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PROPOSED TRANSMISSION INTEGRATION FOR THE BIOTHERM MARALLA EAST AND WEST WIND FACILITIES

SOCIO-ECONOMIC IMPACT ASSESSMENT

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WSP | PARSONS BRINCKERHOFF

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SOCIO-ECONOMIC IMPACT ASSESSMENT

BioTherm Energy (Pty) Ltd

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1 INTRODUCTION

BioTherm Energy (Pty) Ltd (BioTherm) propose to develop 2 x 140 MW renewable energy wind facility within the Western Cape and Northern Cape, namely the Maralla East and Maralla West Wind Facilities. These facilities are proposed to be located approximately 35 km south of the town of Sutherland. This project forms part of a larger wind energy complex proposed by BioTherm for the area, namely the Esizayo, Maralla East (140 MW) and Maralla West (140 MW) facilities (**Figure 1**).

A Scoping and Environmental Impact Assessment (EIA) process is currently being undertaken for the Maralla East and Maralla West Wind Facilities. In support of both the Maralla Wind Facilities, BioTherm proposes to develop a 132kV evacuation power line and associated infrastructure (the proposed project) (**Figure 2**).

WSP | Parsons Brinckerhoff, Environment and Energy, Africa (WSP | Parsons Brinckerhoff) has been appointed to undertake a Basic Assessment (BA) process for the proposed project in order to apply for Environmental Authorisation (EA). This report comprises the Socio-Economic Impact Assessment (SIA) in support of the BA process.

1.1 SCOPE OF WORK

The scope of the SIA was to determine the potential positive and negative impacts of the proposed project, as well as the related infrastructure and alternatives, on the local and regional landscape. Direct, indirect and cumulative impacts of the proposed project in relation to current and proposed activities within the local area have been considered.

1.2 OBJECTIVES OF THE REPORT

The SIA Report has achieved the following objectives:

- Development of a social profile for the proposed project area through the description of the socio-economic receiving environment that may be affected by the proposed activity;
- Identification, description and assessment of the potential socio-economic impacts associated with the proposed facility; and
- Provision of mitigation measures and recommendations to enhance the socio-economic sustainability of all phases of the proposed project

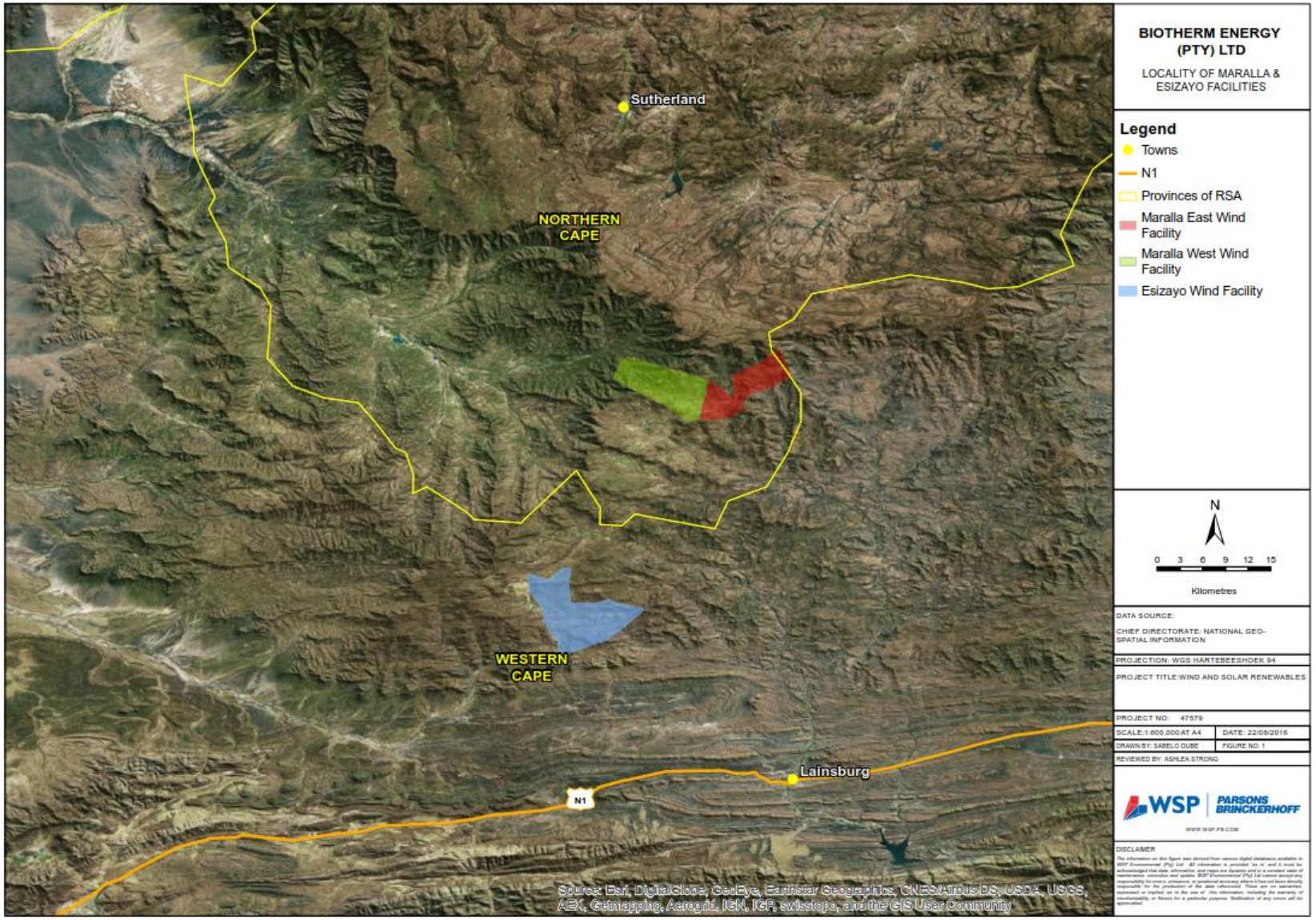
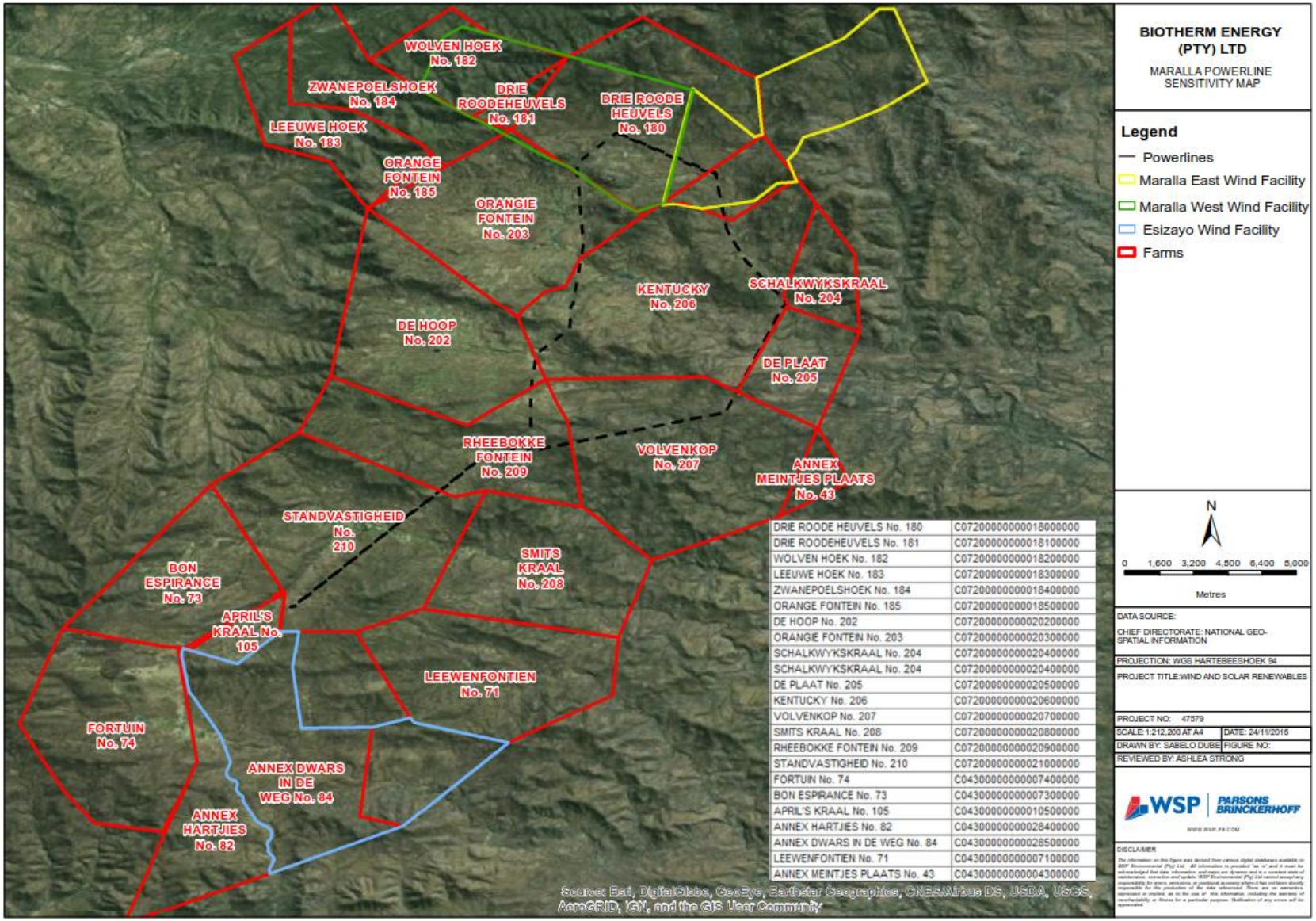


Figure 1: Regional location of proposed wind energy complex



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ORANGE FONTEIN No. 185	C072000000000185000000
DE HOOP No. 202	C072000000000202000000
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SMITS KRAAL No. 208	C072000000000208000000
RHEEBOKKE FONTEIN No. 209	C072000000000209000000
STANDVASTIGHEID No. 210	C072000000000210000000
FORTUIN No. 74	C043000000000074000000
BON ESPIRANCE No. 73	C043000000000073000000
APRIL'S KRAAL No. 105	C043000000000105000000
ANNEX HARTJIES No. 82	C043000000000282400000
ANNEX DWARS IN DE WEG No. 84	C043000000000265000000
LEEWENFONTIEN No. 71	C043000000000071000000
ANNEX MEINTJES PLAATS No. 43	C043000000000043000000

Figure 2: Proposed Maralla Wind Transmission lines alternatives

1.3 LEGISLATIVE FRAMEWORK

There is no legal framework governing SIA processes in South Africa; however, a guideline for SIA is included in the *Western Cape Department of Environmental Affairs and Development Planning Guideline for Involving Social Assessment Specialists in EIA Processes* (Barbour, 2007).

The National Environmental Management Act, as amended (1998) 2014 EIA Regulations provides the general requirements for consultants compiling specialist reports or undertaking specialist processes. In summary, a specialist must:

- Be independent;
- Have expertise in conducting the study, including knowledge of NEMA, the EIA Regulations and any relevant guidelines;
- Perform the work in an objective manner, even if the findings are not favourable to the applicant;
- Comply with all applicable legislation; and
- Disclose to the applicant and competent authority all material information that may have the potential to influence:
  - Any decision to be taken with respect of the application by the competent authority; or
  - The objectivity of any report, plan or document to be prepared for submission to the competent authority.

1.4 STUDY APPROACH AND METHODOLOGY

APPROACH

The approach to the SIA comprised of a combination of desktop and primary data collection, review and assessment. The collection of primary data was to ensure that site-specific issues and potential impacts could be identified and more accurately assessed.

SCOPING PHASE – SCREENING STUDY

The socio-economic screening assessment undertaken during the Scoping Phase sought to obtain insights into the nature of the local social and economic environment, and the potential socio-economic issues that may arise from the proposed project. The following activities were conducted during the Socio-Economic Scoping Study:

- Desktop Review;
- Description of the socio-economic context of the project;
- Identification of potential issues and impacts associated with all components and alternatives associated with the proposed project; and
- Plan of Study for EIA Phase SIA study.

EIA PHASE – SOCIAL IMPACT ASSESSMENT

The Socio-Economic Scoping Report (dated October 2016) provided the terms of reference for the impact assessment phase. The SIA included the following activities:

- Desktop Review:
  - Review of relevant specialist reports in order to obtain an understanding of the broader impacts associated with the project which may have a bearing on the social landscape; and

- Review of outcomes of the Scoping Phase stakeholder engagement (including review of meeting minutes, comment and response reports) to obtain insight into the socio-economic issues and concerns raised by stakeholders.

- Primary Data Collection:
  - Interviews with key representatives of the Laingsburg Local Municipality were held to obtain insights into the anticipated socio-economic impacts associated with the proposed project, namely:
    - Ms Gwynn Harding – Planning and IDP Manager; and
    - Mr Tron –Ward Councillor (Ward 2), past Mayor, and local farmer.
  - Other local representatives were interviewed via informal discussions, including:
    - Ms Francis van Wyk – Laingsburg Local Municipality council representative, museum curator and resident; and
    - Ms Madre Walters – Laingsburg Tourism Officer.

  The interviews sought to obtain responses to specific socio-economic questions and to obtain clarity on assumptions made in the Scoping Phase. The representative interviewed was identified through the EIA process, and was considered knowledgeable and able to represent the local context objectively, and thus meet the requirements of the SIA study. A record of the interviews is provided in **Appendix A**.

- Impact Assessment and Recommendations:
  - Evaluation of potential impacts (as per impact assessment methodology outlined below) and identification of appropriate mitigation and management measures to enhance positive impacts and reduce negative impacts.

IMPACT ASSESSMENT METHODOLOGY

The EIA uses a methodological framework developed by WSP | Parsons Brinckerhoff to meet the combined requirements of international best practice and NEMA, 2014 EIA Regulations.

As required by the EIA Regulations, the determination and assessment of impacts will be based on the following criteria:

- Nature of the Impact
- Significance of the Impact
- Consequence of the Impact
- Extent of the impact
- Duration of the Impact
- Probability if the impact
- Degree to which the impact:
  - can be reversed;
  - may cause irreplaceable loss of resources; and
  - can be avoided, managed or mitigated.

Following international best practice, additional criteria have been included to determine the significant effects. These include the consideration of the following:

- Magnitude: to what extent environmental resources are going to be affected;

- Sensitivity of the resource or receptor (rated as high, medium and low) by considering the importance of the receiving environment (international, national, regional, district and local), rarity of the receiving environment, benefits or services provided by the environmental resources and perception of the resource or receptor); and
- Severity of the impact, measured by the importance of the consequences of change (high, medium, low, negligible) by considering inter alia magnitude, duration, intensity, likelihood, frequency and reversibility of the change.

It should be noted that the definitions given are for guidance only, and not all the definitions will apply to all of the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

METHODOLOGY

Impacts are assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected

NATURE OR TYPE OF IMPACT	DEFINITION
Beneficial / Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
Adverse / Negative	An impact that is considered to represent an adverse change from the baseline, or introduces a new undesirable factor.
Direct	Impacts that arise directly from activities that form an integral part of the Project (e.g. new infrastructure).
Indirect	Impacts that arise indirectly from activities not explicitly forming part of the Project (e.g. noise changes due to changes in road or rail traffic resulting from the operation of Project).
Secondary	Secondary or induced impacts caused by a change in the Project environment (e.g. employment opportunities created by the supply chain requirements).
Cumulative	Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

- The physical **extent**, wherein it is indicated whether:

SCORE	DESCRIPTION
1	the impact will be limited to the site;
2	the impact will be limited to the local area;
3	the impact will be limited to the region;
4	the impact will be national; or
5	the impact will be international;

- The **duration**, wherein it is indicated whether the lifetime of the impact will be:

SCORE	DESCRIPTION
1	of a very short duration (0 to 1 years)
2	of a short duration (2 to 5 years)
3	medium term (5–15 years)

SCORE	DESCRIPTION
4	long term (> 15 years)
5	Permanent

- The **magnitude of impact on ecological processes**, quantified on a scale from 0-10, where a score is assigned:

SCORE	DESCRIPTION
0	small and will have no effect on the environment.
2	minor and will not result in an impact on processes.
4	low and will cause a slight impact on processes.
6	moderate and will result in processes continuing but in a modified way.
8	high (processes are altered to the extent that they temporarily cease).
10	very high and results in complete destruction of patterns and permanent cessation of processes.

- The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale where:

SCORE	DESCRIPTION
1	very improbable (probably will not happen.
2	improbable (some possibility, but low likelihood).
3	probable (distinct possibility).
4	highly probable (most likely).
5	definite (impact will occur regardless of any prevention measures).

- the **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- the **status**, which is described as either positive, negative or neutral;
- the degree to which the impact can be reversed;
- the degree to which the impact may cause irreplaceable loss of resources; and
- the *degree* to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$$S = (E+D+M)*P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

OVERALL SCORE	SIGNIFICANCE RATING	DESCRIPTION
< 30 points	Low	where this impact would not have a direct influence on the decision to develop in the area
31-60 points	Medium	where the impact could influence the decision to develop in the area unless it is effectively mitigated
> 60 points	High	where the impact must have an influence on the decision process to develop in the area

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the project's actual extent of impact, and are included to facilitate understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures, and is thus the final level of impact associated with the development of the Project. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this EIA Report.

1.5 DECLARATION OF INDEPENDENCE

Danielle Sanderson (Senior Consultant) is a qualified social scientist with a Masters of Social Science in Environmental Management obtained from the University of KwaZulu-Natal in 2006. She has over 8 years' experience in social assessments. Danielle undertook the socio-economic screening process and fieldwork associated with the SIA.

Hilary Konigkramer (Director) is a qualified social scientist with a Bachelor of Social Science Honours in Environmental Management obtained from the University of Natal in 1998. She has over 15 years' experience as a consulting social and environmental scientist. Hilary provided guidance and review of the screening report and authored the SIA Report (this document).

Curriculum vitae of the above specialists are provided in **Appendix B**.

Both Danielle Sanderson and Hilary Konigkramer, responsible for undertaking the study and contributing to the production of the Draft SIA Report, are independent and do not have vested or financial interests in the proposed transmission integration project being approved or not. Declaration of Independence forms are attached in **Appendix C**.

2 DESCRIPTION OF THE PROJECT

The proposed transmission integration project entails the construction of a 132kV transmission line from the common substation at the proposed Maralla West Wind facility to connect to the existing Komsberg substation. The preferred transmission line route will run adjacent to an existing road (R354) before running in a southerly direction to the existing Komasberg MTS Substation located approximately 25 km south of the facility.

The proposed project will include the investigations and application for the extension of the existing Komsberg substation to allow for the proposed 132kV line.

The full scope of the works includes:

- Construction of a 132kV transmission line (either single or double circuited) between the Maralla Wind Facilities and the Komsberg substation
- Establishment of the common substation at the solar energy development which includes but is not limited to:
  - A high voltage substation yard to allow for multiple 132kV feeder bays and transformers.
  - The control building, telecommunication infrastructure, oil dam(s) etc.
  - The access road infrastructure to and within the substation.
- Expansion of the Komsberg substation will be required to accommodate the proposed feed.

COMPONENTS OF THE TRANSMISSION LINE

A brief overview of the physical/technical requirements of the project is as follows:

- 132kV single or double circuit transmission line between the Maralla Wind Facilities and the Komsberg substation.
- Straight-line distance between the wind facility and the Komsberg substation is approximately 2km.
- Servitude width for the 132kV transmission line (single and double circuit is 55m).
- Height of 132kV transmission line is approximately 48m.
- Minimum conductor clearance is between 8.1 and 12.6m.
- Span length between structures is approximately 450m.

The design of the 132kV structures is unknown at present as the choice is dependent on the conditions at the exact position of the transmission structures on the chosen line route. A description of the various structure alternatives has been included in the BA Report. The actual number of structures required will vary according to the final route alignment determined.

A working area of approximately 100m x 100m is needed for each of the proposed structures to be constructed.

CLEARANCE REQUIREMENTS FOR TRANSMISSION LINES

For safety reasons, the transmission lines require certain minimum clearance distances. These are as follows:

- The minimum vertical clearance distance between the ground and the transmission line is 6.7m.
- The minimum vertical clearance to any fixed structure that does not form part of the transmission line is 9.4m - 11m.
- The minimum distance between a 132kV transmission line and an existing road is 60m – 120m (depending on the type of road).
- Any farming activity can be practiced under the conductors provided safe working clearances and building restrictions are adhered to.
- Minimum servitude to other parallel lines.

PROPOSED ASSOCIATED INFRASTRUCTURE

The proposed transmission integration project will require the following with respect to the permanent infrastructure:

- Where the transmission line crosses a fence between neighbouring landowners and there is no suitable gate in place, a suitable gate will be erected in consultation with the landowner. These gates are necessary in order to ensure access to the line for maintenance and repair purposes.
- Existing road infrastructure will be used as far as possible to provide access for construction vehicles during the construction of the line. Thereafter, the roads are used for inspection and maintenance purposes. Where appropriate roads may be upgraded to access transmission lines and substations.
- Komsberg substation extension.
- Fibre optic cable could be strung on the earth cable if required for telecommunication.

2.1 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

DESIGN AND PLANNING PHASE

The main activities during the design and planning phase of the proposed transmission integration project will include the following:

- Undertaking the BA process and obtaining EA.
- Negotiation and registration of a servitude.
- Conducting geotechnical and topographical surveys to provide design engineers with information required to determine the quality and optimal placement of structures and conductor spans and design of structure foundations.

CONSTRUCTION PHASE

The main activities during the construction phase of the transmission line will include the following:

- Vegetation clearance and gate erection (access for maintenance phase);
- Establishment of construction camp and construction of access roads if necessary;
- Construction of structure foundations;
- Assembly and erection of towers;
- Stringing of conductors and earthwires; and
- Rehabilitation of working areas.

OPERATIONAL PHASE

Due to the fact that the common substation and the 132kV transmission line will ultimately be transferred to Eskom, Eskom technicians will test and commission the transmission line once all the above steps have been completed. Maintenance of the lines and the surrounding servitude will take place on an on-going basis, as per the finalised operational EMPr. Regular monitoring will also take place to ensure that this EMPr is complied with effectively, and penalties will be enforced for non-compliance.

DECOMMISSIONING PHASE

The viability of the project will be largely dependent on the continued operation of the Maralla Wind Facilities as the primary function of the transmission infrastructure is to evacuate power from this facility. Following the initial 20-year operational period of the proposed Maralla Wind Facilities, their continued economic viability will be investigated. If the facilities are still deemed viable, the operational life may be extended; if not, the facilities and the transmission line it will be decommissioned. If the transmission line is completely decommissioned, all the components will be disassembled, reused and recycled or disposed.

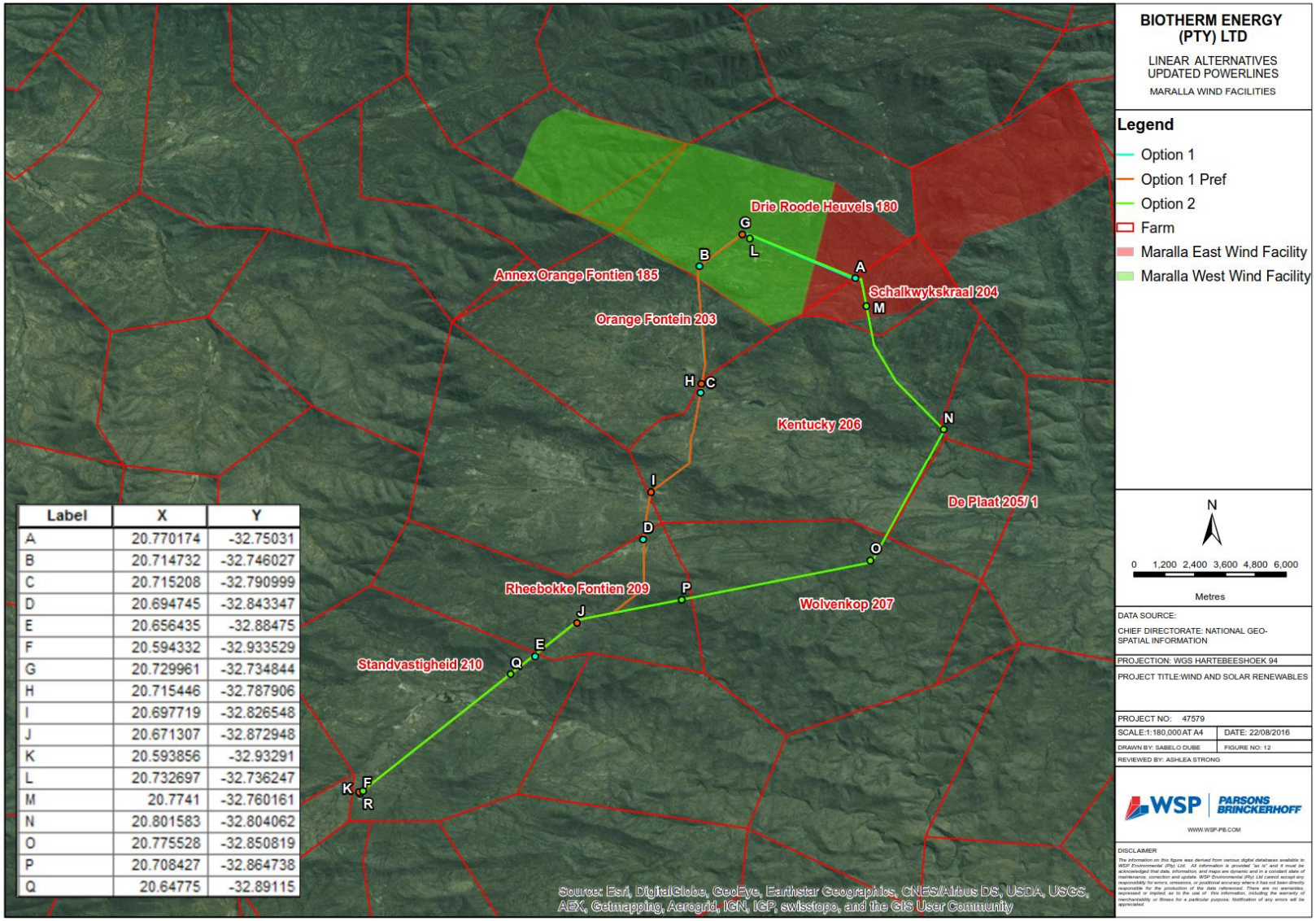
2.2 ALTERNATIVES

CORRIDOR AND SUBSTATION ALTERNATIVES

Figure 3 illustrates the proposed alternative transmission line corridors and substation sites that have been investigated in the BA process. **Table 1** provides a summary of the revised alternative corridors investigated in the BA process for the transmission integration project.

Table 1: Summary of corridor and substation alternatives

	SUBSTATION 1		SUBSTATION 2	
ISSUE	**ALTERNATIVE 1**	**ALTERNATIVE 2**	**ALTERNATIVE 1**	**ALTERNATIVE 2**
Length	27700m	34500m	30200m	32000m
Number of Bend points	7	8	5	6
Number of Transmission Line Crossings	None	None	None	None
Number of National Road Crossings	None	None	None	None
Land Use	Agriculture	Agriculture	Agriculture	Agriculture
Topography	Flat and undulating terrain			
Access	Access through the Maralla Wind Energy Facility, and existing roads and existing service roads where the transmission line runs parallel to existing lines.			
Farm Names	à Drie Roode Heuwels No. 180 à Orangie Fontein No. 203 à Kentucky No. 206 à Rheebokke Fontein No. 209 à Standvastigheid No. 210	à Drie Roode Heuwels No. 180 à Kentucky No. 206 à Schalkwykskraal No. 204 à De Plaat No. 205 à Volvenkop No. 207 à Rheebokke Fontein no. 209 à Standvastigheid No. 210	à Drie Roode Heuwels No. 180 à Kentucky No. 206 à Schalkwykskraal No 204 à De Plaat No. 205 à Volvenkop No. 207 à Rheebokke Fontein No. 209 à Standvastigheid No. 210	à Drie Roode Heuwels No. 180 à Orangie Fontein No. 203 à Kentucky No. 206 à Rheebokke Fontein no. 209 à Standvastigheid No. 210



Label	X	Y
A	20.770174	-32.75031
B	20.714732	-32.746027
C	20.715208	-32.790999
D	20.694745	-32.843347
E	20.656435	-32.88475
F	20.594332	-32.933529
G	20.729961	-32.734844
H	20.715446	-32.787906
I	20.697719	-32.826548
J	20.671307	-32.872948
K	20.593856	-32.93291
L	20.732697	-32.736247
M	20.7741	-32.760161
N	20.801583	-32.804062
O	20.775528	-32.850819
P	20.708427	-32.864738
Q	20.64775	-32.89115

Figure 3: Maralla Transmission Integration Project: Powerline and substation alternatives

NO-GO ALTERNATIVE

The 'do-nothing' or "no-go" alternative is the option of not implementing the proposed project.

The scope of this application includes the establishment of an up to 132kV transmission line and associated substation expansion required for the integration of the power generated at the proposed Maralla Wind Facilities to the National Grid. The proposed transmission line is essential supporting infrastructure to the wind energy development, which, once developed, will generate power from renewable energy resources.

With an increasing demand in energy predicted and growing environmental concerns about fossil fuel based energy systems, the development of large-scale renewable energy supply schemes is strategically important for increasing the diversity of domestic energy supplies and avoiding energy imports in the country.

Without the implementation of this project, the use of renewable options for power supply will be compromised in the future. This has potentially significant negative impacts on environmental and social well-being.

The no-go option is a feasible option; however, this would prevent BioTherm from contributing to the significant environmental, social and economic benefits associated with the development of the renewables sector. Accordingly, the no-go option is not the preferred option.

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 REGIONAL CONTEXT

NORTHERN CAPE PROVINCE

The proposed project is located within Northern Cape Province (**Figure 1**). This is one of the largest provinces within South Africa's, taking up nearly a third of the country's land area (372 889 km^2), but has the country's smallest population of approximately 1.1 million people (Statistics South Africa, 2012). The population density of the province is therefore very low (approximately one person per square kilometre) (Statistics South Africa, 2016). The population comprises predominantly Black African (50%) and Coloured (40%) population groups (**Figure 4**). The two main first languages spoken within the province are Afrikaans (53%) and Setswana (33%) (**Figure 4**).

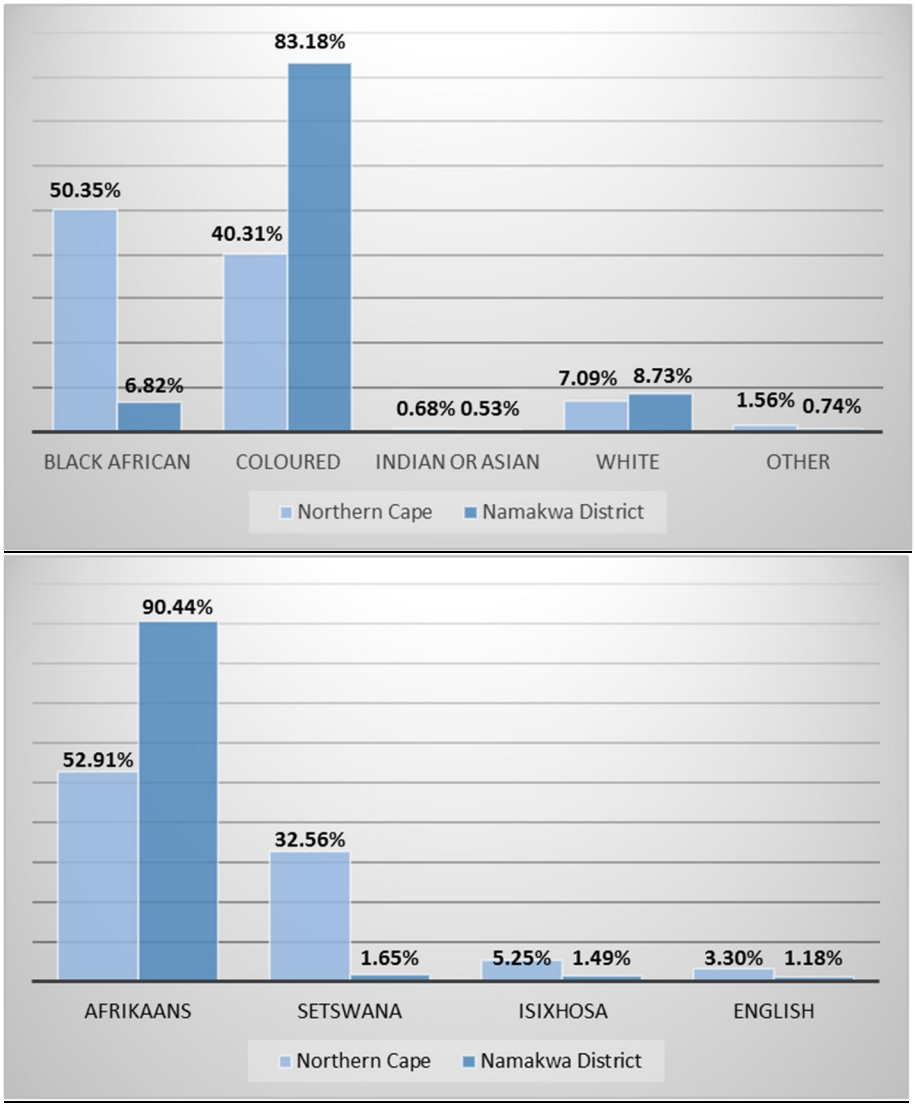
The split between urban and rural populations is 76% and 24% respectively (Statistics South Africa, 2012). This indicates that the majority of the population lives in urban centres, which likely to be a result of sparse natural resources within the province.

Geographically the province shares borders with Namibia in the north and stretches as far as the Atlantic Ocean in the west. The Northern Cape also shares borders with the Western Cape to the south, the Eastern Cape to the southeast, and the Free State and the North West Province to the east. The largest centres in the Northern Cape are Kimberley and Upington.

The current unemployment rate, as of the first quarter of 2016, is 27.8% (Statistics South Africa, 2016). The total dependency ratio is 55.7%, which is slightly higher than the national average, which was 52.14% in 2015 (Indexmundi, 2016). **Figure 5** provides a population pyramid for the Northern Cape indicating a high population below the age of 35. The total percentage of people over the age

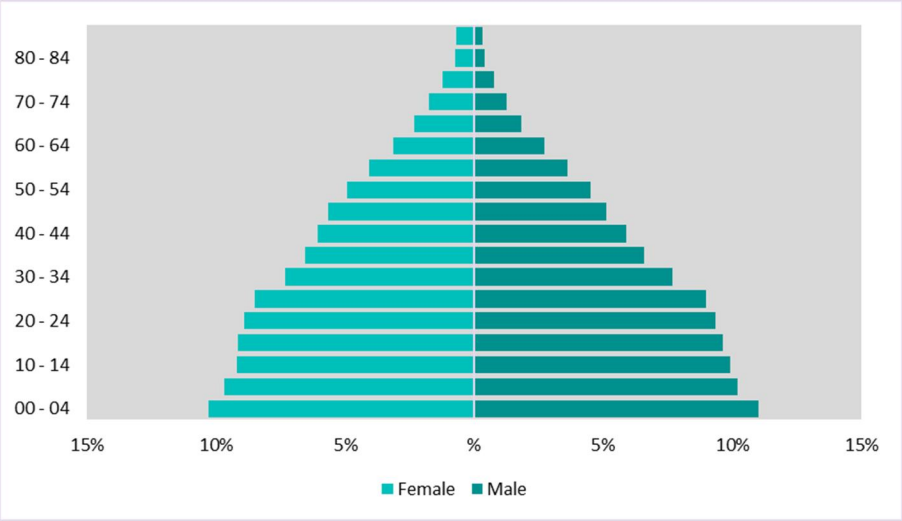
of 20 years of age who do not have schooling is 24%, which is three times the national level of 8% (Statistics South Africa, 2016). The total number of people above the age of 20 that have a matric or higher is 30%, which is lower than the national level of 41% (Statistics South Africa, 2012).

Extensive sheep, goat, and cattle rearing are prominent in the province due to the sparse, arid climate. Farmers in the province contribute to 6.1% to South African agriculture and 6.6% of the province's economy (Statistics South Africa, 2012). Mining (including diamonds, iron, titanium, zinc, lead, and copper) is one of the main economic sectors, generating nearly 7% of South Africa's total mining value and contributes 23.4% to the provinces total economy.



Source: Statistics South Africa (2012)

Figure 4: Population groups and languages spoken – Northern Cape and Namakwa District



Source: Statistics South Africa (2012)

Figure 5: Population pyramid – Northern Cape

The Orange River provides a source of fertile land and water within the northern region of the province. The areas immediately adjacent to Orange River are therefore characterised by a concentration of vineyards and other intensive agricultural activities, producing products such as export-quality table grapes, wine, dried and preserved fruit. The Northern Cape is also home to the world's largest telescope, the Square Kilometre Array (SKA). The province has numerous parks and conservation areas. The Kgalagadi Transfrontier Park is Africa's first cross-border game park and one of the largest conservation areas in southern Africa.

NAMAKWA DISTRICT MUNICIPALITY

The Namakwa District Municipality is one of five districts of the Northern Cape Province and comprises six local municipalities. The municipality is extensive, covering approximately a third of the province, extending from the Namibian border in the north, Atlantic Ocean to the west, and through to the central region of the Karoo dessert in the south. The district is the least populated in the province with just over 100 000 people, with a population density of 0.91 people per square kilometre (Statistics South Africa, 2016). The majority of the population (82.1%) is concentrated in urban areas of the municipality (Statistics South Africa, 2012). The main language spoken within the district municipality is Afrikaans, and of the total population approximately 83% are Coloured (Error! Reference source not found.**4**).

The unemployment rate is relatively high at 37.5% compared to the provincial (22.2%) and national (26.6%) levels (Statistics South Africa, 2012). With a moderate to high dependency ratio of 58%, the high unemployment is a significant issue for the local population. Whilst the percentage of the population over 20 not having any schooling is low (5% compared to the national 8%), only 12.7% of the population have a matric (compared to 41% nationally) which is a contributing factor to the high unemployment rate.

The main contributor to the local economy of the Namakwa District Municipality is the mining sector (52% to GDP), which includes including iron, manganese, and zinc extraction (Namakwa District Municipality, 2012). Other economic activities include mariculture, agriculture and community services (Namakwa District Municipality, 2012). The mining sector is the largest employer within the municipality, although recent trends show the sector to be in decline. A decline in employment opportunities in the mining sector emphasises the need to prioritise alternative sectors (Namakwa District Municipality, 2012).

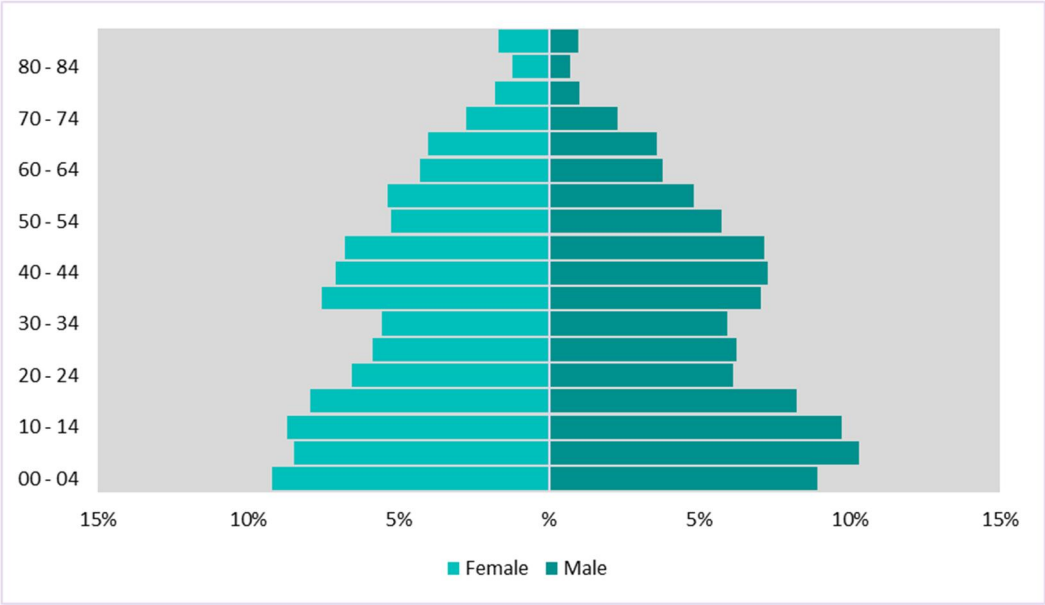
3.2 LOCAL CONTEXT

KAROO HOOGLAND LOCAL MUNICIPALITY

The proposed Maralla West Wind Facility site is located within the Karoo Hoogland Local Municipality, which forms part of the Namakwa District Municipality, in the southernmost area of the Northern Cape. The three main towns in Karoo Hoogland Local Municipality are Williston, Fraserburg and Sutherland (Karoo Hoogland Local Municipality, 2015).

The human settlement within the Karoo Hoogland Local Municipality is concentrated within urban areas, with farming communities and settlements dispersed across the municipality. The population is 12 588, with a population density of 0.4 persons per square kilometre (Statistics South Africa, 2012). The groups representing the highest percentages of the municipality's population are Coloured (79%), followed by White (15%) and Black African (6%) (Statistics South Africa, 2012). The most-spoken first language is Afrikaans (90%), with 1% of the population speaking English and isiXhosa.

The population of the Karoo Hoogland Local Municipality is relatively stable; however, a notable gap occurs between the ages of 15 – 39 (**Figure 6**). This may be indicative of on out-migration of youth in search of education and employment. The dependency ratio is 61%, which is 1.6 dependants for every working age person.



Data source: Statistics South Africa (2012)

Figure 6: Population pyramid – Karoo Hoogland Local Municipality

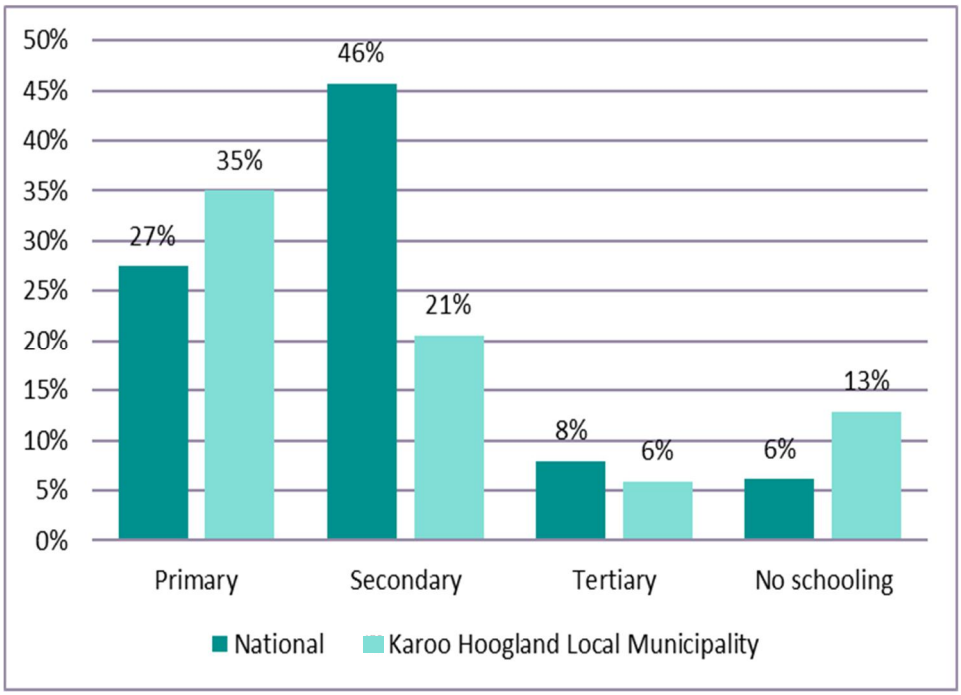
The service levels within the local municipality are moderate with 73.4% of the households having access to electricity for lighting, 58.5% for cooking and 46.4% for heating. This is due to majority (73.3%) of the population residing in urban areas. Sixty-two percent of the municipality's water service is provided by the municipality and other water services, while 33.8% is sourced from boreholes. Refuse removal services level are moderate, as 62.7% of households have their refuse removed by the local authority. Sanitation levels are low with only 39.4% having flush toilets connected to a sewer system. A lack of infrastructure has been identified by the Karoo Hoogland IDP as one of the key a priority development needs (Karoo Hoogland Local Municipality, 2015).

The education levels within the local municipality are low compared to the national average, as indicated in **Figure 7**. Areas with low levels of education and skills generally present a lower level

of economic employment than populations with higher education levels, as indirect opportunities through entrepreneurship are also lost. There are therefore likely to be low numbers of skilled individuals available for employment within the Karoo Hoogland Local Municipality.

The income levels of the municipality's population are low with 42.5% earning less than R1600 per month. The unemployment levels are 23.1% higher than national levels, with 33.2% of the potential labour force being unemployed in comparison to the national unemployment levels of 26.7% (as of the first quarter 2016) (Statistics South Africa, 2012 and 2016, Karoo Hoogland IDP, 2015). According to the Karoo Hoogland IDP (2015), more than half (55%) of the population within the municipality is classified as semi-skilled of unskilled

The Karoo Hoogland Local Municipality is characterised by an arid and mountainous environment. The low potential grazing, non-arable land is suited for sheep and game farming, and consequently agriculture and tourism are the main local economic contributors (Karoo Hoogland Local Municipality, 2010).



Data source: Statistics South Africa, 2012

Figure 7: Education levels – Karoo Hoogland Local Municipality

3.3 LOCAL ECONOMIC ACTIVITIES

AGRICULTURE

The Karoo Hoogland Local Municipality has very limited arable land and poor soil conditions, which makes it ideally suited for grazing (Karoo Hoogland Local Municipality, 2010). Sheep farming is therefore the key agricultural and economic driver. Other agricultural activities include ostrich rearing, and limited, intensive crop farming.

TOURISM

Tourism plays a secondary, but important, role within the Karoo Hoogland local economy. Sutherland is home to the Southern African Large Telescope (SALT) (14 km from Sutherland),

which provides a technology tourism opportunity. In addition, agri-tourism and eco-tourism (including an extinct volcano) attract visitors nationally and internationally.

RENEWABLES

There are a number of proposed renewable energy projects within the Karoo Hoogland Local Municipality. The dominant strong winds throughout the province make the region an ideal location for wind farms. There are a number of proposed and existing developments situated within a 100 km radius of the proposed project site (**Table 3** and **Figure 8**). The presence of multiple approved and proposed wind and solar energy farms within the vicinity of the proposed project site creates an opportunity for infrastructure sharing. Currently, however, only three of the proposed surrounding facilities have been awarded preferred bidder status by the Department of Energy.

3.4 LOCAL COMMUNITIES

The proposed Maralla Wind Facilities are approximately 35 km south of the town of Sutherland, within an area used predominantly for extensive sheep grazing. There is a number of farming related activities within the development area and within the surrounding areas, with Sutherland being the closest town to the proposed site (**Figure 9**). A description of these communities is provided in **Table 2**. Photographs of the area are provided in Error! Reference source not found. to **Figure 13**.

Table 2: Description of local homesteads and towns

RELEVANCE TO THE SITE	SETTLEMENT NAME	DISTANCE AND DIRECTION FROM SITE	DESCRIPTION
Within site boundary	Aurora Farm	1 600 m from eastern border	Comprised of several buildings, and planted pastures. This homestead is currently occupied (son of the landowner), but is not within proximity to any of the proposed structures on site.
Adjacent to site boundary	Welgemoed	1.8 km north east	Farming homesteads includes of several buildings and planted pastures.
	Komsberg	1.9 km east	
Within 10 km of site boundary	Surrounding farm homesteads	2.9 km northeast 3.7 km southeast 3.9 km southeast 4.7 km south	There are several small homesteads along the Komsberg and MeintjiesPlaas River and tributaries surrounding the proposed site. These are predominantly sheep farms, with planted pastures or lucerne[1].
Closest towns	Sutherland	32 km north	Sutherland is historically an agricultural service centre, catering for the surrounding farming community. The town includes tourism activities and is a key technology centre in South Africa, with the South African Astronomical Observatory and the (SALT). The town has a population estimated at 2 836 people and approx. 718 households[2].
	Laingsburg	49 km south	Laingsburg is situated along the N1 route and its economy is mainly based on farming. The town includes tourism activities including the Flood Museum. The town has a population estimated at 5 667 people[3] and 1512 households.

1 Cape Farm Mapper - Crop Census 2013
2 Statistics South Africa, 2012
3 Census 2011

Table 3: Renewable energy projects in proximity to the Maralla Wind Facilities

DEA REFERENCE NUMBER	EIA PROCESS	APPLICANT	PROJECT TITLE	ENVIRONMENTAL ASSESSMENT PRACTITIONER	TECHNOLOGY	MEGAWATT	PROJECT STATUS
14/12/16/3/3/2/395	S&EIR	Networx Eolos Renewables (Pty) Ltd	Proposed 280 MW Gunstfontein Wind Energy Project	Savannah Environmental Consultants (Pty) Ltd	Onshore Wind	280 MW	Approved
12/12/20/1782/AM1	S&EIR	Mainstream Power Sutherland	Proposed development of renewable energy facility at the Sutherland site, Western and Northern Cape.	Environmental Resource Management (Pty) Ltd	Onshore Wind	811 MW	Approved
12/12/20/2370/2	S&EIR	Hidden Valley Wind- African Clean Energy Developments (Pty) Ltd	Proposed Hidden Valley Wind Energy Facility, Northern Cape	Environmental Resource Management (Pty) Ltd	Onshore Wind	150 MW	In Process
12/12/20/2370/3	S&EIR	Hidden Valley Wind- African Clean Energy Developments (Pty) Ltd	Proposed Hidden Valley wind energy facility, Northern Cape	Savannah Environmental Consultants (Pty) Ltd	Onshore Wind	150 MW	In Process
12/12/20/2370/1	S&EIR	Hidden Valley Wind- African Clean Energy Developments (Pty) Ltd	Proposed Hidden Valley wind energy facility, Northern Cape	Aurecon South Africa (Pty) Ltd	Onshore Wind	150MW	Approved
12/12/20/2370	S&EIR	Hidden Valley Wind- African Clean Energy Developments (Pty) Ltd	Proposed Hidden Valley wind energy facility, Northern Cape	Environmental Resource Management (Pty) Ltd	Onshore Wind	650 MW	Approved
12/12/20/2228	S&EIR	Inca Komsberg Wind (Pty) Ltd	Proposed wind energy facility near Komsberg, Western Cape	Environmental Resource Management (Pty) Ltd	Onshore Wind	300 MW	Withdrawn or Lapsed
12/12/20/1988/1/AM 1	Amendment	G7 Renewable Energies (Pty) Ltd	Proposed construction of the 140MW Roggeveld Wind Farm within the Karoo Hoogland Local Municipality, Northern Cape Province and within the Laingsburg Local Municipality, Western Cape Province	Environmental Resource Management (Pty) Ltd	Onshore Wind	140 MW	Approved

DEA REFERENCE NUMBER	EIA PROCESS	APPLICANT	PROJECT TITLE	ENVIRONMENTAL ASSESSMENT PRACTITIONER	TECHNOLOGY	MEGAWATT	PROJECT STATUS
12/12/20/2235	BAR	Inca Komsberg Wind (Pty) Ltd	Proposed Photovoltaic (PV) Solar Energy Facility on a site south of Sutherland, within the Karoo Hoogland Municipality of the Namakwa District Municipality, Northern Cape Province	Environmental Evaluation Unit: UCT	Solar PV	10 MW	Approved
12/12/20/1583	S&EIR	Moyeng Energy (Pty) Ltd	Proposed establishment of the Suurplaat wind energy facility and associated infrastructure on a site near Sutherland, Western Cape and Northern Cape.	Savannah Environmental Consultants (Pty) Ltd	Onshore Wind	120 MW	Approved
12/12/20/2328	S&EIR	Unknown	Proposed wind and solar project near Laingsburg, Western Cape	CSIR	Onshore Wind	50 MW	Withdrawn or Lapsed
12/12/20/1966/A2	Amendment	Witberg Wind Power (Pty) Ltd	Proposed establishment of the Witberg Bay wind energy facility, Laingsburg Local Municipality, Central Karoo District, Western Cape	Environmental Resource Management (Pty) Ltd	Onshore Wind	Unknown	In Process
12/12/20/1787	S&EIR	South Africa Mainstream Renewable Power Development	Proposed renewable energy facility at Konstabel	Environmental Resource Management (Pty) Ltd	Onshore Wind & Solar PV	170 MW	Approved
12/12/20/1783/2/AM 1	Amendment	South Africa Mainstream Renewable Power Development	Proposed development of a renewable Energy facility at Perdekraal, Western Cape - Split 1	Environmental Resource Management (Pty) Ltd	Onshore Wind	Unknown	Approved
12/12/20/1956	S&EIR	Unknown	Proposed Touwsrivier Solar energy facility	University of Cape Town Environmental Evaluation	Solar PV	36 MW	Unknown
14/12/16/3/3/2/856 (Not shown on map)	S&EIR	Komsberg Wind Farms (Pty) Ltd	Komsberg West Wind Energy Facility	Arcus Consultancy Services	Onshore Wind	275MW	Approved
14/12/16/3/3/2/857 (Not shown on map)	S&EIR	Komsberg Wind Farms (Pty) Ltd	Komsberg West Wind Energy Facility	Arcus Consultancy Services	Onshore Wind	275MW	Approved

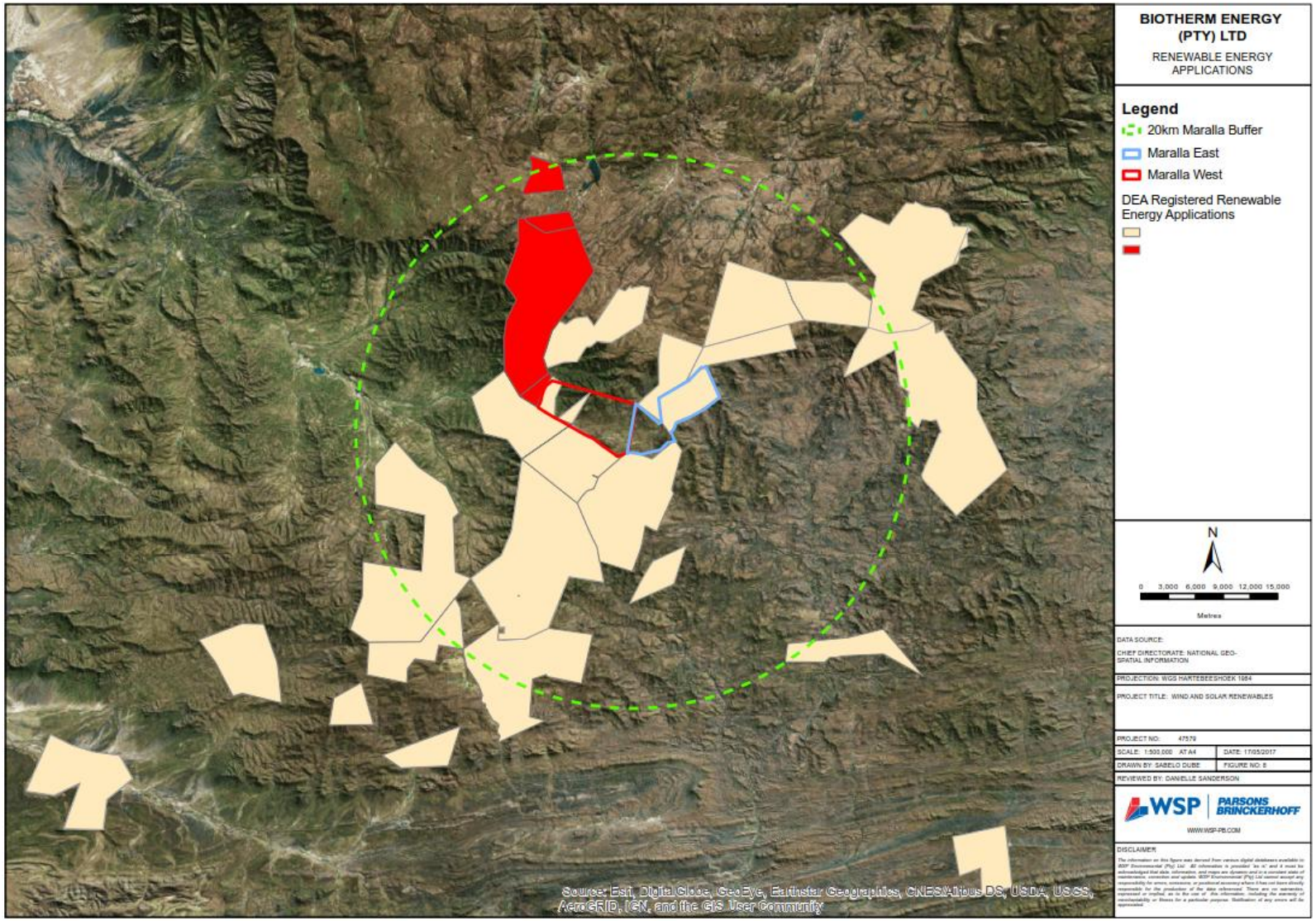
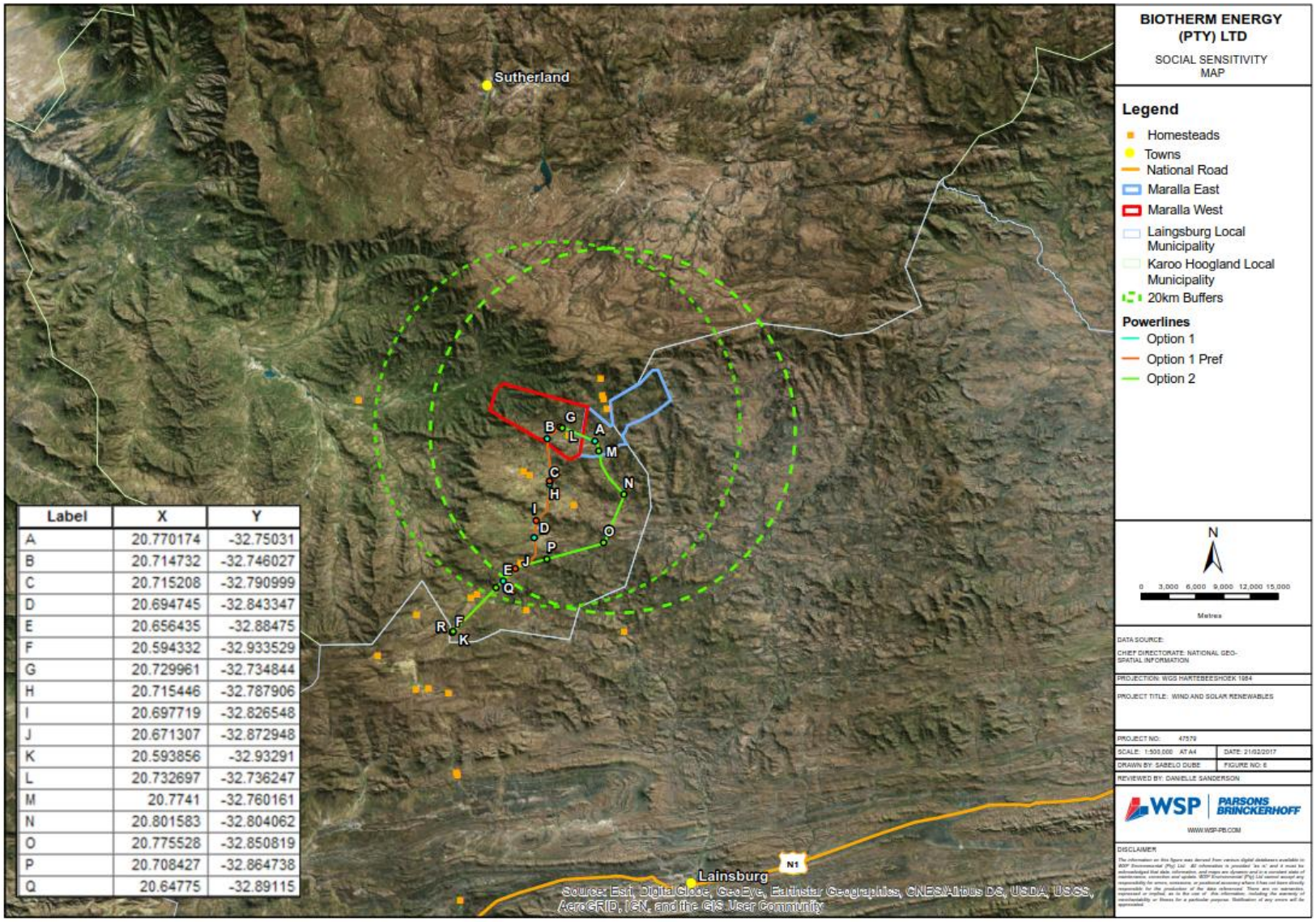


Figure 8: Map of DEA registered renewable energy applications as of April 2016



Label	X	Y
A	20.770174	-32.75031
B	20.714732	-32.746027
C	20.715208	-32.790999
D	20.694745	-32.843347
E	20.656435	-32.88475
F	20.594332	-32.933529
G	20.729961	-32.734844
H	20.715446	-32.787906
I	20.697719	-32.826548
J	20.671307	-32.872948
K	20.593856	-32.93291
L	20.732697	-32.736247
M	20.7741	-32.760161
N	20.801583	-32.804062
O	20.775528	-32.850819
P	20.708427	-32.864738
Q	20.64775	-32.89115

Figure 9: Location of settlements within the vicinity of the Maralla Wind Facilities and transmission infrastructure

Figure 10: Church in Sutherland

Figure 11: The SALT near Sutherland

Figure 12: Windmill pump and sheep near R354

Figure 13: Power pylons near the R354

4 SOCIO-ECONOMIC POLICY AND PLANNING CONTEXT

4.1 NATIONAL POLICIES

There are a number of strategic policies and legislation that have led to the current drive toward advancing the development of renewable energy within South Africa. The broad aim of these frameworks is to promote a diversity in power generation and support with national growth and development, with a positive spin of stimulating local economic development and employment.

An overview of these broader legislation and policies is provided in **Table 4**. Detailed information is provided on renewable energy policies and frameworks below.

Table 4: National legislation and policies framework

TITLE	KEY AIMS/OBJECTIVES
National Energy Act (34 of 2008)	Aims to "ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation…"
New Growth Path Framework (2010)	Proposes strategies "to deepen the domestic and regional market by growing employment, increasing incomes and undertaking other measures to improve equity and income distribution; and to widen the market for South African goods and services through a stronger focus on exports to the region and other rapidly growing economies."
National Infrastructure Plan (2012)	Aims to transform our economic landscape while simultaneously creating significant numbers of new jobs, and to strengthen the delivery of basic services.
Strategic Integrated Projects (SIPs)	The SIPs present five core functions namely to unlock opportunity, transform the economic landscape, create new jobs, strengthen the delivery of basic services, and support the integration of African Economies. SIPs 8 and 9 of the energy SIPs supports the development of the Maralla West Wind Facility which is as follows: à SIP 8: Green energy in support of the South African economy à SIP 9: Electricity generation to support socio-economic development
Integrated Resource Plan 2010-2030	Aimed at providing help and support for the direct expansion of electricity supply including private and own generation and power purchases from regional projects. The overall objectives of the IRP are to evaluate the security of supply, and determine the least-cost supply option through the consideration of various demand side management and supply-side options. In addition, the IRP aims to provide information on the opportunities for investment into new power generating projects.

WHITE PAPER ON THE RENEWABLE ENERGY POLICY OF THE REPUBLIC OF SOUTH AFRICA (2003)

In response to overexploitation of resources and climate change, South African government ratified the United Nations Framework Convention on Climate Change (UNFCC) in August 1997 and acceded to the Kyoto Protocol, the enabling mechanism for the convention, in August 2002. In addition, national response strategies have been developed for both climate change and renewable energy.

The White Paper on Renewable Energy was published in 2003 and supplements the National Energy Policy published in 1998. The White Paper on Renewable Energy sets out the vision, policy principles, strategic goals and objectives of the South African Governments for promoting and implementing renewable energy in South Africa. The paper identifies that the medium and long-term potential of renewable energy is significant and that it is the intention of the government to contribute to the global effort to mitigate greenhouse gas emissions. In addition, it states that there is a need for Government to create an enabling environment through the introduction of fiscal and financial support mechanisms within an appropriate legal and regulatory framework to allow renewable energy technologies to compete with fossil-based technologies.

The objectives of the White Paper are considered in six focal areas:

- Financial instruments;
- Legal instruments,
- Technology development,
- Awareness raising,
- Capacity building and education, and
- Market based instruments and regulatory instruments.

The policy supports the investment in renewable energy facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing greenhouse gas emissions and the promotion of renewable energy sources.

RENEWABLE ENERGY DEVELOPMENT ZONES

The Department of Environmental Assessment (DEA), in consultation with the Department of Energy (DoE), has been mandated to undertake a Strategic Environmental Assessment (SEA), to identify geographical areas most suitable for the rollout of wind and solar PV energy projects and the supporting electricity grid network (Department of Environmental Affairs (2015). These concentrated development zones are referred to as Renewable Energy Development Zone (REDZs). The outputs of the SEAs directly relate to several government priorities including:

- Contributing to reducing present current energy constraints by facilitating renewable energy development in strategic areas in South Africa;
- Addressing the major objectives of the National Development Plan, namely transitioning to a low carbon economy, developing infrastructure to create jobs and reducing the regulatory burden and the cost of doing business;
- Contributing to achieving the renewable energy target identified in the Integrated Resource Plan and implementation of the REIPPP by the Department of Energy and National Treasury;
- Promoting the green economy and sustainable development; and
- Promoting intergovernmental coordination and integrated authorisations

The outcome of the gazetting process will mean that wind and solar PV activities within the eight Renewable Development Zones and electricity grid expansion within the five Power Corridors will be subjected to a Basic Assessment and not a full EIA process. It is intended that the introduction of the REDZs will lead to:

- A reduction of potential negative environmental impacts or consequences;
- Synchronisation and streamlining of authorisation and approval processes;
- Potentially attractive incentives; and
- Focused expansion of the South African electricity grid.

The DEA has released a map with focus areas best suited for the rollout of wind and solar photovoltaics projects in South Africa. The proposed Maralla Wind Facilities will fall within the Komsberg Wind REDZ, located within the Sutherland area of the Northern Cape.

4.2 DISTRICT AND LOCAL MUNICIPALITY POLICIES

The IDP developed by the Karoo Hoogland Local Municipality provides socio-economic context to the proposed project, and highlights the potential social and economic requirements and opportunities within the region.

NORTHERN CAPE

The IDP documents developed by the Namakwa District Municipality and Karoo Hoogland Local Municipality provide socio-economic context to the proposed project, and highlight the potential social and economic requirements and opportunities within the region.

NAMAKWA DISTRICT MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The Namakwa District Municipality Draft IDP (2015-2016) identifies promoting the improvement of living conditions and economic development of local communities as a key objecting for the municipality (Namakwa District Municipality, 2015). A key focus area within the IDP is the optimal utilisation of natural resources in various sectors and this includes renewable energy (Namakwa District Municipality, 2015).

The key strategic objectives of the Namakwa District Municipality IDP (Namakwa District Municipality, 2015) relevant to this study are as follows:

- à Create of job opportunities, as part of the Expanded Public Works Programme; and
- à Ensure sustainable economic and social transformation in the district.

The proposed Maralla Wind Facilities have the potential to promote job creation, as well as sustainable economic and social growth through upskilling of local community, diversifying the local economic sector, and potentially uplifting the local communities in the long-term.

KAROO HOOGLAND LOCAL MUNICIPALITY INTEGRATED DEVELOPMENT PLAN (2015-2016)

The Karoo Hoogland Local Municipality views spatial development as crucial in identifying programmes and projects for development of land within the municipality. The IDP identifies spatial development, service delivery and LED as three of the key performance areas that require tangible development within the municipality. The IDP also identifies the need to attract potential investors through incentive programmes.

Renewable energy is a key LED opportunity for the Karoo Hoogland Local Municipality, which will result in spatial development (in an otherwise undeveloped area of the municipality). The proposed Maralla transmission integration project is therefore aligned with the local municipality's IDP.

5 FINDINGS

The nature of the local and regional landscape in which the proposed project is located is sparsely populated and arid, with little infrastructure and limited development opportunities. There are a number of small agricultural settlements located within and surrounding the proposed project site,

which are unlikely to be directly affected by the proposed project. There are a number of small towns within 100 km radius of the site, which may be affected by the proposed project. As a result, the potential socio-economic impacts of the proposed project have been identified on a local level, with site-specific observations where relevant.

The social screening assessment undertaken for the Maralla Wind Facilities (including transmission infrastructure) did not identify any fatal flaws in terms of the socio-economic environment for any of the proposed sites or alternatives. A number of socio-economic benefits and opportunities are recognised as being key impacts of the proposed project. The following key potential socio-economic impacts applicable to the transmission integration project have been brought through to the SIA for further consideration and assessment:

Construction Phase	à Increase in employment opportunities à Disruption through influx of job seekers à Increase in communicable diseases and reduced public health à Nuisance from noise, dust and traffic disturbances à Increased risk to neighbouring land users à Increased risk of veld fires
Operational Phase	à Change in sense of place à Evacuation of power
Decommissioning Phase	à Gain of short term employment à Nuisance from dust, noise and traffic à Increase risk to neighbouring land users
Cumulative	à Change in sense of place

It is necessary that the no-go alternative is considered i.e. the implications should the proposed transmission integration project associated with the Maralla Wind Facilities not go ahead. The anticipated impacts associated with no-go alternative have been considered. The following impacts have been identified and are discussed in this chapter:

- à Loss of employment and local economic development opportunities;
- à Maintenance of the existing landscape and sense of place; and
- à No infrastructure for the evacuation of power.

5.1 CONSTRUCTION PHASE

INCREASE IN EMPLOYMENT OPPORTUNITIES

The construction phase of the Maralla transmission integration project is estimated to span 12 to 18 months and will occur within the construction phase of the proposed Maralla Wind Facilities. Both skilled and unskilled employment opportunities will be generated through the construction of the transmission integration project, however the number of opportunities likely to be created is unknown at this stage.

Due to the specialised nature of transmission line and substation construction, it is most likely that the work will be undertaken by a contractor from outside the Karoo Hoogland Local Municipality. As contractors tend to use their own staff, the potential for direct employment opportunities for locals during the construction phase is limited. Local community members are likely to benefit in the event that a few unskilled employment opportunities are created. The high unemployment rate (28.3%) indicates that the generation of local employment opportunities will have an impact on the local

population, and it will be possible to source unskilled labour from the population living within the towns within the Karoo Hoogland Local Municipality.

Employment for previously disadvantaged people could contribute to social upliftment and poverty alleviation. Local opportunities will contribute to the development goals of the Karoo Hoogland Local Municipality.

In addition to direct employment opportunities, there may be limited indirect employment though the provision of services and materials for the proposed transmission lines. The construction of the transmission infrastructure is unlikely to generate significant direct LED opportunities. It is recommended, however, that materials for the construction phase be sourced locally as far as possible, and use of local service providers be prioritised.

DISRUPTION DUE TO INFLUX OF JOB SEEKERS

The construction phase may lead to the influx of skilled and unskilled employment seekers from outside the immediate area. This could lead to social conflict over the local resources and employment opportunities. This in-migration may have an impact on the Karoo Hoogland Local Municipality and their ability to service additional people within the municipal area.

It has been recognised in other areas where renewable energy projects have been developed that an influx of job-seekers is not easily managed by the municipality or the proponent of the development. This influx can result in further pressure on basic and social services, including establishment of informal settlements. These individuals are generally from outside the local municipality and from other provinces, resulting in conflicts in cultural beliefs and resentment of the local community, which further disrupts local social networks and stability.

The construction phase of the Maralla Wind Facilities may lead to the influx of skilled and unskilled employment seekers from outside the immediate area, however, the construction of the transmission integration project is unlikely to generate significant interest from job seekers.

INCREASE IN COMMUNICABLE DISEASES AND REDUCED PUBLIC HEALTH

Temporary housing of both skilled and unskilled labour could result in a number of short-and long-term localised social issues, such as increased prostitution, and drug and alcohol abuse. The presence of an outside labour force, as well as the influx of job seekers, could potentially negatively affect local public health, due to a higher likelihood of a spread of communicable diseases such as Tuberculosis (TB), as well as HIV/AIDS[4] and other sexually transmitted diseases (STDs). HIV/AIDS is known to be a significant issue within the Western Cape with 11% of the population estimated as living with HIV (Department of Health, 2012).

Labour requirements for the construction of the transmission infrastructure will be contractor staff, most likely to be sourced from outside the local municipality. This labour force will need to be housed during the construction period. Anticipated housing arrangements have not yet been defined by the project proponent. It is likely that labour will be housed in nearby towns (within a 60 – 80km radius of the site) or alternatively within the development footprint of the Maralla Wind Facilities. As a large labour force is not anticipated, and influx as a result of the transmission infrastructure project is not likely the risk of reduced public health is not considered significant.

NUISANCE FROM NOISE, DUST AND TRAFFIC DISTURBANCES

The construction of the transmission integration project is likely to result in a number of localised disturbances that may indirectly affect local activities, such as farming (on neighbouring sites) and tourism (passing through the area). These may include the generation of dust, noise and traffic

[4] *Human immunodeficiency virus infection and acquired immune deficiency syndrome*

associated with the construction phase. There is a number of farming settlements located within the vicinity of the proposed transmission integration project (**Figure 10**). The construction activities, including increased dust, noise and traffic, may impact on nearby settlements, as well as on the R354 (tourist and commuting route), which lies along the western boundary of the site

The Environmental Management Programme (EMPr) will include mitigation measures to reduce dust and noise generation during the construction phase in order to adequately mitigate the potential nuisance to social receptors.

INCREASED RISK TO NEIGHBOURING LAND USERS

There is the potential for increased risk to neighbouring land users, particularly farmers, as the presence of labour force could result in petty theft of stock and damage to infrastructure. Theft and damage in infrastructure could result in economic losses for neighbouring farmers and land users, and could extend to greater community issues such as mistrust and conflict. This may occur in areas surrounding the proposed Maralla Wind Facilities site and areas near to where labour is housed (if different).

The accommodation of labour during the construction phase has not yet been defined by the project proponent. It is likely that contractor staff associated with the construction of the transmission integration project will be accommodated within the town of Sutherland, or nearby to the proposed development site thereby potentially affecting surrounding farmers. Past development projects within the Karoo Hoogland Local Municipality have not resulted in a notable increased risk to neighbouring land owners or users (*pers. comm*. Harding, 2017). The number of staff employed during the construction phase of the transmission integration project is however unlikely to increase this risk significantly.

INCREASED RISK OF VELD FIRES

Construction phase activities could result in veld fires which may impact neighbouring farmers and pose a threat to livestock. This is particularly relevant considering the arid climate and the reliance on grazing land in the development area. This risk would be increased should labour be temporarily housed within the development footprint. This may impact on the livelihoods of neighbouring farmers through the potential loss of grazing, stock and infrastructure.

5.2 OPERATIONAL PHASE

CHANGE IN SENSE OF PLACE

The operation of the transmission integration project may change in the overall nature of the area, specifically related to the development of infrastructure such as transmission towers. A change in the sense of place will primarily result from the visual impact of the proposed infrastructure, namely wind turbines and power line pylons, characterised by transmission structures at approximately 450m intervals and the associated transmission line at a height of approximately 48m.

A Visual Impact Assessment has been undertaken in support of the application, which has identified and assessed the anticipated visual impacts of the project and where possible relevant recommendations in respect of mitigation of these impacts have been made (Gebhardt, 2016). The transmission lines will to be visible from the nearest sensitive receptors immediately adjacent to the servitude, namely Fortuin / Nuwerus Farm settlements, as well as the R354 road. The overall visual impact of the proposed project operational phase was assessed as low to medium (after mitigation) in the Visual Impact assessment (Gebhardt, 2016).

Due to the location of the site in a sparsely populated area the change in sense of place during the operational phase is likely to be limited to local residents and tourists traveling on the R354 road network closest to the site. As tourism is an important contributor to the Karoo Hoogland Local

Municipality, the change in landscape may impact on the local economy. The actual impact is unlikely to be significant, as the turbines may add interest to the area and are not located near significant points of interest (i.e. only visible for a short length from the road).

EVACUATION OF POWER

The proposed project will allow for the transmission of renewable power from the proposed Maralla Wind Facilities to the national grid. This will provide an additional source of energy for the national power supplier and the South African population. Indirectly the proposed project will allow for the social-economic benefits of the proposed wind facility to be realised, i.e. increase in employment opportunities and increased economic development opportunities.

5.3 DECOMMISSIONING PHASE

GAIN OF SHORT TERM EMPLOYMENT

The decommissioning phase may require a limited number of short-term unskilled or semi-skilled labour to decommission the transmission integration project. These employees are likely to be contractor staff (with experience in decommissioning electrical infrastructure) to sourced outsider of the Karoo Hoogland Local Municipality.

The need for local unskilled labour to support the decommissioning phase activities is unknown, however, if required these opportunities are likely to be limited. Should unskilled labour be required this should be sourced locally in order to facilitate provision of short-term opportunities for social improvement for those employed individuals. The number of decommissioning employment opportunities and the duration of the decommissioning phase are unknown at this stage.

NUISANCE FROM DUST, NOISE AND TRAFFIC

The decommissioning phase of the proposed project has the potential to generate dust, noise and traffic nuisance from the movement of vehicles and dismantling of the transmission line infrastructure. The nearest sensitive receptors are the nearby farm settlements, and the R354 road. The Traffic Impact Assessment and Acoustic Impact Assessment studies have identified and assessed impacts associated with the decommissioning phase of the project and suitable mitigation recommended to reduce impacts as far as possible. Adequate mitigation to reduce dust, traffic and noise generation during the decommissioning phase must be included in the decommissioning EMPr.

Following the decommissioning and removal of the Maralla Wind Facilities and subsequent rehabilitation of the site, there is likely to be a long term overall positive impact on local aesthetics and the broader landscape.

INCREASED RISK TO NEIGHBOURING LAND USERS

The decommissioning phase could result in an increased risk to neighbouring farmers, due to the presence of a labour force. This is likely to occur in areas surrounding the proposed project site and areas near to where labour is housed (if different). This could result in direct economic losses for these farmers (loss of stock, and damage to infrastructure), and could extend to greater community issues such as mistrust and conflict.

5.4 CUMULATIVE IMPACTS

The presence of a number of renewable energy generation projects proposed within a 100 km radius of the proposed site (**Table 2, Figure 8**) was considered at the outset of the SIA. In addition to this, the Department of Environmental Affairs requested that the overall cumulative impacts of

projects within the study area be undertaken (**Appendix D**) and a qualitative discussion be provided by each specialist.

The socio-economic impacts associated with the transmission integration project as employment and LED opportunities are limited. The primary cumulative impacts associated with transmission integration project are those impacts associated with a change in sense of place.

CHANGE IN SENSE OF PLACE

The nature of the landscape will change significantly as a result of the development of numerous renewable energy projects. The various renewable projects will require infrastructure for the evacuation of power including associated transmission structures. The primary cumulative impact is the change in the sense of place, particularly the visual impact of various projects with the same area. The Visual Impact Assessment has considered the cumulative impacts as part of the scope of this study. A change in sense of place can impact other aspects such as tourism.

Tourism is a contributor to the local economy of the Karoo Hoogland Local Municipality; however, it is unlikely that the development of multiple renewable projects and associated transmission lines will have negative economic impacts in respect of the tourism sector, as most of the sites are far from tourist routes. The impact would be dependent on how many of the proposed projects are actually constructed and the proximity of turbines to places of interest (e.g. guesthouses, scenic areas) and density of turbines within the developments and transmission lines within the view shed of tourism areas (resulting in higher visual intrusion).

5.5 NO-GO ALTERNATIVE IMPACTS

LOSS OF EMPLOYMENT AND LOCAL ECONOMIC DEVELOPMENT OPPORTUNITIES

Should the proposed transmission integration project not be developed, there will be a loss employment opportunities in the construction phase and limited number of decommissioning phase employment opportunities. The LED opportunities associated with the transmission infrastructure is likely to be limited, however in the event that the project does not go ahead these opportunities will not be realised.

MAINTENANCE OF THE EXISTING LANDSCAPE AND SENSE OF PLACE

In the event that the proposed transmission integration project is not developed, the existing landscape on the site will remain unchanged (farming). As there are a number of renewable energy projects proposed for the area, some of which are likely to be implemented within the next five to ten years, there is likely to be a change in the sense of place regardless of the implementation of this project.

NO INFRASTRUCTURE FOR THE EVACUATION OF POWER

During the operational phase, the proposed project will allow for the transmission of 140MW of renewable power from the proposed Maralla Wind Facilities to the national grid. This will provide an additional source of energy for the national power supplier and the South African population. Indirectly the proposed project will allow for the social-economic benefits of the proposed Maralla Wind Facilities to be realised, i.e. increase in employment opportunities and increased economic development opportunities. Should the transmission integration project not be implemented, the power generated at the proposed wind facility will not be transferred into the national grid and the overall success of this project will not be realised.

6 ASSESSMENT OF IMPACTS

The potential social impacts identified have been assessed using the methodology outlined in **Section 1**. The results of the assessment are presented in **Appendix D**. Consideration of relevant mitigation has been undertaken in the assessment, and is outlined in **Section 7**.

The impacts identified and discussed in **Section 5** have been considered in relation to the power line and substation alternatives under consideration in the EIA phase (Error! Reference source not found.**; Section** Error! Reference source not found.). The impacts have been discussed broadly, as there are no key distinguishing socio-economic impacts between the various alternatives. The presentation of the impact assessment has followed the same format, namely a consolidated assessment that presents the significance of the impacts associated with the transmission integration project as a whole. The impacts identified are applicable to all the options with no key differentiators identified.

CONSTRUCTION PHASE

The most significant positive impacts associated with the construction phase is the potential for increased employment. This potential impact can be enhanced through the appointment of local contractors and use of local labour as far as possible.

A number of potential of negative impacts have been identified and were assessed as being of low to medium significance. Mitigation measures have been identified were relevant.

Table 5 provides a summary of significance of potential social impacts associated with the construction phase.

Table 5: Summary of construction phase impacts

POTENTIAL IMPACT	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
Increase in employment opportunities	**Low (positive impact)**	**Medium (positive impact)**
Disruption due to influx of job seekers	**Low (negative impact)**	**Low (negative impact)**
Increase in communicable diseases and reduced public health	**Low (negative impact)**	**Low (negative impact)**
Nuisance from noise, dust and traffic disturbances	**Low (negative impact)**	**Low (negative impact)**
Increased risk to neighbouring land users	**Low (negative impact)**	**Low (negative impact)**
Increased risk of veld fires	**Medium (negative impact)**	**Low (negative impact)**

OPERATIONAL PHASE

The primary positive impact provided by the operational phase of the transmission integration project is the evacuation of renewable energy generated from the Maralla Wind Facilities to the national grid. This transmission of power will indirectly facilitate the key socio-economic benefits associated with the proposed wind facility to be realised (increased employment and local economic development). This impact is considered to be of high significance.

The change in sense of place as a result of an altered landscape was identified to be of medium significance. It is unlikely that an altering of the landscape will have impacts on the limited tourism sector, however the change in the nature of the area will occur and there is action that can be taken to mitigate this impact.

Table 6 provides a summary of significance of potential social impacts associated with the operational phase.

Table 6: Summary of operational phase impacts

POTENTIAL IMPACT	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
Change in sense of place	**Medium (negative impact)**	**Low (negative impact)**
Evacuation of power	**High (positive impact)**	**High (positive impact)**

DECOMMISSIONING PHASE

The most significant social impacts associated with the decommissioning phase are associated with gain of short-term employment. A number of typical construction type impacts, such as nuisance factors (noise, dust and traffic) and risk to neighbouring farmers may occur, however, with adequate mitigation these can be managed appropriately.

Table 7 provides a summary of significance of potential social impacts associated with the decommissioning phase.

Table 7: Summary of Decommissioning Phase Impacts

POTENTIAL IMPACT	SIGNFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION
Gain of short term employment	**Low (positive impact)**	**Medium (positive impact)**
Nuisance from noise, dust and traffic disturbances	**Low (negative impact)**	**Low (negative impact)**
Increased risk to neighbouring land users	**Low (negative impact)**	**Low (negative impact)**
Increased risk of veld fires	**Medium (negative impact)**	**Low (negative impact)**

CUMULATIVE IMPACTS

The implementation of numerous transmission integration projects associated with renewable energy projects in the local municipal area will result primarily in a change in sense of place. The rural character of the landscape will change as a result of the visual impacts associated with collective projects.

The mitigation of cumulative impacts needs to be addressed on a cumulative scale i.e. one project cannot seek to address the cumulative issues associated with a series of projects. The relevant authorities, and particularly Karoo Hoogland Local Municipality, therefore need to be involved in the identification of suitable mitigation measures in respect of renewable energy development at a strategic level in the area. It is recommended that a development forum is used to address potential cumulative impacts.

Table 8 provides a summary of significance of potential cumulative social impacts associated with the proposed project.

Table 8: Summary of Cumulative Impacts

POTENTIAL IMPACT	SIGNIFICANT WITHOUT MITIGATION
Change in sense of place	**Medium (negative impact)**

7 MITIGATION AND MANAGEMENT MEASURES

Mitigation and management measures have been identified in order to enhance the potential benefits of the project and to mitigation potential negative impacts to an acceptable level (**Table 9**). It is recommended that these measures be included in the EMPr developed in support of the EA application.

Table 9: Mitigation and Management Measures

ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE	INCLUDE AS CONDITION OF AUTHORISATION	MONITORING REQUIREMENTS
Maximise local employment and business opportunities	à Appointment of local contractors and use of local suppliers and manufacturers where possible. à Development of a database of local companies for service provision. à Target 40% of the construction labour particularly semi and unskilled opportunities could be sourced locally. à Communication with Karoo Hoogland Local Municipalities and community representatives in respect of employment opportunities.	Proponent & contractors	Construction and Decommissioning	No	à Local employment and business targets to be formalised in a document before the construction phase commences. à Database of potential local service providers to be developed, before the construction phase commences. à Percentage of the construction labour to be sourced locally.
Minimise disruption caused by influx of job seekers	à Communicate employment opportunities to Karoo Hoogland Local Municipality and community representatives to manage employment expectations as far as possible and to allow these parties to manage potential issues associated with influx of people.	Proponent	Construction	No	à Engagement with the Karoo Hoogland Local Municipality in respect of accommodation of labour.
Minimise the increase in communicable diseases and reduced public health	à Preparation and implementation of a labour force Community Health and Safety Plan. à In consultation with local HIV/AIDS organisations and government structures, all contractors must design and implement a proactive and ongoing HIV/AIDS awareness and prevention campaign. à Provide opportunities for workers to go home over the weekends or regularly. The cost of transporting workers home and back should be the responsibility of the contractor.	Proponent & Contractors	Construction	No	à Health and Safety Plan prepared and implemented during the construction phase. à HIV/AIDS campaign implemented throughout the construction and operational phases. à Evidence of workforce transportation home during and after construction phase. à Trafficking in persons awareness programme.

ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE	INCLUDE AS CONDITION OF AUTHORISATION	MONITORING REQUIREMENTS
	à All workers are to be transported back to their homes within 2 days of completion of the construction contract at the cost of the contractor.				
Minimise nuisance from dust, noise and traffic	à Implement EMPr conditions in respect of mitigating dust, noise and traffic related impacts. à Establish a stakeholder engagement plan and grievance mechanism to provide a means for affected stakeholders to communicate.	Proponent & Contractors	Construction & Decommissioning	No	à Compliance with EMPr. à Number of complaints raised by stakeholders.
Minimise risk to neighbouring land users	à Development of a code of conduct for workers, signed by the contractor, and communicated to work force. à Contractor to be held liable for compensating farmers for any losses / damage that can be linked to workers.	Proponent & Contractors	Construction Decommissioning	No	à Code of conduct for workers in place, signed, and implemented.
Minimise risk of veld fires	à EMPr to include mitigation in respect of activities that may pose a fire risk: - No open fires allowed for cooking / heating; - Activity that pose a fire risk to be properly managed and confined to a designated area; - Adequate fire-fighting equipment to be provided on site, and appropriate training conducted; etc.	Proponent & Contractors	Construction Decommissioning	No	à Compliance with EMPr.

8 STAKEHOLDER CONSULTATION

8.1 STAKEHOLDER CONSULTATION PROCESS

Public participation is a requirement of the Basic Assessment process; it consists of a series of inclusive and culturally appropriate interactions aimed at providing stakeholders with opportunities to express their views, so that these can be considered and incorporated into the decision-making process. Effective public participation requires the prior disclosure of relevant and adequate project information to enable stakeholders to understand the risks, impacts, and opportunities of the proposed project.

A comprehensive stakeholder consultation process was undertaken during the application process. Stakeholders were identified through existing databases, site notices, newspaper adverts and meetings. All stakeholders identified to date have been registered on the project database. All concerns, comments, viewpoints and questions (collectively referred to as 'issues') that are received during the Basic Assessment process will be documented and responded to in a Comment and Response Report. There will be ongoing communication between WSP | Parsons Brinckerhoff and stakeholders throughout the EIA process.

9 CONCLUSIONS

The SIA has identified a number of key socio-economic impacts (both positive and negative) associated with the transmission integration project proposed to support the evacuation of power generated at the proposed Maralla Wind Facilities.

The findings of the study indicate that the project will create employment opportunities during the construction and decommissioning phase of the project. This potential positive impact can be enhanced through the appointment of local contractors and use of local labour as far as possible.

There are no significant negative social impacts associated with the construction phase of the proposed transmission integration project. A number of negative impacts such as potential influx of job seekers and increased risk to public health; nuisance factors (dust, noise and traffic); and potential risks to neighbouring farmers (including veld fires) were identified to be of low negative significance. Operational impacts associated with the transmission integration project are limited to the change in sense of place, which is considered to be of low significance. The operational phase of the transmission integration project is essential for the evacuation of power from the proposed Maralla Wind Facilities to the national grid, and the associated socio-economic implications of these power facilities, and is therefore considered to be of high positive significance.

Potential cumulative impacts associated with the transmission infrastructure associated with the number of other renewable energy projects proposed for within the Karoo Hoogland Local Municipality is limited to a change in the sense of place in the area. The overall impact on sense of place could be of medium significance with a large number of similar projects within the local area.

None of the impacts identified are considered fatal flaws that should prevent the project from going ahead. It is recommended that the transmission integration project be authorised. The mitigation and management measures included in **Table 9** are to be included in the EMPr prepared in support of the EA application.

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- Department of Energy (2015) State of Renewable Energy in South Africa, South Africa.
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- Social Impact Assessment for the Proposed Commercial Concentrated Solar Solis Power Energy (WSP Environmental (2014).
- van der Sluis, Justin; van Praag, Mirjam; Vijverberg, Wim (2003): Entrepreneurship Selection and Performance, Tinbergen Institute Discussion Paper, No.03-046/3
- Western Cape Province (2006) Western Cape Provincial Growth and Development Strategy: Draft, 2006, Department of the Premier.
- Wyngaard, AT (2006) An introduction to Economic Development in the Western Cape. Department of Economic Development and Tourism

PERSONAL COMMUNICATIONS

- Harding, G - Laingsburg Local Municipality Planning and Integrated Development Planning Manager, Laingsburg Local Municipality Offices, Laingsburg, 12 January 2017
- Van Wyk, F – Laingsburg Local Municipality council representative, museum curator and resident, Laingsburg Tourism Complex ,12 January 2017
- Walters, M – Laingsburg Tourism Officer, Laingsburg Tourism Complex, 12 January 2017
- Mr Tron, - Laingsburg Local Municipality, Ward councillor (Ward 2), former Mayor and local farmer, 12 January 2017

Appendix A

INTERVIEW QUESTIONS AND RESPONSES

INTERVIEW QUESTIONNAIRES: BIOTHERM SIA – WIND, WESTERN CAPE

INTERVIEW 1: LAINGSBURG LOCAL MUNICIPALITY IDP MANAGER – GWYNN HARDING

Date: 12 January 2016

Time: 10:00 – 11:00

Place: Laingsburg Municipality Offices, Laingsburg

1.	**What is your role at the municipality?**
-	**Planning Manager / IDP Manager**
2.	**Current situation**
2.1	What are the key challenges for the local municipality in respect of local social and economic development requirements?
-	**We've just compelted the PPP for the IDP revision**
-	**Key issues:**
o	**High rates of poverty**
o	**High dependency on grants**
o	**High unemployment rate**
o	**High rate of low-skills levels**
o	**Social ills – including teenage pregnancy, drug abuse, crime**
2.2	What are the key priorities for community development in the local municipality?
-	**The municipality has a small revenue (small, sparsely populated with no major economic centres/activities)**
-	**Mpost people are employed in the agricultural sector**
-	**There are new B&Bs opening, but they don't have many employment opportunities**
-	**The new farmers in the area are not doing intensive farming, or even extensive. Moving towards game farms and guest farms – few employment opportunities.**
-	**Towards the eastern side of the municipality they are still doing a lot of soft/stone fruit farming. Other agriculture is seed farming and sheep.**
2.3	What are some of the municipal infrastructure and/or social services projects being implemented to meet community needs?
-	**Infrastructure – housing, roads, water sewage (bulk services)**
3.	**Biotherm project**
3.1	What benefits do you foresee that this project can bring to the area?

- **It will improve local economy – construction phase**
- **The Social investment initiatives would be good for the area**

3.2 What are some of the challenges or potential negative impacts of the project?

- **No skills in the local area**
- **Brining people in from outside – (may result in) negative social issues**
- **The project needs to be supported by the social responsibility initiatives**
- **We have a young population – many drop out, and are not leaving the area**

Construction phase aspects:

3.3 The project site is located in a sparsely populated area characterised by large tracts of farming area. Have there been issues with past projects in terms of impacts of farmers {*Do think the project poses a risk to these farmers during the construction phase i.e. petty theft, damage in infrastructure, potential fire risk?}*

- **Not really, but could be theft of sheep/produce**
- **Impact on soil (degradation) for those farmers where the project is**

3.4 There are a number of small towns within an 50km radius of the proposed developments site (Matjiesfontein, Laignsburg, Sutherland) – how do you think these local towns could potentially support / service the development? (construction phase only)

-

3.5 The project is anticipated to generate about 250 new job opportunities in the construction phase, 110 skilled and 150 unskilled:

- **There might be business opportunities – but needs an assessment of what opportunities will be available, and this should be provided to the local organisations, so they can ensure they are meeting these needs.**
    - Does the municipality have any records on the availability of skills locally?
    - Has a skills audit been undertaken in the LM area / are you aware of what skills exist within the municipal area which could support this project?

- **The skills levels are very low in the area**
- **There might be a skills audit, but not sure.**
- **The problem is that local youth don't want to take the hard subjects – e.g. maths and science. Opt for math literacy instead.**
- **There needs to be training before construction starts.**
- **There needs to be more business centres – commercial, shopping, etc.,**
    - Unskilled opportunities would be sourced locally – where would these individuals likely to be sourced from?

- **Probably bigger than 40km radius**
- **Laingsburg, Matjiesfontein, Touws River, De Doorns, Ladismith, Beaufort West**

3.6	Have you experienced an impacts form previous project (similar or otherwise) (e.g. increase in communicable diseases) Can you tell me more about this?
-	**We've had other projects in the area – cables/roads**
-	**They do bring in people and money, but not significant.**
3.7	What do you think was the primary cause of this/these issue/s?
-	**n/a**
3.8	What do you think could be done to prevent this from occurring in the future?
-	**n/a**
Operational phase aspects:	
3.9	How do you think the local towns could potentially support / service the development? (operational phase only)
-	**See 3.5**
3.10	How can Biotherm contribute towards the Local Municipality initiatives?
	- The proponent of the project is required to identify community needs and utilise a portion of the revenue from the facility to contribute to social upliftment within these local community areas.
	- What type of projects do you foresee being implemented as part of this initiative?
-	Environmental education centre
-	Air strip upgrade
-	Training/skills development facilities
-	Recreational facilities
-	Early childhood development
-	Youth centre
-	Disability centre
-	Old age centre
-	Upgrading houses, sanitation, solar heaters,
	- It would be preferable for the proponent to work with the LM to support projects already identified by the LM – would you agree?
-	Yes
3.11	To what extent is tourism a significant contributor to the LM? Do you foresee that this project would have a positive or negative impact of tourism?
-	
4.	**Energy projects (cumulative)**
There are a number of renewable projects proposed for this area.	

4.1 What are the potential benefits of a number of renewable projects being implemented in the area?
- Increased possible employment and business development – income through accommodation, etc.
4.2 Do you foresee any challenges or cumulative impacts associated with the implementation of a series of renewable projects in the local area?
- The social issues will probably be made worse.
Community liaison
- How do community convey issues that they experience in the local area? Ward councillor or forums?
- **Ward councillors, municipal structures.** - **(Church is the only other social structure)**
- Key NGO's active in the area
- **No big NGOs in the area – some child welfare and disability**

INTERVIEW QUESTIONNAIRES: BIOTHERM SIA – WIND, WESTERN CAPE

INTERVIEW 3: WARD COUNCILLOR

Date: 12 January 2016

Time: 19:00 – 19:30

Place: Lord Milner hotel, Matjiesfontein

1.	**What is your role at the local area?**
-	**Mr Tron – Ward Councillor (Ward 2). Former Mayor, and local farmer (neighbouring site)**
2.	**Current situation**
2.1	What are the key challenges for the local municipality in respect of local social and economic development requirements?
-	**There is little development in this area.**
-	**The N1 provides opportunities, sheep farming and vegetable (seed) farming also do.**
-	**Wind farms will be the only development in the area – especially during construction**
3.	**Biotherm project**
3.1	What benefits do you foresee that this project can bring to the area?
-	**The main impact will be income generation. Currently the municipality generates 2.5 M/year. These types of project can double this to R5 M/year**
-	**There is also social upliftment, youthupliftment**
-	**Things like transport could be provided locally**
-	**Projects such as sanitation could be provided by the project.**
-	**I don't particularily like the wind farms, but it's not for me it's for future generations – youth and clean energy**
3.2	What are some of the challenges or potential negative impacts of the project?
-	**People coming in to the area**
-	**Jobs aren't long term**
-	**The roads around the sites will be used a lot – this can cause issues for local farmers.**

INTERVIEW QUESTIONNAIRES: BIOTHERM SIA – WIND, WESTERN CAPE

INTERVIEW 2: LAINGSBURG MUSEUM CURATOR AND LAINGSBURG TOURISM OFFICER

Date: 12 January 2016

Time: 11:00 – 12:00

Place: Laingsburg Tourism Complex, Laingsburg

1.	**What is your role at the local area?**
-	**Fancis van Wyk – Museum Curator, and a council representative (current portfolio – Health)**
-	**Madre Walters – Tourism Officer**
2.	**Current situation**
2.1	What are the key challenges for the local municipality in respect of local social and economic development requirements?
-	**Jobs, to be quite honest – jobs is the main thing that is needed in the area. These types of projects are sustainable in the area, as they need specialist skills, which people don't have here**
-	**We are a farming community**
-	**In winter there are no sustainable projects (e.g. road building)**
-	**We have had large project come through the area (like putting in cables and road upgrades)**
-	**Eskom, I think, or one of the contractors built accommodation on a farm just outside of Laingsburg and then left it to the farmer. It is still there – he probably rents it out now. It's on Mr Awyn Nel's Farm**
2.2	What do you stay in Laingsburg?
-	**It is peaceful. It is safe. Things are reasonable (priced).**
-	**Recently we have a bit more theft – but this is from youths without jobs.**
-	**The youth have no work ethic – we had the cable-laying project here. The youth signed up, but when they released to would be digging trenches in the sun all day, they did not go back. The contractor got Rhodesians (Zimbabweans) in. they were happy to do the work. And the contractor made sure they had long weekends to go home to their families.**
2.3	What are the key social issues in this area?
-	**Teenage pregnancy**
-	**Drug abuse**
-	**Low skills/education**

2.4	Are there any social projects in the area? (government/NGOs?)
-	**There are a few small projects – such as the "Kick-about" project but the stuff is usually vandalised until it cannot be used any more. People are not made to be responsible for these projects.**
-	**They should have had a community meeting – get the buy in form the community, and help them understand that they are accountable for the equipment and facilities. Then maybe the youth will keep it in good condition.**
2.5	Is there any traditional leadership or informal community structures?
-	**No traditional structure. There is just the Ward system through the municipality. The people look up to Ward Councillors – they respect them.**
-	**We have regular feedback form the community at the municipality. Most complaints come from the low-income groups about housing, etc.**
2.6	What jobs/income earning options are available in this area?
-	**Farmers – hire daily or seasonal workers**
-	**Tourism – Guest farms and game farms (seasonal hunting farms)**
-	**The area is growing in tourism – mountain biking, off road motor biking, quads – the farms stays are very popular**
-	**"off-the-grid" holidays are becoming popular**
-	**People are looking for a unique, restful experience**
-	**The farms are getting more facilities for day visits – which local churches and families also use for days out.**
-	**Star gazing is becoming very popular**
2.7	What social services are in the town/area?
-	**There is the Laingsburg Thusong Service Centre where the social services include an e-centre (where people can access the internet and print for free), SASSA, EMS, SARS, etc.**
3.	**Biotherm project**
3.1	What benefits do you foresee that this project can bring to the area?
-	**The project will bring workers and families, which will benefit local economy through accommodation, sops, etc.**
-	**They have to do community projects – things like Education centre and tourism centre would be good**
-	**Local employment could be generated from construction work, increased tourism, guided tours of the facilities, elderly care (centre). The latter two would be during off-season (i.e. winter) to supplement income. In-town guesthouses would need to employ more people.**
3.2	What are some of the challenges or potential negative impacts of the project?
-	**We have a lot of social issue (teenage pregnancy, drug abuse, etc.). These could be aggravated. But the economic benefits would be good for the community.**

Appendix B

CURRICULUM VITAE

DANIELLE SANDERSON, M.Soc.Sc.

SENIOR CONSULTANT, ENVIRONMENT & ENERGY

YEARS WITH THE FIRM

7

YEARS TOTAL

9

AREAS OF PRACTICE

Environmental Impact Authorisation Processes

Social Impact Assessments

Waste Management Licensing

Coastal Planning and Permitting

CAREER SUMMARY

Danielle is a senior consultant with 8 years' experience as an environmental and social sciences consultant within a variety of sectors, including renewable energy, infrastructure, mining and industrial. Danielle has managed, and been integrally involved in, numerous environmental management projects, specifically related to environmental impact assessment, social and socio-economic impact assessment, and waste management.

Danielle's environmental management experience includes basic assessment, scoping and environmental impact assessment processes for a variety of industries and sectors, including mining, renewable energy, and infrastructure. Waste management licensing experience includes processes undertaken for paper and pulp sector, as well as various other industrial sectors. Danielle has also managed and undertaken projects related to the integration of sustainable development into local government policies and coastal management initiatives in various provinces around South Africa. Socio-economic consulting experience includes a variety of social impact assessment projects in the mining, renewable energy, and industrial sectors, coordinating and facilitating community participation and stakeholder engagement processes, and coordinating and facilitating socio-economic surveys and field research.

During Danielle's time at WSP she was elected as Sustainability Champion for the Durban office, and represents South Africa on the WSP International Social Sciences Roundtable. Danielle also sits on the national executive committee and the regional branch committee of the South African affiliate of the International Association of Impact Assessors.

EDUCATION

Bachelor of Social Science (Masters), Geography and Environmental Management, University of KwaZulu-Natal, Durban, South Africa	2006
Bachelor of Social Science (Honours), Geography and Environmental Management, University of KwaZulu-Natal, Durban, South Africa	2002

ADDITIONAL TRAINING

Leadership Development Programme and Personal Mastery	2014
Integrating HIV and Gender Related Issues into the EA Process – SAIEA, UNDP and IAIAsa certificated course, International Associated of Impact Assessors South Africa	2013
Sustainable Livelihoods Where Social And Natural Systems Meet – International Associated of Impact Assessors, South Africa	2009

PROFESSIONAL MEMBERSHIPS

International Associated of Impact Assessors, South Africa (IAIAsa) (National Executive Committee member, 2014 – present, and KwaZulu-Natal Branch Committee member)	IAIAsa

DANIELLE SANDERSON, M.Soc.Sc.

PROFESSIONAL EXPERIENCE

EIA Processes

- EIA for the Solis 2 Concentrated Solar Power, Upington, Northern Cape, South Africa (2015): Project Manager and EAP. BrightSource is proposes to develop a 125MW Commercial Concentrated Solar Power (CSP) Client: BrightSource Energy.
- Basic Assessment for Expansion of the Island View Fuel Storage, Durban, KwaZulu-Natal, South Africa (2015). Project Manager and EAP. Client: Engen Petroleum Limited.
- E/F Slab Basic Assessment, Richards Bay, KwaZulu-Natal, South Africa (2015). Project Manager and EAP. Client: Transnet Port Terminals.
- Basic Assessment for the expansion of polyester manufacturing plant, Durban, KwaZulu-Natal, South Africa (2015): Project Manager and EAP. Client: Hosaf (a division of PG Bison (Pty) Ltd).
- Basic Assessment and Water Use and Waste Management Licenses for Jozini Community Healthcare Centre, Jozini, KwaZulu-Natal, South Africa (2013): Project Manager and EAP. Client: Sakisizwe Architects.
- Basic Assessment for Energy Expansion at Tugela Mill, Tugela, KwaZulu-Natal, South Africa (2012). Project Manager and EAP. Client: Sappi Southern Africa Limited.
- Scoping and EIA for the upgrade of Liquid Petroleum Gas (LPG) Storage, Durban, KwaZulu-Natal, South Africa (2012). Project Manager and EAP. Client: Easigas (Pty) Ltd.
- Basic Assessment for Photovoltaic Solar Facility, Durban, KwaZulu-Natal, South Africa (2011). Project Manager and EAP. Client: eThekwini Municipality.
- Basic Assessment for Bulk Water Pipeline, Eshowe, KwaZulu-Natal, South Africa (2011). Project Manager and EAP. Client: Aurecon (Pty) Ltd.

Social Impact Assessments

- SIA for Kraft Paper Mill, Frankfort, Free State, South Africa (2015): Lead Social Consultant. Client: Industrial Development Corporation of SA (Pty) Ltd.
- SIA for Sappi Ngodwana Mill Expansion – Ngodwana Mill, Ngodwana, Mpumalanga, South Africa (2014): Lead Social Consultant. Client: Sappi Southern Africa Limited.
- SIA for Block Z Expansion – Isibonelo Colliery, Isibonelo, Mpumalanga, South Africa (2014): Lead Social Consultant. Client: Anglo American Thermal Coal.
- Solis II Concentrated Solar Power, Upington, Northern Cape, Southern Africa (2014): Lead Social Consultant. Client: BrightSource.
- SIA for Tumela Central Shaft, Thabazimbi, Limpopo, South Africa (2013): Social Consultant. Client: Anglo American Platinum Ltd.
- SIA for Proposed Yzermyn Coal Mine, Mpumalanga, South Africa (2013): Social Consultant. Client: Atha-Africa Ventures (Pty).
- SIA for Green Energy Power Project: Socio-Economic Impact Assessment, Nelspruit, Mpumalanga, South Africa (2012): Social Consultant. Client: Sappi Southern Africa Limited.

- SIA for Sasol New Energy's Holding Concentrated Solar Park, Upington, Eastern Cape, South Africa (2012): Social Consultant. Client: Sasol New Energy Holdings.
- Eerstelingsfontein Coal Mine Social Impact Assessment, Belfast, Mpumalanga, South Africa (2011): Social Consultant. Client: Exxaro Coal Mpumalanga (Pty) Ltd.
- Social assessment of a proposed effluent pipeline diversion, Sasolburg, Free State, South Africa (2010): Social Consultant. Client: Sasol Infrachem.
- Nottingham Road Social Impact Assessment, Nottingham Road, KwaZulu-Natal, South Africa (2008): Social Consultant. Client: Afzelia Environmental Consultants.

Waste Management Licensing

- Waste Management Licenses for Jozini Community Healthcare Centre, Jozini, KwaZulu-Natal, South Africa (2014): Project Manager and EAP. Client: Sakisizwe Architects.
- Integrated Waste Management License – Tugela Mill. Mandeni, KwaZulu-Natal, South Africa (2013): Project Manager and EAP. Client: Sappi Southern Africa Limited
- Waste Management License for the Delkor Waste Water Treatment Plant (WWTP), Richards Bay, KwaZulu-Natal, South Africa (2012): Client: Transnet Port Terminals (TPT).

Coastal Planning and Permitting

- Coastal Setback Lines, Environmental consultant and stakeholder engagement, Western Cape, South Africa (2010): Environmental consultant and stakeholder. Client: Western Cape Department of Environmental Affairs and Development Planning.
- Development of a Shoreline Management Plan, Durban, KwaZulu-Natal, South Africa (2009): Project Assistant. Client: eThekwini Municipality.
- Environmental and Engineering Input for the extension of the Durban Yacht Mole, Durban, KwaZulu-Natal, South Africa (2009): Environmental Consultant. Client: eThekwini Municipality.

AWARDS

Phelamanga Award: Continuing Professional Development – IAIAsa KwaZulu-Natal Branch. 2013

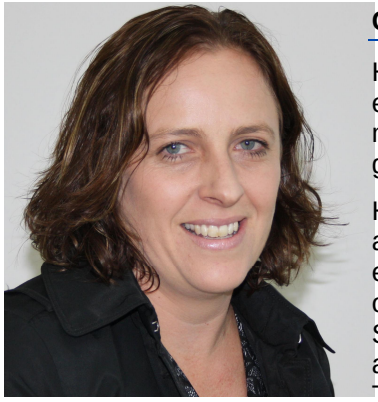
PUBLICATIONS AND PRESENTATIONS

Publications

- Michel, D. P. and Scott, D. (2005). The La Lucia – Umhlanga Ridge as an Emerging 'Edge City'. South African Geographical Journal, vol. 87, no. 2, pp. 104-114.

HILARY KONIGKRAMER, B.SocH., EAP

DIRECTOR (ENVIRONMENTAL SCIENCE), ENVIRONMENT & ENERGY



YEARS WITH THE FIRM

11

YEARS TOTAL

16

PROFESSIONAL QUALIFICATIONS

EAP

AREAS OF PRACTICE

Environmental Impact Assessment Experience

Specialist Environmental Support

Specialist Stakeholder Engagement and Social Impact Assessment Experience

CAREER SUMMARY

Hilary is a Director with 15 years' experience as a consulting social and environmental scientist with extensive experience in integrated environmental management in a variety of sectors including petrochemical, paper and pulp, general industrial, commercial and infrastructure.

Hilary has thorough working knowledge of current environmental laws and policies and a comprehensive understanding of environmental processes. She has experience in undertaking pre-feasibility assessments, legal reviews, and the co-ordination of a wide range of application processes (Basic Assessment and Scoping and EIA processes, Section 24G, and Waste Management License applications). Hilary has been involved in a number of high profile projects for Transnet SOC Ltd; Engen Petroleum Limited, Sappi Southern Africa, and Exxaro Coal Mpumalanga (Pty) Ltd Mpumalanga (Pty) Ltd. She has excellent verbal communication skills in terms of authority consultation, stakeholder engagement and client liaison.

Specialist social science expertise includes conducting Social Impact Assessments (SIA) involving social profiling, social sensitivity mapping, development and implementation of questionnaires, co-ordination of social surveys, stakeholder workshops and focus group sessions. A number of key SIA studies have been undertaken over the past few years for a variety of waste, industrial and mining projects in South Africa, as well as stakeholder engagement for a large residential and tourism development in the Seychelles.

Stakeholder engagement has become a key focus of her capability in recent years. She recognises the value of the development of targeted stakeholder engagement strategies to ensure stakeholder engagement processes are implemented effectively. Recent stakeholder engagement experience includes directing and managing the stakeholder engagement process in the early phases of the proposed Durban Dig-Out Port for Transnet Capital Projects

EDUCATION

BSoc Sci (Hons) Environmental Management, University of Natal, Durban, South African	1998
BSoc Sci Geography, Environmental Management, University of Natal, Durban, South African	1997

ADDITIONAL TRAINING

Sustainability Framework Learning Programme, IFC	2012

PROFESSIONAL MEMBERSHIPS

Member of the International Association for Impact Assessment South Africa	IAIAsa
Certified Environmental Assessment Practitioner (10/2010)	EAP

WSP | PARSONS BRINCKERHOFF

HILARY KONIGKRAMER, B.SocH., EAP

PROFESSIONAL EXPERIENCE

Environmental Impact Assessment Experience

- Expansion of polyester manufacturing plant, Durban, KwaZulu-Natal, South Africa (2015): Project Director. Hosaf operates a polyester production facility in Jacobs (South Durban) and proposed to increase polyethylene terephthalate (PET) production at the facility through the expansion of the plant and installation of a second processing facility. The project involved a Basic Assessment process for the amendment of their Atmospheric Emissions License. Client: Hosaf, a division of PG Bison (Pty) Ltd.
- Expansion of the Island View Fuel Storage, Durban, KwaZulu-Natal, South Africa (2014-2015): Project Director. Engen Petroleum Limited proposed the expansion of fuel storage and modification of the Engen Island View D site, located within the Port of Durban. The project entailed a Basic Assessment process, application for Atmospheric Emissions License, and close coordination with consulting and client engineers. Client: Engen Petroleum Limited.
- Decommissioning of the pulp mill and associated structures including tanks at the Sappi Southern Africa Limited: Enstra Mill in Springs, Gauteng, South Africa (2014-2015): Project Director. This project involves the undertaking of a Basic Assessment process in order to gain Environmental Authorisation for the proposed decommissioning of the Pulp Mill and associated structures including tanks. Client: Sappi Southern Africa Limited.
- Green Energy Power Project - Tugela Mill, KwaZulu-Natal, South Africa (2013-2015): Project Director. Environmental Authorisation and Waste Management License procedure associated with the generation of 40WM of electrical power to supply the Tugela Mill and the national grid. Client: Sappi Southern Africa Limited.
- Sappi Ngodwana Expansion Project – Ngodwana Mill, Mpumalanga, South Africa (2013-2014). Project Director. Environmental Authorisation and Waste Management License for the expansion of the existing specialised cellulose production and construction of a sawmill at the Ngodwana Mill. Client: Sappi Southern Africa Limited.
- Green Energy Power Project – Ngodwana Mill, Mpumalanga, South Africa (2012-2013): Project Director. Environmental Authorisation and Waste Management License procedure for the installation of a biomass boiler, condensing turbine and associated biomass handling equipment, collectively termed the green energy power project. Specialist studies included air quality, visual, traffic, noise and socio-economic impact assessments. Client: Sappi Southern Africa Limited.
- Eerstelingsfontein Open Cast Coal Mine, Mpumalanga, South Africa (2010-2013): Project Manager. The project involved facilitating receipt of an Environmental Authorisation for the proposed open cast coal mining activity. The study included an extensive range of specialist inputs, comprehensive authority engagement, stakeholder engagement and project management. Client: Exxaro Coal Mpumalanga (Pty) Ltd Mpumalanga (Pty) Ltd.
- Cato Ridge Regional Landfill Site, KwaZulu Natal, South Africa (2010-2011): Project Director. An EIA process, including a Waste License Application, was undertaken for the development of a regional landfill site to service the west of the eThekwini Municipality. The study included a wide range of specialist

inputs, and extensive stakeholder engagement and project management. Client: eThekweni Cleansing and Solid Waste Department.

- Sanibonani Mixed Development, Himeville, KwaZulu-Natal, South Africa (2005-2011): Project Director. The project commenced with an environmental pre-feasibility assessment in order to clarify the legal requirements and determine opportunities and constraints associated with the proposed mixed housing and commercial development between the towns of Underberg and Himeville. An Environmental Authorisation procedure was undertaken which included significant project management and co-ordination of a large team of specialists. Client: Retsol Holdings (Pty) Ltd.
- Closure and Remediation of the Guernica Chemicals Site in Cato Ridge, KwaZulu-Natal, South Africa (2009-2010): Project Manager. A Basic Assessment process was undertaken for the closure and remediation of the Guernica Chemicals site in Cato Ridge. The focus of this Basic Assessment process is the identification of the best technology to treat and dispose of mercury contaminated material on site, and prepare implementation plans for the rehabilitation of this site. The site has been covered widely in both local and national media for over 15 years. Client: Guernica Chemicals (Pty) Ltd (formally Thor Chemicals).
- Back of Berth Upgrade at the Island View Complex, and a Tank Replacement at the Engen Refinery, KwaZulu-Natal, South Africa (2008-2010): Project Director. The project involved the upgrade of back of berth pipeline infrastructure within the Durban Harbour, as well as a tank replacement at the Engen Refinery. The challenge with the project was addressing impacts associated with two locations within one application, with one of the locations being within the contentious South Durban area. The Environmental Authorisation process involved significant authority and stakeholder engagement. Client: Engen Petroleum Limited.
- Alkylation Unit Upgrade at the Engen Refinery, South Durban, KwaZulu-Natal, South Africa (2006-2009): Project Manager. Environmental Scoping and Environmental Management Plan was undertaken for the proposed upgrade of the Alkylation Unit at the Engen Refinery. This project involved significant public and authority consultation and a detailed technical component. Stakeholder engagement was a significant challenge within the South Durban context, and an innovative approach was require in order to ensure those who were likely to be directly affected by the project were afforded an opportunity to engage in the process. Client: Engen Petroleum Limited.
- Ngwadini Reservoir, KwaZulu-Natal, South Africa (2007-2009): Project Manager. Environmental Scoping and EMP for the proposed off-stream earth embankment dam in the Ngwadini Valley, to ensure a reliable supply of water to the Sappi Saiccor Mill located in Umkomaas, KwaZulu-Natal. The Environmental Authorisation process included extensive stakeholder and authority engagement, and the management of a wide range of specialist. Client: Sappi Saiccor (Pty) Ltd.
- Permit Amendment for the Existing H:H Landfill Site, Newcastle, KwaZulu-Natal, South Africa (2007-2008): Project Manager. A Basic Assessment process was followed for the permit amendment of the existing H:H landfill at the Arcelor Mittal South Africa Ltd Steel Newcastle Plant. This permit amendment allow for certain waste types generated at the Arcelor Mittal South Africa Ltd Vereeniging Plant to be transported and disposed of at the Newcastle Plant. Client: Arcelor Mittal South Africa Ltd.

HILARY KONIGKRAMER, B.SocH., EAP

Specialist Environmental Support

- Environmental support associated with the Richards Bay Oil Spill, KwaZulu-Natal, South Africa (2014-2015): Project Manager. Provision of strategic support in respect of clean-up operations and longer terms monitoring support in respect to the Heavy Fuel Oil spill which occurred in the Port of Richards Bay. Client: Confidential.
- Environmental input into a technical report and Preliminary Economic Assessment for the Enchi Gold Project, Ghana (2015): Project Manager. An environmental screening assessment was undertaken to identify key environmental issues associated with the proposed gold project, and environmental legal review to identify the regulatory requirements and processes applicable to the project.

Specialist Stakeholder Engagement and Social Impact Assessment Experience

- Proposed Durban Dig-Out Port, early planning phase Stakeholder Engagement, Durban, KwaZulu-Natal, South Africa (2012-2013): Stakeholder Engagement Director and Project Manager. The proposed Durban Dig-Out Port is a large infrastructure project of national strategic importance. WSP has been responsible for stakeholder engagement in the early phase (FEL1) of the project planning lifecycle. A Stakeholder Engagement Strategy was developed to ensure the stakeholder engagement process was implemented effectively. Stakeholder identification, mapping and evaluation was undertaken throughout the project. A series of discussion sessions were arranged with key representatives of the various stakeholder groups in order to develop relationships and trust, share information and obtain feedback (key issues) early in the planning process. This early engagement has developed the foundation for future engagement (EIA phase). Client: Transnet Capital Projects.
- Umhlanga Tidal Pool, KwaZulu-Natal, South Africa (2013): Social Impact Assessment (SIA) Project Director. eThekwini proposed to construct a tidal pool at Umhlanga Beach within the northern eThekwini region. The SIA was commissioned due to public request, and involved extensive surveys and interviews. The outcome included the identification of the most socially acceptable site, and recommendations regarding development and management of the tidal pool in the short to long term. Client: eThekwini Municipality.
- Re-Processing of the Waterval Tailings Storage Facility, Rustenburg, North West Province, South Africa (2013): SIA Project Director. An SIA was required in support of the Environmental Authorisation process for the amendment of the Environmental Management Programme. The existing social climate in and around the Rustenburg mining operations was potentially unstable at the time of the study, due to historical and on-going issues between labour and mining companies. The SIA aimed to establish both direct and indirect impacts of the proposed project, and establish the significance of these impacts within the local socio-economic landscape, and included a review of existing information and the collection of primary data through interviews with key local stakeholders. The SIA ultimately determined that there would be no direct significant negative impacts on the local communities, although certain measures would need to be put in place to ensure that any negative impacts would be mitigated during the construction and operational phases. Client: Anglo American Platinum Limited.

HILARY KONIGKRAMER, B.SocH., EAP

- SIA for Proposed Yzermyn Coal Mine, Mpumalanga, South Africa (2013): SIA Project Director. In support of an Environmental Authorisation procedure for the proposed underground coal mine, an SIA was undertaken to assess the socio-economic impacts of the activity. A variety of techniques, including household surveys, stakeholder interviews, and group meetings were used to establish the potential issues, impacts and recommendations. The social impacts of the proposed mine were determined to be of significance to the local population, and firm measures were provided to prevent excessive loss of local sense of place and livelihoods, and ensure economic stability for the local communities. Client: Atha-Africa Ventures (Pty).
- Tumela Central Shaft, Thabazimbi, Limpopo, South Africa (2013): SIA Project Director (2013): In support of the EIA process for the proposed new shaft at the Amandelbult Section, a social screening was undertaken to establish potential socio-economic impacts of the proposed development. The site, being located a number of kilometres away for populated areas, was unlikely to have a significant social impact. To ensure independent assessment, and given the instability of mining communities, and the social screening reviewed existing data, and interviewed a number of key local stakeholders to determine the possible issues, impacts and recommendations. Client: Anglo American Platinum Limited.
- Sasol New Energy Holding Concentrated Solar Park, Upington, Northern Cape, South Africa (2012): SIA Project Director. Sasol New Energys Holding proposed the construction of a solar power generation complex near Upington in the Northern Cape. The SIA was undertaken to determine the socio-economic impact of the proposed project. The objective of the SIA was to identify and assess potential impacts of the proposed SSP on the socio-economic receiving environment. The SIA determined that there were a number of key socio-economic benefits of the proposed project, and provided sound recommendations regarding the development of community trusts, small business opportunities and education programmes, in order to maximise these social benefits. Client: Sasol Energy.
- Social Impact Assessment of the Proposed Green Energy Project at Sappi Ngodwana Mill, Mpumalanga, South Africa (2012): SIA Project Director. Sappi Southern Africa (Pty) Ltd proposes the installation of a biomass boiler to generate electricity, a portion of which will be fed into the national grid. The SIA focuses on the identification and assessment of the direct socio-economic impacts of the proposed project. Client: Sappi Southern Africa (Pty) Ltd.
- Coal Mine Social Impact Assessment, Eeerstelingsfontein, North West Province, South Africa (2011): SIA Project Director. Exxaro proposed to mine an area of agricultural land for the extraction of high-quality coal. The social impact assessment (SIA) team undertook a detailed assessment of the immediate communities, local government and broader social and economic issues through surveys of the local community and farmers, assessment of other specialist studies in terms of the potential social impacts, and the provision of mitigation measures and a social management plan for the construction and operation of the mine. The presence of an established community on the site provided a significant social hurdle; however, the team provided a social management strategy to manage and mitigation potential social impacts on the local communities. Client: Exxaro Coal Mpumalanga (Pty) Ltd.
- Social Impact Assessment of the Town of Nottingham Road – Implications of the Proposed Rawdons and Hillside Developments, KwaZulu-Natal, South

Africa (2008): SIA Project Director. A socio-economic assessment of the proposed Rawdons extension and the Hillside developments was undertaken. Of particular consideration were the cumulative social impacts and the future growth of the town of Nottingham Road. Client: Afzelia Environmental Consultants CC.

- SIA for Proposed Relocation of Denel's Philippi Munitions Facility, Western Cape, South Africa (2007): Social Consultant. A qualitative methodology was employed during the SIA study in order to identify the social issues associated with the relocation of the Philippi munitions facility. The study sought to understand the differing issues and concerns of the stakeholders likely to be affected by the project. The methodology included a social review of the project areas, primary data collection in the form of questionnaires and stakeholder meetings, and the identification and assessment of potential impacts. Client: Denel Munitions (Pty) Ltd.
- Proposed Cato Ridge Regional Landfill Site, KwaZulu-Natal, South Africa (2007): Social Consultant. The eThekwini Municipality propose the development of a large regional general landfill site to meet the future waste management requirements of the municipality. This SIA study involved the identification and assessment of potential social issues associated with the development of the landfill site. The study included a desktop socio-economic review of the area, primary data collection in the form of questionnaires and stakeholder workshops. Client: eThekwini Cleansing and Solid Waste Department.
- Public Impact Assessment for the Proposed Île Aurore Development, Mahé, Seychelles (2007): Social Consultant. A public impact assessment was undertaken as a specialist component of the Scoping study for the development of an exclusive golf course and casino development on the island of Île Aurore, Seychelles. The purpose of the study was to consult with the local community who would be most affected by the development, document the key issues and identify the likely impacts. Client: Pinnacle Point Holdings (Pty) Ltd.
- Social Probe for the Proposed Ngwadini Reservoir, KwaZulu-Natal, South Africa (2006): Social Consultant. Sappi Saiccor proposed the construction of an off-stream storage reservoir, with a design capacity of 10 million cubic meters of water, to supplement water supply to the Saiccor Mill during period of low river flow. The reservoir footprint is 73 hectares, located within a rural context. The social probe provided a description of the social environment surrounding the proposed Ngwadini Reservoir site, thereby identifying possible social issues associated with the proposed project. The report included a description of social impacts, preliminary assessment of impacts and recommendations. Client: Sappi Saiccor (Pty) Ltd.

Appendix D

ASSESSMENT OF IMPACTS

APPENDIX D-1

CONSTRUCTION

Construction Phase									
Transmission Integration Project									
Potential Impact		Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Increase in employment opportunities	Nature of impact:	Short term employment opportunities to be recognised at a local, regional and national level (largely contractor labour, limited unskilled local labour)							
	Without Mitigation	3	2	4	3	27	Low	+	
	degree to which impact can be reversed:	None							
	degree of impact on irreplaceable resources:	None							
	Mitigation Measures	Appointment of local contractors; Employment of local labour as far as possible, particularly semi-skilled and unskilled opportunities;							
	With Mitigation	3	2	4	4	36	Medium	+	
Disruption through influx of job seekers	Nature of impact:	Influx of job seekers into towns could lead to social conflict in respect of resources and employment opportunities. Challenges for local municipality include establishment of informal settlements and service provision							
	Without Mitigation	2	2	6	3	30	Low	-	
	degree to which impact can be reversed:	Medium - difficult to manage or control influx of job seekers and associated local impacts							

	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	Manage employment expectations as far as possible, prioritise local employment, engage with local municipality in respect of accommodation of labour / staff brought into the area by contractors/developer							
	With Mitigation	2	2	6	2	20	Low	-	
Increase in communicable diseases and reduced public health	Nature of impact:	Presence of an outside labour force, and the influx of job seekers, should potentially affect local public health due to a higher likelihood of a spread of communicable diseases such as TB and HIV/AIDs and other sexually transmitted diseases.							
	Without Mitigation	2	2	6	3	30	Low	-	
	degree to which impact can be reversed:	Medium - difficult to manage or control communicable disease which could permanently impact local populations							
	degree of impact on irreplaceable resources:	High							
	Mitigation Measures	Development of a labour force Health and Safety Plan, HIV/AIDS awareness, prevention and testing campaign							
	With Mitigation	2	2	6	2	20	Low	-	
Nuisance from noise, dust and traffic disturbances	Nature of impact:	Localised disturbance as a result of dust, noise and traffic							
	Without Mitigation	2	2	4	3	24	Low	-	
	degree to which impact can be reversed:	Medium - implementation of EMPr measures to reduce noise, dust and traffic related impacts, but unlikely to negate completely							

	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	Air quality, noise and traffic related mitigation measures recommended by the relevant specialists and included in the EMPr							
	With Mitigation	2	2	2	2	12	Low	-	
Increased risk to neighbouring land users	Nature of impact:	Potential increased risk to farmers as a result of the presence of labour force including petty theft, stock theft, damage to infrastructure							
	Without Mitigation	2	2	6	3	30	Low	-	
	degree to which impact can be reversed:	High - provision of compensation to farmers for damage to infrastructure, stock theft, etc.							
	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	Development of a code of conduct for construction workers, to be signed by the contractor; Contractor to be held liable for compensating farmers for any losses and/or damage that can be linked to construction workers							
	With Mitigation	2	2	4	3	24	Low	-	
Increased risk of veld fires	Nature of impact:	Increased risk of veld fires as a result of construction phase activities							
	Without Mitigation	2	2	6	4	40	Medium	-	
	degree to which impact can be reversed:	High - provision of compensation to farmers for losses resulting from veld fires							
	degree of impact on irreplaceable resources:	Low							

	Mitigation Measures	Implementation of EMPr i.e. mitigation in respect of construction phase activities that may pose a fire risk (i.e. no open fires allows on site for cooking/heating; activities that pose a fire risk to be property managed and confined to designated areas; adequate fire-fighting equipment and necessary training to be provided)							
	With Mitigation	2	2	4	3	24	Low	-	
Transmission Integration Project - No-Go									
Potential Impact	Mitigation	Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Loss of employment and local economic development	Nature of impact:	Loss of employment and local economic development							
	Without Mitigation	3	5	2	5	50	Medium	-	
	degree to which impact can be reversed:	N/A							
	degree of impact on irreplaceable resources:	N/A							
	Mitigation Measures	None							
	With Mitigation	3	5	2	5	50	Medium	-	
Maintenance of the existing landscape and sense of place	Nature of impact:								
	Without Mitigation	2	5	2	5	45	Medium		
	degree to which impact can be reversed:	N/A							

	degree of impact on irreplaceable resources:	N/A							
	Mitigation Measures	None							
	With Mitigation	2	5	2	5	45	Medium		

APPENDIX D-2

OPERATION

Operational Phase									
Transmission Integration Project									
Potential Impact		Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Change in sense of place	Nature of impact:	Change in overall nature of the area / sense of place primarily as a result of visual impact of transmission line and structures							
	Without Mitigation	2	4	4	4	40	Medium	-	
	degree to which impact can be reversed:	High - removal of the proposed infrastructure							
	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	Implementation of recommendations contained in the Visual Impact Assessment							
	With Mitigation	2	4	4	4	40	Medium	-	
Evacuation of power	Nature of impact:	The transmission of renewable power from the Maralla Wind Facilities to the national grid and indirect facilitation of socio-economic implications of the proposed wind facility							
	Without Mitigation	4	4	8	5	80	High	+	
	degree to which impact can be reversed:	N/A							

	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	None							
	With Mitigation	4	4	8	5	80	High	+	
Transmission Integration Project - No-Go									
Potential Impact	Mitigation	Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Maintenance of the existing landscape and sense of place	Nature of impact:	Maintenance of sense of place							
	Without Mitigation	3	5	2	5	50	Medium	-	
	degree to which impact can be reversed:								
	degree of impact on irreplaceable resources:								
	Mitigation Measures	Visual impact assessment mitigation measures to be implemented							
	With Mitigation	3	5	2	3	30	Low	-	
No infrastructure for the evacuation of power	Nature of impact:								
	Without Mitigation	4	5	8	5	85	High	-	
	degree to which impact can be reversed:								

	degree of impact on irreplaceable resources:								
	Mitigation Measures								
	With Mitigation	4	5	8	5	85	High	-	

APPENDIX D-3

DECOMMISSIONING

Decommissioning Phase									
Transmission Integration Project									
Potential Impact		Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Gain of short term employment	Nature of impact:	Limited short term skilled and unskilled opportunities associated with decommissioning of the transmission infrastructure							
	Without Mitigation	2	1	6	3	27	Low	+	
	degree to which impact can be reversed:	N/A							
	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	Appointment of local contractors; Employment of local labour as far as possible, particularly for semi- and unskilled opportunities.							
	With Mitigation	2	1	6	4	36	Medium	+	
Nuisance from dust, noise and traffic	Nature of impact:	Localised disturbance as a result of dust, noise and traffic							
	Without Mitigation	2	1	4	4	28	Low	-	
	degree to which impact can be reversed:	High - Implementation of EMPr measures to reduce noise, dust and traffic impacts							
	degree of impact on irreplaceable resources:	Low							

	Mitigation Measures	Air quality, noise and traffic related mitigation measures recommended by relevant specialists and included in the EMPr							
	With Mitigation	2	1	4	3	21	Low	-	
Increased risk to neighbouring land users	Nature of impact:	Potential increased risk to farmers as a result of presence of labour force including petty theft, stock theft, damage to infrastructure							
	Without Mitigation	2	1	6	3	27	Low	-	
	degree to which impact can be reversed:	High - the provision of compensation for farmers for damage to infrastructure, theft, etc.							
	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures	Development of a code of conduct for decommissioning phase workers, to be signed by the contractor. Contractor to be held liable for compensating farmers for any loses and/or damage that can be linked to decommissioning workers.							
	With Mitigation	2	1	4	3	21	Low	-	
Transmission Integration Project - No-Go									
Potential Impact	Mitigation	Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Loss of employment and local economic development opportunities	Nature of impact:	Loss of limited number of employment opportunities associated with decommissioning activities							
	Without Mitigation	3	5	2	5	50	Medium	-	
	degree to which impact can be reversed:	N/A							

	degree of impact on irreplaceable resources:	N/A							
	Mitigation Measures	None							
	With Mitigation	3	5	2	5	50	Medium	-	
Maintenance of existing landscape and sense of place	Nature of impact:								
	Without Mitigation	2	5	2	5	45	Medium		
	degree to which impact can be reversed:	N/A							
	degree of impact on irreplaceable resources:	N/A							
	Mitigation Measures	None							
	With Mitigation	2	5	2	5	45	Medium		

APPENDIX D-4

CUMULATIVE

Cumulative Impacts									
Transmission Integration Project									
Potential Impact		Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
Change in sense of place	Nature of impact:	Change in the landscape as a result of the development of transmission infrastructure associated with numerous renewable energy projects							
	Without Mitigation	3	4	4	3	33	Medium	-	
	degree to which impact can be reversed:	High - Project could be removed							
	degree of impact on irreplaceable resources:	Low							
	Mitigation Measures								
	With Mitigation								