

APPENDIX C6
Comments Received

Comments Received on Basic Assessment Report



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA · 0001· Environment House · 473 Steve Biko, Arcadia· PRETORIA
Tel (+ 27 12) 399 9372

DEA Reference: 14/12/16/3/3/1/2024

Enquiries: Mr Thando Booï

Telephone: (012) 399 9387 **E-mail:** TBooi@environment.gov.za

Ms Jo-Anne Thomas
Savannah Environmental (Pty) Ltd
P.O Box 148
SUNNINGHILL
2157

Telephone Number: (011) 656 3237
Email Address: joanne@savannahsa.com

PER E-MAIL / MAIL

Dear Ms Thomas

COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT FOR GRID CONNECTION INFRASTRUCTURE FOR AGGENEYS 2 SOLAR PV FACILITY WITHIN KHAI MA LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE

The application form and draft Basic Assessment Report (BAR) dated May 2019 as received by this Department on 30 April 2019 refers.

This Department has the following comments on the abovementioned application:

The project description

- The Department has noted that the total length of the access roads/tracks in section 5, page 6 of 30 of the application form has not been provided. Please ensure that such information is included in the amended application form to be submitted with the final BAR.

The Activity/ies applied for

- The Department further noted that in section 7, page 12 of 30 of the application form, you applied for the listed activity 14 (ii) (a) (c) (a) (ii) (bb) and the portion of activity description relates to sections of the power line corridor alternatives which are located within a Critical Biodiversity Area (CBA). However, the applicable sub-activity that relates to a Critical Biodiversity Area (CBA) i.e. sub activity (ff) is not included in the listed activity applied for, therefore; you must ensure that this sub-activity is included in the amended application form.

Sensitivity map

- Ensure that the sensitivity map is inclusive of identified Critical Biodiversity Areas in the project site as illustrated in the Northern Cape Critical Biodiversity Areas map on page 28 of the flora and fauna specialist study dated April 2019 and prepared by 3 Foxes Biodiversity Solutions.

Public Participation Process

- Ensure that you make the draft BAR available for comments to the Biodiversity and Conservation Directorate of the Department of Environmental Affairs and Northern Cape Department of Environment and Nature Conservation (DENC).
- Further, ensure that all issues raised and comments received during the circulation of the BAR from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the final BAR.
- Proof of correspondence with the various stakeholders must be included in the final BAR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments.
- The Departmental comments must form part of your correspondence and must be attached into the report.

General Comments:

The Public Participation Process must be conducted in terms of Regulations 39, 40, 41, 42, 43 & 44 of the EIA Regulations 2014, as amended.

You must note that the final BAR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of BAR in accordance with Appendix 1 and Regulation 19(1)(a) and 19(3) of the EIA Regulations, 2014 as amended.

Further, note that in terms of Regulation 45 of the EIA Regulations 2014 as amended, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7).

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours faithfully



Mr Sabelo Malaza

Chief Director: Integrated Environmental Authorisations

Department of Environmental Affairs

Signed by: Ms Olivia Letlalo

Designation: Control Environmental Officer: Strategic Infrastructure Developments

Date: 22/05/2019

| | | | | |
|-----|----------------|----------------------------------|---------------------|------------------------------------|
| cc: | Robert Wagener | ABO Wind Aggeneys 2 PV (Pty) Ltd | Tel: (021) 418 2596 | Email: Robert.wagener@abo-wind.com |
| | Bryan Fischer | Northern Cape (DENC) | Tel: (053) 807 7431 | Email: BFisher@ncpg.gov.za |
| | Edward Vries | Khâi-Ma Local Municipality | Tel: (054) 933 1005 | Email: mmsecretary@khaima.gov.za |

Our Ref:



an agency of the
Department of Arts and Culture

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South African Heritage Resources Agency | 111 Harrington Street | Cape Town
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Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 13731

Date: Thursday May 30, 2019
Page No: 1

Final Comment

In terms of Section 38(4) of the National Heritage Resources Act (Act 25 of 1999)

Attention: ABO Wind Aggeneys 2 PV (Pty) Ltd

The development of grid connection infrastructure for the proposed 100MW solar photovoltaic (PV) facility and associated infrastructure located approximately 11km south-east of Aggeneys in the Northern Cape Province. The grid connection infrastructure is to be known as the Grid Connection Infrastructure for Aggeneys 2 and is situated within the Khâi-Ma Local Municipality of the greater Namakwa District Municipality. The associated infrastructure consists of a collector substation and a single-circuit power line of up to 220kV to connect the PV facility to the national grid. This proposed development will consider feasible alternatives for the power line corridor.. The assessment of the grid connection infrastructure will be undertaken within a corridor with a width of up to 1km and a length of up to 17km. The project site is located within Zone 8 of the Renewable Energy Development Zones (REDZ) (also known as the Springbok REDZ), and within the Northern Transmission Corridor. The procedure to be followed in applying for environmental authorisation for a large-scale project in a REDZ was formally gazetted on 16 February 2018 (in GN113 and GN114). As Bloemhoek 1 is located within one of the eight REDZ areas, the project is subject to a Basic Assessment and not a full EIA process, as well as a shortened timeframe of 57 days for the processing of an Application for Environmental Authorisation.

Savannah Environmental (Pty) Ltd has been appointed by ABO Wind Aggeneys 2 PV (Pty) Ltd to conduct an Environmental Authorisation (EA) Application process for the proposed grid connection infrastructure for the Aggeneys 2 solar PV facility, near Aggeneys, Northern Cape Province.

A draft Basic Assessment Report (dBAR) has been completed in terms of the National Environmental Management Act, 1998 (NEMA) and the 2017 NEMA Environmental Impact Assessment (EIA) Regulations. The proposed development will include the construction of a single-circuit power line (up to 220kV in capacity). Two alternative routes have been assessed of up to 1 km wide and up to 17 km long. Additional infrastructure will include a new collector substation/switching station, access tracks up to 6 m wide, and a new feeder bays within the existing HV yard at the Aggeneys Main Transmission Substation.

ASHA Consulting and Natura Viva CC were appointed to provide heritage input into the EA Application process as per section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA).



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Orton, J. 2019. Heritage Impact Assessment: Proposed Grid Connection Infrastructure for the Aggeneys 2 Solar Photovoltaic Facility, Namakwaland Magisterial District, Northern Cape.

No significant heritage resources were identified within the proposed footprint, however, 9 occurrences of isolated artefact scatters and or small sites were noted as part of the landscape. Several isolated Stone Age lithics and ostrich eggshell fragments, a lower grindstone and a single historical ceramic fragment was identified within a low dune. Small stone-walled features were noted on a rocky hill 900 m east of the study area, and an ephemeral artefact scatter consisting of a small grindstone, two quartz flakes and two ostrich eggshell fragments was identified 500 m south of the proposed footprint. Two possible graves of an unknown age were identified 900 m south of the project area near a small rocky hill. As the project area is near the Gamsberg, there may be living heritage sites in the surrounding area due to the possible location of a San massacre site within the mountain.

Recommendations provided in the report include the following:

- Both corridor alternatives are seen as appropriate for the proposed development, with Alternative 1 lightly preferred due to being shorter than Alternative 2 and further from the N14;
- If any change in the authorised footprint occurs, then an archaeologist should be consulted for an opinion on whether a survey is required; and
- If any archaeological or palaeontological material or human burials are uncovered during the course of development, then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Almond, J. E. 2018. Palaeontological Heritage Assessment: Desktop Study for the Aggeneys Proposed PV Solar Energy Facilities on the remaining extent of the farm Bloemhoek 61 and associated power line corridors near Aggeneys, Namakwa District Municipality, Northern Cape.

The proposed development area is underlain at depth by the Mid Proterozoic unfossiliferous Namaqua-Natal Province, which is overlain by Late Caenozoic superficial sediments of the Gordonias Formation (Kalahari Group) of low to very low palaeontological sensitivity. The overall impact of the development will be very low.

Recommendations provided in the report include the following:



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Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za

Date: Thursday May 30, 2019
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CaseID: 13731

- Pending the potential discovery of significant fossil remains during the construction phase, in which case the Chance Fossil Finds Protocol appended here should be implemented, no further specialist palaeontological studies or mitigation are recommended for the PV solar projects and the associated grid connection;
- Ancient alluvial gravels (possibly calcretised) associated with Pleistocene or older fossil remains (e.g. mammalian bones and teeth) might be exposed in the existing borrow pit in the Koa River Palaeovalley area in the south-eastern portion of the Remaining Extent of the Farm Bloemhoek 61 (yellow circle in Fig. 2). If it is proposed to exploit alluvial gravel material from this pit as part of the PV solar facilities, a site inspection by a professional palaeontologist before excavations commence is recommended;
- These recommendations should be incorporated into the Environmental Management Programme (EMPr) for the proposed solar PV facilities and associated grid connection solutions.

Additional recommendations provided in the Environmental Management Programme (EMPr) on page 54 and 55 of the document are noted.

Final Comment

The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final EIA and EMPr:

- 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development;
- 38(4)b – Specific conditions for the development include:
 - i) – The recommendations of the heritage specialists and the recommendations contained within the EMPr with regards to heritage resources are supported;
 - ii) – A Fossil Finds Procedure must be developed for the construction phase of the development as per the recommendations of the SAHRIS PalaeoSensitivity map;
- 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG)

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Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 13731

Date: Thursday May 30, 2019
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Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;

- 38(4)d – See above;
- 38(4)e – The following conditions apply with regards to the appointment of specialists:
 - i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;
- The Final BAR and EMPr must be uploaded to the SAHRIS application for record purposes;
- The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

Natasha Higgitt
Heritage Officer
South African Heritage Resources Agency

Phillip Hine
Acting Manager: Archaeology, Palaeontology and Meteorites Unit

Our Ref:



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CaseID: 13731

Date: Thursday May 30, 2019
Page No: 5

South African Heritage Resources Agency

ADMIN:

Direct URL to case: <http://www.sahra.org.za/node/522856>
(DEA, Ref:)

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.

Nicolene Venter

From: Savannah Public Process
Sent: Monday, June 3, 2019 11:17 AM
To: 'Simphiwe Masilela'
Cc: 'nicolene@savannahsa.com'; Mabel Quinisile
Subject: RE: REMINDER: End of Review Period:Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2

| Tracking: | Recipient | Delivery |
|-----------|---------------------------|------------------------------|
| | 'Simphiwe Masilela' | |
| | 'nicolene@savannahsa.com' | Delivered: 6/3/2019 11:17 AM |
| | Mabel Quinisile | Delivered: 6/3/2019 11:17 AM |

Dear Simphiwe,

We herewith acknowledge receipt of the ATNS' written comments for the Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2.

Kind regards,

Nicolene Venter

Public Participation & Social Consultant | Savannah Environmental (Pty) Ltd
Tel: +27 (0)11 656 3237 | Fax: +27 (0)86 684 0547

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From: Simphiwe Masilela <SimphiweM@atns.co.za>
Sent: Monday, June 3, 2019 10:46 AM
To: Savannah Public Process <publicprocess@savannahsa.com>; Nicolene Venter <nicolene@savannahsa.com>
Subject: RE: REMINDER: End of Review Period:Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2



Good day Nicolene,

RE: Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2

The proposed falls in close vicinity to Aggeneys Air strip (FAAG), which is within the boundaries of the ICAO Annex 14 surfaces associated with the airport.

We would have to conduct a formal assessment to determine whether or not it will affect the line of sight in any way. It may include a glint and glare impact assessment to be done as per SACAA requirement (refer to: Obstacle Notice 4/2017 (17/11/2017): Additional Requirements for Solar Project Applications) on the SACAA website.

Kind Regards,

Simphiwe Masilela

Obstacle Evaluator | COO - Air Traffic Services

ATNS Head Office, Bruma, Johannesburg, South Africa

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From: Savannah Public Process [mailto:publicprocess@savannahsa.com]

Sent: Friday, May 31, 2019 5:39 PM

To: nicolene@savannahsa.com; mabel@savannahsa.com

Subject: FW: REMINDER: End of Review Period:Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2

GRID CONNECTION INFRASTRUCTURE FOR AGGENNEYS 1 AND GRID CONNECTION INFRASTRUCTURE FOR AGGENEYS 2, NORTHERN CAPE PROVINCE

- **Basic Assessment Review and comment period ending**

Dear Stakeholder and/or Interested and Affected Party,

With reference to the attached notification letter sent on Thursday,30 April 2019, and e-mail below, this email serves to inform you that the comment period for the Basic Assessment Reports (BARs) is ending on Monday, 03 June 2019, As you may recall, the review period and comment period for the BARs was **Thursday, 02 May 2019 to Monday, 03 June 2019.**

Thank you to those Stakeholder and Interested and Affected Parties who submitted their written comments and those who had not yet submitted written comments, we kindly request that you do so before or on **Monday, 03 June 2019**, by close of business day.

Nicolene Venter

Public Participation and Social Consultant | Savannah Environmental (Pty) Ltd

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> From: Savannah Public Process <publicprocess@savannahsa.com>
> Date Sent: 27/05/2019 09:33
> To: nicolene@savannahsa.com, mabel@savannahsa.com
> Cc:
> Subject: REMINDER:Review period ending soon - Basic Assessment Reports for the Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2
>

GRID CONNECTION INFRASTRUCTURE FOR AGGENEYS 1 AND GRID CONNECTION INFRASTRUCTURE FOR AGGENEYS 2, NORTHERN CAPE PROVINCE

Dear Stakeholder and/or Interested and Affected Party,

With reference to our e-mail communication below, this e-mail serves to inform you that the review and comment period for written submission for the Basic Assessment Reports ends on **Monday, 03 June 2019**.

We would like to thank those who already submitted their written comments and urge those who had not yet done so, to please submit their written comments by **Monday, 03 June 2019**., before close of business.

Kind Regard

> From: Savannah Public Process
> Date Sent: 30/04/2019 14:25
> To: nicolene@savannahsa.com, mabel@savannahsa.com
> Cc:
> Subject: NOTIFICATION: Basic Assessment Reports for the Grid Connection Infrastructure for Aggeneys 1 and Aggeneys 2: Available for review and comment
>

BASIC ASSESSMENT AND PUBLIC PARTICIPATION PROCESSES: GRID CONNECTION INFRASTRUCTURE FOR AGGENEYS 1 AND GRID CONNECTION INFRASTRUCTURE FOR AGGENEYS 2, NORTHERN CAPE PROVINCE

Dear Stakeholder and/or Interested and Affected Party,

Please find attached letter notifying you of the availability of the Basic Assessment Reports for the above-mentioned projects for your review and comment.

The review and comment period are from **Thursday, 02 May 2019** to **Monday, 03 June 2019** and we are looking forward to receive your written comments.

Please do not hesitate to contact us should you require any additional information.

Kind regards,

Nicolene Venter

Public Participation and Social Consultant | Savannah Environmental (Pty) Ltd
Tel: +27 (0)11 656 3237 | Fax: +27 (0)86 684 0547

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physical writing and physically signed by a duly authorised representative of ATNS. All other provisions of the Electronic Communications and Transactions Act, 25 of 2002 are accepted.

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Comments Received during Basic Assessment
Process Phase

publicprocess

From: John Geeringh <GeerinJH@eskom.co.za>
Sent: Monday, April 8, 2019 11:35 AM
To: publicprocess
Subject: RE: AGGENEYS 1 & AGGENEYS 2 SOLAR PV FACILITIES AND ASSOCIATED GRID CONNECTION SOLUTIONS: BASIC ASSESSMENT PROCESS
Attachments: Eskom requirements for work in or near Eskom servitudes SOLAR (3).doc; Renewable Energy Generation Plant Setbacks to Eskom Infrastructure Rev1 - signed.pdf

Please find attached Eskom requirements for works at or near Eskom infrastructure, servitudes and land holdings. Please also find attached the Eskom setbacks document for the required setbacks from Eskom infrastructure. Please send me KMZ files of the affected properties and proposed development areas and grid connection.

Regards

John Geeringh (Pr Sci Nat)
Senior Consultant Environmental Management
Transmission: Land Development and Management
Megawatt Park, D1Y42, Maxwell Drive, Sunninghill, Sandton.
P O Box 1091, Johannesburg, 2000.
Tel: 011 516 7233

Fax: 086 661 4064
E-mail: john.geeringh@eskom.co.za



From: publicprocess [mailto:publicprocess@savannahsa.com]
Sent: 08 April 2019 03:44 AM
To: nicolene@savannahsa.com; mabel@savannahsa.com
Subject: AGGENEYS 1 & AGGENEYS 2 SOLAR PV FACILITIES AND ASSOCIATED GRID CONNECTION SOLUTIONS: BASIC ASSESSMENT PROCESS

Dear Stakeholder,

The development of two separate 100MW solar photovoltaic (PV) facilities and associated infrastructure is proposed on the Remaining Extent of the Farm Bloemhoek 61, located approximately 11km south-east of Aggeneys in the Northern Cape Province. The two solar PV facilities are to be known as Aggeneys 1 and Aggeneys 2, and are situated within the Khâi-Ma Local Municipality, of the greater Namakwa District Municipality.

The project site is located within Zone 8 of the Renewable Energy Development Zones (REDZ) (also known as the Springbok REDZ), and within the Northern Transmission Corridor. The procedure to be followed in applying for environmental authorisation for a large-scale project in a REDZ was formally gazetted on 16 February 2018 (in GN113 and GN114). As Aggeneys 1 and Aggeneys 2 are located within one of the eight REDZ areas, the projects are

subject to a Basic Assessment and not a full EIA process, as well as a shortened timeframe of 57 days for the processing of an Application for Environmental Authorisation.

Savannah Environmental has been appointed to undertake the Basic Assessment Process for the Aggeneys 1 and Aggeneys 2 Solar PV Facilities and Associated Grid Connection Solutions.

Kindly refer to the attached Notification letter, Registration Form and Background Information Document for further information regarding the proposed projects.

Please do not hesitate to contact us if you have any queries in this regard.

Kind regards,



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savannah
environmental

Public Process

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c:

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Eskom requirements for work in or near Eskom servitudes.

1. Eskom's rights and services must be acknowledged and respected at all times.
2. Eskom shall at all times retain unobstructed access to and egress from its servitudes.
3. Eskom's consent does not relieve the developer from obtaining the necessary statutory, land owner or municipal approvals.
4. Any cost incurred by Eskom as a result of non-compliance to any relevant environmental legislation will be charged to the developer.
5. If Eskom has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the developer's activities or because of the presence of his equipment or installation within the servitude restriction area, the developer shall pay such costs to Eskom on demand.
6. The use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's previous written permission. If such permission is granted the developer must give at least fourteen working days prior notice of the commencement of blasting. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued in terms of the blasting process. It is advisable to make application separately in this regard.
7. Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom's satisfaction.
8. Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the servitude area by the developer, his/her agent, contractors, employees, successors in title, and assignees. The developer indemnifies Eskom against loss, claims or damages including claims pertaining to consequential damages by third parties and whether as a result of damage to or interruption of or interference with Eskom's services or apparatus or otherwise. Eskom will not be held responsible for damage to the developer's equipment.
9. No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the developer must give at least seven working days' notice prior to the commencement of work. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued by the relevant Eskom Manager

Note: Where and electrical outage is required, at least fourteen work days are required to arrange it.

10. Eskom's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with.
11. Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The developer shall maintain the area concerned to Eskom's satisfaction. The developer shall be liable to Eskom for the cost of any remedial action which has to be carried out by Eskom.
12. The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by *Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993)*.
13. Equipment shall be regarded electrically live and therefore dangerous at all times.
14. In spite of the restrictions stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), as an additional safety precaution, Eskom will not approve the erection of houses, or structures occupied or frequented by human beings, under the power lines or within the servitude restriction area.
15. Eskom may stipulate any additional requirements to highlight any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom plant.
16. It is required of the developer to familiarise himself with all safety hazards related to Electrical plant.
17. Any third party servitudes encroaching on Eskom servitudes shall be registered against Eskom's title deed at the developer's own cost. If such a servitude is brought into being, its existence should be endorsed on the Eskom servitude deed concerned, while the third party's servitude deed must also include the rights of the affected Eskom servitude.

John Geeringh (Pr Sci Nat)

Senior Consultant Environmental Management
Eskom GC: Land Development

| | | |
|---|-------------|-------------------|
|  | SCOT | Technology |
|---|-------------|-------------------|

Title: **Renewable Energy Generation Plant Setbacks to Eskom Infrastructure** Unique Identifier: **240-65559775**

Alternative Reference Number: **N/A**

Area of Applicability: **Power Line Engineering**

Documentation Type: **Guideline**

Revision: **1**

Total Pages: **9**

Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED DISCLOSURE**

Compiled by



J W Chetty
Mechanical Engineer

Date: *23/11/2018*

Approved by



B Ntshuntsha
Chief Engineer (Lines)

Date: *24/11/2018*

Authorised by



R A Vajeth
Snr Manager (Lines) and SCOT/SCI Chairperson

Date: *16/11/2018*

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EXECUTIVE SUMMARY

In recent decades, the use of wind turbines, concentrated solar plants and photovoltaic plants have been on the increase as it serves as an abundant source of energy. This document specifies setbacks for wind turbines and the reasons for these setbacks from infrastructure as well as setbacks for concentrated solar plants and photovoltaic plants. Setbacks for wind turbines employed in other countries were compared and a general setback to be used by Eskom was suggested for use with wind turbines and other renewable energy generation plants.

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1. INTRODUCTION

During the last few decades, a large amount of wind turbines have been installed in wind farms to accommodate for the large demand of energy and depleting fossil fuels. Wind is one of the most abundant sources of renewable energy. Wind turbines harness the energy of this renewable resource for integration in electricity networks. The extraction of wind energy is its primary function and thus the aerodynamics of the wind turbine is important. There are many different types of wind turbines which will all exhibit different wind flow characteristics. The most common wind turbine used commercially is the Horizontal Axis Wind Turbine. Wind flow characteristics of this turbine are important to analyse as it may have an effect on surrounding infrastructure.

Wind turbines also cause large turbulence downwind that may affect existing infrastructure. Debris or parts of the turbine blade, in the case of a failure, may be tossed behind the turbine and may lead to damage of infrastructure in the wake path.

This document outlines the minimum distances that need to be introduced between a wind turbine and Eskom infrastructure to ensure that debris and / or turbulence would not negatively impact on the infrastructure.

Safety distances of wind turbines from other structures as implemented by other countries were also considered and the reasons for their selection were noted.

Concentrated solar plants and photovoltaic plants setbacks away from substations were also to be considered to prevent restricting possible power line access routes to the substation.

2. SUPPORTING CLAUSES

2.1 SCOPE

This document provides guidance on the safe distance that a wind turbine should be located from any Eskom power line or substation. The document specifies setback distances for transmission lines (220 kV to 765 kV), distribution lines (6.6 kV to 132 kV) and all Eskom substations. Setbacks for concentrated solar plants and photovoltaic plants are also specified away from substations.

2.1.1 Purpose

Setbacks for wind turbines and power lines / substations are required for various reasons. These include possible catastrophic failure of the turbine blade that may release fragments and which may be thrown onto nearby power lines that may result in damage with associated unplanned outages. Turbulence behind the turbine may affect helicopter flight during routine Eskom live line maintenance and

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inspections that may lead to safety risk of the aircraft / personnel. Concentrated solar plants and photovoltaic plants setback away from substations were required to prevent substations from being boxed in by these renewable generation plants limiting line route access to the substations.

2.1.2 Applicability

This document is applicable to the siting of all new and existing wind turbines, concentrated solar plants and photovoltaic plants near power lines and substations.

2.2 NORMATIVE/INFORMATIVE REFERENCES

2.2.1 Normative

1. <http://www.envir.ee/orb.aw/class=file/action=preview/id=1170403/Hiiumaa+turbulence+impact+EMD.pdf>.
2. <http://www.energy.ca.gov/2005publications/CEC-500-2005-184/CEC-500-2005-184.PDF>
3. <http://www.adamscountywind.com/Revised%20Site/Windmills/Adams%20County%20Ordinance/Adams%20County%20Wind%20Ord.htm>
4. http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=PA11R&RE=1&EE=1
5. <http://www.wind-watch.org/documents/european-setbacks-minimum-distance-between-wind-turbines-and-habitations/>
6. <http://www.publications.parliament.uk/pa/ld201011/ldbills/017/11017.1-i.html>
7. http://www.caw.ca/assets/pdf/Turbine_Safety_Report.pdf
8. Rogers J, Slegers N, Costello M. (2011) A method for defining wind turbine setback standards. Wind energy 10.1002/we.468

2.2.2 Informative

None

2.3 DEFINITIONS

| Definition | Description |
|------------|---|
| Setback | The minimum distance between a wind turbine and boundary line/dwelling/road/infrastructure/servitude etc. |
| Flicker | Effect caused when rotating wind turbine blades periodically cast shadows |
| Tip Height | The total height of the wind turbine ie. Hub height plus half rotor diameter (see Figure1) |

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2.3.1 Disclosure Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

| Abbreviation | Description |
|--------------|-------------|
| None | |

2.5 ROLES AND RESPONSIBILITIES

All personnel involved in the positioning wind turbines, concentrated solar plants and photovoltaic plants near power lines/substations must follow the setbacks outlined in this guideline.

2.6 PROCESS FOR MONITORING

Approval by Eskom in writing.

2.7 RELATED/SUPPORTING DOCUMENTS

None

3. DOCUMENT CONTENT

3.1 INTERNATIONAL SETBACK COMPARISON

Wind Turbine setbacks employed by various countries were considered. It was found that setbacks were determined for various reasons that include noise, flicker, turbine blade failure and wind effects. The distances (setbacks) varied based on these factors and were influenced by the type of infrastructure

Wind turbine setbacks varied for roads, power lines, dwellings, buildings and property and it was noted that the largest setbacks were employed for reasons of noise and flicker related issues [1-7]. Very few countries specified setbacks for power lines.

The literature survey [1-7], yielded information about studies and experiments were conducted to determine the distance that a broken fragment from a wind turbine might be thrown. Even though of low probability of hitting a power line [5.0×10^{-5}]^[8], the distances recorded were significant [750m]^[8]

Setbacks were thus introduced to prevent any damage to Eskom infrastructure.

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Wind turbines may also cause changes in wind patterns with turbulent effects behind the hub. These factors dictate the wind turbine setbacks specified in this document.

Concentrated solar plants and photovoltaic plants also can limit access into the substation for power lines of all voltages. A setback distance must therefore be employed to prevent the substation from being boxed in by these generation plants. These setback distances are specified in this document.

3.2 ESKOM REQUIRED SETBACKS

A formal application must be sent to and accepted by Eskom if any of the below mentioned setback distances are infringed upon:

- Eskom requires a setback distance of 3 times the tip height of the wind turbine from the edge of the closest Eskom servitude (including vacant servitudes) for transmission lines (220kV to 765kV) and Substations.
- Eskom requires a setback distance of 1 times the tip height of the wind turbine from the edge of the closest Eskom servitude (including vacant servitudes) for distribution lines (66 kV to 132 kV) and Substations.
- An application must be sent to Eskom regarding any proposed wind turbine, concentrated solar plants and photovoltaic activity within a 5 km radius of a substation for Eskom to comment on the application.
- Where concentrated solar plants and photovoltaic structures fall within a 2 km radius of the closest point of a transmission or distribution substation (66kV to 765kV), Eskom should be applied to for approval in writing during the planning phase of such plant or structures.
- Applicants must not position any wind turbine in the line of site between and two Eskom Radio Telecommunication masts. It must be proven that Eskom radio telecommunication systems (mainly microwave systems) will not be affected in any way by wind turbines.
- If the position or size of any turbine changes and subsequently infringes on any of the above stated setbacks, an application must be sent through to Eskom as per the point mentioned above.

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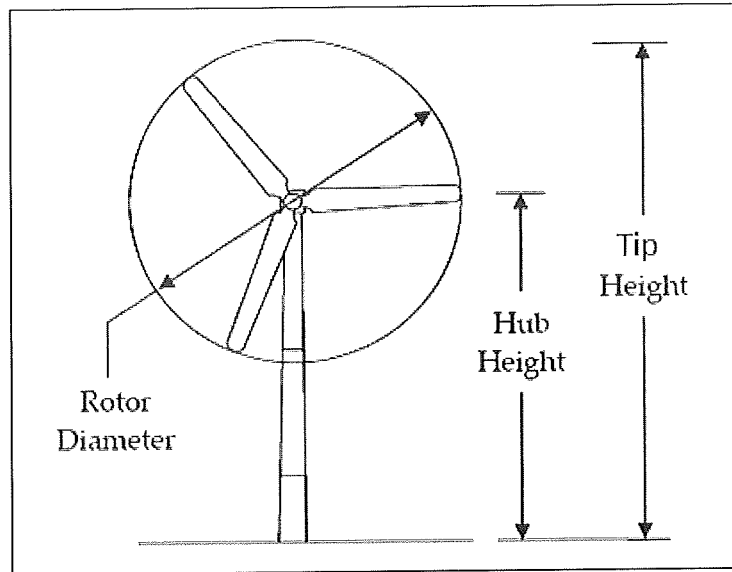


Figure 1: Horizontal Axis Wind Turbine ^[2]

4. AUTHORISATION

This document has been seen and accepted by:

| Name & Surname | Designation |
|------------------|-----------------------------|
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| J Geeringh | Snr Consultant Environ Mngt |
| B Haridass | Snr Consultant Engineer |
| R A Vajeth | Acting Snr Manager (Lines) |

5. REVISIONS

| Date | Rev. | Compiler | Remarks |
|---------------|------|------------|---|
| November 2013 | 0 | J W Chetty | First Publication - No renewable energy generation plant setback specification in existence |
| October 2018 | 1 | JW Chetty | Modification to sub-section 3.2 to provide more clarity for application procedure |

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6. DEVELOPMENT TEAM

The following people were involved in the development of this document:

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