

The Humansrus site is in a rural area of the Northern Cape, with mainly farming activities, including cattle, sheep, horses and some game. The solar energy facility, together with the electrical substation, would create an industrial-type feature in the semi-open bushveld landscape. The solar arrays, used for generating solar power, would be visible from the R385 arterial road and the D3381 local district road, as well as from several farmsteads.

The visual impact will be largely limited to the operation phase, although aspects of the Solar Farm will become visible during the construction phase and large machinery will be visible on site as soon as site preparation begins.

The visual impacts will be perceived by two types of receptors during the operational phase, namely:

- receptors located at a fix point, i.e. dwelling on the site and surrounding areas; and
- receptors that will temporarily come into contact with the Solar Farm, such as passing motorists and tourists in the area.

The potential visual impacts are summarised in *Table 10.1*.

Table 10.1 *Impact characteristics: Visual Impacts*

| Summary | Construction | Operation |
|----------------------------------|--------------|--|
| Project Aspect/ activity | N/A | Operation of the REF |
| Impact Type | N/A | Direct negative |
| Stakeholders/ Receptors Affected | N/A | Affected landowners, neighbouring land owners, road users, visitors to the area. |

10.1

VISUAL ASSESSMENT CRITERIA

The potential visual impacts of the Solar Farm are used to determine using a series of quantitative and qualitative criteria. These are rated to determine both the expected level and significance of the visual impacts (Oberholzer et al, 2010).

Table 10.2 below describes the visual assessment criteria in relation to the proposed Humansrus Solar Farm.

Table 10.2 *Criteria used to Assess Visual Impacts*

| Criteria | Description | Comment |
|----------------------------|--|--|
| View Points | View points are selected based on prominent viewing positions in the area, where uninterrupted views of the proposed site could be obtained. | The proposed facilities would be potentially visible from the R385 arterial road, and a number of surrounding farmsteads. |
| Visibility | Determined by the distance between the Solar Farm and the viewer. | Degrees of visibility in relation to distance for the solar arrays tend to vary from clearly visible at 0-1km to not visible at all at 4km, based on field observations and photographic panoramas |
| Visual Exposure | Determined by the geographical features of the area surrounding the site. Certain areas may fall within view shadows, where geographical features intervene with the line of sight from the REF to the receptor. | The viewshed boundary tends to follow ridgelines and high points in the landscape. Some areas within the view catchment area fall within a view shadow, and would therefore not be affected by the proposed energy facilities. The zone of visual influence of the solar arrays at Humansrus tends to fall mainly within a 2km radius. |
| Visual Sensitivity | Determined by the presence of topographical features, steep slopes, rivers, protected areas, scenic routes or airfields. | At Humansrus, there do not seem to be any landscape features of importance, except for the small stream in the base of the valley. |
| Landscape Integrity | Determined by the lack of other visual intrusions. | The Humansrus site has an existing Eskom power line, a railway line and some excavations as visual intrusions in the rural landscape |
| Visual Absorption Capacity | This is the potential for the landscape to screen or absorb the Solar Farm. | Given the modest height of the solar arrays (± 3 m), some screening by trees along roads or farm boundaries would be possible. |

Table 10.3 *Visibility of the PV arrays*

| Degree of Visibility | Comments | Distance |
|-----------------------------|--|-----------------|
| Highly Visible | Clearly noticeable within the observers' viewframe | 0 - 1 km |
| Moderately Visible | Recognisable feature within observer's viewframe | 1 - 2.5 km |
| Marginally Visible | Not particularly noticeable within observer's viewframe | 2.5 - 4 km |
| Hardly Visible | Practically not visible unless pointed out to the observer | 4 km + |

Figure 10.1 View Points and Distance Radii

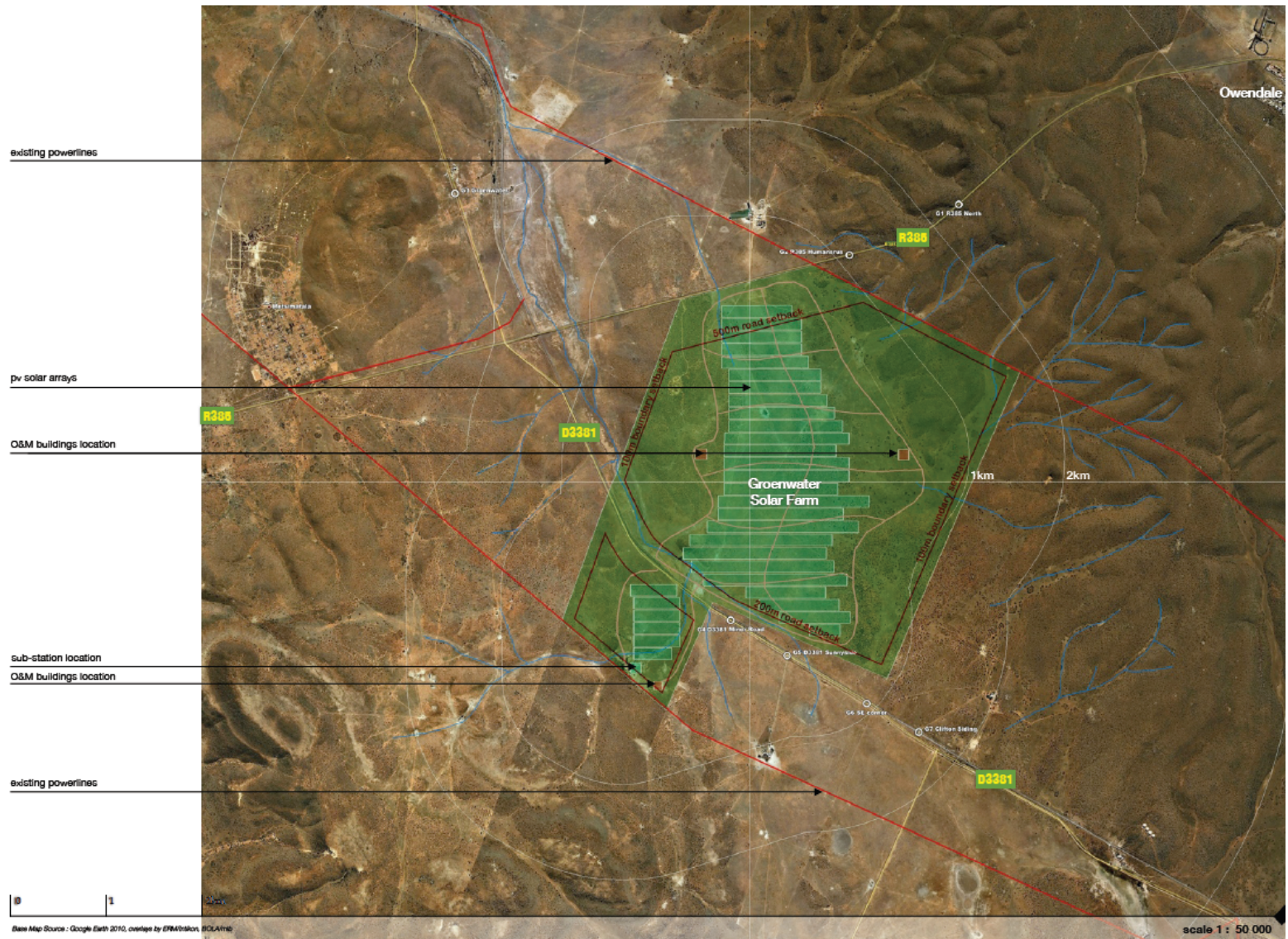
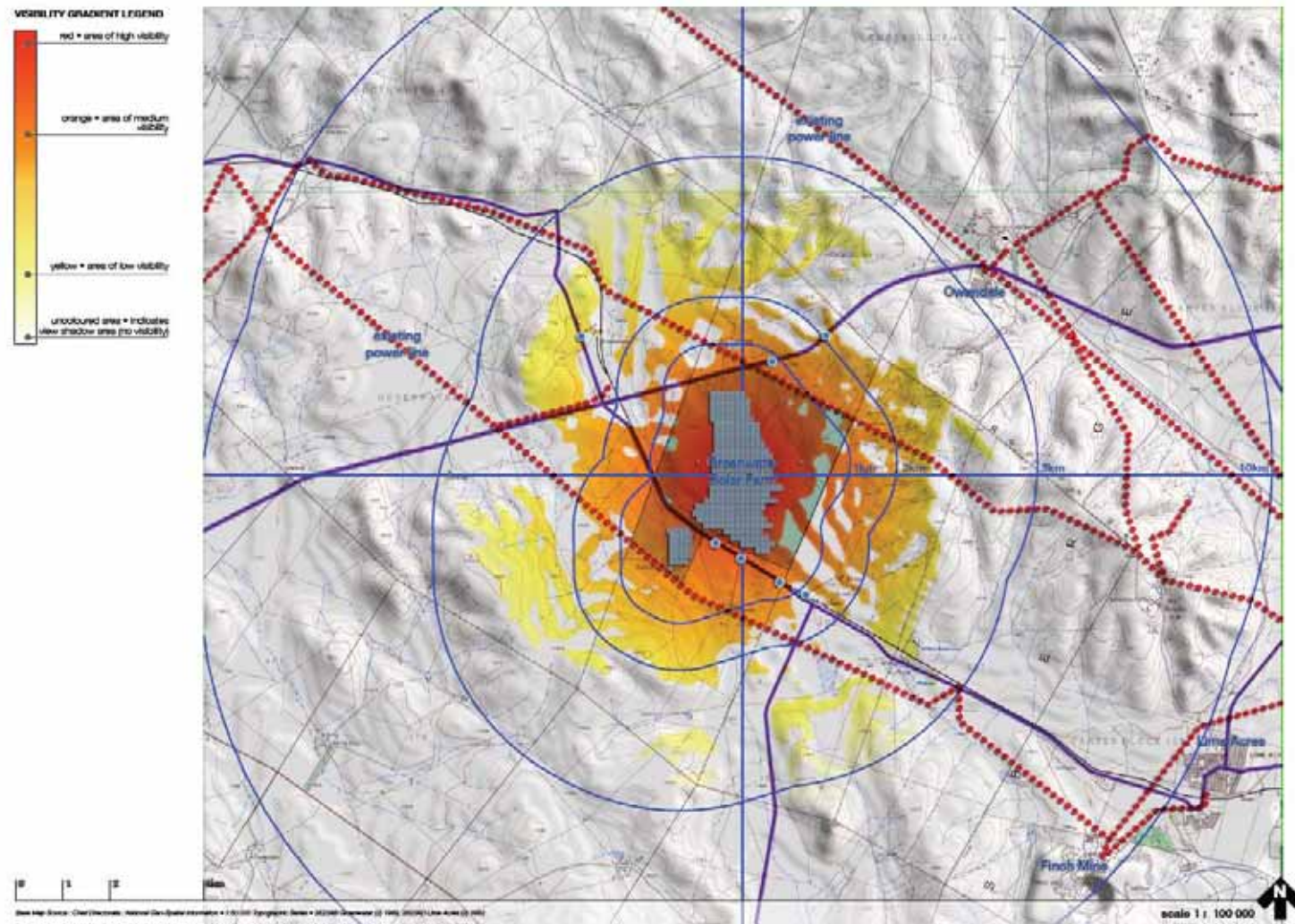


Figure 10.2 View shed for the proposed Humansrus Solar Farm ⁽¹⁾



(1) Previously known as the Groenwater Solar Power Farm

10.2 VISUAL IMPACT

10.2.1 Impact Description and Assessment

The following discussion and integrated assessment of the visual impacts associated with the proposed Humansrus Solar Farm is based on the detailed specialist visual impacts assessment contained in *Annex F* of this report.

The visual assessment indicates that the potential visual impacts for the proposed solar energy facility would be medium to high before mitigation and medium after mitigation. Visual impacts for associated infrastructure and the substation would be moderate before mitigation, and moderate to minor after mitigation for the buildings, but remain medium for the substation (see Table 8 in *Annex F*).

Cumulative visual impacts are not considered to be significant as no other energy facilities are proposed in the general area, and no future expansion of the Intikon solar energy facility is planned at this stage. However, the addition of a substation and power lines would result in some cumulative visual impacts.

The construction of the Solar Farm at Humansrus may alter the visual character of the landscape, as these features are in contrast to the rural surrounding landscape.

Given that the area is not a pristine landscape, with mining activities in the general area, that there are no important scenic or tourist resources, that the area is sparsely populated and that there are already Eskom power lines and a railway line across the site, it is not believed that the proposed solar energy facility would constitute a fatal flaw in terms of visual and landscape considerations, provided that the mitigation measures are adopted.

It is important to note that whether the visual impact is seen as positive or negative is highly subjective, and people's attitude towards and perception of the visual impacts associated with the Solar Farm may differ vastly.

Table 10.3 *Potential Visibility from Surrounding View points*

| View Pt | Location | Distance | Comments |
|---------|----------------------------------|----------|---|
| G1 | R385 northern approach | 2.0km | Moderately visible from main arterial road. Partly obscured by ridge. |
| G2 | R385 opp. Humansrus Farm | 0.8km | Highly visible from main arterial road. |
| G3 | Groenwater settlement | 3.0km | In view shadow. Obscured by ridge |
| G4 | D3381 minor road | 0.3km | Highly visible in foreground. |
| G5 | D3381 opp. Sunnyside Farm | 0.3km | Highly visible in foreground. |
| G6 | D3381 opp. SE corner of the site | 0.8km | Highly visible. Partly obscured by ridge. |
| G7 | D3381 at Clifton rail crossing | 1.3km | Largely obscured by ridge. |

Box 10.1 *Operational Impact*

Nature: Operational activities would result in a **negative direct** impact on the visual landscape in the area surrounding the site.

Impact Magnitude Medium-High

- **Extent:** The extent of the impact is **local**, as the facility will be hardly visible beyond 15km from the site.
- **Duration:** The duration would be **long-term** since it will persist for as long as the facility remains operational.
- **Intensity:** The intensity will be **high**, as the REF will be highly visible from the main road on site but it will not be visible from surrounding dwellings.

Likelihood - There is a **definite** likelihood that this impact will occur.

IMPACT SIGNIFICANCE (PRE-MITIGATION) MODERATE - MAJOR (-VE)

Degree of Confidence: The degree of confidence is **HIGH**.

10.2.2 *Mitigating Visual Impacts*

Given the large footprint of the proposed solar energy facility, (4.5km²), it would be difficult to mitigate. However, a number of mitigations have been recommended, which could slightly reduce the visual impact significance.

Design Phase

The following are recommended as essential mitigation measures to reduce the visual impact ratings, based on criteria listed in *Table 10.2*:

- Visual buffers of 500 m for the solar arrays, substation and maintenance buildings from the R385 arterial road, 200 m from the D3381 secondary road, and 100 m from external farm boundaries.
- Cables to be located underground as far as possible, particularly where these cross the D3381 secondary road.
- The substation, which has a high degree of visual intrusion, to be screened from roads by the related buildings and/or tree planting.
- The maintenance and storage buildings to be clustered as far as possible, with one complex in the northern portion of the site and another, if necessary, in the southern portion. These should be located in low-lying areas and not on the hill slopes.
- The design of the buildings to be compatible in scale and form with rural buildings of the surrounding area. All yards and storage areas to be enclosed by masonry walls.
- The colour of the solar array structures, such as the supports and the rear of the panels, to be carefully selected, and to be in the dark grey or green range, to minimise visibility and avoid reflectivity.

- Signage related to the development to be discrete and confined to the entrance gates. No other corporate or advertising signage, particularly billboards, to be permitted.
- External lighting should be confined to the substation and maintenance buildings. Lights should be low-level and fitted with reflectors to avoid light spillage.

Construction Phase

- The construction camp, material stores and lay-down area should be screened as far as possible from the local roads, possibly in the vicinity of the proposed substation and maintenance buildings.
- The extent of the construction camp and stores should be limited in area to only that which is essential.
- Disturbed areas rather than pristine or intact landscape areas should preferably be used for the construction camp.
- Measures to control wastes and litter should be included in the EMP and contract specification documents.
- Provision should be made for rehabilitation/ re-vegetation of areas damaged by construction activities.
- Borrow pits for the construction (which have not been identified), would be subject to permits from the relevant authorities.

Operational Phase

- The footprint of the maintenance facilities, as well as parking and vehicular circulation, should be clearly defined, and not be allowed to spill over into other areas of the site.
- The maintenance and storage areas should be screened by buildings, walls, hedges and/or tree planting, and should be kept in a tidy state to minimise further visual impact.

10.2.3 Residual Impact

Providing the proposed mitigation measures are implemented, the visual impact can be reduced from moderate-major native to moderate negative (see *Table 10.4*)

Table 10.4 Pre- and Post-Mitigation Significance: Visual Impact

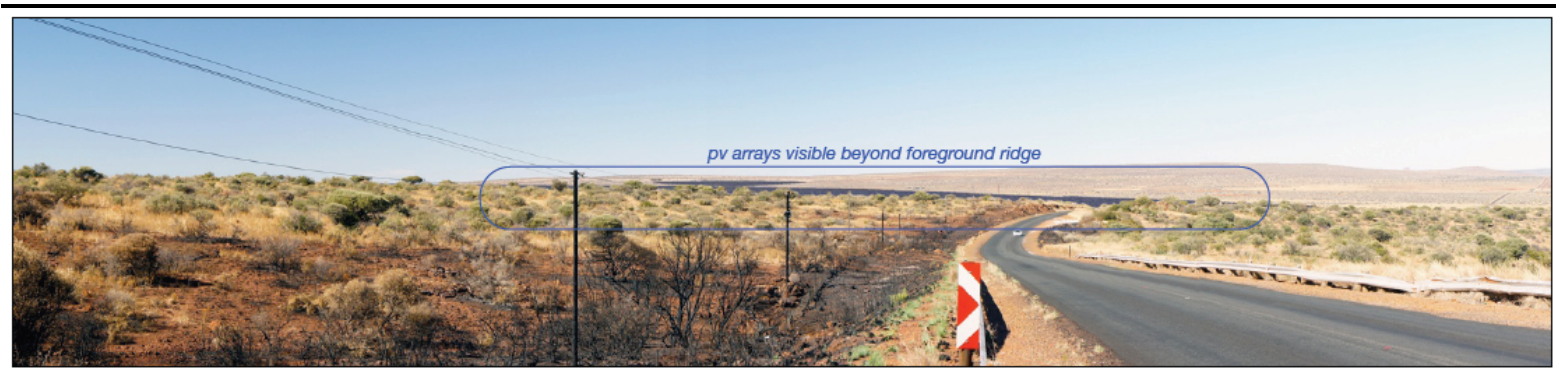
| Phase | Significance (Pre-mitigation) | Residual Impact Significance |
|-----------|-------------------------------|------------------------------|
| Operation | MODERATE-MAJOR (-VE) | MODERATE (-VE) |

Figure 10.3 Viewpoint G1 Before • looking south-west from the R385



Taken: 28.2782S, 23.3862E • 21/11/2010 • 08h28

Figure 10.4 Viewpoint G1 After • looking south-west from the R385



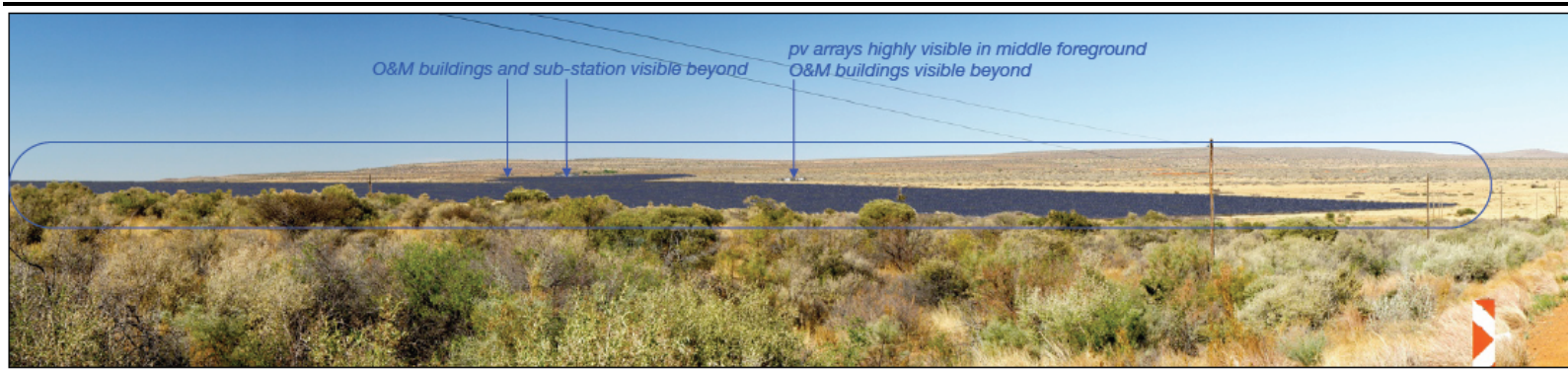
Distance to nearest PV array: 2.03km

Figure 10.5 Viewpoint G2 Before • looking south-west from R385



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Figure 10.6 Viewpoint G2 After - looking south-west from R385



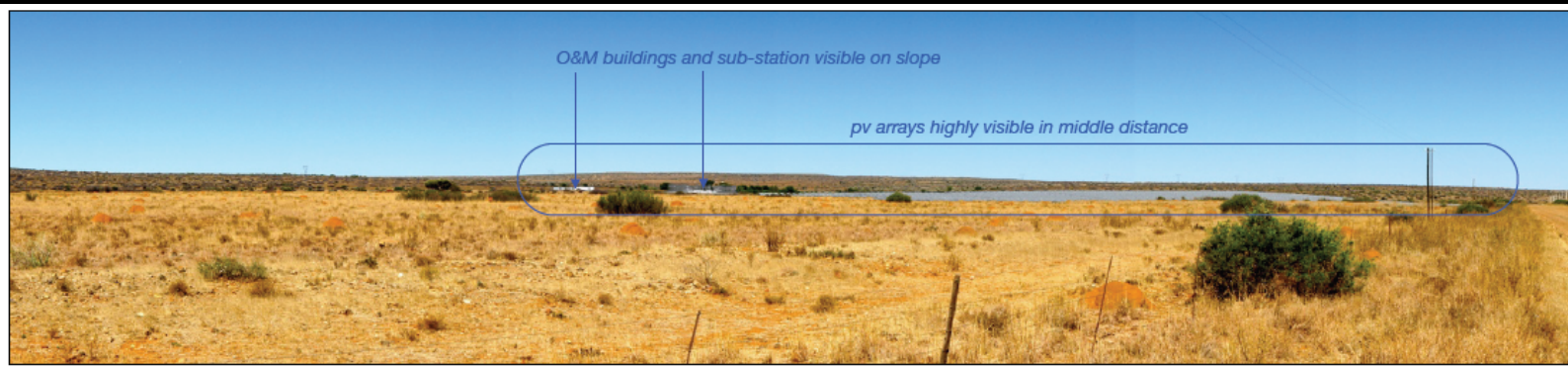
*Distance to nearest PV Array: 845 m

Figure 10.7 Viewpoint G5 Before - looking west from D3381 at Sunnyside turnoff



Taken: 28.3208S, 23.3678E • 21/11/2010 • 08h53

Figure 10.8 Viewpoint G5 After - looking west from D3381 at Sunnyside turnoff



Distance to nearest PV array: 1.13km