ENVIRONMENTAL IMPACT ASSESSMENT PROCESS: PROPOSED WIND ENERGY FACILITIES (SOUTH & NORTH) SITUATED ON THE EASTERN PLATEAU NEAR DE AAR, NORTHERN CAPE MARCH 2012

SOUTH: DEA REF. NO. 12/12/20/2463/1 / NEAS REF. NO. DEAT/EIA/0000577/2011 NORTH: DEA REF. NO. 12/12/20/2463/2 / NEAS REF. NO. DEAT/EIA/0000578/2011

CUTECON EXECUTIVE SUMMARY: DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Background

Mulilo Renewable Energy (Pty) Ltd (Mulilo) proposes to construct two 155-360 MW wind energy facilities on the eastern plateau approximately 20 km east of De Aar, Northern Cape. Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the requisite environmental process as required in terms of the National Environmental Management Act (NEMA)(No. 107 of 1998), as amended, on behalf of Mulilo.

The northern site is approximately 14 500 ha in extent and consists of 14 portions of six farms, whilst the southern site is approximately 9 200 ha in extent and consists of nine portions of four farms (see **Figure 1**). The associated infrastructure would include power lines to connect into the existing grid as well as access roads and cabling between turbines.

Proposed project

Initially, Mulilo proposed to construct two 150 - 200 MW wind energy facilities on the eastern plateau approximately 20 km east of De Aar, Northern Cape. The two proposed wind energy facilities would be located on the northern and southern portion of the plateau approximately 20 km east of the town of De

Aar. The northern portion would have potentially consisted of 145 wind turbines and the southern portion, 105 wind turbines with a combined total capacity of 150 - 200 MW each. Subsequent to this initial proposal, the turbine layouts were revised in order to incorporate specialist recommendations that buffers be implemented around sensitive features and areas. The revised layouts for the northern portion would now potentially consist of 144 wind turbines with a potential capacity to produce between 216 - 360 MW and the southern portion with 103 wind turbines with a potential capacity of 155 - 258 MW. The power generated by the two proposed projects would be transmitted to the national grid via five proposed substations with three on the southern site and two on north site, connecting into the three existing transmission lines crossing the site and linking into the Hydra substation near De Aar. The proposed sites are situated in the Emthanjeni and Renosterberg LM in the Northern Cape.

Wind turbines can rotate about either a horizontal or a vertical axis. Turbines used in wind farms for commercial production of electricity are usually horizontal axis, three-bladed and pointed into the wind by computer-controlled motors. These have high tip speeds of over 320 km/hour, high efficiency, and low torque ripple, which contribute to good reliability.

Purpose of this document

This document provides a summary of the Draft Environmental Impact Assessment Report (EIAR) for the proposed wind energy facilities near De Aar, Northern Cape It provides a brief background and overview of the proposed project, a description of the public participation process undertaken thus far, the list of project alternatives and potential impacts that have been assessed.

Please review this Summary Document and, preferably, the full EIAR, and submit your comments on the proposed project by **13 April 2012**. All EIA documents will be available on Aurecon's website (www.aurecongroup.com change "Current Location" to "South Africa" and follow the Public Participation link), Emthanjeni Local Municipality (De Aar) municipal buildings and the De Aar (Station Road) and Phillipstown (Kerk Street) Public Libraries from 2 March 2012 until 13 April 2012.

Comments should be directed to:**Aurecon** Simon Clark or Louise Corbett P O Box 494, Cape Town, 8000 Tel: 021 526 6034/6027 Fax: 021 526 9500 Email: simon.clark@aurecongroup.com





Figure 1 Revised layout, dated February 2012, for the proposed wind energy facilities (north and south)



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The blades are usually coloured light grey and could range in length from 40- 60 m. The tubular steel towers range from 65 - 100 m tall. The blades rotate at 15 revolutions per minute. A gear box is commonly used for stepping up the speed of the generator. Some models operate at constant speed, but more energy can be collected by variable-speed turbines. All turbines are equipped with protective features to avoid damage at high wind speeds, by feathering (turning) the blades into the wind which ceases their rotation, supplemented by brakes.

EIA Process

EIA Regulations (Regulations 544, 545 and 546) promulgated in terms of NEMA, identify certain activities, which "could have a substantial detrimental effect on the environment". These listed activities require environmental authorisation from the competent environmental authority, i.e. the Department of Environmental Affairs (DEA) in the case of energy applications, prior to commencing.

This proposed project triggers a number of listed activities in terms of NEMA and accordingly requires environmental authorisation from DEA via the EIA process outlined in Regulation 543 of NEMA.

The proposed wind energy facilities trigger the following activities in terms of NEMA (GN No. 544 Activity No.10 & 11; GN No. 545 Activity No. 1 and GN No. 546 Activity No. 14. As such authorisation from DEA, via the EIA process (GN No. R543 of 18 June 2010) is necessary (*please note that two separate projects have been assessed in one EIAR*).

Aurecon was appointed to undertake the required environmental authorisation processes on Mulilo's behalf.

The EIA process consists of an Initial Application Phase, a Scoping Phase and an EIA Phase. The purpose of the Initial Application Phase is to commence the projects *via* the submission of the relevant department's application forms. The purpose of the Scoping Phase is to identify and describe potential positive and negative environmental impacts, (both social and biophysical), associated with the proposed projects and to screen feasible alternatives to consider in further detail.

The purpose of the EIA Phase (the current phase) is to comprehensively investigate and assess those alternatives and impacts identified in the Scoping Report and propose mitigation to minimise negative impacts. Ultimately the EIAR provides the basis for informed decision-making by the applicant, with respect to which alternatives to pursue, and by DEA with respect to the environmental acceptability of the applicant's chosen option. This summary cannot replace the comprehensive EIAR, but it gives an overview of what is contained in the report.

How you can get involved

Public participation is a key component of this EIA process and has taken place at various stages throughout the project.

The primary purpose of the public participation during the Scoping Phase was to present the Draft Scoping Report (DSR) to Interested and Affected Parties (I&APs), and to elicit issues of concern and/or comment. The Scoping Phase comprised the following steps:

- Lodging the Draft Scoping Report (DSR) at the Emthanjeni LM (De Aar) municipal buildings and the De Aar and Phillipstown Public Libraries and on the Aurecon website from 8 November 2011. All registered I&APs were notified of the availability of the DSR and of a public meeting by means of a letter sent by post and/or e-mail on 8 November 2011. The notification letters also included a copy of the Executive Summary of the DSR in English and Afrikaans.
- Advertisements were placed in a local newspaper, the Echo and a regional newspaper, Die Volksblad, notifying the broader public of the proposed projects and inviting them to register as I&APs from 4 November 2011;



- Site notices, were erected on the 8 November 2011 on the perimeters of the farms comprising the sites, notifying the broader public of the proposed projects and inviting them to register as I&APs;
- Holding a public meeting on Wednesday, 30 November 2011 to present and discuss the findings
 of the DSR at the De Aar Civic Hall (also known as the Community Hall) from 16h00-18h00.
 Notes of the public meeting were sent to all those who attended;
- I&APs had 40 days, until the 5 January 2012 to submit their written comments on the DSR, however due to a mailing error the period was extended to 9 January 2012. Cognisance was taken of all comments when compiling the final report, and the comments, together with the project team and proponent's responses thereto, were included in final report.
- The Final Scoping Report (FSR) was made available to the public for review and comment at the same locations as the DSR until 7 February 2012. All registered I&APs were informed of the lodging of the FSR by means of a letter posted on 15 January 2012. The FSR outlined the full range of potential environmental impacts and feasible project alternatives and how these were derived. Moreover, it included a Plan of Study for EIA, which outlined the proposed approach to the current EIA Phase, including the requisite specialist investigations to be undertaken;
- The FSR and associated Plan of Study for EIA was submitted to DEA on 13 January 2012 and accepted on 21 February 2012.

All written comments received on the FSR were included as an annexure to the Draft EIAR. All issues raised via written correspondence have been summarised into a Comments and Response Report with responses from the project team and are included as an annexure to the Draft EIAR.

The current EIA Phase aims to present the Draft EIAR to registered I&APs. This phase comprises:

- Lodging the Draft EIAR at Emthanjeni Local Municipality (De Aar) municipal buildings and the De Aar (Station Road) and Phillipstown (Kerk Street) Public Libraries and on Aurecon's website (www.aurecongroup.com change "Current Location" to "South Africa" and follow the Public Participation link) from 2 March 2012 until 13 April 2012;
- Finalising the EIAR by incorporating all public comment received into a Comments and Responses Report and making changes to the report, where relevant; And
- Submitting the Final EIAR to DEA for decision-making.

Following the issuing of the Environmental Authorisations, DEA's decision will be communicated by means of a letter to all registered I&APs and the appeal process will commence, during which any party concerned will have the opportunity to appeal the decision to the Minister of Environmental Affairs in terms of NEMA.

Project alternatives

The following feasible alternatives have been identified for further consideration in the Environmental Impact Assessment Report (EIAR):

- Location alternatives:
 - o One location per proposed wind energy facility;
- Activity alternatives:
 - Wind energy generation via wind turbines; and
 - "No-go" alternative to wind energy production.
- Site layout alternatives:
 - One layout alternative per site;
- Technology alternatives:
 - Turbine towers of 65 m and a blade length of 40 m; and
 - Turbine towers of 100 m with a blade length of 60 m;



Identified impacts

The EIAR has provided a comprehensive assessment of the potential environmental impacts, identified by the EIA team and I&APs, associated with the proposed wind energy facility.

The following specialist studies and specialists were undertaken to provide more detailed information on those environmental impacts which had been identified as potentially being of most concern, and/or where insufficient information is available, namely:

- Ecological assessment: Dr David Hoare of David Hoare Consulting;
- Avifauna assessment: Dr Doug Harebottle, private consultant;
- Bat assessment: Mr Werner Marais of Animalia Zoological and Ecological Consultation;
- Heritage Impact Assessment: Mr Jayson Orton of ACO Associates (cultural heritage and archaeology), and Dr John Almond of Natura Viva (palaeontology); and
- Visual Impact Assessment: Mrs Karen Hansen, private consultant;
- Noise Impact Assessment: Mr Morne de Jager of M2 Environmental Connections;
- Aquatic-ecology assessment: Mrs Toni Belcher, private consultant; and
- Agricultural Assessment: Mr Kurt Barichievy of SiVEST.

The significance of the potential environmental (biophysical and socio-economic) impacts associated with the proposed project are summarised in **Table 1**.

With reference to **Table 1**, the most significant (**high (-)**) operational phase impacts on the biophysical and socio-economic environment, *without mitigation* was for the potential impacts of the proposed wind energy facility on bats, avifauna and visual aesthetics. With the implementation of mitigation measures the impact on bats and avifauna would decrease to **low-medium (-)** and **medium (-)** significance. However the impact on visual aesthetics would remain the same. It should be noted that three potential positive impacts on energy production and local economy (employment), climate change and social conditions would result and these would be of *low-medium (+)* significance, with and without mitigation measures.

The most significant construction phase impact was that on heritage and archaeology which was considered to be of **medium-high (-)** and **low (-)** significance with and without mitigation respectively, for both north and south projects, The remaining negative construction phase impacts were not deemed to have a significant impact on the environment, given their duration (approximately 18 months) and localised extent. The remaining construction impacts were assessed to be of **very low to medium (-)** significance, without mitigation measures. With the implementation of the recommended EMP the significance of construction phase impacts is likely to reduce to **very low to low (-)** significance. It should be noted that a potential positive impact on local economy (employment) and social conditions would result and would be of **medium (+)** significance, with and without mitigation measures.

In comparing the proposed project and the "no-go" alternatives it can be seen that the "no-go" alternative results in only one negative impact of **low (-)** significance on the biophysical and socio-economic environment (botanical impact) whilst the proposed wind energy facility results in *low to medium (+)* impacts and **low to high (-)** impacts on the environment, with mitigation. The negative impacts of the proposed project are considered to be environmentally acceptable, considering the positive impacts.

The potential cumulative impacts were also considered, including both proposed projects, as well as any other proposed renewable energy facilities, where applicable. The significance of these were considered to be of low to high (-) significance and *low to medium* (+), without mitigation. These potential cumulative impacts would decrease, with implementation of mitigation measures for the proposed projects as well as other proposed projects in the area, and are considered to be acceptable. However, it should be noted that it is not possible to assess these cumulative impacts in a project specific EIA, not least because not all the proposed projects in the area may be approved or constructed. As such it would be necessary for DEA, or a similar body, to undertake a strategic assessment in this regard.



			Preferred Layout south site		Preferred Layout north site		
ІМРАСТ				With Mit	No Mit	With Mit	
OPERATIONAL PHASE IMPACTS							
1.1	Impact on Ecology:	Preferred layout	L-M	VL-M	L-M	VL-M	
1.2		No-go alternative	L	L	L	L	
2	Impact on birds		M-H	М	M-H	М	
3	Impact on bats		М	L-M	М	L-M	
4	Impact on climate change		L+	L+	L+	L+	
5	Visual aesthetics		н	Н	H	Н	
6	Impact on Fresh Water		L	VL	L	VL	
7	Impact on energy production		L+	L+	L+	L+	
8	Impact on local economy (employment) and social conditions		M+	M+	M+	M+	
9	Impact of noise		L	VL	L	VL	
10	Impact on agricultural land		VL	VL	VL	VL	
CONSTRUCTION PHASE IMPACTS							
11	Impacts on flora, avifauna, fauna and bats		L-M	L	L-M	L	
12	Sedimentation and erosion		М	VL	М	VL	
13.1	Impact on heritage resources:	Archaeology	M-H	L	M-H	L	
13.2		Palaeontology	L	VL	L	VL	
13.3		Cultural heritage	M-H	L	M-H	L	
14	Visual aesthetics		М	L-M	М	L-M	
15	Impact on local economy (employment) and social conditions		M+	M+	M+	M+	
16	Impact on transport		L	L	L	L	
17	Noise pollution		VL	VL	VL	VL	
18	Storage of hazardous substances on site		L	L	L	L	
19	Impact of dust		L	VL	L	VL	

Table 1 Summary of significance of the potential impacts associated with the proposed developments (north and south)

KEY:

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Н	High Significance	VL	Very Low Significance		
M-H	Medium to High Significance	N	Neutral Significance		
М	Medium Significance	H+	High positive significance		
L-M	Low to Medium Significance	M+	Medium positive significance		
VL-M	Very Low to Medium Significanc	L+	Low positive significance		
L	Low Significance				
VL-L	Very Low to Low Significance				



In terms of differences in the significance of potential impacts of the feasible alternatives, including the distribution and turbine alternatives, they are all considered to be equivalent, and therefore no significant differences would result. As such it is recommended that Mulilo choose their preferred option based on technical and financial considerations.

Conclusions and recommendations

The impacts associated with the proposed project would result in regional impacts (both biophysical and socio-economic) that would negatively affect the area. The significance of these impacts **without mitigation** are deemed to be of **high or lower (-)** significance. However, with the implementation of the recommended mitigation measures the significance of the negative impacts would be minimized and would be **medium or lower (-)**, for all but one (visual) impact.

Associated with the proposed project are positive impacts on energy production and local economy (employment), climate change and social conditions of *low* (+) to medium (+) significance.

Based on the above, the EAP is of the opinion that the proposed wind energy facility and associated infrastructure, including alternatives, being applied for be authorised as the benefits outweigh the negative environmental impacts. The significance of negative impacts can be reduced with effective and appropriate mitigation through a Life-Cycle EMP, as described in this report. If authorised, the implementation of an EMP should be included as a condition of approval.

With regards to the alternatives considered, including the turbine alternatives, there is no difference in significance of impacts between alternatives. As such there is no preference of alternatives from an environmental perspective.

Way forward

The Draft EIAR has been lodged at the at Emthanjeni Local Municipality (De Aar) municipal buildings and the De Aar (Station Road) and Phillipstown (Kerk Street) Public Libraries and on Aurecon's website (<u>www.aurecongroup.com</u> change "Current Location" to "South Africa" and follow the Public Participation link). All registered I&APs have been notified of the availability of the Draft EIAR by means of a letter which includes a copy of the Draft EIAR Executive Summary. The public will have until 13 April 2012 to submit written comment on the Draft EIAR to Aurecon.

The Final EIAR will be completed via the addition of any I&AP comments and the addition of a letter from Mulilo indicating which mitigation measures will be implemented and which alternatives they prefer. The Final EIAR will then be submitted to the Northern Cape DEANC and DEA for their review and decision-making, respectively.

Once DEA has reviewed the Final EIAR, they will need to ascertain whether the EIA process undertaken met the legal requirements and whether there is adequate information to make an informed decision. Should the above requirements be met, they will then need to decide on the environmental acceptability of the proposed project. Their decision will be documented in an Environmental Authorisation, which will detail the decision, the reasons therefore, and any related conditions. Following the issuing of the Environmental Authorisation, DEA's decision will be communicated by means of a letter to all registered I&APs and the appeal process will commence, during which any party concerned will have the opportunity to appeal the decision to the Minister of Environmental Affairs in terms of NEMA.



Public Participation Office

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List of Acronyms

DEA	Department of Environmental Affairs
DSR	Draft Scoping Report
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMP	Environmental Management Programme
FSR	Final Scoping Report
ha	Hectare
I&AP	Interested and Affected Party
km	Kilometer
kV	Kilovolt
MW	Megawatts
NEMA	National Environmental Management Act