

DISSELFONTEIN, PORTION OF PORTION 8 FARM77: SOLAR ENERGY FACILITY

VISUAL ASSESSMENT ADDENDUM A

For consideration in the Basic Assessment

For

EnviroAfrica

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Addendum A (March 2017) to original Report (2012)

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Report history:

Version	Date	Amendments
Draft Report: Version 1	26 March 2012	
Final Report	11 May 2012	
Addendum	18 March 2017	

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Relevant Qualifications & Experience of the Author

Ms Sarien Lategan holds a Honours Degree in Geography as well as a Masters Degree in Town and Regional Planning from the University of Stellenbosch. She has 7 years experience as Town planner at a local government, 3 years with South African national Parks as planner and project manager of various GEF and World Bank managed, tourist facilities in the Table Mountain National Park and since 2004 as private practitioner involved in inter alia Site Analysis and Visual Impact assessments for various types of developments ranging from housing, tourism to infrastructure developments.

Ms Lategan is registered as a professional Town and Regional Planner as well as Environmental Assessment Practitioner.

Declaration of Independence

I, Sarah C. Lategan, fully authorized by Geostratics CC, declare that I am an independent consultant to EnviroAfrica and neither myself nor Geostratics, has any business, financial, personal or other interest in the proposed project or application in respect of which I was appointed, other than fair remuneration for work performed in connection with the application. There are furthermore no circumstances which compromise my objectivity in executing the task appointed for.



SC Lategan

EXECUTIVE SUMMARY

Sarien Lategan of Geostratics was appointed to undertake the visual impact assessment of a maximum 10Megawatt solar facility, as input to the Basic Assessment in terms of the National Environmental Management Act, 1998 (Act no. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010 by undertaken EnviroAfrica. The development of the solar farm is proposed by Keren Energy (Pty) Ltd. The site on which the facility is planned comprises a portion of Farm 8/77, Disselfontein in the Hopetown district.

An environmental authorization was obtained but has since expired. A new application will now be submitted for which the original VIA needs to be re-assessed to accommodate any changes that may have occurred since the original assessment as well as include an assessment of cumulative impacts. This report serves as an addendum to the original VIA for this purpose and should be read with the original report.

At the time of the original assessment a final decision was not yet been taken on the exact technology or mix of technology to be used in the development and therefore the worst case scenario was followed by assessing the technology most probably going to have the highest visual impact in terms of size of structures. For the purposes of the original study thus, tracking CPV units of dimensions 15,64m in height and 17m wide has been assessed. The technology currently proposed comprise single axis tracking system with a max tilt of 50°. This setup results in infrastructure to be significantly lower than the units assessed in the original VIA and therefore has a significant lower visual impact.

The overall conclusion in the original assessment was that the visual impact is within acceptable levels and could thus be recommended. Due to the nature of the type of technology, little mitigation measures can be implemented to further reduces any potential visual impacts. With the technology now proposed the visual impact is even further reduced.

With regard to cumulative impacts it is concluded in this addendum that no significant cumulative visual impacts will arise from the development and it is thus within the acceptable level of change.

It can thus be concluded that the overall visual impact of the new application is similar and even slightly less than the original proposal and from a visual perspective can be considered for approval. No additional mitigation measures are required.

1 OBJECTIVE

In 2012, Sarien Lategan of Geostratics was appointed to undertake the visual impact assessment of a maximum 10Megawatt solar facility, as input to the Basic Assessment in terms of the National Environmental Management Act, 1998 (Act no. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010 by undertaken EnviroAfrica. The development of the solar farm is proposed by Keren Energy (Pty) Ltd. The site on which the facility is planned comprises a portion of Farm 8/77, Disselfontein in the Hopetown district

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The objective of this addendum is to access changes that occurred since the original VIA and the subsequent impact thereof on the recommendations. It will futher more also assess the cumulative impacts of the proposal.

The changes that may have occurred includes the following:

1. Changes in the proposal namely -
 - a. Site boundary
 - b. Extent of solar production
 - c. Technology
2. Changes in the receiving environment

Cumulative impact holds two components namely the visual catchment area of assement and the criteria as defined by the DEA guideline on cumulative impacts.

It is important to note that the original VIA did assess impacts within the normal visual sphere of observation namely 30km.

2 CHANGES IN PROPOSAL

2.1 Site Boundary

The site boundary has changed slightly but no to the effect that it will change the assessment of the receptors as per the original report. Therefore the previous assessment of receptors remains unchanged.



Figure 1: Site boundary

2.2 Extend of solar production

The proposal has been changed from the assessed extent of 10MW to a final proposal of 5MW. The footprint area however remains the same. The visual impact is thus similar to the original proposal.

2.3 Proposed Technology

At the time of the original assessment a final decision was not yet been taken on the exact technology or mix of technology to be used in the development and therefore the worst case scenario was followed by assessing the technology most probably going to have the highest visual impact in terms of size of structures. For the purposes of the original study thus, tracking CPV units of dimensions 15,64m in height and 17m wide has been assessed.

The technology currently proposed, comprise is a crystalline PV single axis plant. It has 18540 solar modules connected to 7 central inverters, and makes use of Exosun single axis trackers. The facility will be connected to Eskom's Ouplaas Substation.

This proposal result in significant downscale in the size of infrastructure being less intrusive. The original proposal comprise units of up to 6m in height where the PV single axis system is approximately 2m.

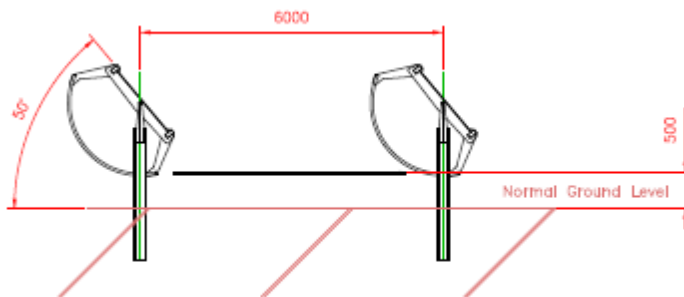


Figure 2: Single axis mounting system

No changes is made to the 22kV connector lines to the substation adjacent the proposal site. No changes has been made to site parameter fencing and type of access roads.

The new proposed technology therefor reduce the visual impact with regard to the production technology and remains similar with regard to the connection lines.

3 CHANGES IN RECEIVING ENVIRONMENT

The only change in the receiving environment is the road that has been tarred which may imply that it will carry more traffic in future. This does increase the frequency of exposure slightly but not to the extend that it will change the original assessment of the site. The original assessment conclusion to this effect thus remains unchanged.

4 CUMULATIVE IMPACTS

4.1 Methodology

Cumulative effects occur when:

- Impacts on the environment take place so frequently in time or so densely in space that the effects of individual impacts cannot be assimilated; or
- The impacts of one activity combine with those of another in a synergistic manner

DEAT has issued a guideline which identify types and characteristics of different cumulative effects.¹ Table 1 below summarise these criteria and these have been used to assess the cumulative visual impact.

Table 1: Types and characteristics of cumulative impacts

TYPE	CHARACTERISTIC
Time Crowding	Frequent and repetitive effects.
Time Lags	Delayed effects.
Space Crowding	High spatial density of effects.
Cross-boundary	Effects occur away from the source.
Fragmentation	Change in landscape pattern.
Compounding Effects	Effects arising from multiple sources or pathways.
Indirect Effects	Secondary effects.
Triggers and Thresholds	Fundamental changes in system functioning and structure.

DEAT also require that cumulative impacts of all energy projects within a 30km radius be assessed.

4.2 Assessment of cumulative impacts

4.2.1 Time Crowding

With regard to construction, should the other proposed projects in the area be undertaken at the same time the construction activities can cause increased level of such activities. However this is only temporary. There are futhermore only 2 other PV sites within a 30km radius and thus the impacts will be limited. It is unclear what the construction of a prposed hydro facility will entail but the construction extent of the application PV site will be far less than that of the hydro facility. The fact that the road has been tarred will futher reduce the impact on the area as less dust will be experienced.

With regard to operational visual impact of a static land use change as proposed, this aspect is not relevant.

4.2.2 Time Lags

The facility does not change in its visual appeal over time and therefore there are no visual time lag effects.

4.2.3 Space crowding

The area is characterized by a flowing topography of low rises just outside the valley corridor. More hills and ridges occur closer to the river. The plain area however display such a level of gradient that present a fairly high level of absorption and view is on average restricted to the immediate environment and seldom more than 5km. The human eye can observe the horizon on a perfectly flat surface up to 30km. The Disselfontein area however displays sufficient gradient variations to restrict this view significantly, mostly below 2km. (Refer Figure 3 below)

This thus concluded that the catchment area does not extent to the 30km radius. (Refer Figure 4 below) However a traveller through the landscape may experience the other two energy facilities within this radius and generally within a timeframe of 30min. The R369 pass two solar facilities to the southeast and a potential facility to the northwest. A traveller will thus experience a number of solar sites on his journey through the landscape but since they are approximately 15km apart it is sufficient to provide a flow in variation. The topography of the landscape also absort the sites and prevent crowding within the space.

¹ DEAT (2004) Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DEAT), Pretoria

4.2.4 Cross Boundary

From a visual perspective the site has no cross boundary impacts.

4.2.5 Fragmentation

The site is adjacent an existing substation and due to the small extent of the proposed development will not pose a significant impact on fragmentation of the landscape. It is unclear what infrastructure is proposed for the Hydro electric facility. Such facility is however significantly larger and may have a higher level of fragmentation to the landscape as it extends from the road to the river. The level of fragmentation by the solar facility is low and within acceptable level of change.

4.2.6 Compounding Effects

From a visual perspective the site has no compounding impacts.

4.2.7 Indirect Effects

The development enlarge the current substation enclave and does has the potential to attract further development. The support services anticipated should however be of low impact such as general maintenance services as the facility does not require large scale industrial maintenance systems of equipment. The anticipated indirect visual effects are thus insignificant.

4.2.8 Triggers and Thresholds

From a visual perspective the site has no impacts on Triggers and Thresholds.

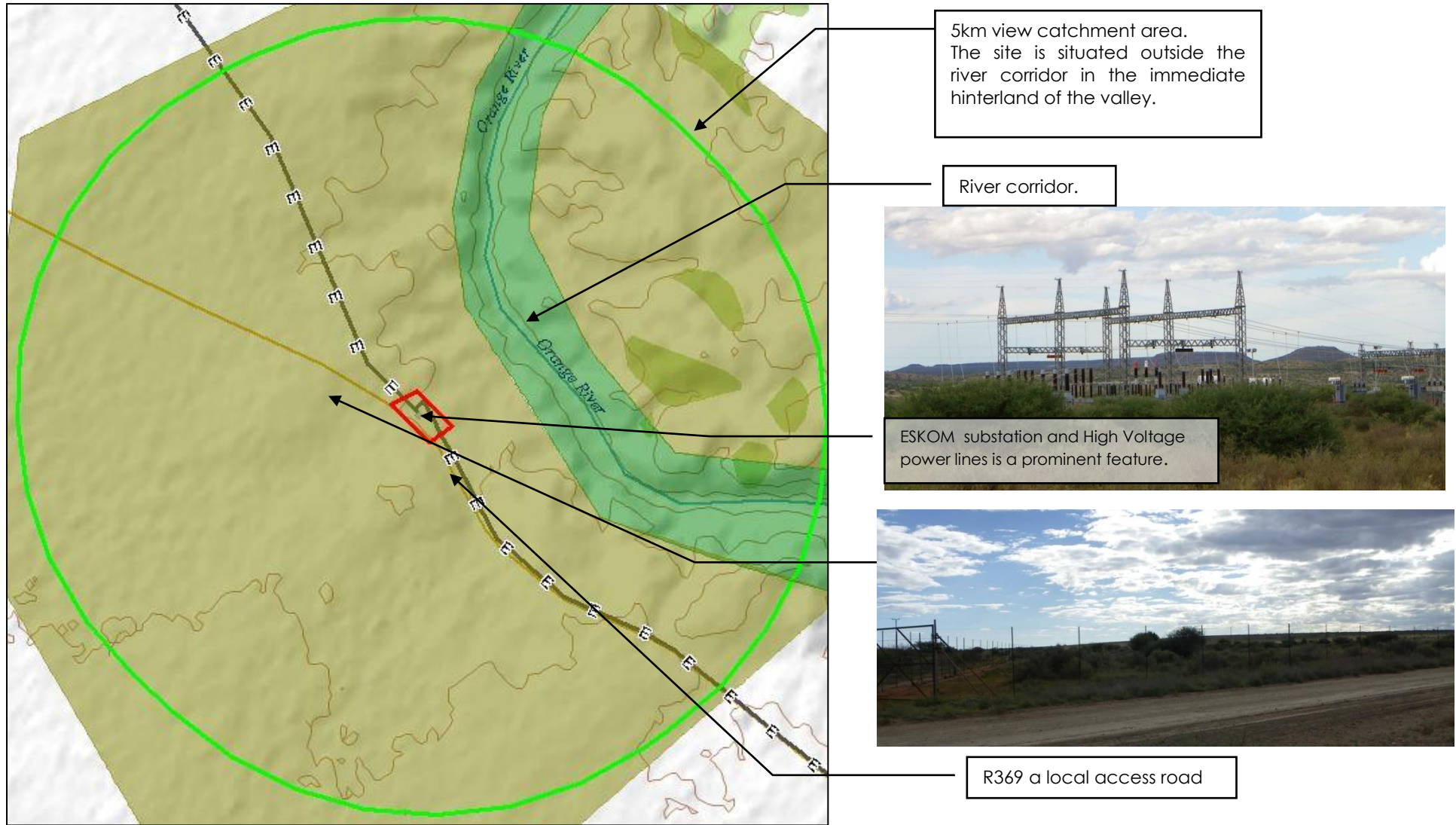


Figure 3: View catchment and site elements

5 FINDINGS AND CONCLUSIONS

5.1 Construction Impacts

During construction, various large earth moving equipment and equipment will be transported to the site and work on the site. This will impact on the general experience of viewers. This impact is however temporary and not uncommon during construction of infrastructure. Communities have fairly high tolerance levels for such activities if it contributes to the infrastructure of the area.

Rating: Low

5.2 Operational Impacts

The site is situated in an area with a rural character. The immediate area however do host an electrical substation and HV lines. The solar farm will thus change the character of the immediate environment. The view catchment is however small due to topographical variations. The landscape has a medium absorption rate which reduces the significance of land use change.

The R369 will be exposed to the site, but the impact is of short duration and linked to existing similar infrastructure namely the substation and HV lines. The short duration of view reduce the significance of impact.

As the PV units are planned next to the substation, the transmission lines will be on-site and not add any additional off-site visual impact to the development

The facility has a high exposure when the viewer is within approximately 1km of the site. The duration of view is however short as the viewer travel passes the site. The change in technology reduce the intrusion level of the proposal and thus result in a lower overall impact than the original proposal. Therefore the new proposal does not present an unacceptable level of change to the visual environment and therefore the development can be recommended.

Due to the locality of the units on the same site as the substation, the transmission lines will have very little additional impact on the current land use and thus visual appearance.

The proposal does not present an unacceptable level of change to the visual environment and therefore the development can be recommended.

Statement 1: The property on which the development is proposed, is currently used for substation and HV Power lines but the surrounding area has a rural character. The proposed solar farm will change the character of the immediate surrounds but within acceptable levels of change.

Statement 2: The new technology reduces the visual impact.

Statement 3: The proposal does not pose any significant cumulative visual impacts which would deem the proposal unacceptable.

6 MITIGATION MEASURES

The nature of the development is such that very little mitigation measures is required. A vegetation strip between the road and the solar facility provides soft boundary and this vegetation strip should be retained.