

**Appendix E8 – Correspondence with Organs of State:  
Eskom**

## Vivienne Thomson

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**From:** John Geeringh <GeerinJH@eskom.co.za>  
**Sent:** 27 August 2020 08:41  
**To:** Vivienne Thomson  
**Subject:** RE: Visserspan Solar PV Facilities - Projects 1 to 4

Thank you,  
Regards  
John

---

**From:** Vivienne Thomson [mailto:vivienne@enviroafrica.co.za]  
**Sent:** 26 August 2020 03:11 PM  
**To:** John Geeringh  
**Subject:** Visserspan Solar PV Facilities - Projects 1 to 4

Dear Mr Geeringh

As per the email below, please find attached the combined draft layout drawing for the four proposed ground based, crystalline solar PV facilities proposed on Visserspan Farm No. 40, near Dealesville, Free State Province.

Individual draft layout drawings (per project) are available if required. Please zoom in for drawing details.

Thank you,  
Vivienne Thomson



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Please consider the environment and only print this mail if necessary.

**From:** Vivienne Thomson <vivienne@enviroafrica.co.za>  
**Sent:** 26 August 2020 13:40  
**To:** 'John Geeringh' <GeerinJH@eskom.co.za>  
**Subject:** Proposed Visserspan Solar PV Facilities - Projects 1 to 4

Dear Mr Geeringh

Please find the requested kmz files attached. The four Visserspan projects are all ground based, crystalline, solar PV facilities. The proposed/draft layout drawing for Projects 1 to 4 will be sent in a subsequent email due to possible email file size limitations.

**Please note:** there are no overhead power lines linked to any of these four applications since all electrical cables/evacuation power lines will run underground to a proposed common future sub-station from where evacuated power will tie-in to the Eskom grid. Underground electricity lines from the four Visserspan solar PV facilities only lead up to the proposed future sub-station. The development of the substation and connection to the Eskom grid does not form part of this application. Only if the proponent is successful in the next independent power

producer (IPP) bidding process, will the design and various authorisation processes for construction of the proposed IPP sub-station and above ground pylons (for grid connection) take place.

The proponent has communicated to EnviroAfrica that they have made application for cost estimate letters from Eskom for the near-by Perseus sub-station and initial indicators are that there is enough capacity at Perseus for tie-in.

Should there be any queries please do not hesitate to contact me.

Thank you,  
Vivienne Thomson



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**From:** John Geeringh <[GeerinJH@eskom.co.za](mailto:GeerinJH@eskom.co.za)>

**Sent:** 01 July 2020 08:24

**To:** Vivienne Thomson <[vivienne@enviroafrica.co.za](mailto:vivienne@enviroafrica.co.za)>

**Subject:** RE: Extension: Proposed Visserspan Solar PV Facilities - Projects 1 to 4

Please find attached an Eskom setbacks guideline for consideration during the planning of the Visserspan 1-4 projects. Please also find general comments regarding protection of Eskom infrastructure on the property should such exist. Please send me KMZ files of the affected properties and proposed layouts as well as the proposed Grid connections.

Regards

John Geeringh (Pr Sci Nat)(EAPASA)  
Senior Consultant Environmental Management  
Land and Rights  
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---

**From:** Vivienne Thomson [<mailto:vivienne@enviroafrica.co.za>]

**Sent:** 30 June 2020 10:47 AM

**To:** John Geeringh

**Subject:** Extension: Proposed Visserspan Solar PV Facilities - Projects 1 to 4

Dear I&AP

Please note that the **deadline for comments** on the following developments proposed on Visserspan Farm No. 40, near Dealesville, Free State Province, has been **extended to 19 July 2020**:

Visserspan Solar PV Facility - Project 1 (Ref. No. 14/12/16/3/3/1/2153);  
Visserspan Solar PV Facility - Project 2 (Ref. No. 14/12/16/3/3/1/2154);  
Visserspan Solar PV Facility - Project 3 (Ref. No. 14/12/16/3/3/1/2155);  
Visserspan Solar PV Facility - Project 4 (Ref. No. 14/12/16/3/3/1/2156).

Comments/queries must be made in writing. All documents as, originally made available at the start of this public participation process earlier in March 2020 are still relevant and are also still available on EnviroAfrica's website ([www.enviroafrica.co.za/projects/forpublicparticipation](http://www.enviroafrica.co.za/projects/forpublicparticipation)).

**Please note:** The above stance is in keeping with communication sent to environmental assessment practitioners from the national Department of Environment, Forestry and Fisheries' in relation to project timelines. No further extension, beyond **19 July 2020**, will be made.

Thank you for your active involvement in this process.

Regards,  
Vivienne Thomson



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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.

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 Eskom	SCOT	Technology
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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**

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Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED DISCLOSURE**

Compiled by	Approved by	Authorised by
		
<b>J W Chetty</b> <b>Mechanical Engineer</b>	<b>B Ntshuntsha</b> <b>Chief Engineer (Lines)</b>	<b>R A Vajeth</b> <b>Snr Manager (Lines) and SCOT/SC/ Chairperson</b>
Date: <i>23/11/2018</i>	Date: <i>23/11/2018</i>	Date: <i>16/11/2018</i>

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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](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](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 [ $5.0 \times 10^{-5}$ ]<sup>[8]</sup>, the distances recorded were significant [750m]<sup>[8]</sup>

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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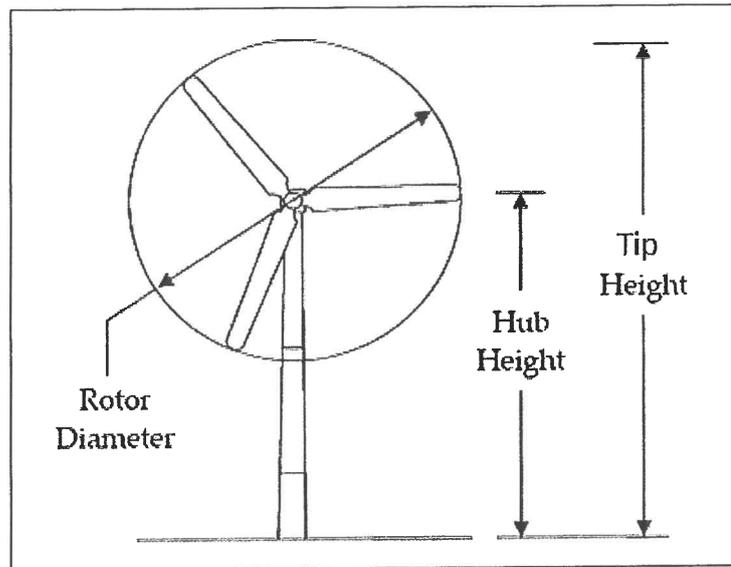


Figure 1: Horizontal Axis Wind Turbine <sup>[2]</sup>

**4. AUTHORISATION**

This document has been seen and accepted by:

Name & Surname	Designation
V Naidoo	Chief Engineer
Dr P H Pretorius	Electrical Specialist
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:

Jonathan W Chetty (Mechanical Engineer)

Vivendhra Naidoo (Chief Engineer)

Dr Pieter H Pretorius (Electrical Specialist)

John Geeringh (Snr Consultant Environ Mngt)

Bharat Haridass (Snr Consultant Engineer)

Riaz A Vajeth (Acting Snr Manager (Lines))

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## Vivienne Thomson

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**From:** Vivienne Thomson <vivienne@enviroafrica.co.za>  
**Sent:** 09 March 2020 17:13  
**To:** 'teselial@eskom.co.za'  
**Subject:** Proposed Visserspan Solar PV Facilities - Projects 1 to 4

Dear Interested and Affected Party (I&AP)

You have been registered as an I&AP for the four above-mentioned proposed projects.

Please note that the draft basic assessment reports (DBARs) are now available for comment:

1. Cd copies of the DBAR for each of the four projects have been posted to you (if you provided a postal address).
2. Hardcopies of the four DBARs, have been couriered to BKB Dealesville for public viewing.
3. All documentation for the DBARs are also available on EnviroAfrica's website at [www.enviroafrica/projects/forpublic participation](http://www.enviroafrica/projects/forpublic%20participation) then scroll down to [Visserspan Solar Facility - Project \(number\) DBAR](#).

Should you have any comments queries or concerns regarding any of the projects, please notify EnviroAfrica in writing by **15 April 2020**, at the contact details below.

Please also inform and encourage any other parties you feel may be interested in, or affected by, the proposed developments, to register as part of this process. Future correspondence will be sent to registered I&APs.

I trust everything is in order and look forward to your valued input.

Thank you,  
Vivienne Thomson



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