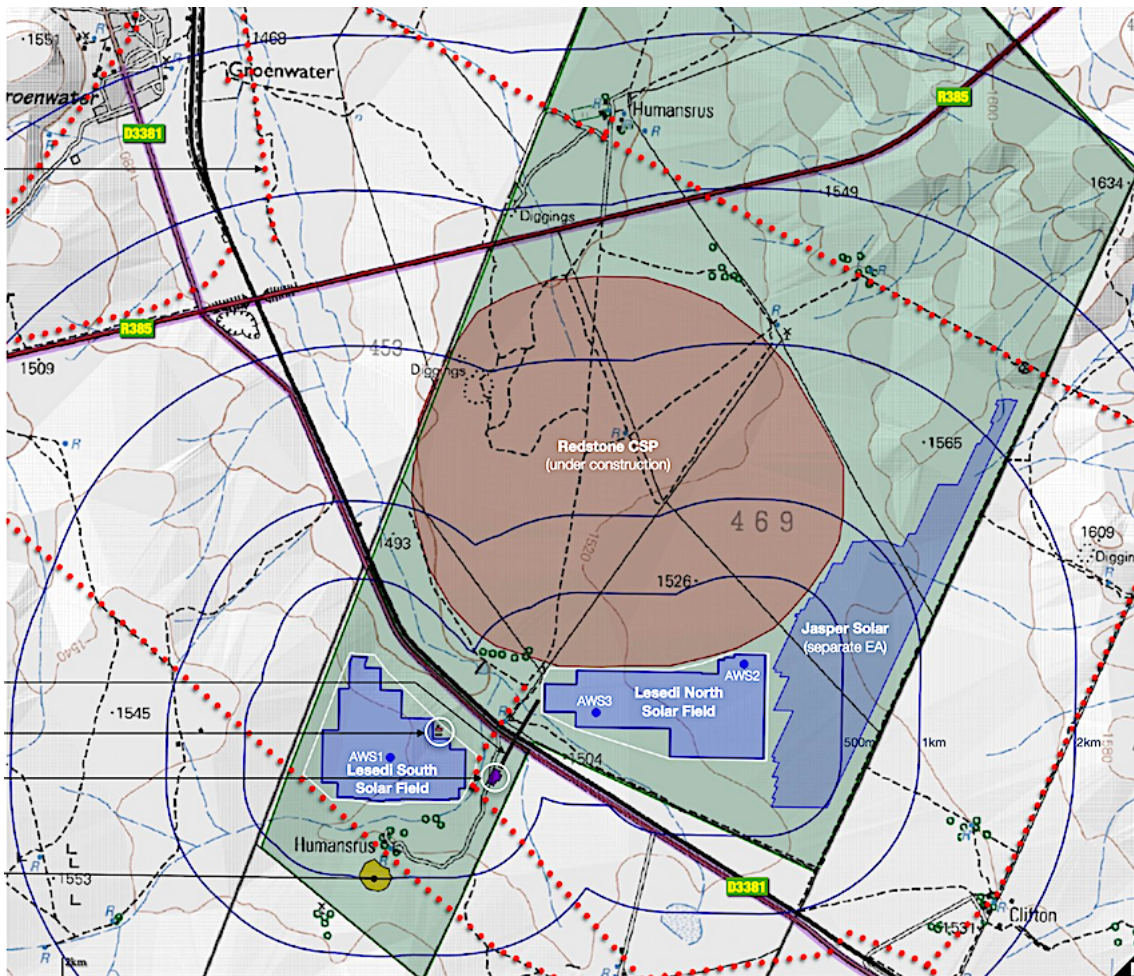


Part 2 Environmental Authorisation Amendment  
Application  
For 75MW Humansrus PV 1 Solar Power Facility  
for Lesedi Power Company

**Visual Assessment Amendment**

30 January 2023



Prepared for  
EarthnSky Environmental Consultants

Prepared by  
Quinton Lawson, Architect  
and  
Bernard Oberholzer, Landscape Architect

## **1. Background**

The Applicant is proposing to amend the Environmental Authorisation (EA: 12/12/20/1903/1) for the existing Humansrus PV 1 Solar Power Facility (referred to as Lesedi Power Company) located near Postmasburg in the Northern Cape Province (see Figure 1). This visual amendment report addresses the various amendments and their potential visual implications.

The original Visual Impact Assessment (VIA) Report was prepared by the authors in 2011 and revised in 2015. Environmental authorisation (EA) was given for the 75 MW Humansrus Photovoltaic (PV) 1 Solar Power Facility in 2012.

## **2. Terms of Reference**

The Terms of Reference include the preparation of a specialist comment / statement addressing the following:

- Update the layout and visual assessment of the solar PV project to reflect the as-built project.
- Update the VIA in terms of the as-built project, taking into consideration the current construction of the Redstone CSP.
- Update the Client / Application name.
- Update the site boundary / site assessment area.
- Conclusions specifically addressing the various amendments on the project site.

The purpose of this Amendment Report therefore is to determine if there would be any changes in the potential visual impacts, when compared to those of the authorised project description and layout, and the possible significance of the changes.

A field trip was not considered necessary for the amendment as the authors are familiar with the site and have adequate photographic coverage of the area, having been involved in the original VIA.

## **3. Original VIA**

The findings of the original VIA were as follows:

"Given the relatively flat topography and exposed landscape, and the rural character of the area, it was anticipated that the proposed solar park would have a medium-high visual impact before mitigation. The visual impact can, however, be reduced to medium by means of selective screen planting along the external roads and other visual mitigation measures, including setbacks from the local roads."

The potential visual impact of the substation was also considered to be medium-high, and mitigation in the form of earth berms and screen planting were considered possible.

"Taking into account 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 or scenic considerations, provided that the mitigation measures are implemented."

## **4. Proposed Amendments**

Environmental Authorisation amendment is sought for the following (EarthNSky Environmental, January 2023):

- Confirmation of change of the contact person for Oakleaf Investment Holdings 79 (Pty) Ltd. (Trading as Lesedi Power Company (Pty) Ltd.);

- To amend the size and location of the substation, including a control room, external 132kV transformers, electric switch gear, capacitor banks and fencing for security and safety;
- To indicate the location of the operations and maintenance facility, including an office and storage buildings, security, ablution facilities, parking, outdoor storage area and water treatment facility;
- To include aboveground 22kV power lines between the northern solar field and the substation, i.e. across the railway line and D3381 road;
- Relaxation of the 200m visual buffer (condition 29 of the Environmental Authorisation) and the 50m buffer (condition 30 of the Environmental Authorisation) for the aboveground 22kV power lines between the northern solar field and the substation that cross the railway line and D3381 road;
- To show PV arrays of up to 1km in length across the south solar field and up to 1,5km in length across the north solar field, made up of approximately 100m sections;
- To accommodate the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 National Norms and Standards for the storage of waste;
- To align the authorised development footprint with the farm boundary, to accommodate the overburden storage area, and to indicate that a small borrow pit on site was not needed during the construction phase, as excess overburden was used for filling;
- To indicate that the solar irradiation measuring panel (approximately 16m<sup>2</sup> in size) was in place during the feasibility stage, but not being permanent, was removed prior to commencement of operations;
- To include three autonomous weather stations (aws), approximately 4m in height, for continuous monitoring of local conditions during the operational phase, and three soiling stations consisting of two PV panels each, measuring approximately 4m<sup>2</sup> in size each, to monitor and determine operational efficiencies;
- Approval of the as-built drawings and layout plans for the entire operations, as well as access roads used to the solar fields and substation.

The above facilities are indicated in Figures 2 to 6. An updated viewshed and photomontages are given in Figures 7 and 8.

## 5. Assessment of Visual Impacts

### *Size and location of the Substation:*

The substation was built further east and the size was increased towards the south of the authorised substation layout, and comprises a control room, external 132 kV transformers, electric switchgear, capacitor banks and is fenced for security and safety. Seen from the various viewpoints, including the D3381 Road, no major visual implications have been identified, a visual buffer along the road having been maintained.

### *Operations and Maintenance (O&M) Facility:*

The location of the O&M Facility consisting of an office and storage buildings, security, ablution facilities, parking outdoor storage area and water treatment facility, is indicated in Figure 2. As in the case of the substation, seen from the various viewpoints, including the D3381 Road, no major visual implications have been identified, a visual buffer along the road having been maintained.

### *Aboveground 22 kV lines:*

A 22 kV powerline between the northern solar field and the substation, across the railway line and D3381 road have been constructed as indicated in Figure 2. As the powerlines cross the railway line and D3381 road at right angles, the 200m visual buffer and 50m buffer can be relaxed for the powerline crossing.

### *PV Arrays:*

The PV arrays of up to 1 km in length across the solar south field and up to 1,5 km length across the north solar field are indicated in Figure 2, and have been previously assessed with no further visual implications.

### *Development Footprint:*

The authorised development footprint has been aligned with the farm boundary to accommodate the overburden storage area. A borrow pit on site was not needed during the construction phase, as excess overburden was used for filling.

### *Solar Irradiation Measuring Panel:*

This panel was in place during the feasibility stage to collect data on the solar resource, but was not permanent and was removed prior to the commencement of operations.

### *Weather Stations:*

Three autonomous weather stations approx. 4m in height for continuous monitoring during the operational phase, and three soiling stations approx. 4m<sup>2</sup> each to monitor operational efficiencies have been included. These do not have significant visual implications within the context of the overall solar power facility.

### *As-built Drawings:*

As-built drawings and layout plans for the entire operations, including access roads, are indicated in Figures 2 to 5.

## **6. Conclusion**

None of the amendments described above relating to the as-built project would have any significant visual implications when seen in the context of the overall Humansrus PV 1 Solar Power Project and the Redstone CSP project (under construction) to the north of the Lesedi North and South solar fields.

The overall visual impact significance for the project is therefore not expected to change from that of the authorised layout.

Amendments to the related infrastructure, such as internal access roads and overhead powerlines, would result in no change in the overall visual impact significance ratings and would be low before and after mitigation.

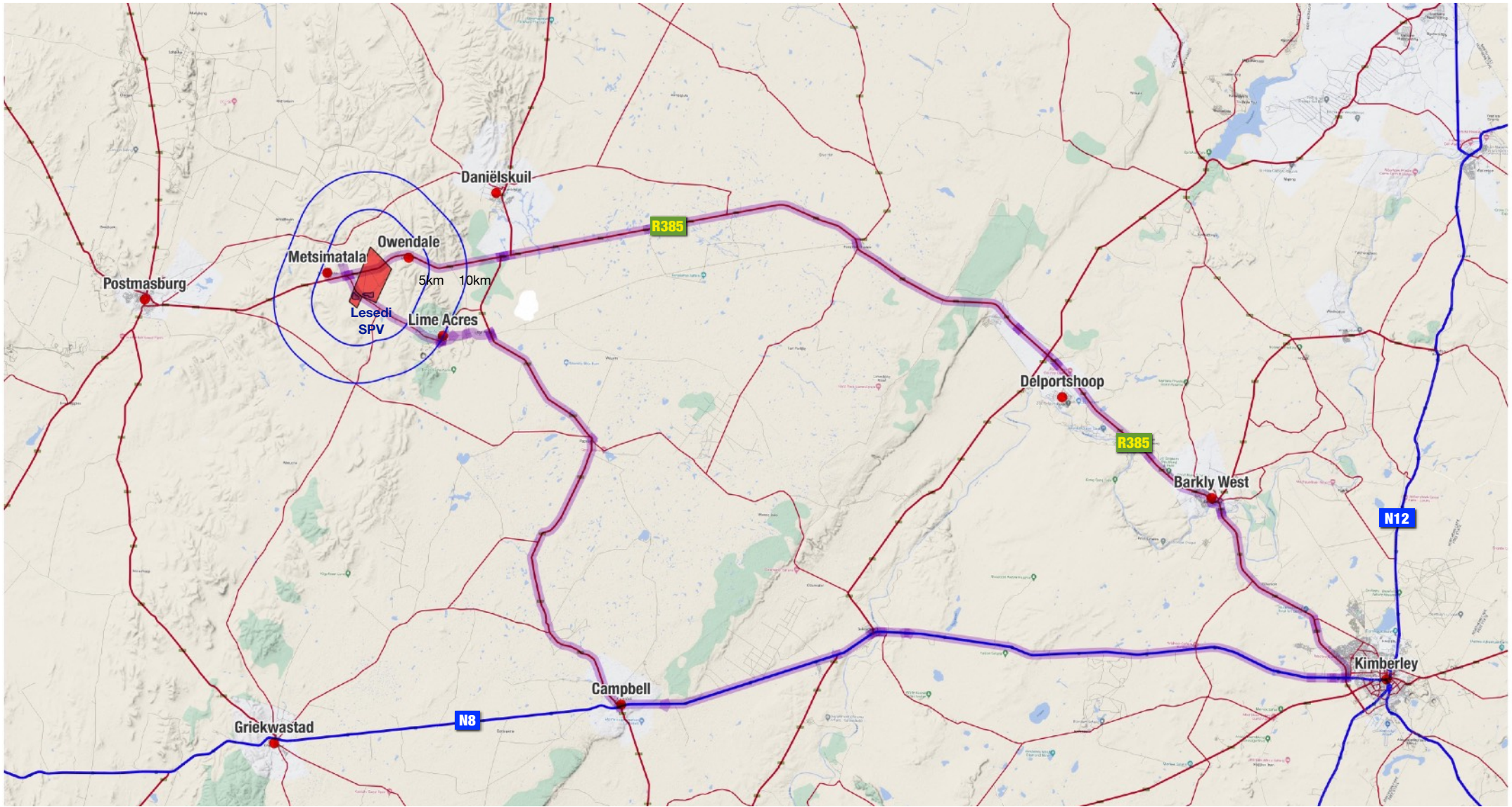
Accordingly, the amendments to the as-built project will not result in an increased level or change in the nature of the visual impacts, and the final as-built layout is acceptable from a visual perspective.

## **References**

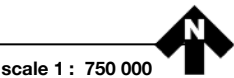
EarthnSky, Oct 2022. Pre-application Meeting. Environmental Authorisation Amendment Application: 75 MW Humansrus PV 1 Solar Power Facility (Lesedi Power Company).

EarthnSky, Jan 2023. Information for Specialists. Environmental Authorisation Amendment Application: 75 MW Humansrus PV 1 Solar Power Facility (Lesedi Power Company).

Oberholzer, B. and Lawson Q. 2011 and 2015: Proposed lesedi (Groenwater) Solar Park on the Humansrus Farm near Postmasburg, Northern Cape: Visual Impact Assessment.



Base Map Source : Google Maps 2023



scale 1 : 750 000

Figure 1 • LESEDI Solar Locality Map

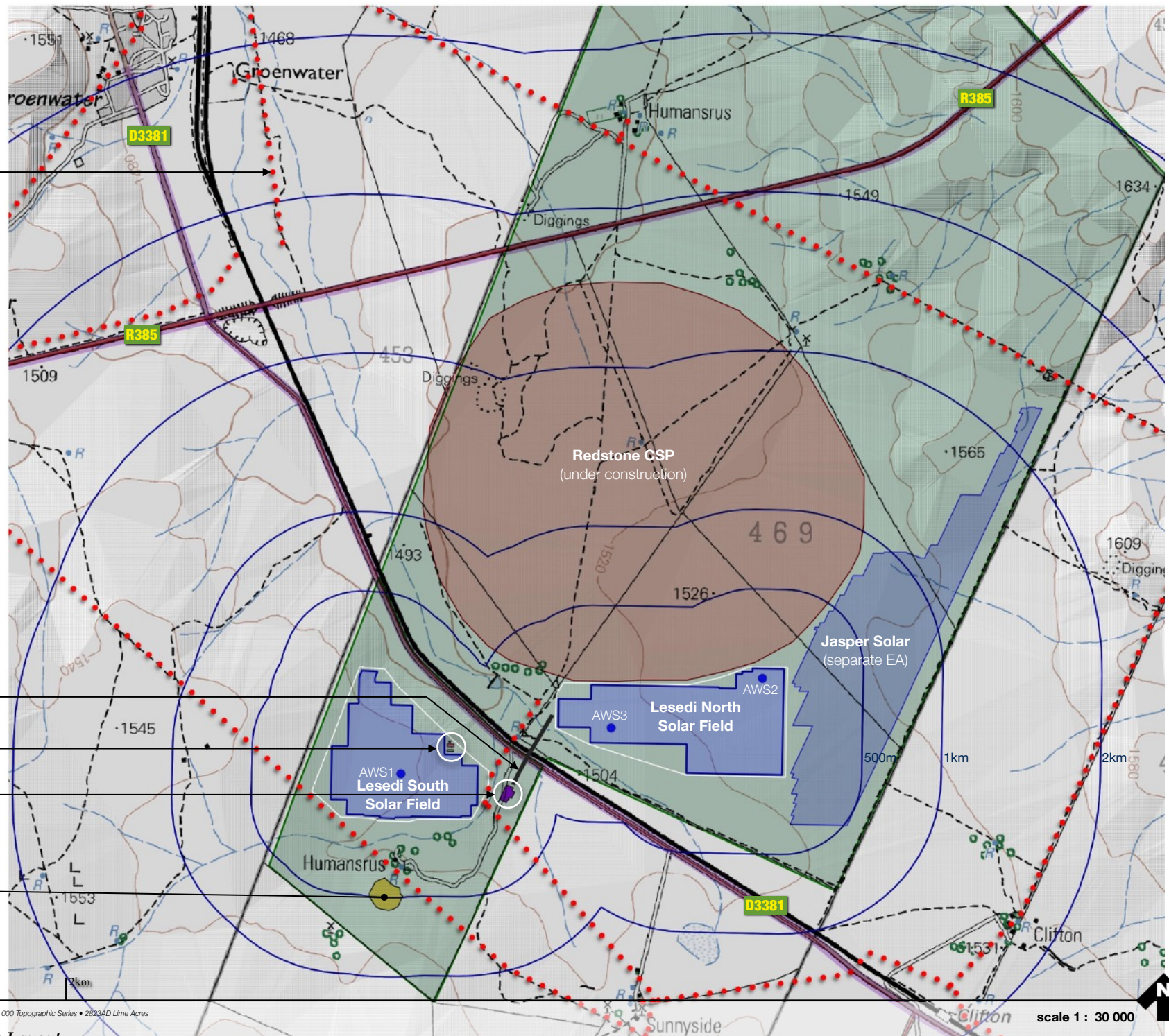
existing power lines

22kV Inter-connecting power lines

O&M buildings location

sub-station, capacitor banks location

overburden stock pile



Base Map Source : Chief Directorate : National Geo-Spatial Information • 1:50 000 Topographic Series • 28234D Lime Acres

Figure 2 • LESEDI Solar Facilities Layout

scale 1 : 30 000

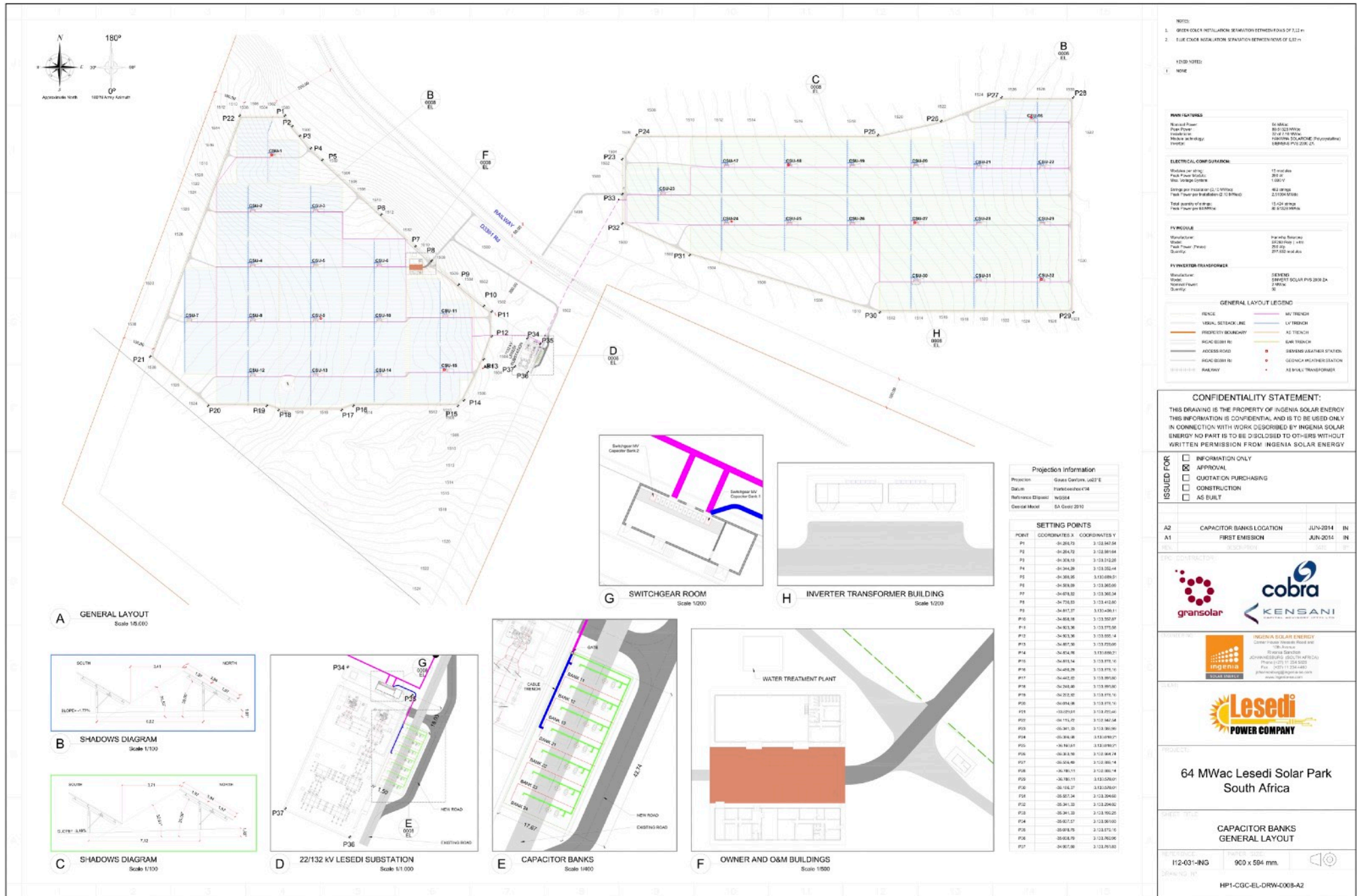
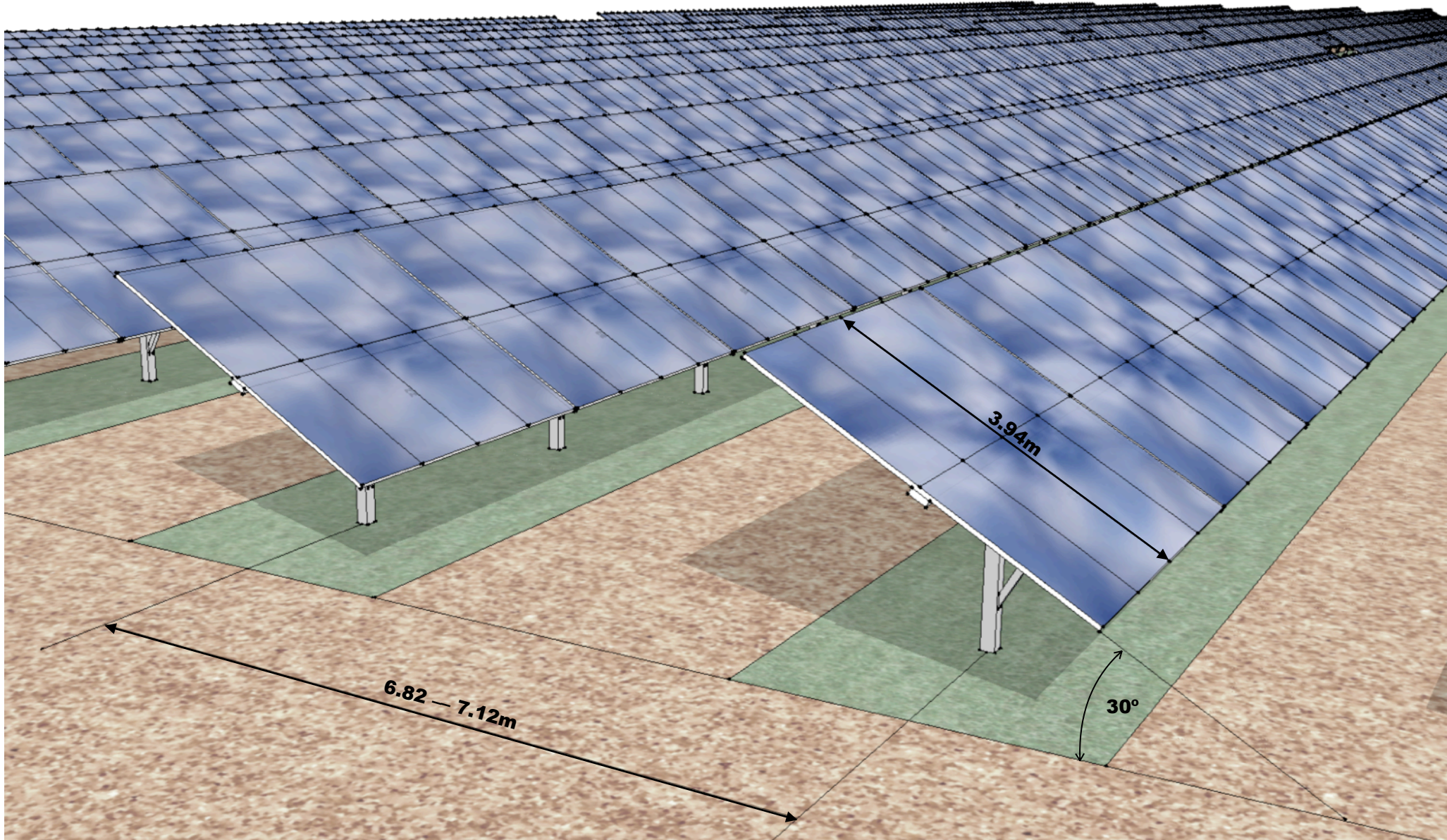


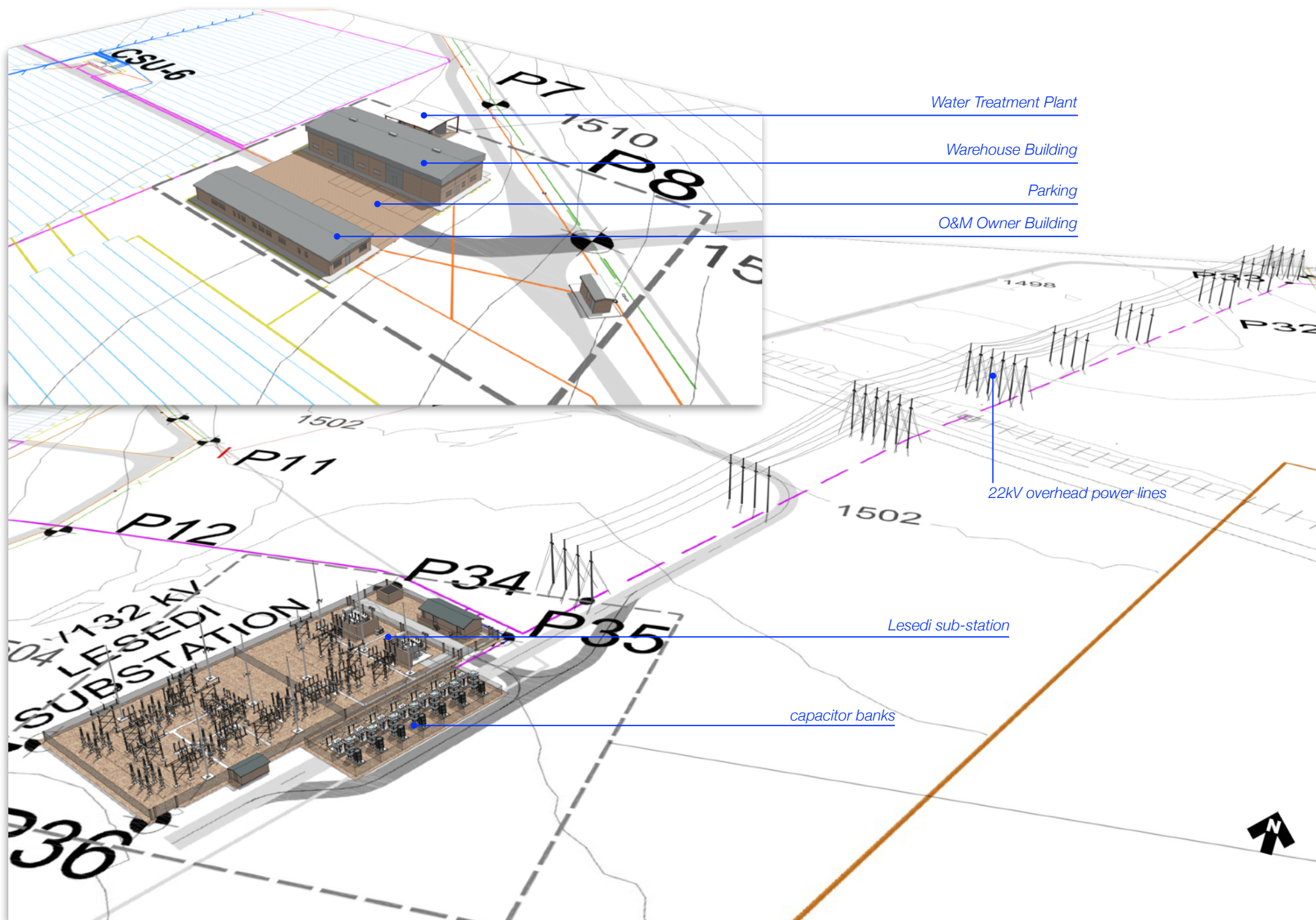
Figure 3 • LESEDI Solar As-built Layout



Solar Panel dimensions and spacing

Based on information provided by Lesedi, 3D models by qarc

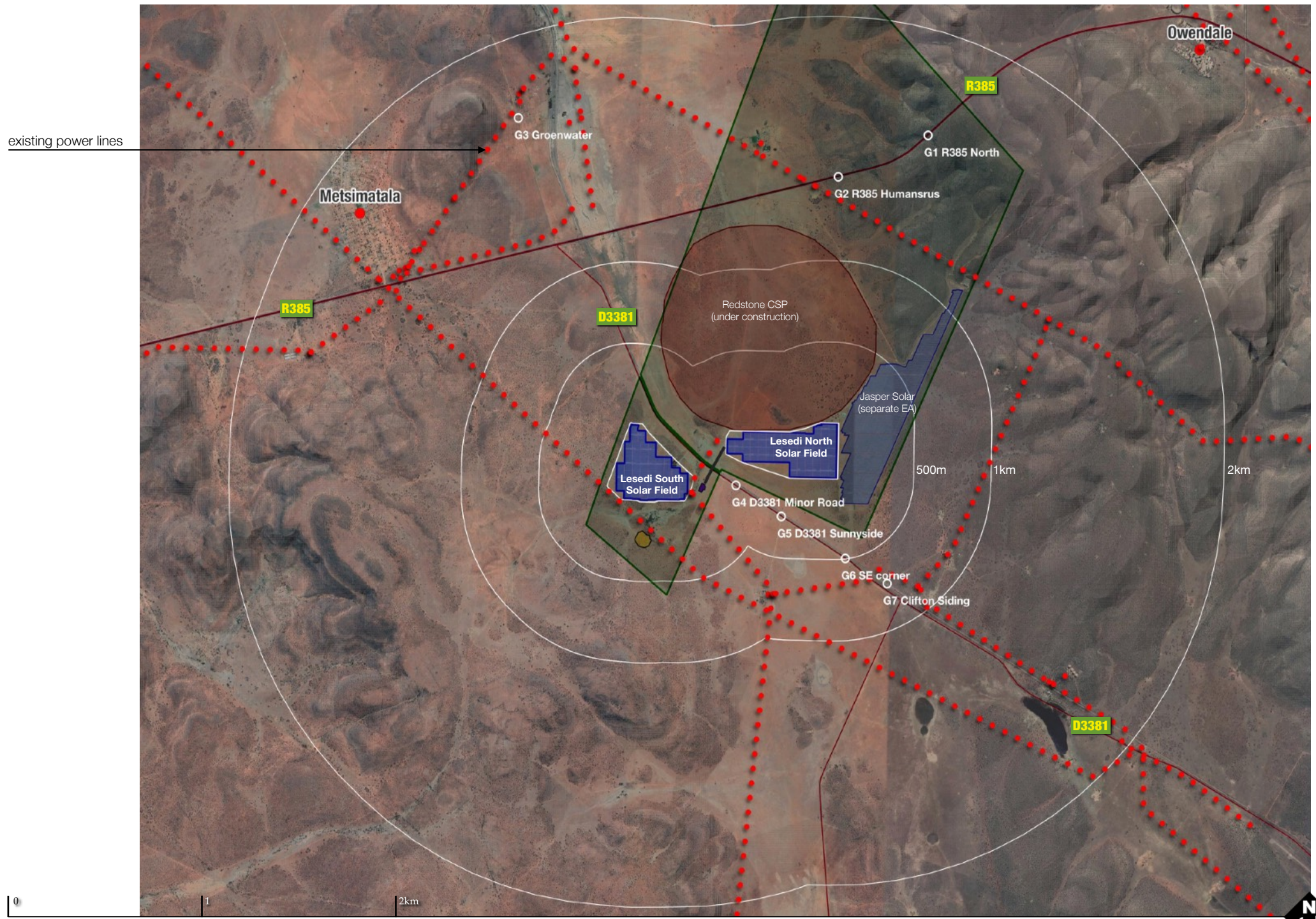




Based on information provided by Lesedi, 3D models by qarc

Figure 5 • LESEDI Solar 3D Models of Facilities

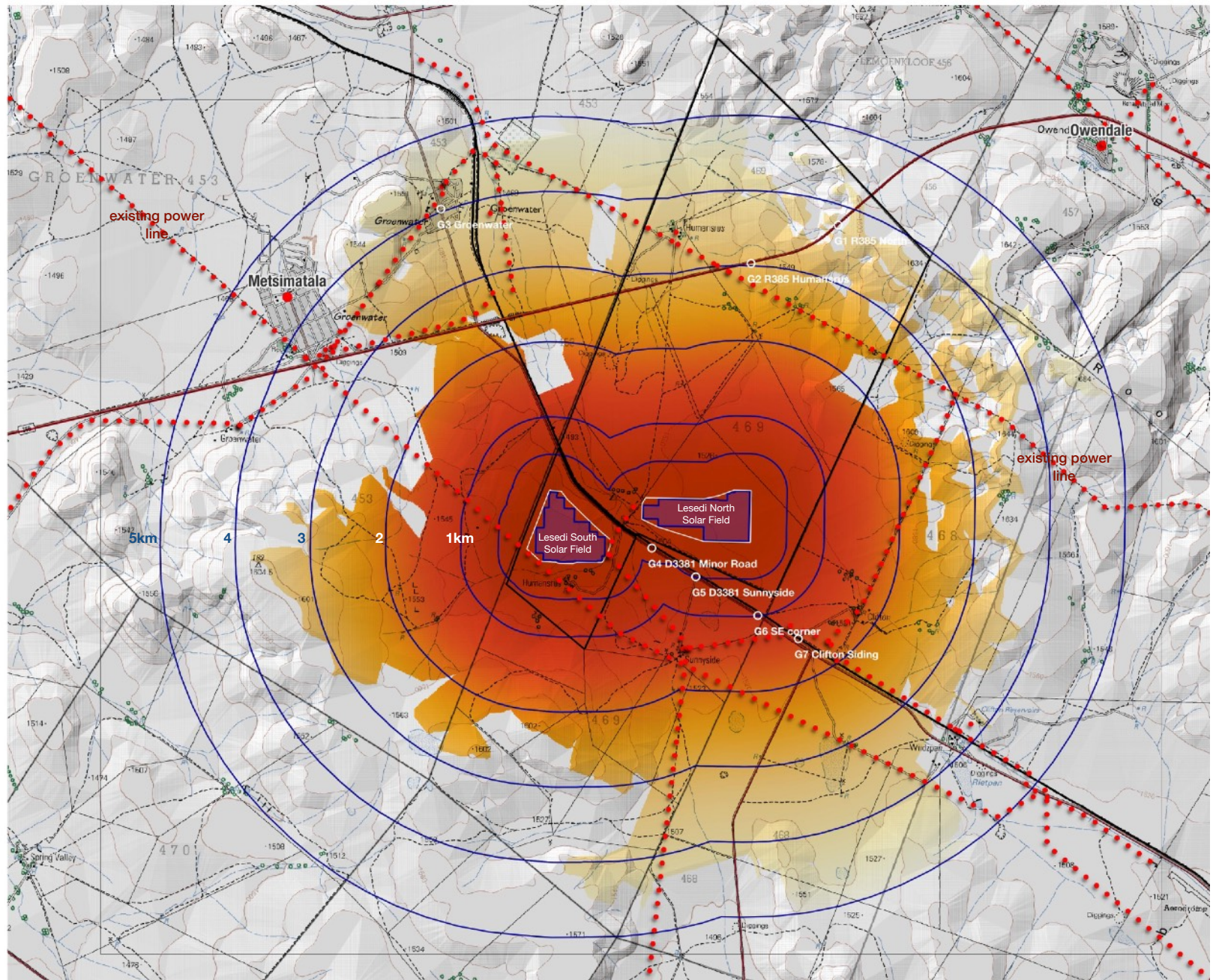
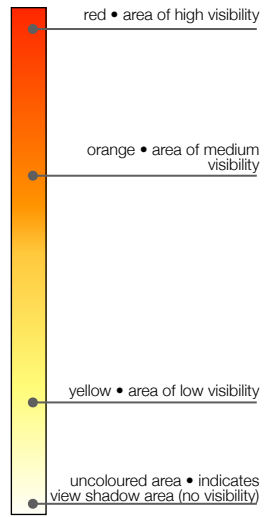
no scale



Base Map Source : Google Earth 2023

Figure 6 • LESEDI Solar Viewpoints, Distance Radii

**VISIBILITY GRADIENT LEGEND**

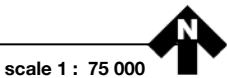


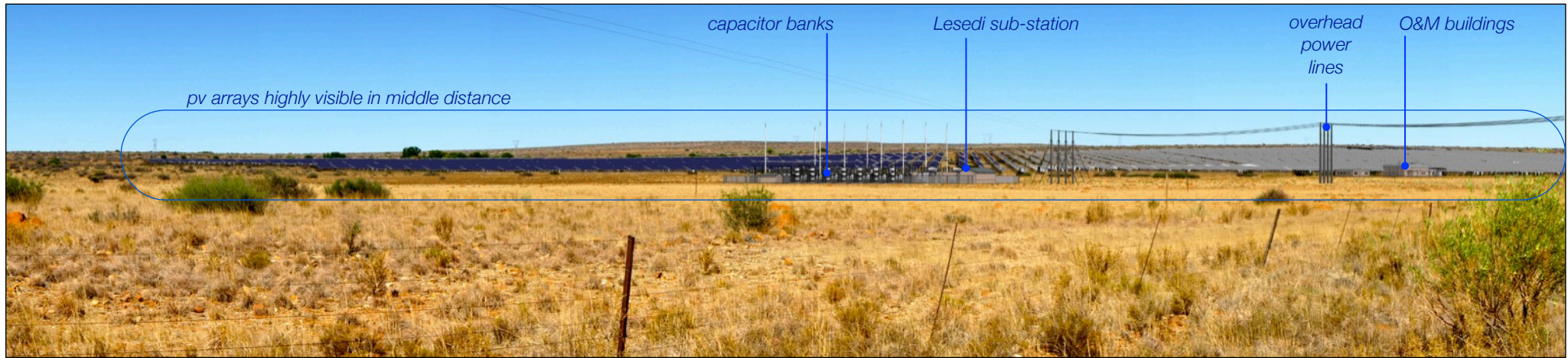
Note : Viewshed derived from Solar PV arrays maximum 3m high



Base Map Source : Chief Directorate : National Geo-Spatial Information • 1:50 000 Topographic Series • 2823AD Lime Acres

Figure 7 • LESEDI Solar Viewshed and Distance Radii





**Viewpoint G4 • looking west from D3381**

28.3175S, 23.3618E • 21/11/2010 • 08h52  
 distance to nearest pv array : 625m  
 distance to capacitor banks/sub-station : 393m



**Viewpoint G5 • looking west from D3381 at Sunnyside turnoff**

28.3208S, 23.3678E • 21/11/2010 • 08h53  
 distance to nearest pv array : 1.24km  
 distance to capacitor banks/sub-station : 1.05km

## **Addendum A: CV of Visual Specialists**

The Visual Assessment Amendment was prepared by the following:

### **Quinton Lawson, Architect**

8 Blackwood Drive, Hout Bay 7806

Email: [quinton@openmail.co.za](mailto:quinton@openmail.co.za)

#### *Qualifications:*

Bachelor of Architecture (Univ. of Natal 1977)

#### *Professional registration/membership:*

Professional member of SA Council for the Architectural Profession (SACAP) reg. no.3686.

Member of the Cape Institute for Architects and SA Institute of Architects.

### **Bernard Oberholzer, Landscape Architect**

PO Box 471, Stanford, Western Cape, 7210

Email: [bernard.bola@gmail.com](mailto:bernard.bola@gmail.com)

#### *Qualifications:*

Bachelor of Architecture (UCT 1970), Master of Landscape Architecture (U. of Pennsylvania 1975).

#### *Professional registration/membership:*

Professional member of SA Council for the Landscape Architectural Profession (SACLAP) reg. no.87018.

Fellow of the Institute of Landscape Architects of South Africa.

## **Expertise**

Quinton Lawson has a Bachelor of Architecture Degree (Natal) and has more than 15 years' experience in visual assessments, specializing in 3D modeling and visual simulations. He has previously lectured on visual simulation techniques in the Master of Landscape Architecture Programme at UCT.

Bernard Oberholzer has a Bachelor of Architecture (UCT) and Master of Landscape Architecture (U. of Pennsylvania), and has more than 25 years' experience in undertaking visual impact assessments. He has presented papers on *Visual and Aesthetic Assessment Techniques*, and is the author of *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes*, prepared for the Dept. of Environmental Affairs and Development Planning, Provincial Government of the Western Cape, 2005.

The authors have been involved in visual assessments for a wide range of residential, industrial and renewable energy projects. They prepared the 'Landscape Assessment' report for the *National Wind and Solar PV Strategic Environmental Assessment (SEA)*, in association with the CSIR, for the Department of Environmental Affairs (now DFFE) in 2014.