

# DANIELSKUIL, PORTION ERF 753: SOLAR ENERGY FACILITY

## VISUAL ASSESSMENT ADDENDUM A

For consideration in the Basic Assessment

For

EnviroAfrica

PO Box 5367

Helderberg

7135

info@enviroafrica.co.za

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

Compiled by:

S.C. Lategan



PO Box 1082

Strand

7139

### Report history:

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

## CONTENT

1	OBJECTIVE .....	1
2	CHANGES IN PROPOSAL .....	1
2.1	Site Boundary .....	1
2.2	Extend of solar production.....	2
2.3	Proposed Technology.....	2
3	CHANGES IN RECEIVING ENVIRONMENT .....	2
4	CUMULATIVE IMPACTS .....	2
4.1	Methodology.....	2
4.2	Assessment of cumulative impacts.....	3
4.2.1	Time Crowding .....	3
4.2.2	Time Lags.....	3
4.2.3	Space crowding.....	3
4.2.4	Cross Boundary .....	3
4.2.5	Fragmentation .....	4
4.2.6	Compounding Effects .....	4
4.2.7	Indirect Effects .....	4
4.2.8	Triggers and Thresholds .....	4
5	FINDINGS AND CONCLUSIONS .....	7
5.1	Construction Impacts .....	7
5.2	Operational Impacts.....	7
6	MITIGATION MEASURES.....	7

### Tables

Table 1: Types and characteristics of cumulative impacts.....	3
---	---

### Figures:

Figure 1: Site boundary.....	1
Figure 2: Single axis mounting system.....	2
Figure 3: View catchment .....	5
Figure 4: 30km Radius & other energy projects .....	6

**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 Erf 753, Danielskuil opposite the Indwala Lime mine.

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 Erf 753, Danielskuil opposite the Indwala Lime mine.

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.

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 further 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 remains unchanged.

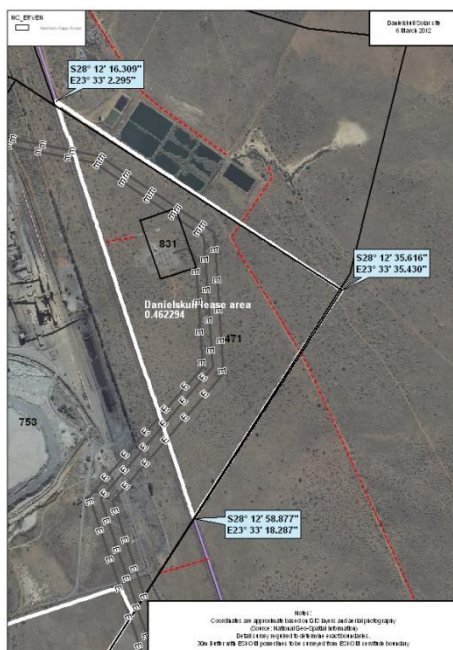


Figure 1: Site boundary

## 2.2 Extend of solar production

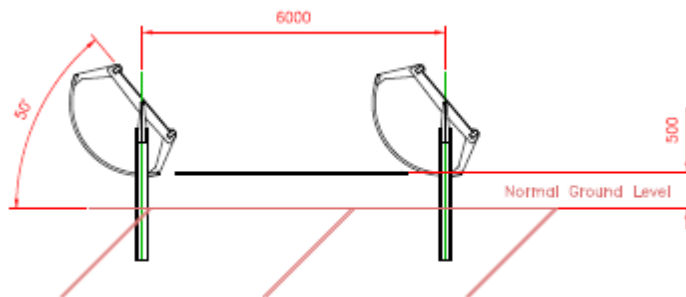
The proposal has been changed from the assessed extent of 10MW to a final proposal of 5MW. The footprint area however remains the same. The visual impact is thus similar to the original proposal.

## 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 within the boundaries of 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

No changes has occurred within the receiving environment resulting in no additional visual receptors. The original assessment conclusion to this effect thus remains unchanged.

## 4 CUMULATIVE IMPACTS

### 4.1 Methodology

Ccumulative 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.<sup>1</sup> 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 various 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 and due to the mining character of the region, the tolerance level of the receiving community is fairly high.

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 landscape consist a fairly flat plain interspersed with occasional low hills. The town to the north is situated on the lower slopes of a hill and face south towards the site.

The hills to the north and northwest restrict the catchment area to the slopes of these hills which are closer than 5km from the site. Due to the undulating landscape to the south and east, the catchment area is restricted to approximately 5km. (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 a number of energy facilities within this radius and generally within a timeframe of 30min. The R385 traverse through a number of proposed energy production sites in the direction of Postmansburg. The Danielskuil site is however screened from the R385 and does not add to space crowding on this route. The site is only exposed to the R31 and no other energy sites are located on this route. The effect of space crowding is thus extremely low and of no significant importance.

### 4.2.4 Cross Boundary

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

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

#### **4.2.5 Fragmentation**

The site is within the confines of an urban and industrial area and does not pose any visual fragmentation of the landscape.

#### **4.2.6 Compounding Effects**

From a visual perspective the site has no compounding impacts.

#### **4.2.7 Indirect Effects**

The development strengthen the industrial character of the immediate area and may result in support services developing in the vicinity. 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.



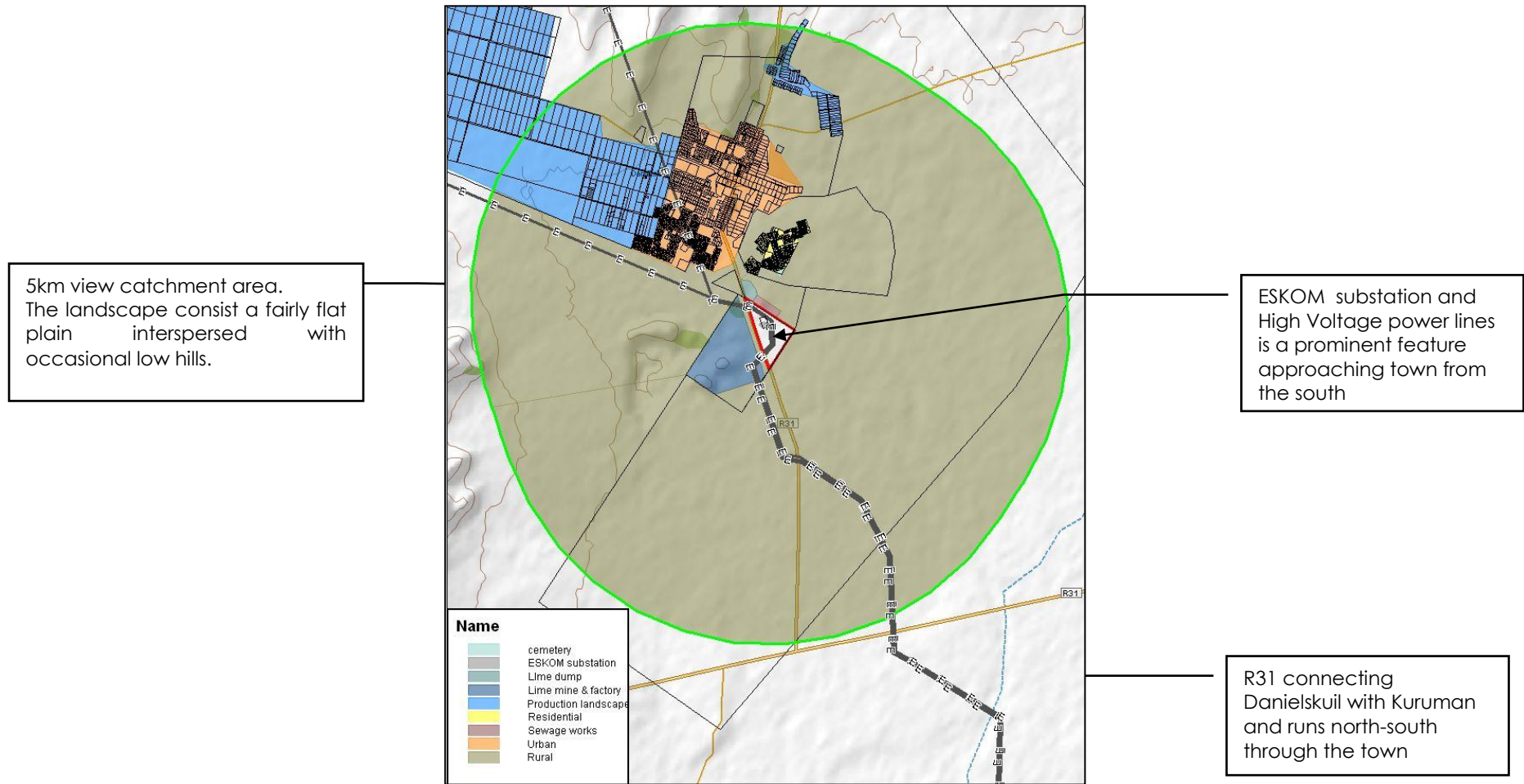


Figure 3: View catchment

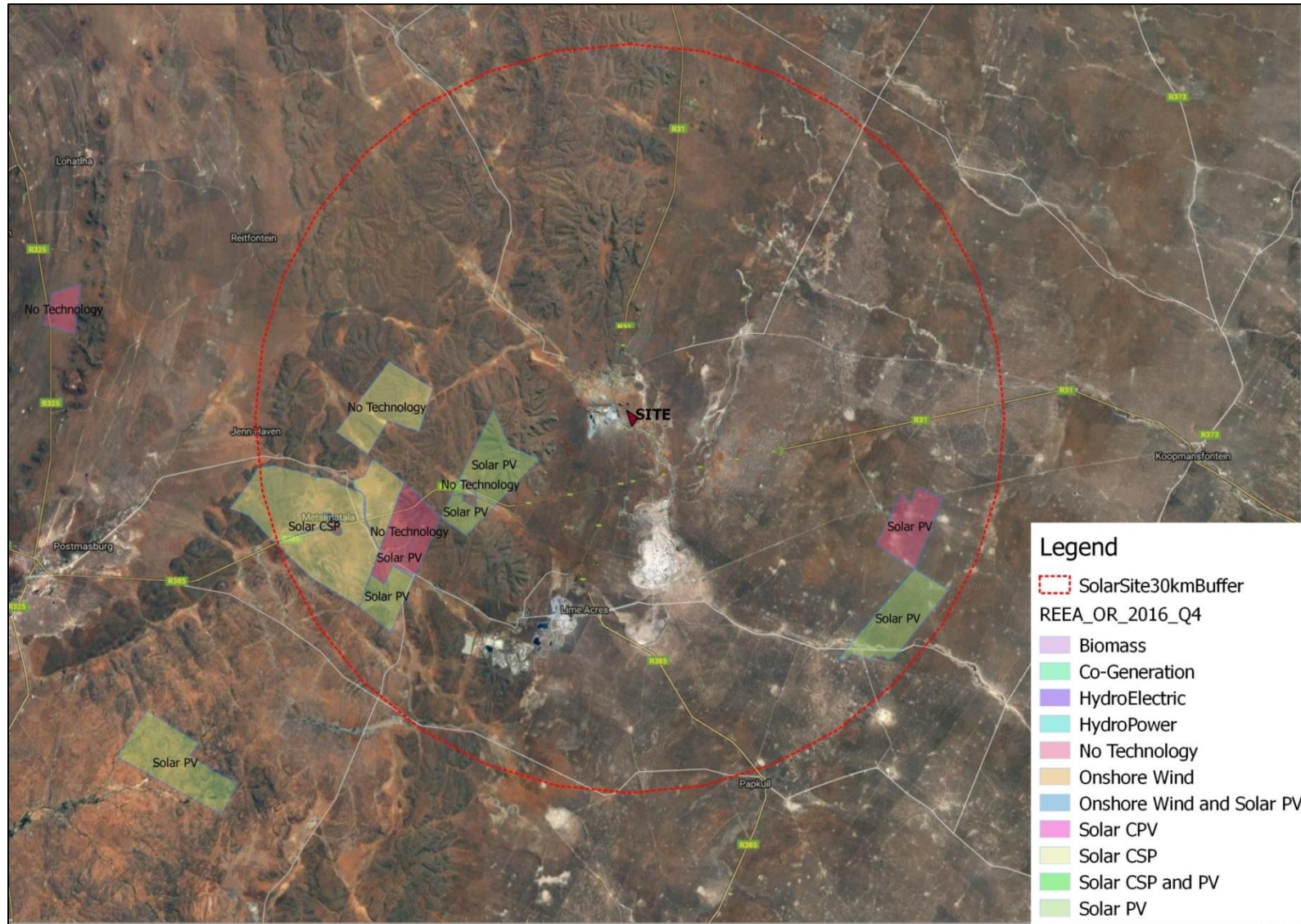


Figure 4: 30km Radius & other energy projects

## 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 proposed site is situated within the urban edge zone of Danielskuil in an area characterized by industrial type buildings and large infrastructure. The larger area reflects the characteristics of a rural to urban landscape and the site is situated within this land use continuum.

The area is characterized by a flowing topography of low rises on a large plain. It is interspersed with occasional low hills. 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 Danielskuil area however displays sufficient gradient variations to restrict this view significantly.

The site is situated in an area characterized by industrial type building, mine and utility land uses. The site has a high absorption capacity due to the presence of existing land use.

The sensitive receptors namely the monument and residential areas are situated such that the exposure to the site and the intrusion level is low, thus creating a low overall visual impact.

The less sensitive receptor namely the R31 will be more exposed to the site, but the impact is in character with the surrounding and thus of less significance.

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 a range of utility type of land use as well as large scale mining and therefore the proposed solar farm seem to be in character with these elements.

**Statement 2:** Due to the medium absorption capacity of the landscape, the development will easily be absorbed into the existing visual structure.

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

## 6 MITIGATION MEASURES

The level of visual impact is of such level that no mitigation to the proposed on-site development elements necessary, but in order to avoid any potential glare impacts of the R31 southbound, it can be considered to provide a soft screening along the road of height between 1,2 -1,8m.