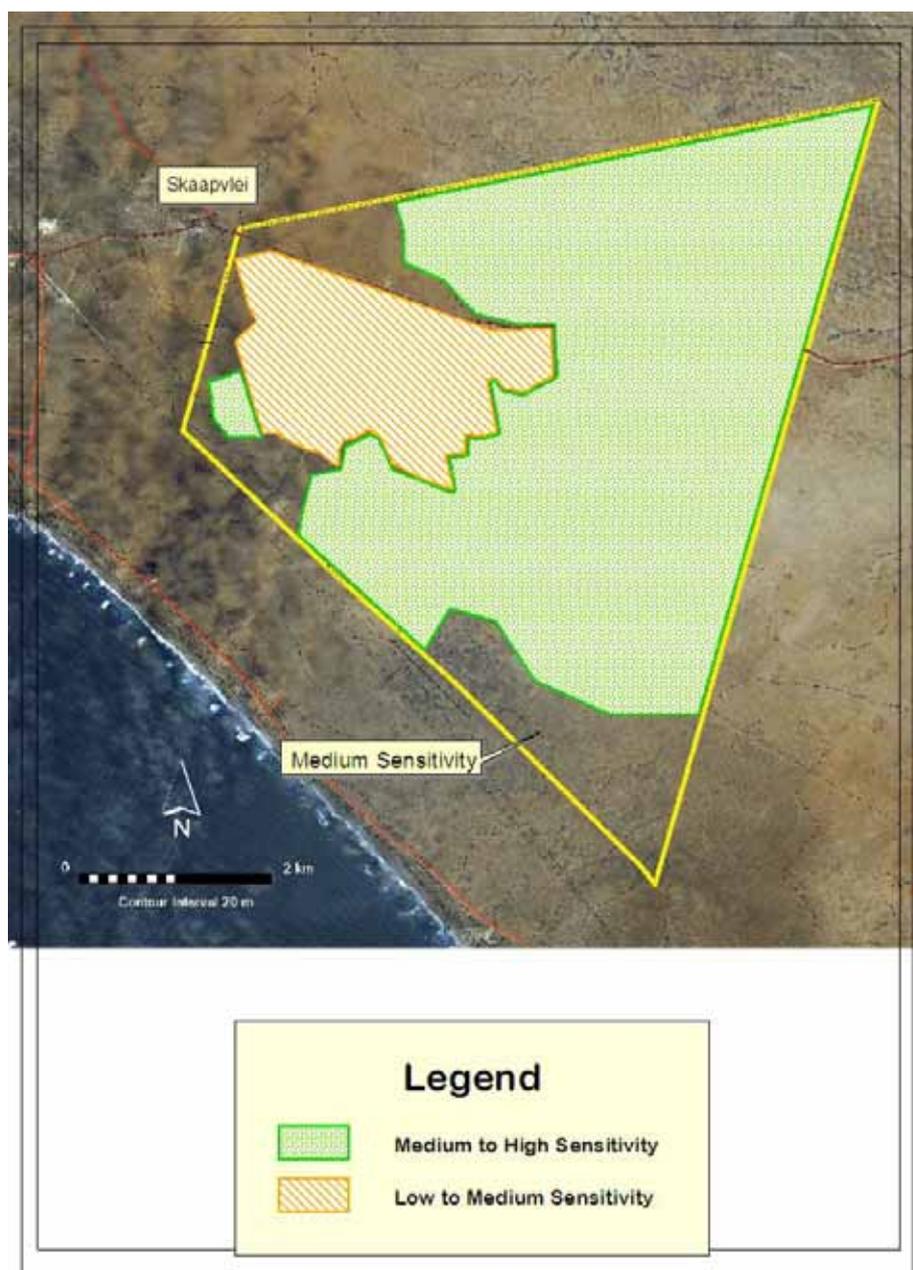
Through a regional site identification process, a broader area was identified by Eskom as potentially suitable for the wind energy development and put forward for consideration within an EIA (refer to Chapter 4 for details of the site identification process). This area (> 37 km<sup>2</sup> in extent) comprises the following farm portions:

- » Portion 5 of the farm Gravewaterkop 158
- » A portion of the Portion 620 of the farm Olifants River Settlement
- » A portion of the Portion 617 of the farm Olifants River Settlement

The wind farm is proposed to accommodate up to 100 turbines. The performance of the turbines is determined by disturbances to the wind resource, which requires that they are appropriately spaced. The turbines and associated infrastructure is, therefore, required to be positioned over an area of approximately 25 km<sup>2</sup>. In evaluating impacts associated with the proposed wind energy facility, it has been assumed that although during operation the area affected will comprise 100 turbines (15 m x 15 m foundation area), access roads and a substation, during construction the bulk of the approximately 25 km<sup>2</sup> required for the wind energy facility footprint could suffer some level of disturbance.

Issues identified through this scoping study as being potentially associated with the proposed wind energy facility at a site on West Coast include impacts on biodiversity and ecological processes, including habitat alteration and impacts to wildlife, visual impacts, potential impacts on heritage sites, soil erosion, noise produced by the spinning of rotor blades; avian/bat mortality resulting from collisions with blades; and transportation of equipment and materials. The majority of potential impacts identified to be associated with the construction and operation of the proposed wind energy facility are anticipated to be localised and restricted to the proposed site. No environmental fatal flaws were identified to be associated with the site, and no absolute 'no-go' areas were identified within the broader area evaluated. However, a number of potentially sensitive areas have been identified through the environmental scoping study. These areas should be considered in the micro-siting of the wind turbines, and avoided as far as possible. Potentially sensitive areas include:

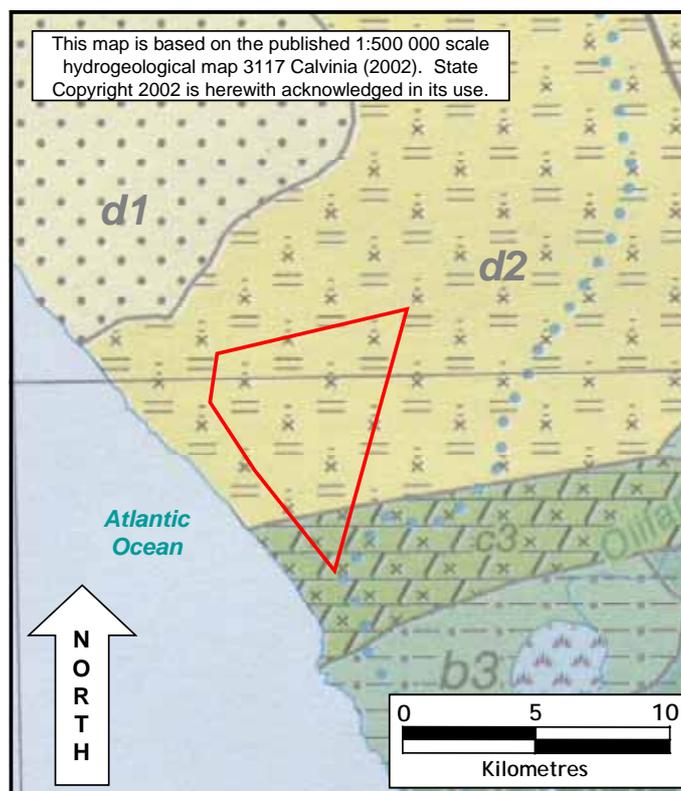
- » The sparse vegetation on clay soils, all rocky areas, and all Sand Fynbos areas were assessed as having a medium to high sensitivity (refer to Figure 9.1), and should ideally have limited disturbance through the construction of infrastructure in these areas.



**Figure 9.1:** Botanical Sensitivity Map of the proposed wind energy facility development site

- » The three small non-perennial pans that may hold water after rainfall. By definition, a pans is considered a wetland and may be potentially sensitive in terms of vegetation and the provision of habitats to terrestrial fauna and birds. These pans and associated buffer zones (of approximately 100 m) should be excluded from the development footprint.
- » Unvegetated and largely unvegetated aeolian dunes represent a high erosion risk and should be avoided for the siting of infrastructure wherever possible.
- » The southern corner of the proposed site should not be considered for the placement or development of infrastructure that poses a contamination risk to

the groundwater resource unless site-specific groundwater studies indicate otherwise (refer to Figure 9.2).



**Figure 9.2:** Hydrogeological map of the study area indicating the location of the presence of a (pseudo)karst aquifer associated with limestone formations that intersect the southern corner of the site (indicated as c3)

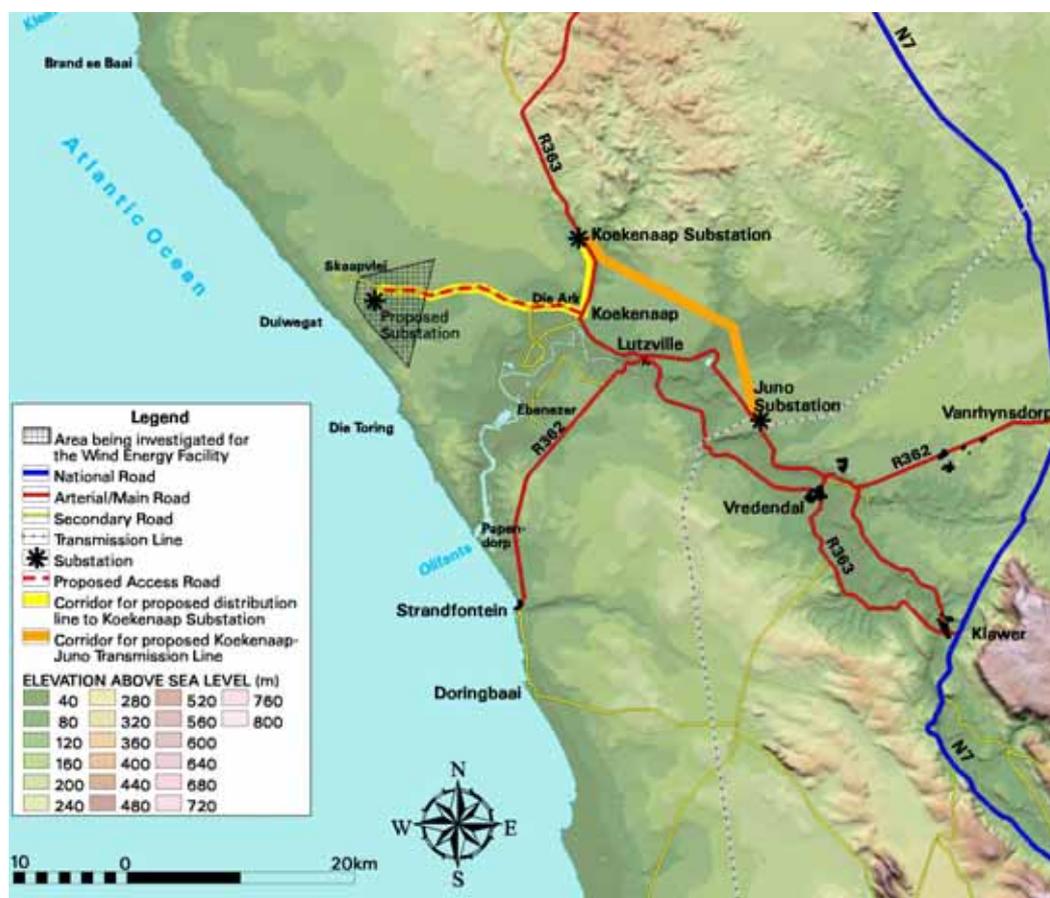
As a result of the area being previously disturbed, the least sensitive area identified is the previously cultivated area located on large parts of Portion 5 of Gravewaterkop 158.

The findings of the Draft Scoping Report do not, therefore, identify any portion of the proposed study sites as of "high sensitivity" prohibiting the development. The proposed design of the wind farm (i.e. wind turbines and other infrastructure) can be based on the full extent of the 37 km<sup>2</sup> site, and therefore utilise the most technically optimal positions on the broader site to the fullest extent. This recommendation does, however, require that due cognisance is taken of the recommendations outlined in Chapter 8 and above (as well as within individual specialist reports) regarding sites of potential moderate to high sensitivity. Understanding which area of the site would be least impacted by the development of such a facility, Eskom should prepare the detailed infrastructure layouts for consideration within the EIA phase.

## 9.2. Conclusions drawn from the Evaluation of the Potential Issues Associated with the Proposed 132 kV Powerline

In order to connect the wind energy facility to the power grid, overhead powerlines (132 kV distribution lines) will be required to be established from the wind farm substation/s feeding into the electricity distribution network/grid at the Koekenaap Distribution Substation or the Juno Transmission Substation (near Vredendal). Potential issues identified to be associated with the proposed overhead powerline include impacts on flora, fauna and ecological processes, impacts on avifauna as a result of collisions and electrocutions, potential impacts on heritage sites and visual impacts.

In order to minimise potential impacts associated with the proposed powerline, it is recommended that the powerline alignment follow existing linear infrastructure (i.e. roads, other powerlines, etc.) as far as possible (refer Figure 9.3). The alternatives of connecting the powerline into the electricity distribution network/grid at the Koekenaap Distribution Substation or the Juno Transmission Substation will be considered in detail within the EIA phase in order to assess potential impacts associated with the powerline corridor and make recommendations regarding a preferred alternative alignment and appropriate mitigation measures.



**Figure 9.3:** Map illustrating powerline corridors for consideration in the EIA

Studies and/or specialist processes which are required to be undertaken outside of the EIA process include:

- » A specialist engineering geological investigation by the proponent once the EIA investigation has been completed in order to investigate geological constraints that could be of concern from a planning and engineering perspective, the suitability of material for construction applications such as turbine foundations and pavement layerworks.
- » Evaluation of the seismic risk to structures.
- » Additional tests should include the establishment of the erosion potential of the material occurring across the site (i.e. dispersiveness), the suitability of the material for construction applications, *in situ* bearing capacities and the chemical potential of the groundwater (perched) occurring across the site to impact negatively on reinforced concrete structures.

The above investigations are vital to ensure long-term integrity of the proposed wind energy facility within this dynamic coastal environment.

Engineering geological test procedures that should be undertaken during the above specialist investigations should include the following:

- » Foundation Indicator for turbine and substation foundations (including hydrometer test)
- » Road Indicator for road pavement layerworks
- » MOD CBR for both foundation and pavement design
- » SCS Double Hydrometer to establish dispersive potential of the soil
- » Corrosive test of groundwater (if encountered) to establish impact on reinforced concrete.

Transportation assessments are required to inform an overall transportation strategy for the project. Potential problem areas requiring more detailed investigation through specialist investigations include those routes identified as feasible routes by the transportation study (refer to the details contained within the specialist report – Appendix W).