Draft Scoping Report

Non-technical Executive Summary

Proposed Richtersveld Wind Farm, Northern Cape
DEA Ref: 12/12/20/1967

G7 Renewable Energies (Pty) Ltd

September 2010

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Proposed Richtersveld Wind Farm, Northern Cape

September 2010

Prepared by: Katherine Degenaar and Claire Alborough
DEA Reference: 12/12/20/1967
ERM Reference: 0117424

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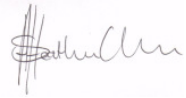
For and on behalf of Environmental Resources Management	
Approved by: Stuart Heather-Clark	
Signed:	
Position:	Partner
Date:	29 September 2010

INTRODUCTION

G7 Renewable Energies (Pty) Ltd, hereafter referred to as G7, appointed Environmental Resources Management Southern Africa (Pty) Ltd, hereafter referred to as ERM, as independent environmental consultants to undertake the Environmental Impact Assessment (EIA) for the proposed development of a wind farm at the Richtersveld site, in the Namakwa District's Richtersveld Local Municipality. The proposed facility will utilise wind turbines to generate electricity that will be fed into the National Power Grid. The facility will have an energy generation capacity of up to 225 MW.

PURPOSE OF THIS REPORT

This report is the non-technical executive summary of the draft Scoping Report for G7's proposed wind farm. This Scoping Report has been compiled as part of the EIA process in accordance with the regulatory requirements stipulated in the EIA Regulations promulgated in terms of Section 24(5) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), as amended.

The report provides a summary of the proposed project activities, alternatives considered, the EIA methodology, and issues and concerns identified by the project team and/or raised by interested and affected parties (I&APs). A Plan of Study for the EIA, which includes the terms of reference for specialist studies, is also included.

EIA PROCESS, APPROACH AND METHODOLOGY

There are a number of legislative requirements that the project will need to adhere to, all of which are discussed in the Scoping Report. The key legislation that drives the EIA process is the National Environmental Management Act (Act No. 107 of 1998), as amended and the NEMA EIA regulations, 2010 (Government Notice No R. 543, R. 544, R. 545 and R.546). The EIA regulations govern how the EIA process should be undertaken. This includes specific tasks that allow for I&APs to be involved in the EIA process.

Note that on 18 June 2010 new EIA Regulations (Government Notice No R. 543, 544, 545 and 546) were promulgated in terms of Section 24(5) of NEMA. These regulations came into effect on 1 August 2010, replacing the regulations of 21 April 2006. However the regulations provide for transitional situations and Section 76(1) states that: *'An application submitted in terms of the previous NEMA regulations and which is pending when these Regulations take effect, must despite the repeal of those regulations be dispensed with in terms of those previous NEMA regulations as if those previous NEMA regulations were not repealed'*. Therefore since the application for this proposed Project was submitted to the DEA on 10 June 2010, prior to the commencement of the new regulations, and

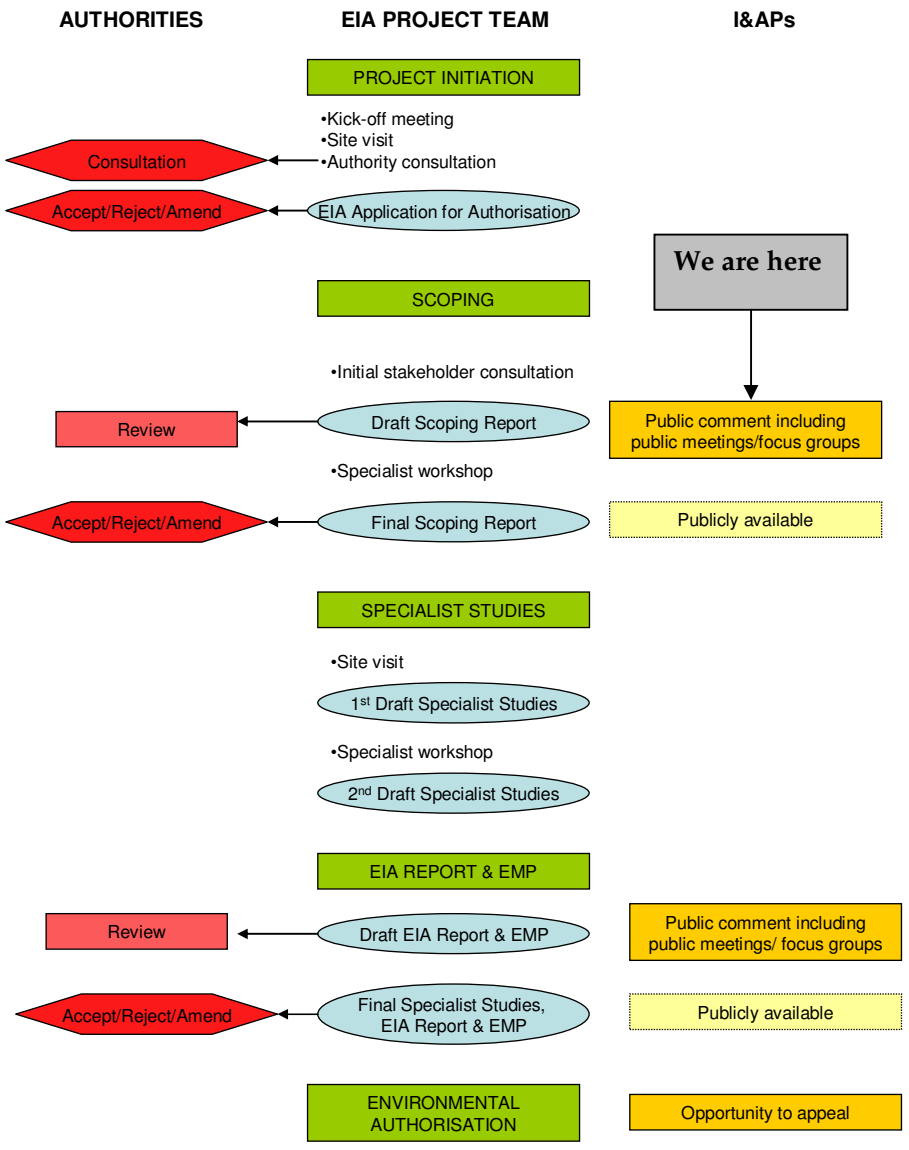
no new listed activities have been identified, the application will continue under the 2006 EIA Regulations as if they had not been replaced.

The EIA process consists of the following phases:

- Environmental and Social Scoping Phase;
- Specialist Studies Phase; and
- Integration and Assessment Phase.

The figure below provides an outline of the EIA process and indicates where you can be involved as an I&AP. All steps are described in more detail in the draft Scoping Report.

EIA Process Flow Diagram



YOUR OPPORTUNITY TO COMMENT

The non-technical summary and draft Scoping Report for G7's proposed wind farm have been made available for stakeholder comment. The Scoping Report will be available at Alexander Bay and Port Nolloth Libraries and on the project's website http://www.erm.com/G7_Renewable_Energies. A notification letter has been sent to all registered and identified I&APs to inform them of the release of the draft Scoping Report and where the report can be reviewed.

Comments and questions should be forward to ERM at the following address, telephone, fax or e-mail. All comments must be received before 12th November 2010.

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PROJECT JUSTIFICATION

Global dependence on fossil fuels, rising fossil fuel prices and concern for the impacts of climate change has resulted in increasing international pressure on countries around the world to increase their share of energy from renewable sources. Targets for the promotion of renewable energy now exist in more than 58 countries around the world and wind energy is emerging as an important component of the energy market in a number of countries. Globally, wind turbines currently generate more than 1percent of global electricity.

In South Africa the government has developed a policy framework (the White Paper on Renewable Energy) and set a target of sourcing 10,000 GWh from renewable energy projects by 2013 (1). This amounts to approximately 4 percent of South Africa's total estimated energy demand by 2013. South Africa's Integrated Resource Plan (IRP 2010) (2) also sets targets for the reduction of CO_2 emissions by 34 percent by 2020; a goal that the renewable energy plays a major role in achieving.

(1) National Energy Regulator of South Africa **South Africa Renewable Energy Feed-In Tariff** (2009) NERSA Publications.
(2)Department of Energy Integrated Resource Plan (2010)

Emergency load shedding in South Africa during 2007 and 2008 highlighted the challenges facing South Africa in terms of electricity generation, transmission and distribution. The National Energy Response Plan (NERP), drafted at the time, acknowledged the role that independent power producers (IPPs) (including those harnessing renewable energy resources) can play in ensuring sustainable electricity generation, and sets a goal that 30 percent of all new power generation will be derived from IPPs (1).

In 2009, the establishment of the Renewable Energy Feed in Tariff (REFIT) in South Africa presented opportunities for the renewable energy industry, promoting competiveness for renewable energy with conventional energy generation technologies under an enabling market mechanism which offers a Feed in Tariff for each unit of energy that is produced from renewable resources. Through REFIT there will be a heightened demand throughout the renewable energy sector (wind, solar, hydro, biomass and geo-thermal) due to the set prices for electricity which are determined and licensed by the National Energy Regulator of South Africa (NERSA).

The intention of G7 in establishing wind energy facilities is to develop wind resources to generate electricity, reduce South Africa's dependence on non-renewable fossil fuel resources and contribute to climate change mitigation. The proposed Richtersveld Wind Farm project would contribute to providing a future of increased energy security and sustainability whilst providing energy to facilitate South Africa's continuing development. A summary of the project motivation is provided in *Box.1* below.

Box.1 ***Project Motivation***

- Reduce South Africa's dependence on fossil fuel resources
- Improve reliability and range of electrical services
- Meet demand for diversified energy sources
- Ensure the future of sustainable energy use
- Reduce CO_2 emissions and the nation's carbon footprint
- Contribute to targets for emission reduction as outlined in IRP 2010
- Promote environmental, social and economically sustainable development
- Contribute to reaching South Africa's goal of 10,000 GWh of renewable energy by 2013
- Contribute to meeting the NERP goal of 30 percent of all new energy from IPPs

In addition to the energy produced by the wind farm, the proposed project has the added advantage of income generation through the sale of the electricity produced, which can supplement the income of marginally productive farms and be used to fund community development projects. As the proposed Richtersveld Wind Farm is located at the end of a national grid feeding line it also promotes grid support and may result in a more secure energy supply for energy users in the local area.

PROJECT DESCRIPTION

The proposed wind energy facility is located near Alexander Bay in the Northern Cape Province. The site is located on part of Korridor Wes Farm (Witbank (Farm 6/2) which is owned by the Richtersveld Sida Hub

Communal Property Association. The approximate site boundary is shown in *Figure 0.1* below. It is anticipated that the once operational the facility will generate up to 225 MW of electricity which will be fed into the National Power Grid. The key components of the proposed wind energy facility include the following:

- wind turbines;
- electrical connections;
- substation;
- access roads and site access; and
- additional project infrastructure.

There will be up to 75 wind turbines on the site. Each of the turbines at the Richtersveld Wind Farm will have an individual capacity of up to 3 MW. The turbines will be approximately 105 m high (to the turbine hub), with a blade diameter of approximately 90—100 m. Each turbine will have a concrete foundation of approximately 5 m x 5 m (1) at its base and a gravel hard standing and lay-down area (of approximately 2,500 m^2) adjacent to the turbine foundation. The hard standing area will be used for construction activities and for turbine maintenance during operation. Typical wind turbine is shown in *Figure 0.2* below.

The turbines will be connected to each other, and the turbine rows will be connected to a new substation that will be built as part of the development. A number of different electrical connection options are being considered as part of the development. The final design of the electrical connections will be based on a number of environmental, technical and economic considerations which will be explored during the EIA process and detailed project design phase. Possible development options that are being investigated include the following:

- Connections between the turbines using underground electrical cabling.
- Connections between the turbines using overhead transmission lines (66 kV) that would be strung between the turbine towers.
- Connection of the turbine rows to the substation using underground electrical cabling.
- Connection of the turbine rows to the substation using overhead transmission lines (66 kV).

Depending on the final location of the substation, the development may include a short 220 kV overhead transmission line (approximately 4.5 km) between the substation and the existing transmission lines that run through the east of the site. The substation will be a single-storey building of approximately 2,500 m^2 in size; it will house electrical equipment and will be fenced for security and safety. The substation complex will also house site offices, storage areas and ablution facilities.

(1) The dimensions refer to the visible area of the foundation at ground level, not the size of the foundation below the surface.

Additional infrastructure that will be required for the project includes site access tracks, a permanent wind measuring mast (lattice structure; 80 m high) to collect data on wind conditions and site fencing (as required). A small borrow pit and an on-site cement batching plant may be developed (subject to the appropriate permits).

16°30'0"E 16°31'30"E 16°33'0"E 16°34'30"E 16°36'0"E 16°37'30"E 16°39'0"E 16°40'30"E 16°42'0"E 16°43'30"E 16°45'0"E 16°46'30"E 16°48'0"E 16°49'30"E 16°51'0"E 16°52'30"E 16°54'0"E

28°31'30"S 28°33'0"S 28°34'30"S 28°36'0"S 28°37'30"S 28°39'0"S 28°40'30"S 28°42'0"S 28°43'30"S 28°45'0"S 28°46'30"S 28°48'0"S 28°49'30"S 28°51'0"S 28°52'30"S

BEAUVALLON

ORANJERIVIER

Northern Cape Province

ALEXANDER BAY

R382

Atlantic Ocean

6/2

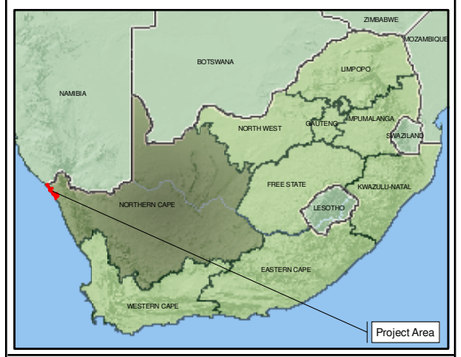
Richtersveld Wind Farm

Re/1

HOLGATRIVIER

Legend

- Towns
- Perennial Rivers
- Non Perennial Rivers
- Contours (20m)
- Main Roads
- Secondary Roads
- Transmission Lines
- Railway Line
- Richtersveld Wind Farm Project Area
- Cadastral Portions
- Dams



SCALE:
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TITLE:
Richtersveld Wind Farm Locality Map

CLIENT:
G7 renewable ENERGIES

DATE: Sept 2010	CHECKED: KD	PROJECT: 0117424
DRAWN: LDT	APPROVED: SHC	SCALE: 1 : 150 000

DRAWING: Richtersveld Locality Map_Rev3.mxd
REV: 3

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ERM

Projection: Geographic , Datum: Hartebeesthoek 1994
Source: Surveys and Mapping, Cape Town, Vector Data 2816, Raster 2816,
Inset Map: Esri Data and Maps

SIZE: A3

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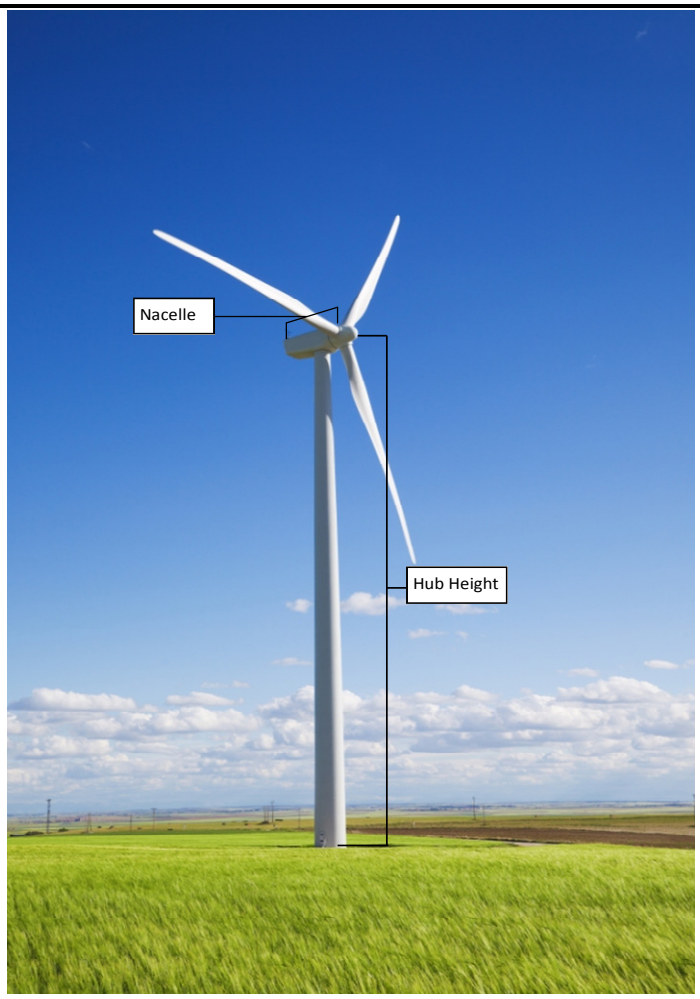
Figure 0.2 Typical Wind Turbine



The development of the Richtersveld Wind Farm will include the following activities:

- site selection, pre-feasibility assessment and permitting;
- detailed development design;
- construction;
- operation; and
- decommissioning.

During the site selection phase G7 commissioned an environmental and social pre-feasibility assessment of the site and several others including a high-level screening of potential environmental and social issues or 'fatal flaws'. The Richtersveld site was selected by G7 as one of five priority sites and the EIA and other permitting processes have now commenced.

The detailed design of the development including the turbine layout, exact size and type of turbine, and location of other project components will be determined using information gathered from wind measuring masts, the information gathered during the specialist studies phase and environmental

and social considerations described in the EIA. This is an iterative process that has begun but not yet concluded.

The construction phase is comprised of site preparation and turbine assembly. Prior to the installation of the wind turbines, the site will be prepared as required; this would include the following activities:

- vegetation clearance;
- subcontractor mobilisation;
- erection of fencing;
- construction/upgrading of on-site access roads;
- construction of site office and storage facilities;
- levelling of hard-standing areas;
- laying of turbine foundations;
- laying of underground cables;
- stringing of overhead cables; and
- substation construction.

These activities can take up to 12 months.

The turbines and other construction materials will be delivered to site via public roads on low-bed trucks. Once the turbine components have arrived on site, it will take approximately up to 9 months to complete the turbine assembly and electrical connections. Due to the size of the development it is possible that the construction and commissioning of the wind farm may be undertaken in one or more phases; the construction timescales for any one phase would depend on the size of the phase but each phase would take no longer to construct than the timescales identified above which presume that the entire development is constructed as one phase.

After the completion of the internal electrical connections turbine function testing will take place to verify the correct operation of the facility. The turbine assembly and testing would be undertaken by a highly-skilled team of turbine construction specialists (the majority of which would likely be from overseas as a workforce of this type is not currently available in the South African market). As part of the project, opportunities to train South African's to be skilled wind farm construction staff will be identified.

The operation phase of the facility is expected to have a minimum life span of up to 25 years. Regular maintenance will be required to ensure that the turbines are kept in optimal working order. Most day to day facility operations will be done remotely through the use of computer networks but some limited maintenance and repair activities will be undertaken on site. During operation the wind farm can function in parallel with daily farming activities due to the relatively small footprint of the turbines, hard-standing areas and access roads. During operation the wind farm can function in parallel with daily farming activities due to the relatively small footprint of the turbines, hard-standing areas and access roads. Only a small team of up to

15 wind farm maintenance specialists (including trainees) would be employed by the project during the operations phase.

Once the facility has reached the end of its life the turbines may be refurbished and continue operating as a power generating facility, or the facility can be closed and decommissioned. If decommissioned, all the components of the wind farm would be removed and the site would be rehabilitated. Some access roads may be also be removed and rehabilitated at the request of the landowner.

CONSIDERATION OF ALTERNATIVES

As part of the site selection process G7 undertook an extensive and detailed technical site selection study in order to identify suitable sites for wind energy facilities in South Africa. The sites that were selected are considered highly desirable from a technical perspective, which considers the following factors.

- wind resource;
- site extent;
- grid access;
- land suitability;
- proximity to aerodromes;
- landowner support; and
- environmental and social high-level screening.

The consideration of the above criteria resulted in the selection of the preferred site. No further site location alternatives will be considered in the EIA process but site layout alternatives and wind turbine technology alternatives will be presented.

The 'no-go' alternative implies that the project would not be executed. Assuming that the wind energy facility would not be developed at the proposed site, there would be no increase in electricity generation from the facility, no CO_2 offsets associated with the proposed development and no economic benefit to the landowners associated with the potential income generated through the operation of the facility and there would be no contribution to meeting South Africa's targets for renewable energy generation. There would also be no negative environmental and social impacts associated with the development of a wind energy facility.

CLEAN DEVELOPMENT MECHANISM REGISTRATION

The electricity generated by the proposed Richtersveld Wind Farm will displace grid electricity which is primarily coal-based and, as such, has a high Greenhouse Gas (GHG) emission factor. The project is in the process of preparing an application for registration under the Clean Development Mechanism (CDM). This CDM registration process is not part of the EIA process and is not being undertaken by ERM. G7 has commissioned Deloitte & Touche as independent CDM consultants. General information on the CDM

can be found at www.unfccc.int and for further information on the CDM registration for the Richtersveld Wind Farm please contact Joslin Andrews at Deloitte & Touche (josandrews@deloitte.co.za or +27 (0) 11 806 5952).

BIOPHYSICAL AND SOCIAL BASELINE

The Alexander Bay area experiences cool winters and relatively hot and dry summers. The mean annual precipitation of parts of coastal Richtersveld and areas adjoining the Namib Desert is normally less than 80 mm with the majority of the rainfall occurring during the winter months. The site lies at approximately 300 m above sea level. From the Atlantic Ocean (located approximately 10 km to the west of the site) the topography rises up a short escarpment to a broad, open coastal plain, upon which the site is situated. The site is dominated by sandy soils; rock outcrops, boulders and pavements are absent from the area. There are no permanent waterbodies or watercourses within the site area and the site access road does not cross any watercourses. The closest major watercourse to the site is the Holgat River, which is located to the southeast and south of the site approximately 10 km from the site at its closest point.

The majority of the Richtersveld region falls within the Succulent Karoo biome of South Africa vegetation. The proposed wind farm site is located within the Succulent Karoo biome, and is also close to the boundary of the Desert biome, which is located within approximately 20 km from the Orange River, along the border with Namibia. The vegetation types that are likely to be found on and in close proximity to the site are Northern Richtersveld Yellow Duneveld. Richtersveld Coastal Duneveld vegetation is also located in the area, largely to the west of the proposed site. All of the abovementioned vegetation types are considered to be least threatened [(1)].

There are no known protected or conservation areas within the site. The Orange River mouth wetlands are located in Alexander Bay on the border of South Africa and Namibia (approximately 20 km northwest of the site). This area is designated as an internationally important wetland site under the Ramsar convention and is also listed as a non-statutory Important Bird Area (IBA) by Birdlife International (IBA ZA023) [(2)]. The Richtersveld National Park (part of the Richtersveld/Ais-Ais Transfrontier Park) is located more than 50 km to the northeast of the proposed wind farm site.

The site is located within the Northern Cape Province under the jurisdiction of the Namakwa District Municipality and the Richtersveld Local Municipality. The District Municipality had a population of 126,494 at the time of the 2007 Community Survey, which indicated a population increase of approximately 10.3 percent compared to the population size in 2001 which was 108,111 [(3)]. Fishing and agriculture are two of the most dominant economic activities in the Local Municipality following mining.

(1) Rouget et al. 2004
(2) http://www.birdlife.org/
(3) Community Survey, 2007

The population of the District Municipality has very low levels of education. Namakwa District Municipality has a lower unemployment rate (12.8 percent) when compared to the Provincial rate (17.4 percent) (1). The District Municipality has a lack of medical facilities which could be attributed to the scattered settlement pattern of the District (2). The common illnesses experienced by the population are HIV, TB and substance abuse.

The landscape of the area is largely open and arid with very little natural visual screening (such as trees or hills). Apart from the town of Alexander Bay, scattered mining developments and the R382 there are very few visual receptors in the area.

IDENTIFICATION OF ISSUES AND CONCERNS

A number of key issues have been identified through the scoping process thus far including the following potential impacts:

- noise impacts;
- loss of agricultural land;
- loss to archaeological and cultural heritage;
- visual and landscape impacts;
- impact on fauna and flora;
- impact on bird life;
- impact on fauna (including bats);
- impacts due to dust;
- impact on traffic;
- impact of waste production;
- impact on hydrology;
- impact on surface water and groundwater;
- impact on soil;
- socio-economic impacts; and
- human health and safety.

With substantial increase in wind farm developments, cumulative impacts need to be considered. Significant cumulative impacts on visual amenity, birdlife, bats and vegetation (amongst others) could result due to the development of wind energy facilities in proximity to each other.

PLAN OF STUDY FOR EIA

The draft Scoping Report presents a Plan of Study for the EIA. The remainder of the EIA process will include Specialist Studies and an Integration and Assessment Phase; in parallel with these activities the EIA team will continue to interact with the Authorities and continue the public participation process.

(1) Namakwa District Municipality IDP, 2006 - 2011
(2) Namakwa District Municipality Profile, 2008

During the Specialist Study phase, the appointed specialists will gather relevant data needed to provide a description of the affected environment. By understanding the sensitivity of the affected environment this will enable the specialists to identify and assess impacts that might occur as a result of the proposed wind farm. The project team will assess potential impacts (positive and negative) according to a predefined assessment methodology. Ways in which negative impacts could be mitigated and benefits enhanced will be outlined.

Specialists who will be included as part of the project team for the following specialist studies are:

- Noise – Adrian Jongens (Jongens Keet and Associates);
- Archaeology, cultural heritage and palaeontology – Tim Hart (ACO Associates cc.);
- Visual and landscape – Bernard Oberholzer and Quinton Lawson (Bernard Oberholzer Landscape Architects in association with Meirelles Lawson Burger Architects);
- Vegetation and terrestrial ecology – Simon Todd (Simon Todd Consulting);
- Birds – Andrew Jenkins (AVISENSE Ornithological Consulting);
- Bats – Kate McEwan (Natural Scientific Services cc.); and
- Socio-economic – Kerryn McKune Desai (ERM).

WAY FORWARD

All additional comments received during the review of this draft Scoping Report and associated public participation activities have been assimilated and incorporated into a Comments and Responses Report. The final Scoping Report will be submitted to the Department of Environment (DEA) for approval. On acceptance of the final Scoping Report by DEA, the EIA will proceed to the next phase; the Specialist Studies and Impact Assessment Integration Phase.

Table 1 Planned Schedule for Future Activities

Task	Date
Stakeholder Comment on Scoping Report and Plan of Study for EIA	Oct/Nov 2010
Finalise Scoping Report and Plan of Study for EIA and submit to DEA	Nov 2010
Specialist studies	Sept – Dec 2010
Prepare Draft EIR and EMP	Dec 2010 - Jan 2011
Stakeholder Comment on Draft EIR and EMP	Feb/Mar 2011
Finalise and submit EIR and EMP to DEA	Apr 2011

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