srk consulting

Ground Floor, Bay Suites
1a Humewood Rd,
Humerail
Port Elizabeth, 6001
P O Box 21842
Port Elizabeth 6000
South Africa
T: +27 (0) 41 509 4800
F: +27 (0) 41 509 4850
E: portelizabeth@srk.co.za
www.srk.co.za

478867
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Executive Summary

Final Scoping Report: Proposed Inyanda - Roodeplaat Wind Energy Facility

1. Introduction

Inyanda Energy Projects (Pty) Ltd (referred to hereafter as 'Inyanda Energy') proposes to construct a Wind Energy Facility (WEF) of up to 140 MW installed capacity on a number of properties, referred to collectively in this report as the farm Roodeplaat, situated in the Groot Winterhoek Mountains west of the town of Uitenhage in the Eastern Cape (see Figure 2 for site locality).

An Environmental Impact Assessment (EIA) for the project was started by Coastal Environmental Services (CES, and now trading as EOH Coastal Environmental Services) in January 2013, and a Draft Scoping Report was issued for public and stakeholder comment in November 2013, as per the requirements of the NEMA 2010 EIA regulations. In October 2014, Inyanda Energy Projects (Pty) Ltd appointed SRK Consulting (South Africa) (Pty) Ltd (SRK) to complete the EIA process commenced by CES, including the finalisation of the scoping report. CES have subsequently provided all relevant documentation, including (but not limited to) public participation material, generated in the EIA process up to the date that SRK was appointed.

This Final Scoping Report (FSR) is intended to be a reproduction of the FSR that was under preparation by CES immediately prior to SRK's appointment and as such most of this report is derived directly from the CES report, either verbatim or with minor typographical editing aimed at improving the readability of the document. The authors of this report hereby acknowledge the CES report as the primary source.

The proposed project area consists of approximately 12,200 ha located on 22 adjacent property portions. The proposed Inyanda – Roodeplaat WEF will consist of approximately 43 to 48 turbines (depending on selected turbine) each capable of generating approximately 3 to 3.3 MW. The turbine footprints and associated facility infrastructure (internal access roads, substation, construction compound, batching plant and operations building) will potentially cover an area of approximately 60 ha depending on final layout design. An investigation of the wind regime of the site will decide the model of turbines to be installed. The facility will have a maximum generating output of up to 140 MW.

2. Approach to the Study

The proposed development is subject to environmental authorisation from DEA in terms of the National Environmental Management Act of 1998. As such, an EIA is required and this Final Scoping Report (FSR) presents an important milestone in the EIA process.

The first step of the EIA process (see Figure 1) is the Scoping Study. The Scoping process is aimed at identifying the issues and/ or impacts that may result from the proposed activities, including the concerns of Interested and Affected Parties (IAP's), in order to inform the Impact Assessment phase of the EIA process. The FSR form the basis of the terms of reference for specialist studies, and it is therefore important that all issues and potential impacts that may be associated with the proposed development be identified and recorded.

The EIA process thus far has focussed on developing a more detailed description of the development proposal, and on identifying the issues and concerns of Stakeholders and IAPs. IAPs have made comments after reviewing the Draft Scoping Report (DSR), which are recorded in the FSR.

The following activities have been done as part of the Scoping Study in accordance with the requirements of the NEMA EIA regulations:

- Advertisements in two Provincial Newspapers (Die Burger on 23 March 2013 and The Herald on 22 March 2013) and one local newspaper (UD News) on 28 March 2013;
- Written notices were sent to the owners and/or occupants of land immediately surrounding the site and to numerous organs of state;

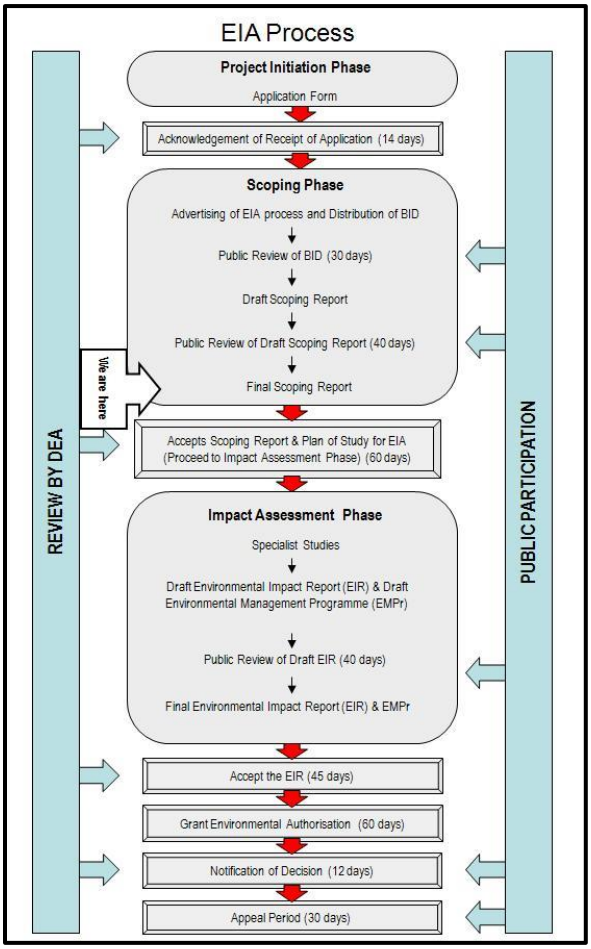

Figure 1: EIA Process

- Three 800 x 600 mm single sided corex notice boards were placed on the boundary of the proposed project sites near the proposed locations;
- The DSR was distributed for comment (11 October 2013 to 20 November 2013) and a public meeting was held on 23 October 2013 at the Feather Market Hall in Port Elizabeth as well as the Kroonenhoff Guesthouse in Kirkwood. Notice of this was advertised in the above mentioned newspapers prior to the meeting.
- The DSR was available for review at the following places:
  - Port Elizabeth Public Library (Market Square, Govan Mbeki Avenue, PE);
  - Uitenhage Public Library (Market St, Uitenhage Central, Uitenhage);
  - Kirkwood Public Library (Middelstraat, Kirkwood); and
  - The CES website (www.cesnet.co.za) - on the public documents link
- Compilation of all comments received on the DSR and integration of these comments into the FSR (this report); and
- Submission of the FSR and the Plan of Study for the EIA to DEA for consideration and approval. Once approved, the EIA process can proceed to the detailed Impact Assessment phase.

3. Motivation for the Proposed Development

Electricity supply

According to the project proponent, the establishment of the proposed WEF will contribute to strengthening the existing electricity grid for the area and will aid the government in achieving its goal of a 30% share of all new power generation being derived from Independent Power Producers (IPPs). In addition to the above-mentioned potential benefits, the proposed project site was selected due to:

- Excellent wind resources suitable for the installation of a large wind energy facility;
- The proposed project site has localised wind potentially intensified by a funnelling effect caused by surrounding topographical features;
- The site is accessible from gravel roads off the R75 which will assist in the transportation of wind turbine components to the site;
- The surrounding area is not densely populated; and
- There is potential and a desire within the Sundays River Valley Local Municipality to engage with new technologies and industries.

The Inyanda - Roodeplaat WEF will provide additional electricity and greater grid stability. Upgrading of the local electricity supply infrastructure may be required depending on the actual maximum installed capacity of the WEF. The local Municipality is the provider of electricity within Sundays River Valley Municipality and has identified the supply of electricity as a priority issue in its Integrated Development Plan (IDP) based on the weaknesses specific to electricity supply below:

- Scattered households impede electrification;
- Some of the areas are inaccessible;
- Limited substations, many areas far from the grid;
- Load shedding by Eskom;
- Electricity increases will affect affordability; and
- Over-subsidising of consumers.

Specific measures to address these weaknesses are currently not proposed and it is assumed that these would form part of a local economic development strategy to be defined during the bidding process.

Climate change

Most of South Africa's energy comes from non-renewable sources; however the proponents of renewable energy sources like biomass, geothermal energy, hydropower, solar energy, and wind energy is a major factor that the South African sector need to consider. It is estimated that approximately only 1% of the country's electricity is currently generated from renewable energy sources.

By the year 2020 an additional 20 GW generation capacity would be required and up to 40 GW by 2030 to sustain the energy demands in the country. National energy policy has called for a change in the energy mix to reduce the

dependency of the economy on fossil fuels and facilitate the uptake of renewable energy resources. This is in accordance with the prescriptions of the United Nations Convention on Climate Change 1994 (UNFCCC) and its associated Kyoto protocol of 1997, South Africa has put in place a long term mitigation scenario by which the country aims to develop a plan of action which is economically viable and internationally aligned to the world effort on climate change. During this period (2003-2050) South Africa will aim to take action to mitigate GHG emissions by 30% to 40% by the year 2050. This is a reduction of between 9,000 tons and 17,500 tons of CO_2 by 2050. In January 2010, South Africa pledged to the UNFCCC, a 34% and 42% reduction against business as usual emissions growth trajectory by the year 2020 and 2025 respectively.

Due to concerns such as climate change, and the on-going exploitation of non-renewable resources, there is increasing international pressure on countries to increase their share of renewable energy generation. The South African Government has recognised the country's high level of untapped renewable energy potential and the equally high level of current fossil-fired power generation, and has placed targets of 10,000 GWh of renewable energy (biomass, wind, solar and small hydro) in order to begin to redress the balance..

The establishment of the proposed Inyanda - Roodeplaat WEF will assist in strengthening the existing electricity grid for the area and contribute to government achieving its goal of a 30% share of all new power generation being derived from Independent Power Producers (IPP).

Social and economic development

Inyanda Energy intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the projects operational phase. A local community trust or organisation is intended to directly benefit from the project.

In the event that the project goes through the REIPPPP bidding process, one of the key assessment criteria is likely to be the local economic development plan. This plan is currently not available.

Conservation potential

The proposed wind energy facility is located within an area designated as a National Protected Areas Expansion Strategy Area (NPAES). The project study area forms a contiguous corridor linking two disparate sections of the adjacent Groendal Nature Reserve (Figure 2). Although historically utilised for agricultural and livestock production purposes, these land portions have mostly been purchased by Mr Ronnie Watson (one of Inyanda Energy's associates), who is gradually converting these portions to game farming land uses.

Mr Watson is investigating the potential for setting aside all 12,200 hectares of these portions as conservation areas to offset the impact of the wind energy facility. In theory, the addition of these property portions to the disparate Groendal Nature Reserve portions will create a connection corridor between these two portions which would be desirable from a conservation perspective. The potential, or even viability of this proposal, has been discussed with relevant parks and conservation bodies, at national and provincial level. Early indications from the Eastern Cape Parks and Tourism Association (ECPTA) are that they are not supportive of the project in general. Should the proposal be viable it would have to be subject to a biodiversity offset process assessment in the EIA phase of this reporting process.

The landowner has had discussions regarding a stewardship agreement with the ECPTA since the initial consultations reported in the previous paragraph. It is unclear whether the landowner's willingness to enter into a stewardship agreement with ECPTA for the portions of land in the study area is contingent on the development of a wind energy facility, or whether such stewardship agreement would be entered into irrespective of whether the proposed development is authorised or not. If it is the former, then this could be considered a motivation for the development proposal.

4. Development Proposal

The wind energy facility which will be spread over 17 property portions in the project area comprising 22 adjacent properties. These land portions are planned to host up to 47[1] turbines dependent on turbine supplier, each with a nominal power output of approximately 3 MW per turbine. The maximum total potential output of the wind farm would therefore be approximately 140 MW, which will serve to further support the regional and national power balance. The ultimate size of the wind turbines will depend on further technical assessments but will typically consist of three blades each approximately 60 m in length therefore creating rotor diameters of up to 125 m mounted atop a 100 m high steel (or hybrid steel/concrete) tower, i.e. the height of the wind turbine generator would be approximately 165 m from ground level to the tip of the rotor. Other infrastructure components associated with the proposed wind energy facility are inter alia:

- Concrete or rock adaptor foundations to support the wind turbine towers;
- Internal access roads to each turbine - approximately 6 meters wide;
- Underground cables connecting the wind turbines to the on-site substation. It has been confirmed that all internal power lines will be underground, and located within footprint of the internal roads, as depicted in a typical cross section;
- 132 kV electrical substation;

[1] Note that although 52 turbine locations are shown on the site development plan(s), the intention is to establish a wind farm with an installed capacity of 140 MW, i.e. 43 to 48 turbines when looking at the range of nameplate capacity (3 – 3.3 MW per turbine) of the turbines under consideration. Note further that the selection of turbines is not within the scope of the EIA

- Possible upgrading of existing roads for the transportation of the turbines to the wind energy facility;
- Buildings to house the control instrumentation, as well as a store room for the maintenance equipment; and
- Construction compound, on-site staff accommodation, and a concrete batching plant.

The preliminary layout that has been developed taking the local social and ecological sensitivities identified to date into account is shown in Figure 3. The final road layout and cable routing will be defined at a later stage based on the definition of the final locations of the turbines.

Various (but not all) elements of the site development plan are discussed below.

On-site staff accommodation

Temporary accommodation for approximately 200 construction personnel will be required at the peak of construction. Provision is made in the site development plan for staff accommodation in the vicinity of the existing staff quarters and workshops. Details of the proposed water supply, ablution facilities and waste management are not available at this stage of the project and it is expected these would only be designed in the event that the project receives environmental authorisation. These facilities will all be contained in the footprint shown. It is anticipated that water will be provided from new boreholes (approximately 26.9 kL/day at the peak of construction) and that sewage would be directed to a conservancy tank. All solid waste associated with on-site accommodation would need to be removed from site for recycling or disposal at a registered landfill.

Cement batching plant

A cement batching plant is proposed as part of the construction camp area. The total volume of cement that is required for the project is expected to be at least 25,300 m³ and would require on-site bulk storage of aggregate, cement and sand, all of which would be imported to the site from commercial sources, i.e. no mining or crushing of materials is proposed. It is anticipated that the water demand for concrete production would be approximately 5,060 kL over a 16 month period and would be supplied by new borehole(s) in vicinity of the batching plant.

Details of the batching plant are not known at this stage, but will all be contained within the footprint of the construction camp site.

Storage of hazardous chemicals

Apart from the storage of cement powder associated with the batching plant, it is anticipated that temporary storage facilities for various hydrocarbons would be required during construction. Due to the remoteness of the site, the contractor is likely to require a bulk fuel storage tank from which mechanical plant on the site can be refuelled. It is therefore anticipated that an above ground storage tank with a capacity of 20 kL would be required for the duration of construction.

Additionally, provision would need to be made for the temporary storage of oils, paints and other chemicals, typically inside shipping containerised storage areas, which together with the fuel storage may exceed the 30 kL threshold of Activity 10, Listing Notice 3 (see Section Table 1-2 of the FSR).

The location of the storage facility would most likely be at the Construction Plant Storage area, where plant can be re-fuelled as necessary, or from where fuel bowsers can be filled and despatched to fill plant on site. Storage areas will be on impervious concrete floors with secondary containment. Drainage from such areas (e.g. to accommodate rain water) will be to a water-tight sump and/or oil trap from where it can be removed off-site for disposal.

All hydrocarbon storage facilities will not be permanent and will completely be removed on completion of construction.

Transformer oil will be brought to site for the filling of transformers after they have been installed and prior to operation. This is a once off operation, with a typical 56/80 MVA 33 kV/132 kV transformer requiring approximately 26,000 L of oil. Transformers themselves will be installed on concrete floors, surrounded with a low impervious wall. Oil will be brought to site by tanker at the time that it is needed and as such there will be no need to store this oil on the site. Transformer oil which will be required for maintenance purposes will not be stored on site but will be transported to site as necessary. Under normal operational conditions, the transformers should only be re-filled after a 10 year operation period.

Lay down area for turbine components

A temporary combined laydown area of approximately 15 ha is provided for in the site development plan. Due to space constraints on the platforms, it is proposed that turbine components are temporarily stored at the laydown area on arrival from Ngqura Harbour, and then transported individually to the platform on demand. It is anticipated that the laydown area will require earthworks to level the site, and gravel layerworks to achieve a suitable hardstanding. In general it is expected that the site will be constructed of compacted earth.

Turbine Platforms

A permanent platform is required at each turbine foundation site to ensure safe and stable access by heavy machinery and equipment (bulldozers, trucks, cranes etc.) during the construction phase. A standard layout is provided in the FSR.

Due to the topography of the site, the platform area for each turbine, excluding the working space and access road that will run adjacent to the platform, will be limited to 60 m x 30 m. The overall footprint of each platform would be greater than the level 60 m x 30 m area, due to the cut and fill profiles. It is proposed to crush the excavated material on each platform for use as layer works backfill on that platform. A mobile crushing plant must therefore be accommodated on

the platform, together with mechanical plant for excavation, backfilling and compaction.

During the construction phase this footprint is likely to be extended to accommodate topsoil stockpiles, and crushed material prior to backfilling. Temporary platforms for laydown areas may also be required. The use of the cut material on the platform site may reduce the footprint associated with excess fill (i.e. reduce the amount of spoil material).

To limit the overall footprint, the electrical earth mat required for each WTG would be installed under the hardstand platform.

The project engineers have confirmed that the 60 m x 30 m platform area is sufficient to accommodate the activities required for the erection of each wind turbine generator, recognising that the limited working area may pose logistical and time challenges during construction.

Internal Roads

Turbine platforms will be connected by internal access roads that must meet the following requirements:

- Generally 6 m in width. Road side stormwater drainage will be limited to 1 m wide trapezoidal channels, approximately 300 mm deep, as per the typical road cross section drawing;
- After excavation (cut & fill) of bulk material, road pavement layerworks will be limited to 350 mm thickness;
- Generally slopes must be limited to 12.5% gradient. However in this instance several sections will have longitudinal gradients in excess of 25% (e.g. 1:4). In these instances circumstances, concrete strips will be constructed to limit rutting and erosion of road surface, especially at gradients where excessive natural loose gravel exist.
- Minimum horizontal turning radii for tyres and payloads (estimated to be 40 m and 50 m respectively).

A typical cross section specific to this project is included in the FSR.

Substation

The sub-station is located near the centre of the WEF for technical (electrical) reasons. The proposed layout of the sub-station is provided in the FSR.

The 132 kV substation will comprise a fenced area of about 80 m x 40 m. The platform will be split into various levels to limit the cut and fill outside of this platform to less than 10 m horizontal distance. As with the wind WTG platforms, the electrical earth mat will be installed within this footprint.

Access to the site

The site is accessible along a number of provincial minor gravel roads that lead of the R75 and existing roads on the project area. Various alternatives are shown in the FSR. Gravel roads may need widening and resurfacing prior to the start of the project and in some cases minor culverts / bridges may require upgrading. Based on the width of the existing road, the preferred route for abnormal loads is from the Cockscomb station turnoff although at least for some traffic, other routes might be followed.

The possible upgrading, resurfacing, and/or rehabilitation of these gravel roads and associated borrow pits is outside the scope of this EIA process.

5. Issues identified

The identification of potential impacts is based on the following factors:

- The legal requirements;
- The nature of the proposed activity;
- The nature of the receiving environment; and
- Issues raised during the public participation process.

Considering the factors listed above, a number of potential environmental impacts have been identified. The following is a summary of the impacts that will be investigated further in the impact assessment phase of the project.

Landscape & visual: Design of the wind turbine layout will result in an alteration of the landscape character and sense of place. Visual disturbance of the landscape during construction will be caused by the construction activity, and the presence and use of very large machinery.

Due to the elevated nature and steep topography of the site, cleared areas (platforms and roads) and associated cuttings will contribute more to landscape and visual impacts than is typically the case. Changes to the landscape are likely to be permanent (i.e. original topography cannot be re-instated) and cuttings are likely to remain un-vegetated, and therefore visible, even after decommissioning.

The presence of a wind farm could indirectly affect the visual appeal of a cultural heritage feature within 35 km of the site (maximum visually discernible distance).

A visual impact assessment is proposed in the next phase of this EIA process. The terms of reference for this assessment are reproduced in Section 6 of this executive summary.

Ecology: Irreversible habitat destruction associated with the construction is likely to be the largest source of risk to faunal and floral communities in the broader region. The construction of the wind energy facility could cause disturbances to local wildlife, especially breeding birds and aquatic fauna could be adversely affected if significant amounts of silt or any hydrocarbons or chemicals are allowed to enter waterbodies.

The wind energy facility could result in a permanent physical loss of important habitat and species on the land required for the turbines and ancillary elements. There could additionally be habitat severance and fragmentation, particularly from linear elements such as the access tracks.

The maintenance of the wind farm could cause disturbance to local wildlife, especially breeding birds and bat populations.

A terrestrial ecological impact assessment has been conducted based on a prior version of the site development plan. It is proposed that this specialist study be revised and reported on in the impact assessment phase of the EIA. The terms of reference for this assessment are reproduced in Section 6 of this executive summary.

Avifauna and Bats: In addition to the possible disturbance of breeding birds during construction, certain types of bird species (e.g. raptors) could avoid the area due to the rotating blades, and could consequently be affected by a loss of feeding habitat.

Particular types of bird species (e.g. raptors, divers and geese) could be susceptible to collision with the turbines and any overhead wires, particularly if the scheme straddles regular flight lines between roosting and feeding grounds or where the site is used by birds for hunting.

The potential impacts on bats may be significant if the study area does in fact support significant bat communities.

Avifauna and bat specialist studies have already commenced. It is proposed that these specialist studies be reported on in the impact assessment phase of the EIA. The terms of reference for these specialist studies are reproduced in Section 6 of this executive summary.

Cultural heritage & archaeology: The construction of a wind farm could have a direct physical impact on any undiscovered archaeological remains or other features of cultural heritage on the site. There could also be certain physical impacts along the wider route used to transport turbines to the site, for example heavy or wide loads could damage historic bridges and culverts, and road improvements such as corner widening could damage any features adjacent to the road.

Archaeological and paleontological specialist studies are proposed in the next phase of this EIA process. The terms of reference for this assessment are reproduced in Section 6 of this executive summary.

Noise: Adverse noise effects could potentially occur during the construction and operation of the wind farm, including the movement of heavy goods vehicles during construction, and the operation of wind turbine generators during operation. .

A noise impact assessment is proposed in the next phase of this EIA process. The terms of reference for this assessment are reproduced in Section 6 of this executive summary.

Socio-economic: During construction, the wind farm could have a beneficial local economic effect, supporting companies manufacturing turbine parts and providing work for construction and haulage contractors. Jobs may also be created for local communities. It could therefore have a beneficial social and economic impact in the area.

During operation, the wind farm could discourage or encourage people from visiting the area and therefore have an unknown effect on tourism. The wind farm could also have a more localised effect on particular tourism facilities nearby and within sight of the wind farm.

Jobs may be created for local communities. It could therefore have a beneficial social and economic impact in the area.

A socio-economic impact assessment is proposed in the next phase of this EIA process. The terms of reference for this assessment are reproduced in Section 6 of this executive summary.

Traffic & transport: It is possible that there could be a very high number of heavy vehicle movements spread over the construction period. The average number of heavy vehicle movements per day might not be significant, but there could be peaks that might have a detrimental effect on sensitive receptors, especially if any of these are near the local access route. Transporting turbine parts and specialist construction equipment to the site by long and/or slow moving vehicles could cause traffic congestion, especially if temporary road closures are required. There could also be an adverse effect on the integrity of existing road infrastructure such as bridges.

Any road modifications which are provided to facilitate the scheme could, have long lasting traffic benefits.

It is proposed to address traffic impacts through generic management measures, to be captured and reported on in the Environmental Management Programme that will be distributed as part of the Draft Environmental Impact Report.

Wetlands, Surface and Groundwater: The construction of the wind farm has the potential to affect water quality adversely within the streams on and near to the site and further downstream. Sediment is especially likely to be created during the excavation of turbine foundations, the laying of access tracks, digging of cable runs and soil stripping and stockpiling to create temporary areas of hard-standing, such as the construction compound. Pollution could arise from the spillage or leaking of diesel, lubricant and cement.

The use of cement on roadways could affect the pH of surface water, fines could wash out of bare slopes before natural regeneration has established, and there could be leaks or spillages of lubricants from any permanent maintenance compound.

Any deterioration of water quality as a result of the wind farm could potentially affect private water supply abstractions in the vicinity of the site.

Areas of ecological value such as wetlands within and beyond the site could be sensitive to any alteration of

localized drainage patterns which might arise from the introduction of turbine bases, access tracks and underground cable runs.

The introduction of roads and impermeable areas of hard standing could increase rates of run-off and therefore the risk of localized flooding.

It is proposed to address water related impacts through generic management measures, to be captured and reported on in the Environmental Management Programme that will be distributed as part of the Draft Environmental Impact Report.

Geology and topography: The construction of the wind turbines will require excavations in order to lay adequate foundations. Approximately 500 m³ of substrate will have to be excavated for each turbine. Furthermore, minor excavations will be required for the construction of access roads as well as the laying of electrical cabling.

No specific measures to address geology and topography impacts, other than those already captured in the visual and terrestrial ecological specialist studies are proposed in the EIA process.

Health and safety: Health and safety aspects will mostly pertain to activities defined under the Occupational Health and Safety Act (Act No. 85 of 1993). The EIA process will therefore not consider health & safety impacts.

Removal of top soil and soil erosion: The construction of the individual wind turbines will require the clearing of vegetation which will result in exposed soil surfaces. This will increase the chances of soil erosion.

No specialist assessment of top soil and erosion impacts is proposed in impact assessment phase. It is proposed to address top soil and soil erosion impacts through standard construction management measures which will be recorded in the Draft Environmental Management Programme.

Impacts on air quality: Impacts on air quality during the construction phase will primarily be as a result of increased dust levels associated with the required excavation, vegetation clearing, grading and other construction activities.

The electricity generated by the wind farm will displace some of that produced by fossil fuel based forms of electricity generation. The scheme, over its lifetime, will therefore avoid the production of a sizeable amount of CO_2, SO_2 and NO_2 that would otherwise be emitted to the atmosphere.

No specialist assessment of air quality impacts is proposed in impact assessment phase. It is proposed to address construction related air quality impacts through standard construction management measures which will be recorded in the Draft Environmental Management Programme.

Pollution and Solid Waste: It is anticipated that the proposed development will produce solid waste in the form of building rubble such as excavated soil and vegetation and excess concrete, bricks, etc. and general waste such as litter during the construction phase.

No specialist assessment of pollution or solid waste is proposed in impact assessment phase. It is proposed to address pollution and waste management impacts through standard construction management measures which will be recorded in the Draft Environmental Management Programme.

Loss of agricultural land: The proposed development site is currently zoned as agriculture. The proposed development will therefore result in a loss of agricultural potential.

An agricultural impact assessment is proposed in the next phase of this EIA process. The terms of reference for this assessment are reproduced in Section 6 of this executive summary.

Impacts on aviation: Wind turbine blade tips, at their highest point, may reach more than 160 m in height. If located near airports or known flight paths, a wind farm may impact aircraft safety directly through potential collision or alteration of flight paths. Furthermore, wind turbines could potentially cause electromagnetic interference with aviation radar.

As the site is more than 35 km from the Port Elizabeth airport, no assessment of aviation impacts is proposed. It is assumed that aviation impacts would be adequately mitigated through compliance with the existing civil aviation regulations.

6. Terms of Reference for Specialist Studies

The following Specialist Studies are proposed for the EIA Phase of the assessment:

- Visual Impact Assessment;
- Ecological Impact Assessment (incorporating flora and fauna);
- Noise Impact Assessment;
- Heritage, Archaeological and Paleontological Impact Assessment;
- Avi-Faunal Assessment;
- Bat Impact Assessment;
- Agricultural Assessment; and
- Socio-economic Assessment.

The Terms of Reference for the above-mentioned studies, which outline the information required from the specialists, are provided below. Specialists will also be required to address issues raised by IAPs in their reports.

Visual and Landscape Impact Assessment

The size of the structures is dictated by the design, and there is little that can be done to reduce their dimensions. Therefore, the Visual and Landscape Impact Assessment will focus on assessing significance within the visual context of

the site. The specific Terms of Reference for the Visual and Landscape Impact Assessment will therefore include:-

1 Conduct a site reconnaissance visit and photographic survey of the proposed project site and the power line route alignment alternatives;

2 Conduct a desk top mapping exercise to establish visual sensitivity:-

- Describe and rate the scenic character and sense of place of the area and site;
- Establish extent of visibility by mapping the view-sheds and zones of visual influence;
- Establish visual exposure to viewpoints; and
- Establish the inherent visual sensitivity of the site by mapping slope grades, landforms, vegetation, special features and land use and overlaying all relevant above map layers to assimilate a visual sensitivity map.

3 Review relevant legislation, policies, guidelines and standards, including the National Heritage Act.

4 Preparation of a Visual Impact Assessment report:

- Assessing visual sensitivity criteria such as extent of visibility, the site's inherent sensitivity, visual sensitivity of the receptors, visual absorption capacity of the area and visual intrusion on the character of the area;
- Prepare photomontages of the proposed development;
- Assess the proposed project against the visual impact criteria (visibility, visual exposure, sensitivity of site and receptor, visual absorption capacity and visual intrusion) for the site;
- Assess impacts based on a synthesis of criteria for each site (criteria = nature of impact, extent, duration, intensity, probability and significance); and
- Establish mitigation measures/ recommendations with regards to minimizing visual risk areas.

5 Specific questions that the assessment must address are as follows:

- The extent to which sense of place will be affected, particularly in relation to the wilderness character of the area, and from key vantage points associated with eco-tourism that benefits from the existing visual character, including current and proposed protected areas;
- In addition to assessing the visual impacts from the wind turbine generators, the visual assessment must also (as is typically the case) consider the impacts from related infrastructure, including the :
  - Overhead power line;
  - Electrical sub-station;
  - Roads and road cuttings;
  - Cut & fill areas, e.g. for platforms and roads; and
  - Site offices, construction camps, control rooms.

Note that modelling of shadow flicker, specified in the DSR has been excluded from the terms of reference in the FSR due to the distance to habitable buildings.

Ecological Impact Assessment

The assessment will follow on from the initial study, which included a site visit conducted during the scoping phase, and will address any key issues raised by interested and affected parties. The study will comprise a desktop study of all available and relevant literature.

However, a detailed survey of the site will be undertaken to determine the possibility of there being listed threatened or protected ecosystems and species on the proposed project site. If any of these are found, the Environmental Management Plan will include recommended measures to remove or otherwise protect plant species found on the site that are afforded protection under the National Environmental Management: Biodiversity Act, Nature and Environmental Conservation Ordinance (No 10 of 1974) and the Forest Act during construction.

This specialist study will therefore include:

1 A detailed description of the ecological (fauna and flora) environment within and immediately surrounding the footprint of the proposed development and will consider terrestrial fauna and flora. Fauna include mammals, reptiles, amphibians, and insects but not avifauna as these will be the subject of a separate specialist. This aspect of the report will specifically include the identification of:

- Areas of high biodiversity;
- The presence of species of special concern, including sensitive, endemic and protected species;
- Habitat associations and conservation status of the identified fauna and flora;
- The presence of areas sensitive to invasion by alien species; and
- The presence of conservation areas and sensitive habitats where disturbance should be avoided or minimised.

2 Review relevant legislation, policies, guidelines and standards, including the Eastern Cape Protected Area Expansion Strategy and the fine scale conservation plan for the Baviaanskloof;

3 An assessment of the potential direct and indirect impacts resulting from the proposed development (including the wind turbines, associated infrastructure, e.g. access roads), both on the footprint and the immediate surrounding area during construction and operation;

4 A detailed description of appropriate mitigation measures that can be adopted to reduce negative

impacts for each phase of the project, where required; and

5 Checklists of faunal groups identified in the region to date, highlighting sensitive species and their possible areas of distribution.

6 Specific questions that the ecological assessment must address are as follows:

- The extent to which biodiversity in the greater planning domain (including current and proposed protected areas or the broader catchment) will be impacted if the development is authorised. It is recognised that a number of planning domains exist and the specialist will be required to select the most appropriate planning domain, motivate that selection, and make an assessment in terms of this;
- The significance of loss of habitat and habitat fragmentation must be assessed in terms of general biodiversity and in terms of key terrestrial species identified during public consultation (e.g. Leopard, ghost frog, Elandsberg dwarf chameleon, and Smith's dwarf chameleon);
- Conduct a literature review of the impact of noise on the above-mentioned species (or similar) with the objective of estimating the significance that increased noise during construction and/or operation will have on these species, either in terms of reducing the size of their habitat by more than the physical footprint of the development, or discouraging them to traverse the site (i.e. contribute to habitat fragmentation by more than the physical footprint of the development);
- Comment on the impact of fencing (if any) on fragmentation of each of these species and on biodiversity in general;
- Comment on whether, in terms of impacts on terrestrial ecology (such as the occurrence of threatened species on the site), the application should be authorised or not; and
- Overlay identified vegetation types on a contour map, as per the comment from DEDEAT on the correlation between altitude topography and vegetation type; and
- Discuss the relevance of fire in the ecological processes of Kouga Grassy Sandstone Fynbos and the implications (if any) to this project.

Noise Impact Assessment

The objective of the noise impact assessment will be to:

1 Identify all potential noise sensitive sites that could be impacted upon by activities relating to the construction and operation of the proposed wind energy facility.

2 Identify all noise sources relating to the activities of the facility during the construction and operation phases that could potentially result in a noise impact at the identified noise sensitive sites.

3 Determine the sound emission, operating cycle and nature of the sound emission from each of the identified noise sources.

4 Calculate the combined sound power level due to the sound emissions of the individual noise sources.

5 Calculate the expected rating level of sound at the identified noise sensitive sites from the combined sound power level emanating from identified noise sources.

6 Display the rating level of sound emitted by the noise sources in the form of noise contours superimposed on the map of the study area.

7 Determine the existing ambient levels of noise at identified noise sensitive sites by conducting representative sound measurements.

8 Determine the acceptable rating level for noise at the identified noise sensitive sites.

9 Calculate the noise impact at identified noise sensitive sites.

10 Assess the noise impact at identified noise sensitive sites in terms of:-

- SANS 101 SANS 10103 for "The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication".
- Noise Control Regulations.
- World Health Organisation - Guidelines for Community Noise.
- World Bank - Environmental Guidelines.

11 Investigate alternative noise mitigation procedures, if required, in collaboration with the design engineers of the facility and estimate the impact of noise upon implementation of such procedures.

12 Prepare and submit a full environmental noise impact report containing detailed procedures and findings of the investigation including recommended noise mitigation procedures, if relevant.

Heritage, Archaeological and Paleontological Impact Assessment

As part of the Environmental Impact Assessment (EIA) for the proposed facility, it is necessary to undertake a phase one heritage (archaeological, historical and paleontological) survey.

A heritage and archaeological impact assessment will therefore be conducted, the primary objective of which is to determine whether there are any indications that the proposed site is of archaeological significance. This will be a phase 1 assessment and will be largely desk-top although a site visit will be required to enable the specialist the opportunity to look for significant artefacts on the surface of the site. It is not expected that a more detailed Phase 2 assessment will be required but this remains to be confirmed.

The terms of reference for the Phase 1 heritage and archaeological study will be to:

1 Determine the likelihood of heritage or archaeological remains of significance on the proposed site within the study area;

2 Identify and map (where applicable) the location of any significant heritage or archaeological remains;

3 Assess the sensitivity and significance of heritage and archaeological remains in the site; and

4 Identify mitigatory measures to protect and maintain any valuable heritage and archaeological sites and remains that may exist within the proposed site.

In addition, a paleontological impact assessment will be conducted, the primary objective of which is to determine whether there are any indications that the proposed site is of paleontological significance.

This will be a phase 1 assessment and will be largely desk-top although a site visit will be required to enable the specialist the opportunity to look for significant artefacts/fossils on the surface of the site. It is not expected that a more detailed Phase 2 assessment will be required but this remains to be confirmed. The terms of reference for the Phase 1 paleontological study will be to:

1 Provide a summary of the relevant legislation;

2 Conduct a site inspection as required by national legislation;

3 Determine the likelihood of paleontological remains of significance in the proposed site;

4 Identify and map (where applicable) the location of any significant paleontological remains;

5 Assess the sensitivity and significance of paleontological remains in the site;

6 Assess the significance of direct and cumulative impacts of the proposed development and viable alternatives on paleontological resources; and

7 Identify mitigatory measures to protect and maintain any valuable paleontological sites and remains that may exist within the proposed site.

8 Prepare and submit any permit applications to the relevant authorities

Avifauna Assessment

An avifauna specialist study will be conducted. The assessment will include:

1 A desk-top review of existing literature to seek:

- Previous means of predicting bird mortality (and other impacts) of wind turbines affecting birds in groups similar to those in the study area;
- Accounts of mortality at wind turbines; and
- Information on the status of bird groups most likely to be affected.

2 A site visit to identify species of special concern and assess the likely impacts of the construction and operational phases on the avifauna of the site;

3 Surveys will be conducted on the study area in line with recommended guidelines in this regard. These will be refined for the study area;

4 Conduct a review of international literature and experience relating to operational wind farms; including state of the art plants around the world;

5 Contextualize the literature and experience and relate it to the regional scenario and local avifauna;

6 Map sensitive areas in and around the proposed project site(s);

7 Describe the affected environment and determine the status quo in terms of avifauna;

8 Indicate how an avifaunal resource or community will be affected by the proposed project;

9 Discuss gaps in the baseline data with respect to avifauna and relevant habitats;

10 List and describe the expected impacts;

11 Assess and evaluate the anticipated impacts; and;

12 Make recommendations for relevant mitigation measures which will allow the reduction of negative impacts and the maximization of the benefits associated with any identified positive impacts.

Pre-construction monitoring of avifauna has been conducted during the course of the scoping study. This report includes identification of birds that are potentially vulnerable if the development proceeds, including the occurrence of Verreaux's, Crowned, and Martial Eagles on the site, which are ranked as the second, sixth and 30th most sensitive bird species in South Africa to the potential impacts of wind energy facilities (Retief et al. 2012, as reported in Jenkins & du Plessis, August 2014).

In addition to the terms of reference recorded above, it is proposed that the further assessment of avifauna impacts during the impact assessment phase should include:

13 Conduct a literature review of the impact of noise on sensitive avifaunal species in the area, with the objective of estimating the significance that increased noise during construction and/or operation will have on these species, either in terms of reducing the size of their habitat by more than the physical footprint of the development, or discouraging them to traverse the site (i.e. contribute to habitat fragmentation by more than the physical footprint of the development);

14 Provide specific comment on the issues raised by the Elands River conservancy regarding avifauna, including the species identified in the vicinity of the site and their vulnerability to turbines, wires of utility structures, and power lines;

15 Collect additional site specific data for Verreaux's, and Martial Eagles, to recognised international good practice standards, in order to perform collision risk modelling with a reasonable degree of confidence (including comment on how extreme weather conditions may affect collision risks);

16 List and describe the expected impacts on sensitive species, including potential impacts from:

- Wind turbine generators during operation, including collision risk and habitat fragmentation;
- Construction activities, with specific reference to identified eagle breeding sites; and
- Overhead power lines; and

17 Recommend practical management and/or mitigation measures.

Bat Impact Assessment

A bat impact assessment specialist study will be conducted. This study will investigate the following issues:

- The likelihood and significance of impacts with regards to bat (Chiroptera) fauna, in relation to the proposed wind energy facility;
- Identification and mapping (where applicable) of any significant bat habitats;
- Assessment of the sensitivity and significance of the site with regards to bat (Chiroptera) fauna;
- Assessment of the significance of direct and cumulative impacts (including foraging impacts, roost impacts and migration impacts to a certain extent) of the proposed development and viable alternatives; and
- Identification of mitigatory measures to protect and maintain any bat habitats.

As for the avifauna assessment, a specialist determined baseline monitoring programme needs to be conducted during the EIA process and beyond. The applicability of locally developed monitoring regimes to the study will be assessed and refined for implementation.

Agriculture Impact Assessment

The agricultural Impact Assessment must adhere to the requirements described under point 4 of Section C of the National Development of Agriculture, Forestry and Fisheries document: Guidelines for the evaluation and review of applications pertaining to wind farming on agricultural land, September 2010.

These terms of reference are also mindful of additional assessment criteria required by the Western Cape Provincial Department of Agriculture.

An agricultural specialist study will be conducted; the key issues that will be investigated are the following:

- The extent and quality of arable land (less than 12% slope);
- The extent and quality of existing crops;
- The extent and quality of commercially unused land;
- The availability of irrigation water;
- The condition of the veld and other natural vegetation;
- The percentage of usable land that will be utilised during construction; and
- The percentage of usable land that will be utilised after construction.

Specifically, the following will be investigated:

1 Status Quo of Soils

- Erosion Hazards - The study will identify any visible erosion hazards and record the apparent reasons therefore. It will also identify and describe any environmental hazards other than erosion.
- Slope - Identify any areas with a slope greater than 12%.
- Current and previous land usage - Evaluate the ratio between virgin arable land, currently cultivated crops, fallow and abandoned fields.
- Infrastructure and Access - Note and record where improved infrastructure and access could impact negatively on the natural environment.
- Extension Services - Note and report on incidence of industry, provincial and municipal extension and support services.

2 Water Resources

- Surface Water - Note and record any visible water resources.
- Groundwater - Identify and note any evidence of the presence of groundwater – springs, eyes, seepage, green patches etc.

3 Vegetation: Grasses, Decorative and Medicinal Veld Plants - The presence of any important or interesting medicinal or other indigenous plants will be noted. A general assessment of veld condition and condition of livestock will be made.

6.2.8 Socio-economic Impact Assessment

The project will result in national, regional and local economic benefits. It could also provide support for infrastructural development and, at a local level, will provide job opportunities and benefits arising from the multiplier effects associated with these. However, projects such as this are also likely to produce a range of negative impacts, which should be identified and avoided or mitigated as far as possible.

The primary objectives of this study will be:

- To provide a detailed description of the socio-economic environment in and around the project area. This should include an assessment of eco-tourism activities and how these may be impacted on by a change in the visual character of the area;
- To provide empirical socio-economic data to be used as a baseline for future monitoring.
- To analyse the potential impacts of the proposed project.

- To provide guidelines for limiting or mitigating negative impacts and optimising benefits of the proposed project.
- Estimate the job creation potential of the proposed development, both at a local (within 50 km of the site) and regional (provincial) scale, during construction and operation
- Assess the significance of this job creation potential in terms of the local and regional economy;
- Assess the potential impact on job creation potential for eco-tourism ventures.

7. Way Forward

The public participation process so far has given IAPs the opportunity to assist with identification of issues and potential impacts. The Final Scoping Report (this report) has incorporated comments received from IAPs, and will be submitted to DEA for a decision on the proposed plan of study for EIA

IAPs wishing to provide further comment on this report can still do so by sending comments, within **14 days** of the publication of this report, directly to DEA as outlined below. It is important to note that the regulations require an IAP to provide SRK Consulting with a copy of any comments submitted directly to the competent authority.

This Executive Summary has been distributed to all registered IAPs. Printed copies of the report are available for public review at:

- **Uitenhage Public Subscription Library** (Caledon Street, Uitenhage)
- **Kirkwood Public Library** (Jefferson Ave, Kirkwood).

The report can also be accessed as an electronic copy on SRK Consulting's webpage via the 'Public Documents' link http://www.srk.co.za/en/page/za-public-documents

Written comment on this Final EIR should be sent by 17h00 on 07 April 2015 to:

Mr Vincent Chauke
Department of Economic Affairs
Private Bag X447, Pretoria, 0001
Environment House, 473 Steve Biko Road, Arcadia
Email: vchauke@environment.gov.za
Reference Number: 14/12/16/3/3/2/464

A copy of the comments must be forwarded to:

SRK Consulting
PO Box 21842, Port Elizabeth, 6000
Email: portelizabeth@srk.co.za
Fax: (041) 509 4850

Table 1: Activities and Timetable

Stage / Activity	Target Dates	
	Start	End
Submission of Final Scoping Report and Plan of Study for EIA to DEA	-	20 March 2015
DEA approval of Plan of Study for EIA (potentially including recommendations)	23 March 2015	07 May 2015
Conduct Specialist Studies and Compile Draft EIR	23 March 2015	08 May 2015
Issue Draft EIR for Public Comment	-	22 May 2015
Public Comment Period for Draft EIR	22 May 2015	01 July 2015
Submit Final EIR to DEA for a decision	-	08 July 2015
Submission of Final Scoping Report and Plan of Study for EIA to DEA	-	20 March 2015

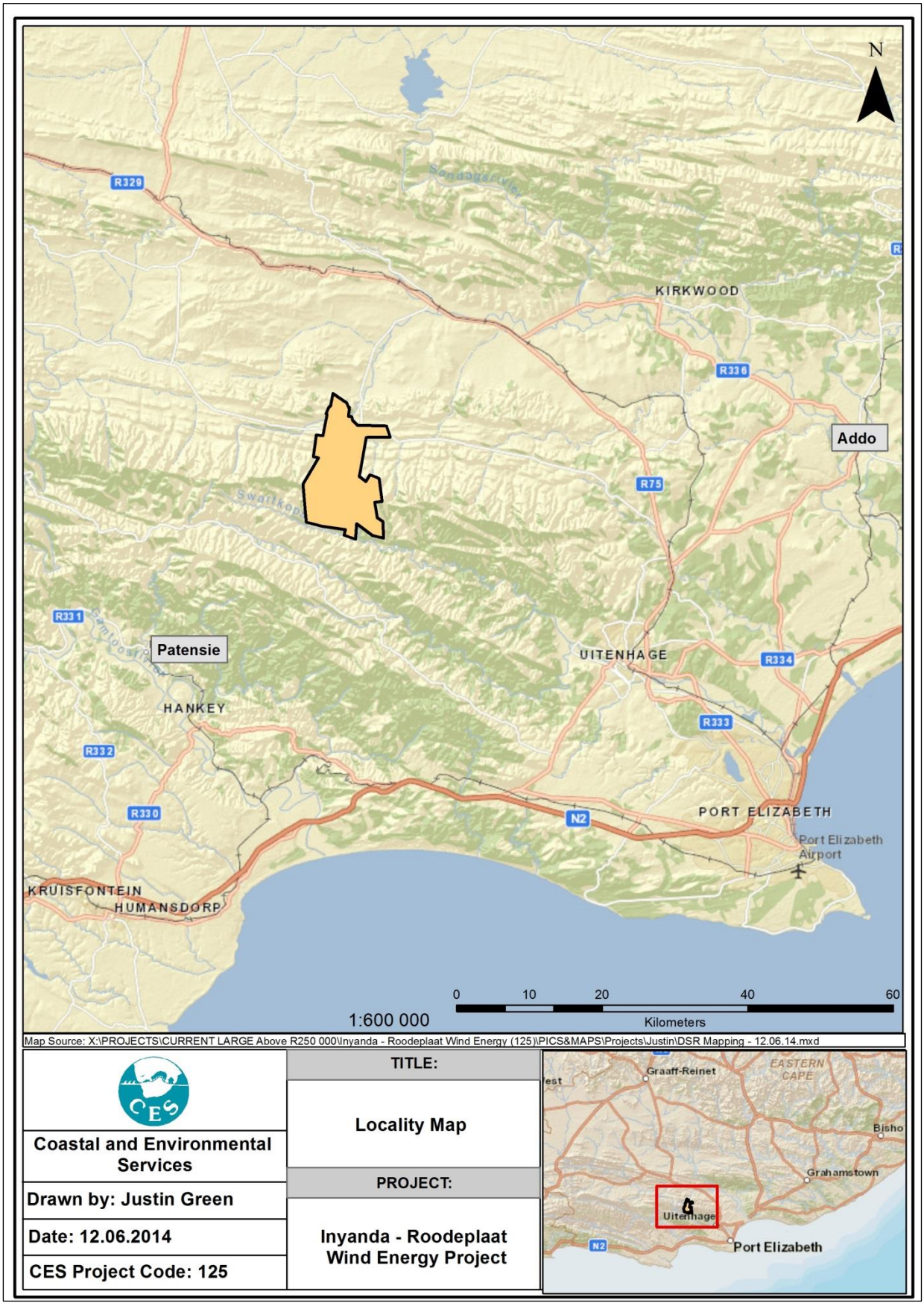

Figure 2: Site Locality Plan for the Inyanda – Roodeplaat WEF

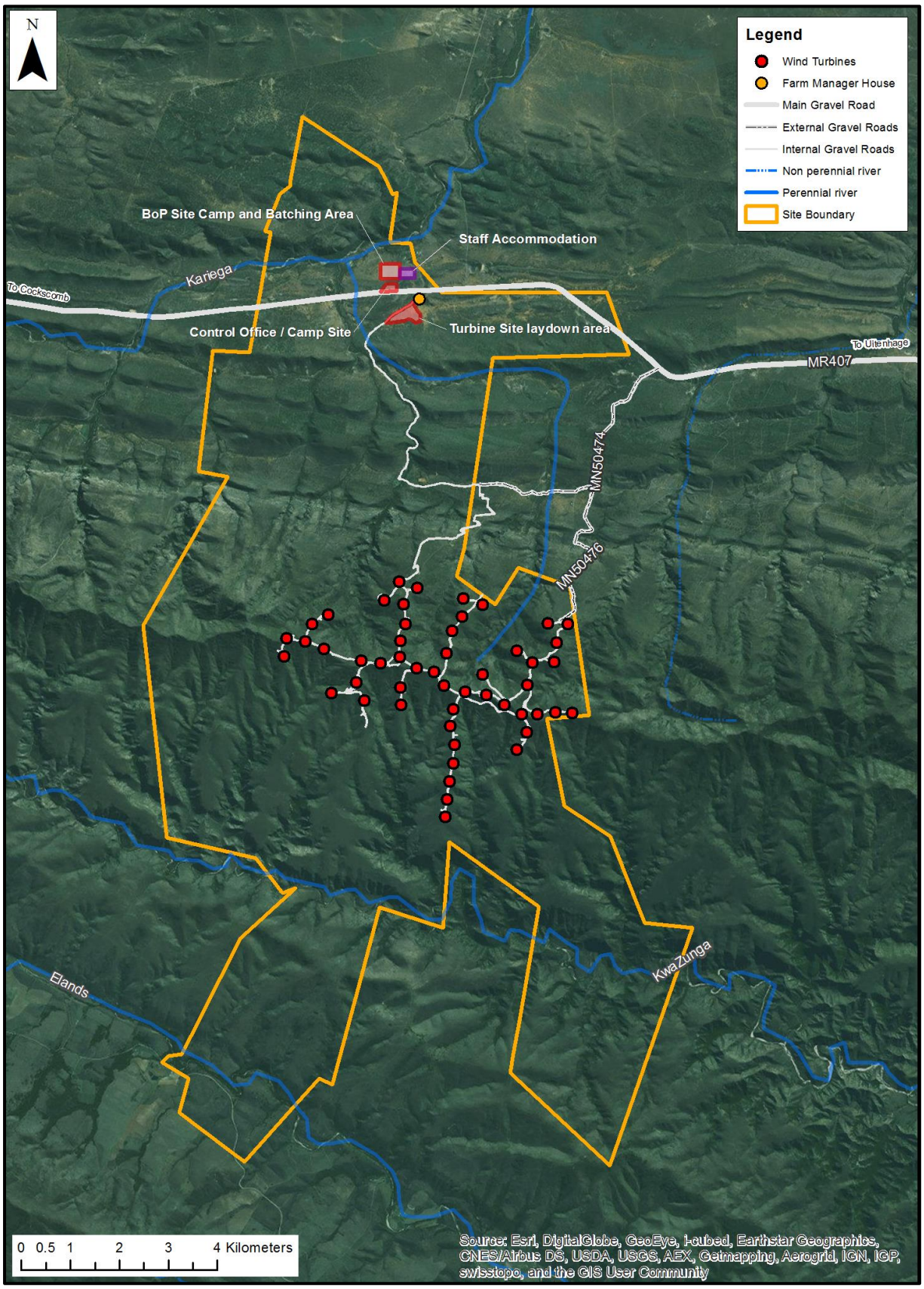

Figure 3: Site Layout Plan (Larger versions of the site development plan are provided in Appendix G)